Guide2010

National Centres of Competence in Research

FNSNF
Swiss National Science Foundation

Guide2010

National Centres of Competence in Research

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NCCR Office
Wildhainweg 3
CH-3001 Berne

phone: +41 (0)31 308 23 52
nccr@snf.ch
www.snf.ch

Production

Stefan Bachmann
Urs Christ
Thomas Griessen
Nuria Sturm
Matthias Wenker

Design, layout, typesetting

werbecreativ schenk, Berne
werbecreativ.ch

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FNSNF
Swiss National Science Foundation

Content

National Centres of Competence in Research (NCCRs)
Goals and Implementation

In the year 2001 the Swiss National Science Foundation launched the National Centres of Competence in Research (NCCR). The main goal of the currently 20 NCCRs is the promotion of scientific excellence in areas of major strategic importance for the future of Swiss research, economy and society. NCCRs are managed by leading houses institutionally linked to universities or other distinguished research institutions (home institutions). In addition to the research teams at the home institution, an NCCR sets up a network of other research teams across Switzerland. The maximum duration of an NCCR is 12 years. The three underlying principles of NCCRs are:

- Research: NCCRs carry out research of excellent quality, spanning basic research to applications. There is a number of individual projects doing the actual research work in each NCCR. The NCCR director ensures the coherence and integration of the individual projects.
- Knowledge and technology transfer: NCCRs develop links with the potential users of their results, and involve them in project planning from the outset.
- Training and promotion of women: NCCRs create the necessary structures and implement measures required to train young scientists (doctoral and postdoctoral students). Particular attention is paid to the advancement of women in research.

From a research policy point of view, NCCRs should contribute to a better structuring of the Swiss research environment, and to optimised task assignment between research institutions.

NCCRs are funded by the Swiss National Science Foundation (SNSF), participating institutions – in particular the home institution – and third parties. The 20 existing NCCRs receive a total of CHF 157 million in SNSF funding for 2009 - 2012.

Calls for submissions to set up NCCRs were first made in January 1999. Priority was given to four areas of research: life sciences, social sciences and humanities, sustainable development and environment, and information and communication technologies. A share of the overall budget was also made available to projects involving promising topics from outside these priority areas. The SNSF assessed the projects in two stages: a pre-proposal stage, with 82 projects submitted, and a full-proposal stage, with 34 submissions. The SNSF presented 18 full proposals of outstanding merit to the Federal Department of Home Affairs, which made the final selection of 14 NCCRs according to federal research policy in December 2000.

A second call for NCCRs in the field of Social Sciences and Humanities was launched in October 2003. After a thorough evaluation of 44 pre-proposals and 17 full proposals 6 new NCCRs started in autumn 2005.

A third call launched in 2008 was open for all scientific fields. It resulted in the submission of 54 pre-proposals in December 2008 and of 28 full proposals in September 2009. The final selection will be made in spring 2010.

In summer 2009 several NCCRs could profit from the economic stimulus package decided by the Swiss government and parliament in order to fight the economic crisis. 28 out of 43 projects submitted jointly by NCCRs and companies were accepted. They will run for 2 years and focus on the transfer of results into practical applications.

Within the SNSF, Division IV of the National Research Council is responsible for NCCRs. An international Review Panel is set up for each NCCR to assess its progress regularly.

The NCCRs
at a glance

1st Call of NCCRs

Short Name	NCCR-Director	Home Institution	Web Address
Climate	Prof. Stocker Thomas	University of Berne	www.nccr-climate.unibe.ch
CO-ME	Prof. Székely Gábor	ETH Zurich	co-me.ch
FINRISK	Prof. Habib Michel	University of Zurich	www.nccr-finrisk.uzh.ch
Genetics	Prof. Duboule Denis	University of Geneva	www.frontiers-in-genetics.org
IM2	Prof. Bourlard Hervé	Idiap Research Institute, Martigny	www.im2.ch
MaNEP	Prof. Fischer Øystein	University of Geneva	www.manep.ch
MICS	Prof. Aberer Karl	EPF Lausanne	www.mics.org
Molecular Oncology	Prof. Aguet Michel	EPF Lausanne	www.nccr-oncology.ch
Nanoscale Science	Prof. Schönenberger Christian	University of Basel	www.nccr-nano.org
Neuro	Prof. Schwab Martin	University of Zurich	www.nccr-neuro.uzh.ch
North-South	Prof. Hurni Hans	University of Berne	www.north-south.unibe.ch
Plant Survival	Prof. Turlings Ted	University of Neuchâtel	www.unine.ch/plantsurvival
Quantum Photonics	Prof. Devaud-Plédran Benoît	EPF Lausanne	nccr-qp.epfl.ch
Structural Biology	Prof. Grütter Markus	University of Zurich	www.structuralbiology.uzh.ch

2nd Call of NCCRs

Short Name	NCCR-Director	Home Institution	Web Address
Affective Sciences	Prof. Scherer Klaus	University of Geneva	www.affective-sciences.org www.sciences-affectives.ch
Democracy	Prof. Kriesi Hanspeter	University of Zurich	www.nccr-democracy.uzh.ch
Iconic Criticism	Prof. Boehm Gottfried	University of Basel	www.eikones.ch
Mediality	Prof. Kiening Christian	University of Zurich	www.mediality.ch
SESAM	Prof. Margraf Jürgen	University of Basel	www.sesamswiss.ch
Trade Regulation	Prof. Cottier Thomas	University of Berne	www.nccr-trade.ch

Output in 2001 - 2004
(1st Call of NCCRs)

Type	Number
Scientific papers	7 100
Presentations at congresses and fairs	6 700
Patents/licences	126
Start up companies[1]	17
Prototypes, demonstrators, processes	131
Cooperations with private and public sector	338
CTI projects[2]	28[3]

[1] Built up or encouraged by the NCCRs
[2] CTI: Innovation Promotion Agency of the Swiss Government funding cooperation projects with industry
[3] The total amount of the 28 projects is about CHF 31.7 Mio.

Total of funds in 2001 - 2004
(1st Call of NCCRs)

Funding source (CHF)	2001	2002	2003	2004	Total	%
SNSF funding	51 034 237	57 303 066	58 114 035	57 607 320	224 058 658	37
Self-funding from home institutions[1]	18 685 602	20 762 660	19 157 137	19 722 980	78 328 379	13
Self-funding from project participants	39 364 540	51 884 528	64 851 723	69 156 289	225 257 080	37
Third-party funding[2]	8 861 639	16 620 401	27 986 869	29 546 417	83 015 326	13
Total	117 946 018	146 570 655	170 109 764	176 033 006	610 659 443	100

[1] Personnel costs, equipment and consumables, not included infrastructure and basic equipment
[2] Not included is CTI funding (cf. above)

Total of funds in 2005 - 2008

(1st and 2nd Call of NCCRs)

Funding source (CHF)	2005	2006	2007	2008	Total	%
SNSF funding	66 955 000	65 567 000	63 341 000	61 537 000	257 400 000	35
Self-funding from home institutions[1]	21 117 710	23 852 187	22 725 242	26 198 486	93 893 625	13
Self-funding from other institutions[2]	6 095 240	5 677 322	5 153 897	4 729 639	21 656 098	3
Self-funding from project participants	68 003 946	72 138 404	65 352 264	60 880 145	266 374 759	36
Third-party funding[3]	30 212 890	20 912 240	22 998 884	19 017 270	93 141 284	13
Total	192 384 786	188 147 153	179 571 287	172 362 540	732 465 766	100

[1] Personnel costs, equipment and consumables, not included infrastructure and basic equipment
[2] See the NCCRs Molecular Oncology, Neuro and Structural Biology
[3] Not included is CTI funding (cf. page 6 and some NCCRs)

Total of funds in 2009 - 2012

(1st and 2nd Call of NCCRs)

Funding source (CHF)	2009	2010	2011	2012	Total	%
SNSF funding	55 547 767[4]	44 910 000[4]	34 895 000	21 995 000	157 347 767	31
Self-funding from home institutions[1]	30 968 668	23 469 997	24 161 766	28 675 709	107 276 140	21
Self-funding from other institutions[2]	2 195 500	2 211 500	2 211 500	2 211 500	8 830 000	2
Self-funding from project participants	45 186 593[4]	44 566 575[4]	40 385 200	36 149 732	166 288 100	33
Third-party funding[3]	20 381 865[4]	18 267 567[4]	13 275 408	12 915 041	64 839 881	13
Total	154 280 393	133 425 639	114 928 874	101 946 982	504 581 888	100

[1] Personnel costs, equipment and consumables, not included infrastructure and basic equipment
[2] See the NCCRs Molecular Oncology, Neuro and Structural Biology
[3] Not included is CTI funding (cf. page 6 and some NCCRs)
[4] Included funding of economic stimulus package projects

Total of persons involved in the NCCRs in the last reporting period (12 months)

(1st and 2nd Call of NCCRs)

Personnel	Total of Persons	Female	%	Male	%	Swiss	Other Nations
Management	85[1]	121	47	137	53	148	110
Master students	166	96	58	70	42	92	74
Doctoral students	1235	449	36	786	64	426	809
Postdoctoral students	571	186	33	385	67	109	462
Research associates	205	81	40	124	60	90	115
Senior researchers[2]	1219	228	19	991	81	494	725
Other staff	772	353	57	262	43	414	358
Total	4253	1514	35	2755	65	1773	2653

[1] Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training
[2] Including leaders of the individual projects and other organisational units of the NCCRs

Molecular Oncology – From Basic Research to Therapeutic Approaches

NCCR Molecular Oncology

Home Institution
EPFL, Lausanne

Start of the NCCR
May 1, 2001

NCCR Management
Director
Aguet Michel, Prof.

Associate Director
Deka Jürgen, Dr.
phone: +41 (0)21 314 77 22
jurgen.deka@epfl.ch

Office
Vania Sergy, Mrs.
phone: +41 (0)21 314 71 50
vania.sergy@epfl.ch

Public Relations
Vania Sergy, Mrs.

Knowledge and Technology Transfer
Aguet Michel, Prof.

Education and Training
Deka Jürgen, Dr.

Advancement of Women
Brisken Cathrin, Dr.

Address
NCCR Molecular Oncology
Institut Suisse
de Recherche Expérimentale
sur le Cancer, EPFL
c/o Institut Universitaire
de Pathologie
Rue du Bugnon 25
1011 Lausanne
phone: + 41 (0)21 314 71 50
nccr.oncology@epfl.ch

Web Address
www.nccr-oncology.ch

Public Relations
- Newsletter NCCR
- News and press coverage on website
- Press releases

Research

Cell Signaling in Tumor Development and Metastasis

The progesterone-Wnt connection and early events in human breast carcinogenesis
Head: Brisken C.

Mechanisms controlling tissue homeostasis and their role in cancerogenesis
H: Hülsken J.

Sarcoma-development and the role of the tumor stroma
H: Stamenkovic I.

The role of IL-1 in tumorigenesis
H: Tschopp J.

Large-scale analysis of functional genomics data
H: Delorenzi M.

Epigenetics and gene expression signatures in human glioblastoma and glioma stem like cells and implications for tumor biology and treatment of cancer
H: Hegi M.

Regulation of colorectal cancer progression
H: Petrova T.

Tumor Angiogenesis

Impact of antiangiogenic treatments on tumor evolution and tumor microenvironment
H: Rüegg C.

The molecular regulation of tumor lymphangiogenesis and lymphnode metastasis
H: Christofori G.

Role of lymphatic vessels in cancer invasion and metastasiss
H: Swartz M.

Tumor Immunity and Cancer Immunotherapy

Analysis of in vivo differentiation and function, and molecular dissection of antigen specific CD8 T cells before and after immunotherapy of melanoma patients
H: Speiser D.
Rufer N.

Structural design of peptide/MHC and T cell receptor interactions
H: Michielin O.

Economic stimulus package

Integrative data analysis in development of prognostic lung cancer assay
H: Delorenzi M., Kroll W.

Cancer stem cells as research and diagnostic targets
H: Huelsken J., Donzé O.

Education

Oncology Online: Development of a web-based oncology teaching program
H: Kraehenbuhl J.-P.

Heads of Individual Research Projects

Aguet Michel, Prof.	Institut Suisse de Recherche Expérimentale sur le Cancer, EPFL, Epalinges
Brisken Cathrin, Prof.	Institut Suisse de Recherche Expérimentale sur le Cancer, EPFL, Epalinges
Christofori Gerhard, Prof.	Dept. of Clinical-Biological Sciences, University of Basel
Delorenzi Mauro, Dr.	Swiss Institute of Bioinformatics, Lausanne
Hegi Monika, Dr.	Centre Hospitalier Universitaire Vaudois, Lausanne
Hülsken Jörg, Prof.	Institut Suisse de Recherche Expérimentale sur le Cancer, EPFL, Epalinges
Kraehenbuhl Jean-Pierre, Prof.	Health Sciences eTraining, Epalinges
Michielin Olivier, Prof.	Swiss Institute of Bioinformatics, Lausanne
Petrova Tatiana, Dr.	Centre pluridisciplinaire d'oncologie, Lausanne
Romero Pedro, Prof.	Ludwig Institut for Cancer Research, Epalinges

Topics

Cancer cells are defective in basic processes controlling cell differentiation and proliferation, genome stability and programmed cell death. They acquire capacities to invade tissues, to stimulate angiogenesis, and to elicit innate and in some instances specific immune responses. The Swiss Institute for Experimental Cancer Research (ISREC) forms together with several partner institutes (Ludwig Institute for Cancer Research, Department of Biochemistry of the University of Lausanne, Swiss Institute of Bioinformatics) part of a biomedical research center in Epalinges near Lausanne. The research focuses on different aspects of basic tumor biology and the host response to cancer. Work at ISREC centers on the discovery of genes that play important roles in tumorigenesis, using genetic approaches in unicellular and multicellular organisms. A major project at the Department of Biochemistry of the University of Lausanne investigates the ways that permit tumor cells to evade programmed cell death. Other groups in the ISREC and the Ludwig Institute for Cancer Research elucidate the mechanisms that control immune responses to cancer. Research projects in external institutes and clinics, also in other parts of Switzerland, complement the research portfolio of this cancer research program.
The projects carried out in Epalinges form a basis for the design of novel approaches to cancer therapy, and the NCCR program provides us with the means to explore such prospects, through cooperation with our partners in different University hospitals. The NCCR is also essential for supporting technology development and core facilities necessary for such clinically oriented research. Finally, the program provides training opportunities for MD/PhDs to foster the development of translational oncology in Switzerland.

Rüegg Curzio, Prof.	Centre pluridisciplinaire d'oncologie, Lausanne
Rufer Nathalie, Dr.	Centre pluridisciplinaire d'oncologie, Lausanne
Speiser Daniel, Prof.	Ludwig Institut de Recherches sur le Cancer, Epalinges
Stamenkovic Ivan, Prof.	Centre Hospitalier Universitaire Vaudois, CHUV, Lausanne
Tschopp Jürg, Prof.	Department of Biochemistry, University of Lausanne
Swartz Melody, Prof.	Institut of Bioengineering, EPF Lausanne

Partner Institutions

Ludwig Institute for Cancer Research LICR, Lausanne Branch
Department of Biochemistry of the University of Lausanne DB, UNIL
Swiss Institute of Bioinformatics SIB, Lausanne Branch
Centre Pluridisciplinaire d'Oncologie CePO
Centre Hospitalier Universitaire Vaudois CHUV

Members of the Advisory Board

Tumor-Host Interaction and Apoptosis

Ashkenazi Avi, Prof.	Genentech Inc., San Francisco, US
Carmeliet Peter, Prof.	Catholic University of Leuven, BE
Rommelaere Jean, Prof.	Deutsches Krebsforschungszentrum DKFZ, Heidelberg, DE

DNA-Microarrays, Bioinformatics and Tumor Specific Gene Expression

Ansorge Wilhelm, Prof.	European Molecular Biology Laboratory EMBL, Heidelberg, DE
Collins Peter, Prof.	University of Cambridge, GB
Guha Abhijit, Prof.	University of Toronto, CA
Liu Edison, Prof.	Genome Institute of Singapore, SG
Van't Veer Laura, Dr.	Netherlands Cancer Institute NKI, Amsterdam, NL

Immunotherapy

Greenberg Philip, Prof.	University of Seattle & Fred Hutchinson Cancer Research Center, US
Lanzavecchia Antonio, Prof.	Istituto di Ricerca in Biomedicina IRB, Bellinzona, CH
Melief Cees J. M., Prof.	Leiden University, NL

Third Party Cooperation

(in progress)

Programmes

- Vital – IT
- ACGT (FP6)
- EORTC + RTOG
- EORTC
- TRANS-BIG (FP6)
- TuMIC (FP7)

Research Institutions

- Bute Medical School, University of St Andrews, Edinburgh, GB
- Cancer Research Institute, New York, US
- Centre Médical Universitaire de Genève, CH
- Department of Biochemistry, University of North Carolina, US
- Department of Diagnostic Radiology, CHUV, Lausanne, CH
- Department of Growth Control, Friedrich Mischer Institute, Basel, CH
- Department of Immunology and Oncology, University of Madrid, ES
- Department of Neurosurgery, Anderson Cancer Center, University of Texas, Houston, US
- Department of Signal Processing, EPFL, Lausanne, CH
- Department of Surgical Oncology, Erasmus University Hospital, Rotterdam, NL
- ETH-IMSB, Zürich, CH
- Instituto de Investigaciones Biomedicas, CSIC-UAM, Madrid, ES
- Laboratory of Physical Chemistry, ETHZ, Zürich, CH
- Molecular Cancer Biology Laboratory, University of Helsinki, FI
- National Institute of Allergy and Infectious Diseases (NIAID), National Institutes of Health (NIH), Bethesda, US
- Oncology Institute of Southern Switzerland, Bellinzona, CH
- San Francisco Department of Public Health, University of California, San Francisco (UCSF), US
- Service de dermatologie et vénéréologie, Centre Hospitalier Universitaire Vaudois (CHUV), Lausanne, CH

Molecular Oncology – From Basic Research to Therapeutic Approaches

NCCR Molecular Oncology

Economy / Industry

- Agilent Technologies, Inc., Palo Alto, US
- Animatrics GmbH, Basel, CH
- Apoxis SA, Lausanne, CH
- AstraZeneca (UK) Ltd, London, GB
- Bracco Research SA, Geneva, CH
- BTG International Ltd., London, GB
- Diagnoplex Sàrl, Epalinges, CH
- Eli Lilly and Company, Indianapolis, US
- Ipsogen SAS, Marseille, FR
- Merck KGaA, Darmstadt, DE
- Novartis AG, Basel, CH
- Novartis Pharma AG, Basel, CH
- OncoMethylome Sciences, Inc., Durham, US
- Pfizer AG, Zurich, CH
- Pfizer, Inc., New London, US
- Roche AG, Basel, CH
- Smart Nose Ltd, Neuchâtel, CH
- Xigen SA, Lausanne, CH

Others

- Association pour la recherche sur le Cancer (ARC), Villejuif, FR
- European School of Oncology, Milan, IT
- Fond'Action contre le Cancer, Lausanne, CH
- Fondation Barletta, Lausanne, CH
- Fondation Widmer c/o Dept. Médecine Interne, Hôpital Universitaire de Genève, CH
- Fonds de neurochirurgie, Geneva, CH
- Gebert Rüf Stiftung, Basel, CH
- HIV Vaccine Trials Network, Seattle, US
- Ligue Suisse contre le Cancer, Bern, CH
- Medic Foundation, Geneva, CH
- OncoSuisse, Bern, CH
- Swiss Group for Clinical Cancer Research (SAKK), Berne, CH

Achievements of the previous years

New spirit

The NCCR has created a new spirit of greater mutual interest across the borders between basic and clinical research. Several collaborative projects involving scientists at ISREC and more clinically oriented research groups at the University Hospital Lausanne (CHUV) and other Swiss university clinics have been started. Some of these projects include partnerships with pharmaceutical companies (e.g. Pfizer).

New insights

Novel molecular events underlying the development of certain tumour types have been elucidated. Cell types from which these tumours arise have been identified. Mechanisms, which control cell division and the degree of specialization of normal cells have been unravelled and may prove relevant for malignant tumour progression. New models to investigate the development of tumour metastases in distant organs have been established. These discoveries provide a basis for the identification and validation of novel therapeutic approaches.

New therapeutic developments

A clinical study has been completed to investigate how tumours control their blood supply. A further clinical trial is currently underway to assess the efficacy of anti-angiogenic therapy in patients with head and neck tumours.
Novel strategies have been developed to direct the patient's immune system against the tumour. Immunisation of melanoma patients with tumour derived antigens proved to be successful in eliciting a strong tumour specific immune response.
A vaccine against papillomaviruses has been developed as treatment against cervix carcinomas, which in a vast majority are associated with papillomavirus infections. The vaccine has been proven to be safe and is currently being tested in patients.
The pattern of differentially regulated genes has been analysed in several human tumour types (breast, brain, skin). Results from such studies allowed identifying new tumour subtypes and in some cases new prognostic markers. They may eventually lead to the identification of gene profiles, which are predictive of a response to therapy.

New research groups

Five new positions for junior research group leaders equivalent to assistant professorships have been created to strengthen advanced biocomputing and research that is directly cancer relevant.

New technologies

The NCCR Molecular Oncology allowed to establish or strengthen important technology platforms. The animal facility allowed the development of novel cancer mouse models, which mimic the genetic alterations and the behavior of human tumours and are indispensable for the validation of new therapeutic targets. The DNA array and bioinformatics core facilities supported several novel cancer relevant projects at the interface to the clinic.

Training

The NCCR Molecular Oncology provides education and training in cancer research at several levels. It participates and strengthens the ISREC International PhD Programme and the MD/PhD programme of the University of Lausanne, providing medical doctors with an opportunity to carry out a PhD thesis in molecular oncology. The NCCR presently supports the training of approximately 30 PhD students and 30 postdoctoral fellows. NCCR advanced courses in microscopy, imaging and morphology have been carried out by the NCCR imaging facility (MIM) for users including students from the University of Lausanne and the EPFL.

Further information see www.nccr-oncology.ch

Statistical Input – Output Data

Funding source (CHF)	Year 9	Year 10	Year 11	Year 12	Total	%
SNSF funding	490 000[6]	3 490 000[6]	3 000 000	1 500 000	8 480 000	26
Self-funding from home institution[1]	793 206	793 205	793 205	793 205	3 172 821	10
Self-funding from University of Lausanne	700 000	700 000	700 000	700 000	2 800 000	9
Self-funding from project participants	1 874 376[6]	1 880 342[6]	1 687 910	1 687 910	7 130 538	22
Third-party funding[2]	3 836 721[6]	3 432 021[6]	1 970 721	1 970 721	11 210 184	34
Total	7 694 303	10 295 568	8 151 836	6 651 836	32 793 543	100

Personnel[3]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							FR	DE	IT	CA	ES	
Management	2.02[4]	3	33	6	67	5	0	1	0	0	0	3
Master students	3	1	33	2	67	2	0	0	1	0	0	0
Doctoral students	24	10	42	14	58	12	1	1	3	1	0	6
Postdoctoral students	32	16	50	16	50	5	9	1	5	2	1	9
Research associates	4	3	75	1	25	0	1	2	0	0	0	1
Senior researchers[5]	46	11	24	35	76	20	4	4	3	1	0	14
Other staff	33	17	52	16	48	15	4	4	0	0	3	7
Total	144.02	61	40	90	60	59	19	13	12	4	4	40

[1] Personnel costs, equipment and consumables, not included infrastructure and basic equipment
[2] Not included is CTI funding (cf. page 6). Since the start of the NCCR 1 project has been funded by CTI at a total amount of 1.1 million CHF.
[3] Persons involved in the NCCR in the last reporting period (12 months)
[4] Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training
[5] Including leaders of the individual projects and other organisational units of the NCCR
[6] Included funding of economic stimulus package (cf. project list)

Evaluation and Monitoring by the Swiss National Science Foundation (SNSF)

Members of the Review Panel

Kléber André, Prof. (Chair)	Swiss National Science Foundation, Berne, CH
Ben-Ze'ev Avri, Prof.	Department of Molecular Cell Biology, The Weizmann Institute of Science, IL
Cavalli Franco, Prof.	Oncology Institute of Southern Switzerland, Ospedale San Giovanni, Bellinzona, CH
Cerundolo Vincenzo, Prof.	Weatherall Institute of Molecular Medicine, University of Oxford, GB
Dalla-Favera Riccardo, Prof.	Institute of Cancer Genetics, Columbia University, New York, US
Dehio Christoph, Prof.	Swiss National Science Foundation, Berne, CH
Huber Christoph, Prof.	Department of Hematology and Oncology, Johannes-Gutenberg-University Medical School, Mainz, DE
Müller Hans-Joachim, Prof.	Pharma Research Penzberg, Roche Diagnostics GmbH, Penzberg, DE
Polyak Kornelia, Prof.	Department of Medical Oncology, Dana-Farber Cancer Institute, Harvard Medical School, Boston, US
Werner Sabine, Prof.	Swiss National Science Foundation, Berne, CH
Yaniv Moshe, Prof.	Institut Pasteur, Unité des Virus Oncogènes, Paris, FR

NCCR Office SNSF

Christ Urs, Dr.
Schweiz. Nationalfonds, Wildhainweg 3, 3001 Bern
phone: + 41 (0)31 308 23 50, fax: + 41 (0)31 305 29 71
uchrist@snf.ch

Frontiers in Genetics – Genes, Chromosomes and Development
NCCR Genetics

Home Institution
University of Geneva

Start of the NCCR
July 1, 2001

NCCR Management
Director
Duboule Denis, Prof.
phone: + 41 (0)22 379 67 71
denis.duboule@frontiers-in-genetics.org

Deputy Director
Trono Didier, Prof.
phone: + 41 (0)21 693 17 51
didier.trono@frontiers-in-genetics.org

NCCR Executive Officer
Suarez Mougli, Dr.
phone: + 41 (0)22 379 67 82
mougli.suarez@frontiers-in-genetics.org

Office Secretary
Krebs Bérénice, Mrs.

Knowledge and Technology Transfer
Suarez Mougli, Dr.
Hartmann Reto, Dr. (Consultant)

Education and Training
Rodriguez Ivan, Prof.

Advancement of Women
Suarez Mougli, Dr.

Communication
Pizurki Lara, Dr.

Webmaster
Thièvent Alain, Dr.

Address
NCCR Frontiers in Genetics
Sciences III
Université de Genève
Quai Ernest-Ansermet, 30
1211 Genève 4
phone: + 41 (0)22 379 67 82
fax: + 41 (0)22 379 61 50
management@frontiers-in-genetics.org

Web Address
www.frontiers-in-genetics.org

Public Relations
- New section on our web site: "Genetics for All"
- Forum of biology (in coordination with the Swiss television - TSR1)
- Press Releases, news and advertisements
- Leaflets (English & French)
- Weeks of study for secondary school students
- Public events (open doors, teachings, trainings, exhibitions)
- Meetings

Research

Work Package 1
Novel approaches in functional genomics
Coordinator: Trono D.

Members: Antonarakis S., Basler K., Deplancke B., Dermitzakis E., Duboule D., Karch F., Rodriguez I., Roska B., Schibler U., Wahli W.

Work Package 2
Energy homeostasis
Coordinator: Thorens B.

Members: Hernandez N., Herrera P., Nef S., Schibler U., Wahli W.

Work Package 3
The dialog between DNA and the nucleus influences gene expression and replication
Coordinator: Shore D.

Members: Gasser S., Halazonetis T., Laemmli U., Lingner J., Stutz F.

Pilot project
Stem cells and regeneration
Coordinator: Herrera P.

Members: Grapin-Botton A., Nef S., Ruiz i Altaba A., Gaillot B.

Technological Platforms, Programs etc.

Genomics platform (Genotyping and transcriptome profiling)
Manager: Descombes P.

Bioimaging platform (Image analysis)
Manager: Bauer C.

Fly C31
H: Basler K.

Metabolic Evaluation Facility
H: Torens B.

Lentiviral Vectors
H: Trono D.

Doctoral School
Supervisors: Rodriguez I., Suarez M.

Heads of Individual Research Projects

Antonarakis Stylianos E., Prof.	Département de Médécine Génétique et Développement, Université de Genève
Basler Konrad, Prof.	Institut für Molekularbiologie, Universität Zürich
Deplancke Bart, Prof.	Laboratoire de Génétique et Biologie des Systèmes, EPFL
Dermitzakis Emanouil, Prof.	Département de Médécine Génétique et Développement, Université de Genève
Duboule Denis, Prof.	Département de Zoologie et Biologie Animale, Université de Genève
Galliot Brigitte, MER	Département de Zoologie et Biologie Animale, Université de Genève
Gasser Susan M., Prof.	Friedrich Miescher Institute for Biomedical Research, Basel
Gonzalez-Gaitan Marcos, Prof.	Département de Biochemie, Université de Genève
Gotta Monica, Prof.	Département de Médécine Génétique et Développement, Université de Genève
Grapin-Botton Anne	ISREC, Epalinges
Hernandez Nouria, Prof.	Centre Intégratif de Génomique, Université de Lausanne

Topics

The general goal of the NCCR Frontiers in Genetics – Genes, Chromosomes and Development is to understand the function and regulation of genes during the development of cells and organisms. These fundamental problems are tackled at four different levels, namely at the level of genes, of chromosomes, of the whole cell and of the entire organism. In order to reach excellence in this domain, it is neccessary to bridge the gaps between these levels. The NCCR Genetics contributes to diminish these gaps by creating a network of scientist, which work together on common projects (organized as Work-Packages, WP). These WPs provide an ideal forum for the in-depth discussion of scientific issues by all interested persons (including post-doctoral fellows and students). The aim of the third phase (2009-2013) is to complete the integration of its educational and scientific program within the participating institutions. Along with the integration process, we will keep the work package research structure, while adapting it to institutional contexts.
In this view, only three work packages will be implemented, in collaboration with the three institutions of the Lemanic region and the on-site technological platforms that have been developed by these institutions in close contacts with the NCCR.
Some projects directly related to technological development are pursued in the context of our technological platforms. These platforms are shared common facilities in which the latest technologies in Genomics and Bioimaging are available for the regional scientific community.
Another major goal is to offer the best graduate school in genetics. We believe that to pursue top science, we need to attract the best students worldwide and "create" the next generation of top scientists by teaching.

Herrera Pedro, Dr.	Département de Morphologie, Université de Genève
Herr Winship, Prof.	Centre Intégratif de Génomique, Université de Lausanne
Karch François, Dr.	Département de Zoologie et Biologie Animale, Université de Genève
Laemmli Ulrich K., Prof.	Départements de Biologie Moléculaire et Biochimie, Université de Genève
Lingner Joachim, Dr.	ISREC, Epalinges
Loewith Robbie, Prof.	Département de Biologie Moléculaire, Université de Genève
Nef Serge, Dr.	Département de Morphologie, Université de Genève
Rodriguez Ivan, Prof.	Département de Zoologie et Biologie Animale, Université de Genève
Roska Botond, Dr.	Friedrich Miescher Institute for Biomedical Research, Basel
Ruiz i Altaba Ariel, Prof.	Département de Génétique Médicale, Université de Genève
Schibler Ueli, Prof.	Département de Biologie Moléculaire, Université de Genève
Shore David M., Prof.	Département de Biologie Moléculaire, Université de Genève
Stutz Françoise, Dr.	Département de Biologie Cellulaire, Université de Genève
Thanos Halazonetis, Prof.	Département de Biologie Moléculaire, Université de Genève
Thorens Bernard, Prof.	Centre Intégratif de Génomique, Université de Lausanne
Trono Didier, Prof.	Ecole Polytechnique Fédérale de Lausanne
Wahli Walter, Prof.	Centre Intégratif de Génomique, Université de Lausanne

Third Party Cooperation

(in progress)

Programmes

- EuroDYNA
- NEURONE

Research Institutions

- Biological Sciences -Neurobiology, Columbia University, New York, US
- Biomolecular Screening Facility, EPFL, Lausanne, CH
- Brain Research Institute, ETHZ, Zurich, CH
- Clinic of Endocrinology and Diabetes, Dept. of Medicine, University Hospital Zurich, CH
- Dép. de Physiologie Cellulaire et Métabolisme, Fac. Médécine, University of Geneva, CH
- Dép. Médecine Interne, Université de Genève, CH
- Dept. Head of Developmental Biology, Hagedorn Research Institute, Gentolfte, DK
- Dept. of Biochemistry and Molecular Biology, University of Georgia, Athens, GR
- Dept. of Biochemistry, Erasmus Euniversity Medical Center, Rotterdam, NL
- Dept. of Cell Biology, Nara Institute of Science and Technology, Nara, JP
- Dept. of Cell Physiology and Metabolism, University Medical Center, Geneva, CH
- Dept. of Developmental Biology, University of Texas Southwestern, Dallas, US
- Dept. of Genetic Medicine and Development, University Medical Center Geneva, CH
- Dept. of Genetics and Microbiology, University of Pavia, IT
- Dept. of Physiology, University of Lausanne, CH
- Diabetes Research Center, Free University, Brussels, BE
- EMBL, Developmental Biology Unit, Heidelberg, DE
- Gene Expression and Regulation Program, Wistar Institute, Philadelphia, US
- Hadassah Med. School, Hebrew University, Jerusalem, IL
- INSERM, Unité Inserm 625, Rennens, FR

- Inst. of Biochemistry, ETHZ, Zurich, CH
- Inst. of Veterinary Biochemistry and Molecular Biology, University of Zurich, CH
- Ludwig Institute of Cancer Research, University of Lausanne, CH
- Max Planck Institute for Biophysical Chemistry, Gottingen, DE
- Max Planck Institute for Molecular Biology, Munich, DE
- Molecular Physiology & Biophysics, Vanderbilt University, Nashville, US
- Muséum National d'Histoire Naturelle, Paris, FR
- Neurodegenerative Studies Laboratory, EPFL, Lausanne, CH
- Oncologie et biologie du développement, ISREC-EPFL, Lausanne, CH
- Pathologies nutritionnelles et métaboliques. Centre de recherche des Cordeliers, IFR58, Paris, FR
- School of Life Sciences, ISREC-EPFL, Lausanne, CH
- Southwestern Medical Center, University of Texas, Dallas, US
- Technical Research Centre of Finland (VTT), Helsinki, FI
- The Jackson Laboratory, University of Massachusetts, Bar Harbour, US
- Unité d'Endocrinologie et Métabolisme, Catholic University of Louvain, Brussels, BE

Economy / Industry

- Debiopharm S.A., Lausanne, CH
- Evolva AG, Allschwil, CH
- Leica Microsystems, Glattbrugg, CH
- Nestlé Research Center, Vevey, CH
- Novartis S.A., Basel, CH
- Sanofi-Aventis SA, Paris, FR

Other

- NCCR FG members, Geneva, CH

Achievements of the previous years

Research

NCCR funding not only has reinforced the scientific productivity of many member groups, allowing them to stay at the forefront of international competition in their respective fields of research, but has also allowed the emergence of younger group leaders. Collaborative projects are now delivering and a new culture of networking has been installed.

The quality of the research carried out in our NCCR has been acknowledged by the recent awards of the European Research Council senior grants. Of the 15 grants allocated to Switzerland, 4 were attributed to members of Frontiers in Genetics.

Education

Our doctoral school is up and running. The organization of an international program, while promoting a strong national participation, was a challenge. This school is unique in Switzerland and its access is extremely competitive. The first PhD's were granted in 2007 and the school is now at cruising speed.

Technological platforms

NCCR funding has been an essential trigger to equip the Lemanic region with state-of-the-art technological platforms, in particular in genomics technologies, which would otherwise have been beyond our means. These platforms are very successful and heavily used by customers from the entire country, including clinicians or scientists working in research areas unrelated to those pursued by the NCCR itself. Frontiers in Genetics, via its direct link with the SVS program (Life, Sciences and Society), has also been instrumental in launching a common structure for animal houses in the Lausanne-Geneva area.

Infrastructural effects

The NCCR had a major impact on the local scientific priorities within the Faculties of science and medicine of the host institution, in terms of budget, positions and infrastructures. Genetics has been declared as one of the six general research priorities by the new rector of Geneva University. The Centre for Integrative Genomics (CIG), launched via the SVS program at the University of Lausanne, is fully running and the EPFL is actively reinforcing basic research in Genetics.

The NCCR, via Swiss Genomics, an initiative launched by the three Lemanic institutions, was a key partner in the transition from SystemsX, an initiative from the ETH with several Frontiers in Genetics members at its origin, towards a wider and more inclusive program accepted by the federal government, now referred to as SystemsX.ch. Three members of our NCCR are part of the executive board of this operation, and a fourth sits on its board of directors.

Visibility, public understanding of science

Frontiers in Genetics has continued to support numerous scientific events (local or national conferences and public manifestations) and has strengthened its collaborations with the local press. A particular emphasis was put on events related to the 450th anniversary of the University of Geneva. This included lecture series, open doors, workshops and artistic performances targeted to the general public. The NCCR's visibility is also ensured all year around through its leading activity of the forum Questions à un biologiste on the website of the Télévision Suisse Romande.

Further information see www.frontiers-in-genetics.org

Statistical Input – Output Data

Funding source (CHF)	Year 9	Year 10	Year 11	Year 12	Total	%
SNSF funding	3 500 000	2 000 000	2 000 000	1 000 000	8 500 000	35
Self-funding from home institution[1]	2 659 626	3 159 626	3 659 626	6 239 439	15 718 317	65
Self-funding from project participants[5]	0	0	0	0	0	0
Third-party funding[5]	0	0	0	0	0	0
Total	6 159 626	5 159 626	5 659 626	7 239 439	24 218 317	100

Personnel[2]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							FR	IT	DE	GB	US	
Management	4.15[3]	2	17	10	83	5	0	1	0	0	3	3
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	70	25	36	45	64	25	9	5	6	4	1	20
Postdoctoral students	60	20	33	40	67	8	15	4	3	3	2	25
Research associates	2	2	100	0	0	0	2	0	0	0	0	0
Senior researchers[4]	24	7	29	17	71	14	5	0	2	0	1	2
Other staff	59	44	75	15	25	34	14	4	0	0	0	7
Total	219.15	100	44	127	56	86	45	14	11	7	7	57

[1] Personnel costs, equipment and consumables, not included infrastructure and basic equipment
[2] Persons involved in the NCCR in the last reporting period (12 months)
[3] Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training
[4] Including leaders of the individual projects and other organisational units of the NCCR
[5] Not yet budgeted, updated figures will be published in Guide 2011

Evaluation and Monitoring by the Swiss National Science Foundation (SNSF)

Members of the Review Panel

Kléber André, Prof. (Chair)	Swiss National Science Foundation, Berne, CH
Almouzni Geneviève, Dr.	Laboratoire de dynamique nucléaire et plasticité du génome, Institut Curie, Paris, FR
Dehio Christoph, Prof.	Swiss National Science Foundation, Berne, CH
Hoeijmakers Jan H.J., Prof.	Dept. of Cell Biology and Genetics, Erasmus University, Rotterdam, NL
Lindpaintner Klaus, Prof.	Roche Genetics and Roche Center for Medical Genomics, F. Hoffmann-La Roche, Basel, CH
McMahon Andrew, Prof.	Dept. of Molecular and Cellular Biology, Harvard University, Cambridge, US
Rosbash Michael, Prof.	Howard Hughes Medical Institute, Brandeis University, Waltham, US
Schaffner Walter, Prof.	Swiss National Science Foundation, Berne, CH

NCCR Office SNSF

Christ Urs, Dr.
Schweiz. Nationalfonds, Wildhainweg 3, 3001 Bern
phone: + 41 (0)31 308 23 50, fax: + 41 (0)31 305 29 71
uchrist@snf.ch

Molecular Life Sciences – Three Dimensional Structure, Folding and Interactions

NCCR Structural Biology

Home Institution
University of Zurich

Start of the NCCR
May 1, 2001

NCCR Management
Director
Grütter Markus Gerhard, Prof.
phone: + 41 (0)44 635 55 80
gruetter@bioc.uzh.ch

Deputy Director
Richmond Timothy J., Prof.
phone: + 41 (0)44 633 24 70
richmond@mol.biol.ethz.ch

Coordinator
Sticher Patrick, Dr.
phone: + 41 (0)44 635 54 84
sticher@bioc.uzh.ch

Administrative Assistant
Schmid Brigitte, Mrs.
phone: + 41 (0)44 635 55 82
brigitte.schmid@bioc.uzh.ch

Communication
Sticher Patrick, Dr.

Knowledge and Technology Transfer
Plückthun Andreas, Prof.

Education and Training
Glockshuber Rudolf, Prof.

Advancement of Women
van Gunsteren Wilfred, Prof.

Address
NCCR Bureau
Structural Biology
Patrick Sticher
Institute of Biochemistry
University of Zurich
Winterthurerstrasse 190
8057 Zurich

phone: + 41 (0)44 635 54 84
fax: + 41 (0)44 635 68 34
sticher@bioc.uzh.ch

Web Address
www.structuralbiology.uzh.ch

Public Relations
- Leaflet
- Homepage / eNewsletter
- Newspaper articles
- Appearance on radio and national TV

Research
Areas
Structural biology of membrane proteins
Coordinator: Engel A.

Supramolecular assemblies/molecular interactions
Coordinator: Ban N.

Technologies
Coordinator: Plückthun A.

Projects
Folding and function of supramolecular systems and membrane proteins
H: Glockshuber R.

Directed evolution of eukaryotic membrane proteins
H: Plückthun A.

Membrane protein structure and function
H: Engel A.

X-ray crystallography of membrane proteins and the use of chaperones of crystallization
H: Grütter M.

Protein crystallography of integral membrane proteins
H: Winkler F.

Chromatin structure: Genome organization in three-dimensions
H: Richmond T.J.

Macromolecular assemblies involved in central cellular processes; mitochondrial protein synthesis and fatty acid synthesis
H: Ban N.

The structural basis for transmembrane ion transport
H: Dutzler R.

Structure and mechanism of multidrug transporters
H: Locher K.

Structure determination of protein-RNA complexes involved in alternative-splicing by NMR spectroscopy
H: Allain F.

Single molecule spectroscopy of cotranslational protein folding and membrane protein dynamics
H: Schuler B.

Computational biomolecular science
H: van Gunsteren W.F.

Associated Groups & Technology Platforms
Cell-free expression and segmental stable isotope labelling of proteins and RNAs for NMR studies
H: Allain F., Wüthrich K.

High throughput expression lab
H: Plückthun A.

High throughput crystallization facility of the NCCR
H: Grütter M.

Automation of protein crystallography beamlines for challenging projects
H: Schulze-Briese C.

Programmes
PhD program Biomolecular structure and mechanism
Supervisor: Allain F.

Annual practical course in structural biology
Supervisor: Glockshuber R.

Annual symposium on new trends in structural biology
Supervisor: Glockshuber R.

Topics

Today, knowledge about biological processes is obtained from functional experiments on a limited number of biochemical systems, and from a rapidly increasing amount of DNA sequence information, generated in several genome projects. To bridge the widening gap between rapidly increasing information on genome sequences and limited knowledge on the function of gene products, a quantitative understanding of the 3D-structure of proteins, their folding, and their interactions with other molecules is required. Such understanding is the key to develop innovative medicines, such as new antibiotics and vaccines, as well as drugs against cancer and diseases of the central nervous, immune, and cardiovascular systems. In this NCCR specialists in experimental structure determination by X-ray crystallography, NMR spectroscopy and electron microscopy / crystallography, in protein biophysical chemistry, modern molecular biology, and computational biology will meet the challenge to link the ever increasing biological data generated in the genomics field with related structural and functional information. This NCCR is currently in its third and final funding period until 2013. The major assets resulting from this project will be secured longterm through the foundation of a center of structural biology headquartered in Zürich.

Heads of Individual Research Projects and Associated Groups

Allain Frédéric, Prof.	Institut für Molekularbiologie und Biophysik, ETH Zürich
Ban Nenad, Prof.	Institut für Molekularbiologie und Biophysik, ETH Zürich
Dutzler Raimund, Prof.	Institut für Biochemie, Universität Zürich
Engel Andreas, Prof.	M.E. Müller Institut, Biozentrum, Universität Basel
Glockshuber Rudolf, Prof.	Institut für Molekularbiologie und Biophysik, ETH Zürich
Grütter Markus, Prof.	Institut für Biochemie, Universität Zürich
Locher Kaspar, Prof.	Institut für Molekularbiologie und Biophysik, ETH Zürich
Plückthun Andreas, Prof.	Institut für Biochemie, Universität Zürich
Richmond Timothy J., Prof.	Institut für Molekularbiologie und Biophysik, ETH Zürich
Schuler Ben, Prof.	Institut für Biochemie, Universität Zürich
Schulze-Briese Clemens, Dr.	Paul Scherrer Institut,Villigen PSI
van Gunsteren Wilfred F., Prof.	Laboratorium für physikalische Chemie, ETH Zürich
Winkler Fritz, Prof.	Paul Scherrer Institut, Villigen PSI
Wüthrich Kurt, Prof.	Institut für Molekularbiologie und Biophysik, ETH Zürich

Third Party Cooperation

Research Institutions

- Biotechnologisches Zentrum der Technischen Universität Dresden (BIOTEC), Dresden, DE
- Center for Structural Biology, Vanderbilt University, Nashville, US
- Chemical Biology and Nuclear Science Division (CBND), Lawrence Livermore National Laboratory, Livermore, US
- Dép. de microbiologie fondamentale, Université de Lausanne, CH
- Dept. of Biochemistry, Duke University, Chapel Hill, US
- Dept. of Biochemistry, University of Groningen, NL
- Dept. of Biochemistry, University of Washington, Seattle, US
- Dept. of Biology, University of Science and Technology of China, Hefei, CN
- Dept. of Biophysical Chemistry, Biozentrum at the University of Basel, CH
- Dept. of Biophysical Chemistry, University of Groningen, NL
- Dept. of Biophysical Structural Chemistry, Leiden Inst. of Chemistry, Leiden University, NL
- Dept. of Biophysics, Kyoto University, JP
- Dept. of Microbiology, University of Regensburg, DE
- Dept. of Molecular Biology & Biotechnology, University of Sheffield, Firth Court, GB
- Dept. of Molecular Biophysics and Biochemistry, Yale University, New Haven, US
- Dept. of Molecular Microbiology, John Innes Centre, Norwich, GB
- Dept. of Pharmacochemistry, Free University of Amsterdam, NL
- Dept. of Pharmacology, School of Medicine, Case Western Reserve University, Cleveland, US
- Dept. of Physics, University of California (UCLA), Santa Barbara, US
- Dept. of Plant Biochemistry, Lund University, Lund, SE
- Dept. of Structural Biology, Max Planck Inst. of Biophysics (MPI), Frankfurt, DE
- Division of Chemistry and Chemical Engineering, California Inst. of Technology (Caltech), Pasadena, US
- Division of Microbiology, Biozentrum, University of Basel, CH
- Division of Molecular and Health Technologies, Commonwealth Scientific and Industrial Research Org., Melbourne, AU
- Fachhochschule beider Basel (FHBB), Basel, CH
- Fachhochschule Zürich, Wädenswil Winterthur, CH

Molecular Life Sciences – Three Dimensional Structure, Folding and Interactions

NCCR Structural Biology

- Faculté de biologie et de médecine, Université de Lausanne, CH
- Faculty of Sciences, Dept. of Organic Chemistry and Biochemistry, University of Zagreb, HR
- Howard Hughes Medical Inst., University of California Los Angeles, Los Angeles, US
- Inst. de Biologie Moléculaire et Cellulaire (IBMC), CNRS, Strasbourg, FR
- Inst. de Génétique et de Biologie Moléculaire et Cellulaire (IGBMC), Dép. de Neurobiologie et Génétique, Illkirch, FR
- Inst. für Biochemie und Medizinische Molekularbiologie, Friedrich-Alexander-Universität Erlangen-Nürnberg, DE
- Inst. for Biotechnology, ETH Zurich, CH
- Inst. for Microbiology, ETH Zurich, CH
- Inst. for Molecular Bioscience, University of Queensland, Brisbane, AU
- Inst. of Biophysical Chemistry Resonance, Johann Wolfgang Goethe-University of Frankfurt, DE
- Inst. of Biotechnology and Biomedicine, University of Barcelona, ES
- Inst. of Botany, Darmstadt University of Technology, Darmstadt, DE
- Inst. of Cellular and Molecular Medicine, University of Copenhagen, DK
- Inst. of Medical Chemistry, Me-dical University of Vienna, AT
- Inst. of Membrane and Systems Biology, University of Leeds, GB
- Inst. of Microbiology, ETH Zurich, CH
- Inst. of Molecular Pediatric Science, University of Chicago, US
- Inst. of Organic Chemistry, ETH Zurich, CH
- Inst. of Physiology, University of Zurich, CH
- Laboratoire de Maturation des ARN et Enzymologie Moléculaire, Vandoeuvre-les-Nancy, FR
- Laboratory for Surface Science and Technology, ETH Zurich, CH
- Laboratory of Food Microbiology, ETH Zurich, CH
- Laboratory of Molecular Biology, National Inst. of Health (NIH), Bethesda, US
- M. D. Anderson Cancer Center, University of Texas, Houston, US
- Max Planck Inst. for Polymer Research, Mainz, DE
- Max Planck Inst. of Coal Research, Mühlheim, DE
- Max-Planck-Inst. for Biophysical Chemisty, Goettingen, DE

Achievements of the previous years

Key biology areas

This NCCR focuses on the structural biology of membrane proteins and supramolecular complexes and interactions. In both areas, major advances could be reported since the start of this NCCR. Methods for cloning, expression, purification, crystallisation and analysis of membrane proteins could be advanced and successes in the structure determination of membrane proteins were achieved. A recent breakthrough in this field is the structure determination of three ABC transporters. Another highlight was the structure determination of a prokaryotic pentameric ligand gated ion channel that serves as a bacterial homologue to the eukaryotic nicotinic acetylcholine receptors. The structures of several supramolecular complexes were determined. Important research fields in this area include the chromatin structure, the ribosome, RNA-protein interactions and falty acid syntheses.

Technology platforms

Shared infrastructure units for recombinant protein production, stable isotope-labelling of proteins and high-throughput crystallisation of proteins for NMR or X-ray studies have been established and are today a major tool for effective structure determination used by many research groups within or outside this NCCR. A successful collaboration with the SLS-synchrotron for high-throughput crystal analysis and protein structure determination complements these technology platforms.

Technology Transfer

Project leaders of this NCCR have various individual collaborations with industry partners. An umbrella-type agreement for long-term collaboration between Novartis and the NCCR has been realized, so far leading to two collaborations.
The spin-off company Molecular Partners resulted partly from the NCCR research project on 'ankyrin repeats' which are an alternative to antibodies as selective binders. Another spin-off, REDbiotec, commercialites MultiBac, a novel expression tool for large eukargotic multiprotein complexes.

Education

A post-graduate program in structural biology was established and embedded in the Life Science Zurich Graduate School. Thanks to the synergies within this NCCR, a very broad and in-depth education of students in structural biology became possible.
This NCCR established a series of well-recognized structural biology events, namely a yearly symposium and practical courses that are well attended by scientists from within the NCCR and from other research institutes.

Structural Effects

This NCCR offers an excellent opportunity for interdisciplinary and high-standard structural biology research in Switzerland which allowed to attract several outstanding young scientists to Switzerland.

Further information see
www.structuralbiology.uzh.ch

Statistical Input – Output Data

Funding source (CHF)	Year 9	Year 10	Year 11	Year 12	Total	%
SNSF funding	3 600 000	2 000 000	1 500 000	800 000	7 900 000	44
Self-funding from home institution[1]	1 667 000	1 372 865	1 378 865	1 378 865	5 797 595	32
Self-funding from ETH Zurich	558 000	574 000	574 000	574 000	2 280 000	13
Self-funding from project participants	78 960	696 425	653 465	653 465	2 082 315	12
Third-party funding[2, 6]	0	0	0	0	0	0
Total	5 903 960	4 643 290	4 106 330	3 406 330	18 059 910	100

Personnel[3]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	FR	NL	AT	HR	
Management	2.78[4]	1	13	7	88	3	2	1	1	0	0	1
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	71	26	37	45	63	23	27	3	1	3	1	13
Postdoctoral students	48	17	35	31	65	12	9	5	3	1	3	15
Research associates	0	0	0	0	0	0	0	0	0	0	0	0
Senior researchers[5]	45	8	18	37	82	13	11	5	2	2	1	11
Other staff	28	20	71	8	29	12	5	1	0	0	1	9
Total	194.78	72	36	128	64	63	54	15	7	6	6	49

[1] Personnel costs, equipment and consumables, not included infrastructure and basic equipment
[2] Not included is CTI funding (cf. page 6). Since the start of the NCCR 1 project has been funded by CTI at a total amount of 1.7 million CHF.
[3] Persons involved in the NCCR in the last reporting period (12 months)
[4] Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training
[5] Including leaders of the individual projects and other organisational units of the NCCR
[6] Not yet budgeted, updated figures will be published in Guide 2011

Evaluation and Monitoring by the Swiss National Science Foundation (SNSF)

Members of the Review Panel

Kléber André, Prof. (Chair)	Swiss National Science Foundation, Berne, CH
Eisenberg David, Prof.	UCLA-DOE Institute for Genomics and Proteomics, US
Hall Mike, Prof.	Swiss National Science Foundation, Berne, CH
Michel Hartmut, Prof.	Max-Planck Institut für Biophysik, Frankfurt am Main, DE
Roditi Isabel, Prof.	Swiss National Science Foundation, Berne, CH
Schmid Franz Xaver, Prof.	Laboratorium für Biochemie, Universität Bayreuth, DE
Widmer Hans, Dr.	Novartis Pharma AG, Basel, CH
Wright Ernest M., Prof.	UCLA School of Medicine, Los Angeles, US
Wright Peter E., Prof.	Department of Molecular Biology, The Scripps Research Institute, La Jolla, US

NCCR Office SNSF

Christ Urs, Dr.
Schweiz. Nationalfonds, Wildhainweg 3, 3001 Bern
phone: + 41 (0)31 308 23 50, fax: + 41 (0)31 305 29 71
uchrist@snf.ch

- Medizinische Biochemie und Molekularbiologie der Universität des Saarlandes, Homburg, DE
- Molecular and Structural Biochemistry, University of Rennes, FR
- Organic Chemistry, ETH Zurich, CH
- San Diego Joint Center for Structural Genomics, US
- School of Medical Sciences, University of Aberdeen, GB
- Swiss Light Source (SLS), Paul Scherrer Inst., Villigen, CH
- The Scripps Research Inst., La Jolla, US
- Theoretical Molecular Biophysics Group, Max Planck Inst. for Biophysical Chemistry, Göttingen, DE
- Unité de Génétique moléculaire, Inst. Pasteur, Paris, FR
- Zentrum für Molekular-biologie der Pflanzen (ZMBP), Universität Tuebingen, DE
- Zentrum für Molekulare Biologie (ZMBH), Universität Heidelberg, DE

Economy / Industry

- Actelion Pharmaceuticals Ltd., Allschwil, CH
- Apotech Corporation, Lausen, CH
- BioXtal, Epalinges, CH
- Bruker AXS GmbH, Karlsruhe, DE
- Cambridge Antibody Technology, Cambridge, GB
- F. Hoffmann-La Roche Ltd., Basel, CH
- Greiner Bio-One GmbH, Frickenhausen, DE
- Molecular Partners AG, Zurich, CH
- MorphoSys AG, Martinsried, DE
- NEXUS Biosystems, Inc., San Diego, US
- Novartis Pharma AG, Basel, CH
- Novartis Pharma AG, Boston, US
- Polyphor Ltd., Allschwil, CH
- Roche Pharma (Schweiz) AG, Basel, CH
- SIKA AG, Zürich, CH
- Speedel Experimenta AG, Allschwil, CH

Neural Plasticity and Repair
NCCR Neuro

Home Institution
University of Zurich

Start of the NCCR
June 1, 2001

NCCR Management
Director
Schwab Martin E., Prof.
phone: + 41 (0)44 635 33 31
schwab@hifo.uzh.ch

Deputy Directors
Möhler Hanns, Prof.
phone: + 41 (0)44 635 59 33
mohler@pharma.uzh.ch

Nitsch Roger M., Prof.
phone: + 41 (0)44 634 88 71
nitsch@bli.uzh.ch

Knecht Wolfgang, Dr.
phone: + 41 (0)44 635 33 81
wknecht@neuroscience.uzh.ch

Coordinator
Vranesic Tamara, Ms.
phone: + 41 (0)44 635 33 84
vranesic@neuroscience.uzh.ch

Communication
Vranesic Tamara, Ms.
Knecht Wolfgang, Dr.

Knowledge and Technology Transfer
Colombo Gery, Dr.

Education and Training
Knecht Wolfgang, Dr.

Advancement of Women
Mansuy Isabelle, Prof.

Address
NCCR Neural Plasticity and Repair
Winterthurerstrasse 190
8057 Zürich
vranesic@neuroscience.uzh.ch

Web Address
www.nccr-neuro.uzh.ch

Public Relations
- Neurotransmitter Newsletter
- BrainFair Zürich

Research
Neural stem cells: an integrated approach to basic knowledge and therapeutic applications
Head: Suter U.
Fritschy J.-M., Jessberger S., Lipp H.-P., Raineteau O., Sommer L., Thallmair M.

Alzheimer's disease
H: Nitsch R.
Caflisch A., Fraering P., Glockshuber R., Hock C., Knüsel I., Konietzko U., Molinari M., Rajendran L., Sonderegger P.

Acute-phase predictors and modulators for long-term outcome after stroke
H: Luft A.
Rouiller E., Schwab M., Sonderegger P., Wegener S.

Immunotherapy for malignant glioma
H: Weller M.
Aguzzi A., Frei K., Tabatabai G.

Cortical plasticity
H: Martin K.
Helmchen F., Ishai A., Jäncke L., Kiper D., Seifritz E., Singer T., Stephan K.E.

Infection and immunity of the central nervous system
H: Fontana A.
Aguzzi A., Becher B., Reith W., Suter T.

Spinal cord repair
H: Schwab M., Curt A., Kollias S., Micera S., Mir A., Schurch B., Stoeckli E.

Rehabilitation technology matrix
H: Riener R.
Colombo G., Courtine G., Gassert R., Kiper D., Kollias S., Micera S.

Economic stimulus package
Robot-assisted neurorehabilitation of the arm (RANA): technology transfer to clinics and industry
H: Riener R., Colombo G.

Immunotherapy of amyotrophic Lateral Sclerosis
H: Nitsch R., Grimm J.

Technological Platforms, Programmes etc.
Center of transgenesis expertise
H: Mansuy I.
Aguzzi A., Becher B., Jessberger S., Suter U.

Center for advanced assessment of animal behavior
H: Lipp H.-P.
Feldon J., Pryce C., Wolfer D., Zeilhofer H.U.

Center for proteomics
H: Wollscheid B.

Center for animal imaging
H: Rudin M., Ewers H., Helmchen F.

International Ph. D. Program in Neuroscience
Administered by the Neuroscience Center Zurich
Coordinator: Knecht W.

Topics

At present only limited help is available to patients suffering from diseases of the central nervous system. The fundamental goal of the NCCR "Neural Plasticity and Repair" is to gain better insight into the mechanisms and causes of these diseases in order to design improved therapies for the future. The NCCR investigates in its final Phase 3 (2009-2013) molecular, cellular and system level mechanisms of plasticity, regeneration and functional repair of the damaged nervous tissue focusing on Alzheimer's disease, multiple sclerosis, stroke, glioma and spinal cord injury. The key approach of this NCCR is to promote synergies between experimental and clinical research in conjunction with engineering, neuroinformatics and modern brain imaging technologies.

Heads of Individual Research Projects and Subprojects

Aguzzi Adriano, Prof.	Institut für Neuropathologie, Universitätsspital Zürich
Becher Burkhard, Prof.	Institut für Experimentelle Immunologie, Universität Zürich
Caflisch Amedeo, Prof.	Biochemisches Institut, Universität Zürich
Courtine Grégoire, Prof.	Experimental Neurorehabilitation Laboratory, Universität Zürich
Curt Armin, Prof.	Paraplegikerzentrum, Universitätsklinik Balgrist, Zürich
Dietz Volker, Prof.	Paraplegikerzentrum, Universitätsklinik Balgrist, Zürich
Ewers Helge, Dr.	Laboratory of Physical Chemistry, ETH Zürich
Feldon Joram, Prof.	Labor für Verhaltensbiologie, ETH Zürich, Schwerzenbach
Fontana Adriano, Prof.	Klinische Immunologie, Universitätsspital Zürich
Fraering Patrick, Prof.	Brain Mind Institute, EPF Lausanne
Frei Karl, Prof.	Neurochirurgische Klinik, Universitätsspital Zürich
Fritschy Jean-Marc, Prof.	Institut für Pharmakologie und Toxikologie, Universität Zürich
Gassert Roger, Prof.	Labor für Rehabilitationswissenschaften, ETH Zürich
Glockshuber Rudolf, Prof.	Institut für Molekularbiologie und Biophysik, ETH Zürich Hönggerberg
Helmchen Fritjof, Prof.	Institut für Hirnforschung, Universität Zürich
Hock Christoph, Prof.	Abteilung für Psychiatrische Forschung, Universität Zürich
Ishai Alumit, Prof.	Institut für Neuroradiologie, Universitätsspital Zürich
Jäncke Lutz, Prof.	Psychologisches Institut, Universität Zürich
Jessberger Sebastian, Prof.	Institut für Zellbiologie, ETH Zürich
Kiper Daniel, PD Dr.	Institut für Neuroinformatik, Universität und ETH Zürich
Knüsel Irene, Dr.	Institut für Pharmakologie und Toxikologie, Universität Zürich
Kollias Spyros, Prof.	Institut für Neuroradiologie, Universitätsspital Zürich
Konietzko Uwe, Dr.	Abteilung für Psychiatrische Forschung, Universität Zürich

Third Party Cooperation

(in progress)

Programme

- EUCLOCK (FP6)
- INTELLIMAZE (FP6)
- MIMICS (FP7)
- NeuroNE (FP6)
- NEURONET (ESPRIT 4)
- NOVELTUNE (FP6)
- RATstream (FP6)
- SCOPES (IB74B0-111081)
- SystemsX

Research Institutions

- Abteilung Neurologie, Landeskrankenhaus Hochzirl, Hochzirl, AT
- Alexander Silberman Inst. of Life Sciences, Hebrew University, Jerusalem, IL
- Biomedical Research Inst., LeHasselt University, Diepenbeek, BE
- Center for Brain and Behavior and Psychiatry and Behavioral Sciences, Baylor College of Medicine, Houston, US
- Center for Medical Science, International University of Health and Welfare, Ohtawara, JP
- Center for Molecular Biology and Neuroscience, University of Oslo, NO
- Center for Neural Science, Korea Inst. of Science and Technology, Seoul, KR
- Center for Neurobiology and Behavior, Columbia University, New York, US
- Centre for Neuroscience Research, University of Edinburgh, GB
- CNRS UMR 7102, Université Paris, FR
- Dept. de Technologia, Universitat Pompeu Fabra, Barcelona, ES
- Dept. Neuroscience, San Raffaele Scientific Inst., Milano, IT
- Dept. of Anatomical Sciences & Neurobiology, University of Louisville, School of Medicine, Louisville, US
- Dept. of Anatomy and Developmental Biology, University College London, GB
- Dept. of Anatomy and Neurobiology, Chandler Medical Center, University of Kentucky, Lexington, US
- Dept. of Anatomy and Neurobiology, University of California, Irvine, US
- Dept. of Anatomy, University of Witwatersrand, Johannesburg, ZA
- Dept. of Cell Physiology and Pharmacology, University of Leicester, GB
- Dept. of Cellular Neurology, Hertie-Inst. for Clinical Brain Research, University of Tübingen, DE
- Dept. of Chronobiology, University of Groningen, Haren, NL
- Dept. of Cognitive Neuroscience, Faculty of Psychology, Maastricht University, NL
- Dept. of Computer Science, University College London, GB

- Dept. of Human Genetics, Leiden University Medical Center, NL
- Dept. of Infectious Diseases, St. Jude Children's Research Hospital, Memphis, US
- Dept. of Medicine, The Johns Hopkins University, Baltimore, US
- Dept. of Molecular and Cellular Neurobiology, Research Inst. Neurosciences, Vrije Universiteit, Amsterdam, NL
- Dept. of Molecular Cell Biology, Katholieke Universiteit Leuven, NL
- Dept. of Molecular Neurobiology, University of Groningen, Haren, NL
- Dept. of Neurobiology & Behavior, University of California, Irvine, US
- Dept. of Neurobiology, State University of New York, Stony Brook, US
- Dept. of Neurology, Medical University of South Carolina, Charleston, US
- Dept. of Neurology, Music and Neuroimaging Lab., Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, US
- Dept. of Neurology, The University of Texas Medical Branch at Galveston, US
- Dept. of Neuroscience and Cell Biology, Robert Wood Johnson Medical School, University of Medicine and Dentistry of New Jersey, Piscataway, US
- Dept. of Neuroscience, San Raffaele Scientific Inst. - DIBIT, Milano, IT
- Dept. of Neuroscience, University of Parma, IT
- Dept. of Neurosurgery, Stanford University, US
- Dept. of Pathology, Harborview Medical Center, University of Washington School of Medicine, Seattle, US
- Dept. of Pharmacology, Toxicology and Pharmacy, University of Veterinary Medicine Hannnover, DE
- Dept. of Pharmacy, University of Patras, GR
- Dept. of Physiology Science, University of California, Los Angeles, US
- Dept. of Physiology, Anatomy and Genetics, University of Oxford, GB
- Dept. of Psychiatry, University of California, La Jolla, US
- Dept. of Psychiatry, University of Dresden, DE
- Dept. of Psychology, Katholieke Universiteit Leuven, BE
- Dept.s of Anesthesiology and Pharmacology, University of Pittsburgh, US
- DFG-Forschungszentrum für Regenerative Therapien, Dresden, DE
- Dipartimento di Neuroscienze, Sezione di Fisiologia, Univerity of Torino, IT
- Division of Neuroscience, Children's Hospital & Dept. Neurobiology, Harvard Medical School, Boston, US
- Experimental Therapy, Franz Penzoldt Center, Friedrich-Alexander University, Erlangen, DE

Lipp Hans-Peter, Prof.	Anatomisches Institut, Universität Zürich
Luft Andreas, Prof.	Neurologische Klinik, Universitätsspital Zürich
Mansuy Isabelle, Prof.	Institut für Hirnforschung, Universität Zürich
Martin Kevan, Prof.	Institut für Neuroinformatik, Universität und ETH Zürich
Micera Silvestro, Dr.	Institut für Automatik, ETH Zürich
Mir Anis, Dr.	Novartis Pharma AG, Basel
Molinari Maurizio, Dr.	Institute for Research in Biomedicine, Bellinzona
Nitsch Roger M., Prof.	Abteilung für Psychiatrische Forschung, Universität Zürich
Pryce Christopher, Dr.	Psychiatrische Universitätsklinik, Zürich
Raineteau Olivier, Dr.	Institut für Hirnforschung, Universität Zürich
Rajendran Lawrence, Prof.	Abteilung für Psychiatrische Forschung, Universität Zürich
Reith Walter, Prof.	Département de Pathologie et Immunologie, Université de Genève
Riener Robert, Prof.	Labor für Sensomotorische Systeme, ETH Zürich
Rouiller Eric, Prof.	Institut de Physiologie, Université de Fribourg
Rudin Markus, Prof.	Institut für Pharmakologie und Toxikologie, Universität und ETH Zürich und Institut für Biomedizinische Technik, Universität und ETH Zürich
Schurch Brigitte, PD Dr.	Paraplegikerzentrum, Universitätsklinik Balgrist, Zürich
Schwab Martin E., Prof.	Institut für Hirnforschung, Universität Zürich und Departement für Biologie, ETH Zürich
Seifritz Erich, Prof.	Psychiatrische Universitätsklinik, Zürich
Singer Tania, Prof.	Institut für Empirische Wirtschaftsforschung, Universität Zürich
Sommer Lukas, Prof.	Anatomisches Institut, Universität Zürich
Sonderegger Peter, Prof.	Biochemisches Institut, Universität Zürich
Stephan Klaas Enno, Prof.	Institut für Empirische Wirtschaftsforschung, Universität Zürich
Stoeckli Esther, Prof.	Zoologisches Institut, Universität Zürich
Suter Tobias, Dr.	Klinische Immunologie, Universitätsspital Zürich
Suter Ulrich, Prof.	Institut für Zellbiologie, ETH Zürich Hönggerberg
Tabatabai Ghazaleh, Dr.	Neurologische Klinik, Universitätsspital Zürich
Thallmair Michaela, Dr.	Institut für Hirnforschung, Universität Zürich
Valavanis Anton, Prof.	Institut für Neuroradiologie, Universitätsspital Zürich
Wegener Susanne, Dr.	Neurologische Klinik, Universitätsspital Zürich
Weller Michael, Prof.	Neurologische Klinik, Universitätsspital Zürich
Wolfer David, Prof.	Anatomisches Institut, Universität Zürich
Wollscheid Bernd, Dr.	Institut für Molekulare Systembiologie, ETH Zürich Hönggerberg
Zeilhofer Hanns Ulrich, Prof.	Institut für Pharmakologie und Toxikologie, Universität Zürich und Institut für Pharmazeutische Wissenschaften, ETH Zürich

Delegates

Colombo Gery, Dr.	Hocoma AG, Volketswil
Mansuy Isabelle, Prof.	Institut für Hirnforschung, Universität Zürich
Knecht Wolfgang, Dr.	Zentrum für Neurowissenschaften Zürich, Universität und ETH Zürich

Achievements of the previous years

The power of neuroscience has been brought to bear on the understanding of the diseases of the brain and spinal cord and the possibility of restoring neural functions. The NCCR Neuro has achieved major milestones in translating basic neuroscience into therapy since its beginning in 2001. The collaboration between experimental and clinical neuroscience has been further strengthened and extended to include neuroinformatics, brain imaging and engineering sciences.

Therapeutic advances

Immunotherapy has reached the clinical stage in the treatment of spinal cord injury and NCCR groups are participating in the first clinical trials. Similarly, the stage is set for clinical trials of immunotherapy for Alzheimer's disease. Devices from rehabilitation engineering are in clinical use.

Basic science

Basic neuroscience has been strongly promoted to follow new avenues in stem cell research and neural differentiation as well as in the process of rehabilitation of the injured CNS.

Recognition

The achievements of the NCCR were recognized by a large number of internationally and nationally prestigious prices awarded to members of the NCCR Neuro.

New professorships

To advance the NCCR, nine new professorships have been created since the beginning: one each in clinical and experimental analysis of multiple sclerosis, two in rehabilitation engineering, one in animal brain imaging, one in stem cell biology, one each in experimental and clinical neurorehabilitation and one in systems biology of Alzheimer's disease.

Central facilities

A core structure provides methodological support for the diverse projects of the NCCR. This facility consists of four integrative units. The center of transgenesis expertise and the center of behavioral assessment were complemented by a center dedicated to animal imaging and a center on systems proteomics.

Education

The Neuroscience Center Zurich (ZNZ) offers the International Ph.D. Program in Neuroscience. About 80 Ph.D. students of the NCCR Neuro are currently enrolled in this program.

Spin offs

Major efforts have been made to extend joint projects with major pharma companies. In addition, two spin-off companies arose from the NCCR and provide new positions for young scientists: NewBehavior AG in Zurich („Intellicage") and Neurimmune Therapeutics AG in Schlieren/Zurich. Thirty-nine patents have been issued.

Dialogue with society

The dialogue between the NCCR and society at large is an important aspect. Regular press contacts are organized. The BrainFair Zürich attracts thousands of visitors each year. An informative and balanced communication with the public is essential for our work.

Outlook

Based on the past achievements, the NCCR will continue to promote basic science, provide new insights into disease mechanisms and advance therapies for injuries and disorders of the CNS.

Further information see www.nccr-neuro.uzh.ch

- Fred Hutchinson Cancer Research Center, Seattle, US
- Friedrich-Baur-Inst., Klinikum der Universität München, DE
- Inst. für Biochemie, Universität Erlangen-Nürnberg, DE
- Inst. für Humangenetik, Universitätsklinikum Hamburg-Eppendorf, Hamburg, DE
- Inst. for Pharmacy and Molecular Biotechnology, University of Heidelberg, DE
- Inst. for Stem Cell Research, GSF-National Research Inst. for Environment and Health, Neuherberg, DE
- Inst. for Systems Biology, Seattle, US
- Inst. of Biomaterials and Biomedical Engineering, University of Toronto, CA
- Inst. of Biotechnology, Vilnius, LT
- Inst. of Cell Biology and Immunology, University of Stuttgart, DE
- Inst. of Experimental Pathology and Molecular Neurobiology, University of Münster, DE
- Inst. of Medical Biology, Medical Biotechnology Centre, Southern University of Denmark, Odense, DK
- Inst. of Medical Sciences, University of Aberdeen, GB
- Interfaculty Inst. for Cell Biology, University of Tübingen, DE
- Lab. de Neurobiologie de l'Apprentissage, de la Mémoire et de la Communication, CNRS UMR 8620, Université Paris-Sud, Orsay, FR
- Lab. for Behavioral Genetics, Riken Brain Science Inst., Saitama, JP
- Lab. of Cardiovascular Science, National Inst.s of Health (NIH), Baltimore, US
- Lab. of Genetic Neuropharmacology, McLean Hospital, Harvard Medical School, Belmont, US
- Lab. of Genetics, The Salk Inst. for Biological Studies, La Jolla, US
- Lab. of Molecular Biology, Nencki Inst. of Experimental Biology, Warsaw, PL
- Leibniz Inst. for Age Research, Fritz Lipmann Inst. (FLI), Jena, DE
- Max Planck Inst. for Biochemistry, Martinsried, DE
- Max Planck Inst. for Immunobiology, Freiburg, DE
- Max Planck Inst. for Neurobiology, Martinsried, DE
- Max Planck International Research Network on Aging, Max Planck Inst. for Demographic Research, Rostock, DE
- McGill Group for Suicide Studies, Douglas Hospital, McGill University, Montreal, CA
- Molecular Genetics, Neurophysiology and Behavior, Inst. of Biology, Collège de France, CNRS UMR 7148, Paris, FR
- MRC Lab. for Molecular Cell Biology, University College London, GB
- Neurological Clinic, University of Tübingen, DE

- Neurologische Klinik, Technische Universität München, DE
- Neurosciences Group, Weatherall Inst. of Molecular Medicine, John Radcliffe Hospital, Oxford, GB
- Nucleus for Interdisciplinary Sound Studies, University of Campinas, BR
- Royal Victoria Hospital, McGill University, Montreal, CA
- RS Dow Neurobiology Laboratories, Legacy Research, Portland, US
- School of Biology, University of St Andrews, GB
- School of Biosciences, University of Birmingham, GB
- School of Medical Sciences, University of Aberdeen, GB
- Scottish Centre for Regenerative Medicine, University of Edinburgh, GB
- The Mind & Life Inst., Louisville, US
- Unité de Neurosciences Intégratives et Computationnelles (UNIC), UPR CNRS 2191, Gif-sur-Yvette, FR
- Vaccine and Gene Therapy Inst., Oregon Health and Science University, Beaverton, US
- Zentrum für Molekulare Neurobiologie, Universität Hamburg, DE

Economy / Industry

- Agilent Technologies Inc., Santa Clara, US
- Alcon Laboratories Inc., Fort Worth, US
- Bruker Biospin AG, Fällanden, CH
- Compex Medical SA, Ecublens, CH
- ESBATech AG, Zürich-Schlieren, CH
- Evotec Neurosciences AG, Hamburg, DE
- FBI Science GmbH, Technologiezentrum-Ruhr an der Ruhr-Universität, Bochum, DE
- GlaxoSmithKline AG, Verona, IT
- Hocoma AG, Volketswil, CH
- Invitrogen Dynal AS, Oslo, NO
- Miltenyi Biotec GmbH, Bergisch-Gladbach, DE
- MorphoSys AG, Martinsried/Planegg, DE
- Neurimmune Therapeutics AG, Zurich, CH
- NewBehavior AG, Zürich, CH
- Novartis Pharma Schweiz AG, Basel, CH
- Philips Medical Systems AG, Zurich, CH
- Sanofi-Aventis, Paris, FR
- Warren Pharmaceuticals Inc., Ossining, US
- Zühlke Engineering AG, Schlieren, CH

Others

- Christopher Reeve Paralysis Foundation, Short Hills, US
- International Foundation of Research (IFP-Gesuch), Zurich, CH
- International Spinal Research Trust (ISRT), Surrey, GB

Statistical Input – Output Data

Funding source (CHF)	Year 9	Year 10	Year 11	Year 12	Total	%
SNSF funding	4 115 000[6]	3 075 000[6]	1 600 000	1 200 000	9 990 000	13
Self-funding from home institution[1]	3 725 000	825 000	825 000	825 000	6 200 000	8
Self-funding from ETH Zurich	937 500	937 500	937 500	937 500	3 750 000	5
Self-funding from project participants	13 892 198[6]	13 863 698[6]	13 431 098	13 431 098	54 618 092	69
Third-party funding[2]	1 490 626[6]	1 206 002[6]	500 000	1 000 000	4 196 628	5
Total	24 160 324	19 907 200	17 293 598	17 393 598	78 754 720	100

Personnel[3]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	FR	IT	AT	PL	
Management	2.07[4]	5	50	5	50	6	3	1	0	0	0	0
Master students	61	35	57	26	43	50	7	0	1	0	0	3
Doctoral students	190	91	48	99	52	69	49	8	12	6	3	43
Postdoctoral students	55	28	51	27	49	14	15	5	2	0	2	17
Research associates	33	21	64	12	36	13	10	0	2	0	1	7
Senior researchers[5]	153	46	30	107	70	51	47	14	6	3	2	30
Other staff	71	55	77	16	23	46	14	1	1	1	0	8
Total	565.07	281	49	292	51	249	145	29	24	10	8	108

[1] Personnel costs, equipment and consumables, not included infrastructure and basic equipment
[2] Not included is CTI funding (cf. page 6). Since the start of the NCCR 6 projects have been funded by CTI at a total amount of 12.2 million CHF.
[3] Persons involved in the NCCR in the last reporting period (12 months)
[4] Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training
[5] Including leaders of the individual projects and other organisational units of the NCCR
[6] Included funding of economic stimulus package projects (cf. project list)

Evaluation and Monitoring by the Swiss National Science Foundation (SNSF)

Members of the Review Panel

Dehio Christoph, Prof. (Chair)	Swiss National Science Foundation, Berne, CH
Bonhoeffer Tobias, Prof.	Max-Planck Institut für Neurobiologie, München-Martinsried, DE
Clarke Hosek Stéphanie, Prof.	Swiss National Science Foundation, Berne, CH
Compston Alastair, Prof.	Department of Clinical Neurosciences, University of Cambridge, GB
Ghisalba Oreste, Prof.	Swiss National Science Foundation, Berne, CH
Götz Magdalena, Prof.	Institute of Stem Cell Research GSF, National Research Center for Environment and Health, Neuherberg, DE
Herrling Paul, Dr.	Novartis Pharma AG, Basel, CH
Lindvall Olle, Prof.	Wallenberg Neuroscience Center, University Hospital of Lund, SE
Thier Hans-Peter, Prof.	Zentrum für Neurologie, Universitätsklinikum Tübingen, DE
Wiestler Otmar, Prof.	Deutsches Krebsforschungszentrum, Heidelberg, DE

NCCR Office SNSF

Bachmann Stefan, Dr.

Schweiz. Nationalfonds, Wildhainweg 3, 3001 Bern,
phone: + 41 (0)31 308 23 49, fax: + 41 (0)31 305 29 71,
sbachmann@snf.ch

North-South: Research Partnerships for Mitigating Syndromes of Global Change

NCCR North-South

Research

Thematic Node 1
Institutions, Livelihoods, Conflicts

Heads: Müller-Böker U., Goetschel L.

Research Projects

Contested rural development
Co-Leaders: Geiser U., Ramakumar R.

Livelihood futures
Co-Leaders: Shahbaz B., Sharma S.R.

Migration and development
Co-Leaders: Thieme S., Ghimire A.

Environmental conflicts
Co-Leaders: Fokou G., Mulugeta A.

Negotiating statehood
Co-Leaders: Péclard D., Akindès F.

Business peace promotion
Co-Leaders: Iff A., Upreti B.

Thematic Node 2
Health, Services, Planning

Heads: Tanner M., Hering J., Zinsstag J., Zurbrügg C.

Research Projects

Reproductive resilience
Co-Leaders: Pfeiffer C., Ahorlu C.

Productive sanitation
Co-Leaders: Nguyen Viet H., Kengne I.M.

User-driven sanitation
Co-Leaders: Lüthi C., Koottatep T.

Services for mobile populations
Co-Leaders: Schelling E., Bonfoh B.

Thematic Node 3
Resources, Economy, Governance

Heads: Wiesmann U., Hurni H., Carton M.

Research Projects

Land resource potentials
Co-Leaders: Wolfgramm B., Yitaferu B.

Landscape transformation
Co-Leaders: Heinimann A., Zeleke G.

Rural transformation
Co-Leaders: Boillat S., N.N.

Access and welfare
Co-Leaders: Kiteme B., Epprecht M., Sy I.

Adaptation to climate change
Co-Leaders: Ifejika-Speranza C., Koné B., Ur-Rahim I.

Integrative Node
Global Change and Sustainable Development

Head: Hurni H. on behalf of the Board of Directors

Research Project on Global issues
- Policy and practice
- Synthesis and generalisation
- Knowledge and research

Transversal Project

Partnership Regions Project

Research in Partnership Regions

Within the Partnership Regions Project, the NCCR North-South continues to carry out integrated, context-specific, sustainability-oriented research in the following regions:

West Africa (WAF)
Coordinator: Bonfoh B. (Côte d'Ivoire)
East Africa (EAF)
Coordinator: Kiteme B. (Kenya)
Horn of Africa (HOA)
Coordinator: Debele B. (Ethiopia)
Central Asia (CAS)
Coordinator: Arynova M. (Kyrgyzstan)
South Asia (SAS)
Coordinator: Upreti B. (Nepal)
Southeast Asia (SEA)
Coordinator: Koottatep T. (Thailand)
Caribbean & Central America (CCA)
Coordinator: Perez Gutierrez M.A. (Costa Rica)
South America (SAM)
Coordinator: N.N.
Swiss Alps (ALP)
Coordinator: Wallner A. (Switzerland)

Partnership Actions for Mitigating Syndromes of Global Change (PAMS)

The NCCR North-South is implementing a series of pilot activities that apply research results in concrete development settings. These are proposed by researchers and partner institutions through programme calls, selected by the Board, and executed in collaboration with the Coordinators in the Partnership Regions.

Platforms, Programmes etc.

Secretariat of the Swiss Commission for Research Partnerships with Developing Countries (KFPE)
Executive Secretary: Lys J.-A.

Home Institution

University of Bern

Start of the NCCR

July 1, 2001

NCCR Management

Directors
Hurni Hans, Prof.
phone: + 41 (0)31 631 88 76
hans.hurni@cde.unibe.ch

Wiesmann Urs, Prof.
phone: + 41 (0)31 631 88 69
urs.wiesmann@cde.unibe.ch

Coordinator
Breu Thomas, Dr.
phone: + 41 (0)31 631 30 58
thomas.breu@cde.unibe.ch

Deputy Coordinator
Herweg Karl, Dr.

Management Assistant
Vollenwyder Barbara, Ms.

Knowledge and Technology Transfer
Michel Claudia, Dr.

Outcome Monitoring
Heim Eva Maria, Dr.

Education and Training
Herweg Karl, Dr.

Advancement of Women / Career Building
Zimmermann Anne, Dr.

Partnership Actions
Salmi Annika, lic. phil.

Communications
Hirschbühl Tina, Ms.

Financial Management
Balsiger Urs, MBA

Address

NCCR North-South
University of Bern
Hallerstrasse 10
3012 Bern
phone: + 41 (0)31 631 52 72
fax: + 41 (0)31 631 85 44
nccr-north-south@cde.unibe.ch

Web Addresses

www.north-south.unibe.ch

Public Relations

- Website
- Brochure
- Policy briefs: evidence for policy
- Newsletters
- Media releases
- Flyer

Third Party Cooperation

(in progress)

Programmes

- IHDP

Research Institutions

- Abteilung Angewandte Linguistik (AAL), University of Bern, CH
- Centre for Molecular Microbiology and Infection, Imperial College, London, GB
- Centre Régional pour l'Eau Potable et L'Assainissement à faible coût (CREPA), Ouagadougou, BF
- Centro de Estudios Superiores de Mexico y Centroamerica, Univ. de Ciencias y Artes de Chiapas, San Cristóbal, MX
- Colegio de la Frontera Sur, Tapachula, MX
- Dept. of Anthropology, Kannur University (KU), Kerala, IN
- Dept. of Ecology and Natural Resources (IMECBIO), University of Guadalajara, Autlán, MX
- Dept. of Plant Biology, Faculty of Science, University of Yaoundé, CM
- Dept. of Social & Environmental Medicine, Faculty of Tropical Medicine, Mahidol University, Bangkok, TH
- Dept. of Social Anthropology, University of Basel, CH
- Dept. of Systems Analysis, Integrated Assessment and Modelling (SIAM), Swiss Federal Inst. of Aquatic Science and Technology, Duebendorf, CH
- Ecole Supérieure d'Agronomie, Université de Lomé, TG
- Facultad de Ciencias Politicas y Sociales, Universidad Nacional Autonoma (UNAM), Mexico DF, MX
- Facultad Latinoamericana de Ciencias Sociales Programa Costa Rica, San José, CR
- Faculty of Environment and Resource Studies, Mahidol University, Nakhon Pathom, TH
- Fundación de la Universidad de Costa Rica para la Investigación (FUNDEVI), San José, CR
- Gestion, Université de Bamako, ML
- Hochschuldidaktik, Universität Bern, CH
- Human and Natural Resource Studies Centre (HNRSC),

Head Representatives of Institutional Partners in Switzerland

Carton Michel, Prof.	Graduate Institute of International and Development Studies (IHEID), Genève, CH
Goetschel Laurent, Prof.	swisspeace, Bern, CH
Hering Janet, Prof.	Eawag - Sandec, Dübendorf, CH
Hurni Hans, Prof.	Centre for Development and Environment, GIUB, University of Bern, CH
Müller-Böker Ulrike, Prof.	Development Study Group, GIUZ, University of Zurich, CH
Tanner Marcel, Prof.	Swiss Tropical Institute STI, University of Basel, CH
Wiesmann Urs, Prof.	Centre for Development and Environment, GIUB, University of Bern, CH
Zinsstag Jakob, PD Dr	Swiss Tropical Institute STI, University of Basel, CH
Zurbrügg Christian, Mr.	Eawag - Sandec, Dübendorf, CH

Coordinators of Partnership Regions

Arynova Mira	Regional Coordination Office Central Asia, Bishkek, KG
Bonfoh Bassirou, Prof.	Centre Suisse de Recherches Scientifiques, Abidjan, CI
Debele Berhanu	Regional Coordination Office Horn of Africa, Addis Abeba, ET
Kiteme Boniface, Dr.	Centre for Training and Integrated Research in Arid and Semi-arid Lands Development CETRAD, Nanyuki, KE
Koottatep Thammarat, Dr.	Asian Institute of Technology (AIT), Pathumthani, TH
Perez Gutierrez Maria Angelina	Facultad Latinoamericana en Ciencias Sociales FLACSO-CR San José, CR
Upreti Bishnu Raj, Dr.	Regional Coordination Office South Asia, Kathmandu, NP
Wallner Astrid, Dr.	Centre for Development and Environment, GIUB, University of Bern, CH

North-South Partnership Institutions

Agroecologia Universidad Cochabamaba AGRUCO, BO
Ayuda Obrera Suiza AOS, La Paz, BO
Central Department of Geography CDG, Tribhuvan University, Kathmandu, NP
Centre de Support en Santé Internationale CSSI, N'Djaména, TD
Centre de Technique de la Planification et d'Economie Appliquée CTPEA, Port-au-Prince, HT
Centre for Development Studies CDS, Kerala, IN
Centre for Security Studies FSK, Swiss Federal Institute of Technology, Zurich, CH
Centre for Training and Integrated Research in Arid and Semi-Arid Lands Development CETRAD, Nanyuki, KE
Centre National d'Hygiène CNH, Nouakchott, MR
Centre Suisse de Recherches Scientifiques CSRS, Abidjan, CI
Centro Bartolomé de las Casas CBC, Centre for Andean Regional Studies, Colegio Andino, Cuzco, PE
Centro de Investigación para el Desarrollo CIDES, Universidad Mayor de San Andrés, La Paz, BO
City Government of Kunming, CN
Departamento de Organización del Espacio DOE, Universidad Centroamericana "José Simeón Cañas", San Salvador, SV
Département de Sociologie et Anthropologie, Université de Yaoundé DSA-UY, CM
Department of Geography, University Dar es Salaam, TZ
Department of Natural Science, Kyrgyz-Russian Slavic University, Bishkek, KG
Department of Urban Water Management UWM, EAWAG, Duebendorf, CH
Directorship of the Sierra de Manantlán Biosphere Reserve DRBSM, Autlán, MX
Ecole Inter-Etats d'Ingénieurs de l'Equipement Rural EIER, Ouagadougou, BF
Ecole Supérieure des Sciences Agronomiques ESSA, University of Antananarivo, MG
Ethiopian Amhara Region Agricultural Research Institute ARARI, Bahr Dar, ET
Facultad de Agronomia, Agroecologia, Universidad Cochabamba AGRUCO, BO
Facultad Latinoamericana de Ciencias Sociales FLACSO, San José, CR
Faculté des Sciences et Gestion de l'Environnement, Université d'Abobo-Adjamé - UAA-FGS, Abidjan, CI

Topics

Humankind and the world ecosystem are confronted by mounting insecurity stemming from rapid global change, unchecked globalisation and global disparities. Particularly in developing and transition countries, a variety of core issues may compound one another and give rise to "syndromes of global change" that hinder sustainable development. Yet the same countries facing the most acute problems are often least equipped to develop ways of mitigating them. Research partnerships between institutions in the North and the South thus offer an efficient way to overcome disparities in capacity, technology and resources, and enable us to chart a joint path forward towards a sustainable future.

Now in its third phase, the NCCR North-South programme has proven to be an effective means of facilitating mutually beneficial collaboration between institutions and individuals in developing and transition countries and in Switzerland. Displaying a robust network of over 400 researchers from more than 50 countries, the programme continues to carry out high-quality disciplinary, interdisciplinary and transdisciplinary research that improves our understanding of global change and promotes sustainable development. Phase 3 of the programme is characterised by a sharpened focus on specific core themes, increased emphasis on integrating and disseminating research to date, intensified work on translating research results into concrete recommendations for policy and practice and sustained efforts towards capacity development and societal empowerment in the South.

Gujarat Institute for Development Research, Ahmedabad, IN
INESA Société Inter-Entreprises, Port-au-Prince, HT
Institute of Anthropology, University of Basel, CH
Institute of Economic Growth, University Enclave, New Delhi, IN
Institute of Social Anthropology ESUZ, University of Zurich, CH
Institute of Urbanism, Faculty of Architecture and Urbanism, Central University of Venezuela, Caracas, VE
Instituto de Investigaciones Sociales IIS de la Universidad Nacional Autonoma de Mexico UNAM, Mexico City, MX
Inter-Municipal Initiative IMI, Autlán, MX
Kunming Institute of Environmental Science, CN
Laboratoire de Recherches Vétérinaires et Zootechniques de Farcha LRVZ, N'Djaména, TD
Laboratory of Hydrology and Land Improvement HYDRAM, ISTE, EPF Lausanne, CH
Manantlán Institute of Ecology and Conservation of Biodiversity IMECBIO, University of Guadalajara, Autlán, MX
Mekong River Commission MRC, Vientiane, LA
Nepal Institute of Development Studies NIDS, Kathmandu, NP
Pollution Control Department PCD, Ministry of Natural Resources and Environment, Bangkok, TH
Post-graduate Course on Developing Countries ETHZ-NADEL, Zurich, CH
Potsdam Institute for Climate Impact Research PIK, Potsdam, DE
School of Environment, Resources and Development SERD, Asian Institute of Technology AIT, Bangkok, TH
Sustainable Development Policy Institute SDPI, Islamabad, PK
Swiss Agency for Development and Cooperation SDC, Regional Cooperation Office, Bishkek, KG
Tajik Academy of Sciences, Dushanbe, TJ
UNESCO World Natural Heritage Site, Jungfrau-Aletsch-Bietschhorn JAB, Naters, CH
Universidad Mayor de San Simon UMSS, Cochabamba, BO
University of Cocody, Abidjan, CI
Uzbek Academy of Sciences, Tashkent, UZ
Yunnan Academy of Social Science, Kunming, CN

Kathmandu University, NP
- Ifakara Health Research and Development Centre (IHRDC), Ifakara, TZ
- Inst. d'Ethno-Sociologie, Université de Cocody, Abidjan, CI
- Inst. National de Recherche en Santé Publique (INRSP), Nouakchott, MR
- Inst. Supérieur Inter-Etats de formation et de recherche dans les domaines de l'Eau, l'Energie, l'Environnement et
- les Infrastructures (EIER), Ouagadougou, BF
- Inst. for Human-Environment Systems (HES), Swiss Federal Inst. of Technology, Zurich, CH
- Inst. of Livestock, Veterinary Sciences and Pastures (ILVSP), Agrarian Academy, Bishkek, KG
- Inst. de Estudios Sociales (IESE), Universidad Mayor de San Simón, Cochabamba, BO
- Inst. del Conurbano (ICO), Universidad General Sarmiento (UNGS), Buenos Aires, AR
- Inst. Dr. José Maria Luis Mora, Mexico DF, MX
- Interdisziplinäres Zentrum für Frauen- und Geschlechterforschung (IZFG), Universität Bern, CH
- International Centre for Integrated Mountain Development (ICIMOD), Kathmandu, NP
- Journalists for Democracy and Human Rights (JDHR), Islamabad, PK
- National Inst. of Hygiene and Epidemiology (NIHE), Hanoi, VN
- Postgraduate Program in Development Sciences, University Mayor de San Andrés (CIDES-UMSA), La Paz, BO
- Postgraduate Program in Social Work, Universidad Nacional Autónoma (PLATS-UNAH), Tegucigalpa, HN
- Research Inst. of Livestock, Veterinary and Pastures (RILVP), Bishkek, KG
- Sustainable Development Alternatives (SDA), Rawalpindi, PK
- Tata Inst. of Social Sciences (TISS), Mumbai, IN
- Unidad Azcapotzalco, Universidad Autónoma Metropolitana (UAM-A), Mexico DF, MX

North-South: Research Partnerships for Mitigating Syndromes of Global Change

NCCR North-South

Others

- Bread for All / Brot für Alle (BFA), Berne, CH
- Cooperation and Training Division, Urban Research Inst. (URI), Vientiane, LA
- Dept. of Health, Ministry of Public Health, Bangkok, TH
- Environment and Public Health Organisation (ENPHO), Kathmandu, NP
- Fundación Sodis, Cochabamba, BO
- Holistic Understanding for Justified Research and Action (HUJRA), Mingora, PK
- Inst. del Bien Comun (IBC), Lima, PE
- Kyrgyz Sheep Breeding Association, Bishkek, KG
- Lao National Mekong Commission Secretariat (LNMCS), Vientiane, LA
- Maji na Ufanisi (Water & Development), Nairobi, KE
- OXFAM GB Bolivia, Fundación La Paz, Fundación para el Desarollo Participativo Comunitario (FUNDEPCO), La Paz, BO
- Plan Maestro para la Revitalización Integral de la Habana Vieja, Havana, CU
- PROClim, Forum for Climate and Global Change, Swiss Academy of Sciences, Berne, CH
- Republican Center of Veterinary Diagnostics (RCVD), Bishkek, KG
- Research Inst. of Livestock, Veterinary and Pastures, Lebedinovka Village, KG
- Rural Advisory Services "Chui", Bishkek, KG

Achievements of the previous years

In Phase 3, the research activities of the NCCR North-South programme are organised between three Thematic Nodes grouped around an Integrative Node. The Thematic Nodes combine advanced research on (1) "Institutions, Livelihoods, Conflicts", (2) "Health, Services, Planning", and (3) "Resources, Economy, Governance". Each Thematic Node is supported by at least two Swiss Institutional Partners, together with their partners abroad, and comprises four to six Research Projects. The individual projects are co-led by post-doctoral researchers from the South and the North who jointly oversee an international team of post-doctoral and senior researchers, PhD and master's students. The teams conduct their research in at least two out of nine established Partnership Regions spread across four continents.

Scientific Output

Activities in the first eight years produced over 1000 publications (of which over 330 were refereed), more than 600 reports and 1600 presentations, all of which resulted directly from the research carried out in the programme. A total of 166 PhD studies have been launched so far, of which 81 are now completed. In the past year, 16 new PhD students were selected.

Integration and Synthesis

In Phase 3, the main vehicle for integration and synthesis of all programme activities is the Integrative Node. The Integrative Node forms a hub of exchange between the Thematic Nodes and encompasses a new Research Project on global development issues, the Transversal Project and a Partnership Regions Project. The Research Project on global issues is designed to guide the programme on three levels: on the level of policy and practice, by generating concrete recommendations for both that reflect contextual validity and reach; on the level of synthesis and generalisation, by empirically assessing interregional variation of core sustainability issues and comparing them to current global debates; and on the level of knowledge and research, by refining key concepts, issues and methodologies surrounding sustainable development and reflecting on sustainability science. Within the Transversal Project, individual and institutional partners will implement a number of synthesis projects that aim to capitalise on the results achieved over the life span of the NCCR North-South. Finally, the Partnership Regions Project continues to build and strengthen the network of exchange between the nine regions that provide the actual setting for all of the programme's field-based research and initiatives.

Institutionalisation

Phase 3 promises to bring major developments in establishing permanent institutions to carry on the work of the NCCR North-South. An inter-university doctoral programme on "Global Change, Innovation and Sustainable Development" was recently launched, and a corresponding "International Graduate School North-South" will incorporate the experience of the NCCR North-South and cultivate its international network in the long term. The doctoral programme and the graduate school are being jointly implemented by the Centre for Development and Environment (University of Bern), the Development Study Group (University of Zurich) and the Swiss Tropical Institute and swisspeace (University of Basel). Finally, the recent establishment of the Centre for Development and Environment at the University of Bern will also lastingly contribute to a strengthened Swiss role in partnership-based sustainability research and outreach that addresses the needs of developing and transition countries.

Further information see www.north-south.unibe.ch

- Science et Cité, Berne, CH
- Science, Technology and Environment Organization (STENO), Vientiane, LA
- Southeast Asian Ministers of Education Organization, Regional Centre for Archeology and Fine Arts (SEAMEO-SPAFA), Bangkok, TH
- State Secretariat for Economic Affairs (SECO), Bern, CH
- Sustainable Development Alternatives (SDA), Islamabad, PK
- Swiss Association of Research Managers and Administrators (SARMA), Università della Svizzera Italiana, Lugano, CH
- Swiss Information and Data Archive for the Social Sciences (SIDOS), Neuchâtel, CH
- Swiss Red Cross, Bishkek, KG
- Urban-Rural Solutions (URS), Hanoi, VN
- Velux Foundation, Zurich, CH
- Water for Asian Cities Programme (WAC), UN-Habitat, Kathmandu, NP
- Water Supply and Sanitation Collaborative Council (WSSCC), Geneva, CH

Statistical Input – Output Data

Funding source (CHF)	Year 9	Year 10	Year 11	Year 12	Total	%
SNSF funding	3 200 000	2 000 000	1 800 000	1 000 000	8 000 000	20
Self-funding from home institution[1]	250 000	600 000	700 000	1 250 000	2 800 000	7
Self-funding from project participants	3 094 284	3 089 920	3 096 572	3 119 224	12 400 000	31
Third-party funding from SDC	4 881 343	4 178 700	3 833 568	3 311 389	16 205 000	41
Total	11 425 627	9 868 620	9 430 140	8 680 613	39 405 000	100

Personnel[2]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							NP	KE	DE	CI	BO	
Management	6.91[3]	10	53	9	47	15	0	0	2	0	0	2
Master students	59	32	54	27	46	14	28	2	0	2	0	13
Doctoral students	69	21	30	48	70	14	5	1	3	6	3	37
Postdoctoral students	3	1	33	2	67	1	0	0	0	1	0	1
Research associates	24	12	50	12	50	8	0	4	1	1	0	10
Senior researchers[4]	106	32	30	74	70	35	8	5	8	1	4	45
Other staff	58	37	64	21	36	29	3	9	0	0	2	15
Total	325.91	145	43	193	57	116	44	21	14	11	9	123

[1] Personnel costs, equipment and consumables, not included infrastructure and basic equipment
[2] Persons involved in the NCCR in the last reporting period (12 months)
[3] Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training
[4] Including leaders of the individual projects and other organisational units of the NCCR

Evaluation and Monitoring by the Swiss National Science Foundation (SNSF)

Members of the Review Panel

Butera Fabrizio, Prof. (Chair)	Swiss National Science Foundation, Berne, CH
Bradley David, Prof.	Department of Infectious and Tropical Diseases, London School of Hygiene and Tropical Medicine, London, GB
Brock Lothar, Prof.	Fachbereich Gesellschaftswissenschaften, Johann Wolfgang Goethe-Universität, Frankfurt am Main, DE
Flury Manuel, Dr.	Swiss Agency for Development and Cooperation (SDC), Berne, CH
Foray Dominique, Prof.	Swiss National Science Foundation, Berne, CH
Jeffery Roger, Prof.	Department of Sociology, University of Edinburgh, Edinburgh, GB
Narasimha Reddy D., Prof.	Department of Economics, University of Hyderabad, Hyderabad, IN
Rychen Dominique Simone, Ms.	Swiss Agency for Development and Cooperation (SDC), Berne, CH
Shisana Olive, Dr.	Human Sciences Research Council, Cape Town, ZA
Stocking Michael, Prof.	School of Development Studies, University of East Anglia, Norwich, GB
Wehrli Bernhard, Prof.	Swiss National Science Foundation, Berne, CH

NCCR Office SNSF

Christ Urs, Dr.

Schweiz. Nationalfonds, Wildhainweg 3, 3001 Bern
phone: + 41 (0)31 308 23 50, fax: + 41 (0)31 305 29 71
uchrist@snf.ch

Plant Survival in Natural and Agricultural Ecosystems
NCCR Plant Survival

Home Institution
University of Neuchâtel

Start of the NCCR
April 1, 2001

NCCR Management
Director
Turlings Ted, Prof.
phone: + 41 (0)32 718 31 58
ted.turlings@unine.ch

Deputy Director
Neuhaus Jean-Marc, Prof.
phone: + 41 (0)32 718 22 07
jean-marc.neuhaus@unine.ch

Coordinator
Arnold Claire, Dr.
phone: + 41 (0)32 718 25 03
claire.arnold@unine.ch

Deputy Coordinator
Held Matthias, Dr.
phone: +41 (0)32 718 25 22
matthias.held@unine.ch

Office Secretary
Jauslin Carol, Mrs.
phone: + 41 (0)32 718 25 00
plant.survival@unine.ch

Communication
Chlebny Igor, Mr.
phone: + 41 (0)32 718 25 07
igor.chlebny@unine.ch

Knowledge and Technology Transfer
Klappert Rolf, Mr.
phone: +41 (0)32 718 10 51
rolf.klappert@unine.ch

Equal Opportunities
Le Fort Geneviève, Dr.
phone: +41 (0)32 718 10 59
genevieve.lefort@unine.ch

Education and Training
Ted Turlings, Prof.
Bobillier Christiane, Dr.
phone: + 41 (0)32 718 25 02
christiane.bobillier@unine.ch

Address
NCCR Plant Survival
Rue Emile Argand 11
Case postale 158
2009 Neuchâtel
phone: + 41 (0)32 718 25 00
fax: + 41 (0)32 718 25 01
plant.survival@unine.ch

Web Address
www.unine.ch/plantsurvival

Public Relations
- Plant Survival News (trilingual English, French and German)
- Press releases
- Website

Research

WP 1

Plant fitness and abiotic interactions
Leader: Kessler F.

Chloroplast Metabolism
Head: Kessler F.
Fankhauser C., Hörtensteiner S., Rentsch D., Rochaix J. D., Goldschmidt-Clermont M., Zeeman S.

Dynamics of mycorrhiza formation
H: Martinoia E.
Reinhardt D., Paszkowski, U.

WP2

Plant antagonists and mutualists
Leader: Turlings T.

Exploiting inducible root defenses for pest control
H : Turlings T.
Neuhaus J.-M., Mauch-Mani B., Gindro K., Steinger T., Farmer T., Felber, F., Wolfender, J.-L.

Genetic dissection of pollination syndromes in Petunia
H : Kuhlemeier C.
Bshary R., Bernasconi Fusi G., Guerin P.

Host specificity and host-associated differentiation in phytophagous insects
H : Benrey B.
Bacher S., Romeis J.

WP3

Spread and impact of invasive plants
L : Guisan, A.

Invasiveness and ecosystem impact below and above the species level: refining and extending the Centaurea maculosa model
H : Müller-Schärer H.
Guisan A., Schaffner U.

WP3 SP2

Determinants and impacts of plant spread and invasion: a comparative and experimental approach
H: Fischer M.
van Kleunen M.

WP4

Statistics and modelling
Leader: Davison A.
Bersier L.-F., Goldstein D.

Economic stimulus package

Optimizing the control of the Western corn rootworm with entomopathogenic nematodes
H: Turlings T., Burger R., Manukiani A., Betran J.

Technological Platforms, Programmes etc.

Sequencing and microarrays facilities
H: Neuhaus J.-M.

Chemical analytical service
H: Vallat A., Furrer J.

ICP-MS service
H: Matera V.

Greenhouse facilities
H: Felber F., Bernasconi-Fusi G.

Phytotron facilities
H: Kessler F., Turlings T.

Data analysis
H: Davison A.

GIS facilities (ECOSPAT lab)
H: Guisan A.

Doctoral Programme
H: Turlings T.

Heads of Individual Research Projects and Subprojects

Bacher Sven, Dr. — Zoologisches Institut, Universität Bern
Benrey Betty, Dr. — Institut de Biologie, Université de Neuchâtel
Bernasconi Giorgina, Prof. — Institut de Biologie, Université de Neuchâtel
Bersier Louis-Félix, Dr. — Département de Biologie, Université de Fribourg
Bshary Redouan, Prof. — Institut de Zoologie, Université de Neuchâtel
Davison Anthony C., Prof. — Département de Mathématiques, EPF Lausanne
Fankhauser Christian, Prof. — Center for Integrative Genomics, University of Lausanne
Farmer Edward E., Prof. — Département de Biologie Moléculaire Végétale, Université de Lausanne
Felber François, Dr. — Institut de Botanique, Université de Neuchâtel
Fischer Markus, Prof. — Institut für Pflanzenwissenschaften, Universität Bern
Gindro Katia, Dr. — Agroscope ACW Changins, Nyon
Goldschmidt-Clermont Michel, Prof. — Département de Biologie Moléculaire, Université de Genève
Goldstein Darlene, Dr. — Département de Mathématiques, EPF Lausanne
Guerin Patrick, Dr. — Laboratoire de Physiologie Sensorielle, Université de Neuchâtel

Topics

Plants are the primary producers of organic matter on land and central to almost all ecosystems. The survival and performance of plants is of fundamental importance to both the preservation of biodiversity and sustainable agriculture. We explore interactions between plants, insects and pathogens, and also among plants, from the molecule to the ecosystem and landscape level. Research on plant fitness and abiotic interactions focuses on chloroplast metabolism under changing light conditions and nutrient acquisition, the latter being improved by symbioses with arbuscular mycorrhizal fungi.

The field of plant-insect interactions deals with chemical defence compounds produced by the plant that attract natural enemies of its pests at the leaf-air and root-soil interfaces. Identifying the genes that play a role in pollinator selection is another aspect of this topic. Studies on the spread and impact of invasive plants consist in refining and extending the investigations on the causes of invasiveness. The aim is also to understand why, in contrast to invasive alien species, many native species are declining in the landscape. To support these research efforts, novel statistics and modelling methods are being developed, thereby providing an impetus for such interdisciplinary collaborations in Switzerland.

Guisan Antoine, Prof.	Departement d'Ecologie et d'Evolution, Université de Lausanne
Hörtensteiner Stefan, Dr.	Pflanzenbiologisches Institut, Universität Bern
Kessler Felix, Prof.	Laboratoire de Physiologie Végétale, Université de Neuchâtel
Kuhlemeier Cris, Prof.	Pflanzenbiologisches Institut, Universität Bern
Martinoia Enrico, Prof.	Labor für Molekulare Pflanzenphysiologie, Universität Zürich
Mauch-Mani Brigitte, Dr.	Institut de Biologie, Université de Neuchâtel
Müller-Schärer Heinz, Prof.	Département de Biologie, Université de Fribourg
Neuhaus Jean-Marc, Prof.	Laboratoire de Biologie Moléculaire et Cellulaire, Université de Neuchâtel
Paszkowski Uta, Dr.	Dép. de Biologie Moléculaire Végétale, Université de Lausanne
Reinhardt Didier, Dr.	Département de Biologie et Zoologie, Université de Fribourg
Rochaix Jean-David, Prof.	Département de Biologie Moléculaire, Université de Genève
Romeis Jörg, Dr.	Agroscope ART Reckenholz, Zürich
Schaffner Urs, Dr.	CABI Bioscience Swiss Centre, Delémont
Steinger Thomas, Dr.	Agroscope ACW, Changins Nyon
Turlings Ted, Prof.	Institut de Biologie, Université de Neuchâtel
van Kleunen Mark, Dr.	Institut für Pflanzenwissenschaften, Universität Bern
Wolfender Jean-Luc, Prof.	Laboratoire de Pharmacognosie et Phytochimie, Unviersité de Genève
Zeeman Samuel C., Dr.	Institut für Pflanzenwissenschaften, ETH-Zentrum, Zürich

Members of the Advisory Board

Baldwin Ian T., Prof.	Max Planck Institute of Chemical Ecology, DE
Edwards Peter, Prof.	Geobotanisches Institut, ETH-Zentrum, Zürich, CH
Hartmann Thomas, Prof.	Institut für pharmazeutische Biologie, Technische Universität Braunschweig, DE
Harter Klaus, Prof.	Center for Plant Molecular Biology, University of Tübingen, DE
Paré Paul W., Prof.	Chemistry and Biochemistry Department, Texas Tech University, USA

Third Party Cooperation

(in progress)

Programme

- ALARM
- COST 858
- DAISIE
- IGGP
- PRATIQUE
- SiTraMaisBT

Research Institutions

- Academia Sinica, Taipei, TW
- Botanical Inst., University of Cologne, Köln, DE
- Carnegie Inst. of Washington, Stanford, US
- Center for Environmental Science, Appalachian Laboratory, Frostburg, US
- Center for Integrative Genomics, University of Lausanne, CH
- Centre de coopération internationale en recherche agronomique pour le développement (CIRAD), Montpellier, FR
- Centre for Organic Agriculture, University of Newcastle, GB
- Centre for Sustainable Agriculture, Lancaster University, GB
- Commonwealth Scientific and Industrial Research Organisation (CSIRO), Canberra, AU
- Dépt. de biologie moléculaire végétale, Université de Lausanne, CH
- Dépt. d'écologie et d'évolution, Université de Lausanne, CH
- Dept. of Agricultural and Environmental Sciences, University of Newcastle, GB
- Dept. of Biology, University of Technology of Darmstadt, DE
- Dept. of Ecology and Evolution, State University of New York, US
- Dept. of Horticulture and Landscape Architecture, University of Colorado, Fort Collins, US
- Dept. of Life Science, University Pohang, Postech, KR
- Dept. of organic farming and cropping, University of Kassel, DE
- Dept. of Plant Physiology, Umea University, SE
- Division of Molecular And Cellular Biology, Nagoya University, JP
- Ecole d'ingénieurs de Changins, CH
- Ecological Sediment and Soil Assessment (ECOSSA), München, DE
- Facultad de Agronomía, Universidad Mayor de San Andrés, La Paz, BO
- Fisiologia vegetal, Universitat Jaume, Castillon, ES
- Genetics Research Unit, United States Dept. of Agriculture, Geneva, US
- Horticulture Dept., Purdue University, US
- Inst. de Biologie Physicochimique, Centre National de la Recherche Scientifique (CNRS), Paris, FR
- Inst. de chimie moléculaire, Université de Bourgogne, Dijon, FR
- Inst. de recherche pour l'ingénierie de l'agriculture et de l'environnement (Cemagref), Grenoble, FR

- Inst. di Ingegneria Biomedica del CNR, Università di Padova, IT
- Inst. für Biowissenschaften, Universität Würzburg, DE
- Inst. für Gemüse- und Zierpflanzenbau, Grossbeeren, DE
- Inst. für Pflanzenwissenschaft, Eidgenössische Technische Hochschule Zürich, CH
- Inst. für Umwelforschung, Rheinisch-Westfälische Technische Hochschule, Aachen, DE
- Inst. of plant genetics and crop plant research, Gatersleben, DE
- Inst. for Wetland and Water Research, Radboud University Nijmegen, NL
- Inst. of Botany, University of Basel, CH
- Inst. of Environmental Sciences, University of Zurich, CH
- Inst. of Grassland and Environmental Research (IGER), Aberystwyth, GB
- Inst. of Organic Chemistry, University of Innsbruck, AT
- Lab. Biominéralisations et paléoenvironnements, Université Pierre et Marie Curie, Paris, FR
- Lab. de chimie thérapeutique, Pharmapeptiques, Centre Interuniversitaire de recherche et d'enseignement,
- Université de Genève, CH
- Lab. for Electron Microscopy, University of Chicago, US
- Lehrstuhl für Biology, Technische Universität Kaiserslautern, DE
- Lehrstuhl für Pharmazeutische Biologie, Universität Würzburg, DE
- Leibniz Inst. of Plant Genetics and Crop Plant Research Gatersleben (IPK), DE
- Max-Planck Inst. of Molecular Plant Physiology, Golm, DE
- Plant Energy Biology Inst., University of Western Australia, Perth, AU
- Scripps Inst.of Ocenaography, San Diego, US
- Section Plant Genetics, Radboud University, Nijmegen, NL
- Service viticole, Chambre d'agriculture de Saône et Loire, Mâcon, FR
- Swiss Inst. of Bioinformatics, Lausanne, CH
- Umweltforschungszentrum Leipzig-Halle GmbH (UFZ), Leipzig, DE
- Unité de Phytopharmacie et Médiateurs Chimiques, Inst. National de la Recherche Agronomique (INRA),
- Versailles-Grignon, FR
- Unité Mixte de Recherche INRA/CNRS, Plante-Microbe-Environnement (PME), Dijon, FR

Achievements of the previous years

Interdisciplinary and applied research

The NCCR Plant Survival, initiated in 2001, enabled the creation of an interdisciplinary network of skilled scientists around the general theme of plant survival.

The large efforts made by all participants in this network led to numerous publications and discoveries during the first two phases.

In its Third Phase a particular emphasis will be put on the exploitation of the intellectual property and the transfer of knowledge and technology into application.

The enhancement of plastoglobule content in leaves is valuable for the development of pharmaceutical and cosmetic products. The current research on starch quality and quantity is used in the domain of human nutrition or biofuel as well as for the improvement of forage crops.

In another project different plants were selected for their ability to enter mycorrhizal associations even in fertilized soils. The research on genes involved in the transport of secondary metabolites within these interactions will be exploited to improve natural colonization processes.

By studying the mechanisms of plant root defences new crop protection strategies were developed. The scientists have successfully manipulated a root signal that is attractive to insect-killing nematodes and could thereby significantly improve the control of a major root pest.

In the field of invasive plants, new predictive models are developed for the management of invasive or rare species, providing guidelines and screening protocols for the stakeholders and practitioners.

The statistics and modelling group continues to further work on procedures for the analysis of high-dimensional data, for example metabolite profiles or genetic data. They aim to tackle the dynamic modelling of food- and pollination-webs and work on novel approaches for the spatial modelling of species distributions.

Technology transfer

The technology transfer activities aim at consolidating what has been achieved by the partners in the previous phases. Particular emphasis is put on increasing the efforts to financially exploit the results and the intellectual property generated in the different phases of the NCCR through an efficient policy of licensing to or partnering with third parties.

For the Phase III the organisation of the TT activities is taken over by the Technology Transfer Office of the University of Neuchâtel in collaboration with the NCCR coordination.

Public relations

The entering in the Third Phase of the NCCR Plant Survival lead to a major update of the website and a new layout for the tri-lingual newsletter Plant Survival News that appeared in fall 2009. Additionally, a new brochure describing our research themes in English, French and German has been published in Spring 2009. The organisation of the 25th meeting of the International Society of Chemical Ecology by the NCCR Plant Survival staff also involved the communication officer who prepared a substantial press pack and ensured close contact between regional media and the scientists present in Neuchâtel.

Doctoral programme

As of April 2009, the financing and management of the doctoral programme have been taken over by the University of Neuchâtel and have become one of the regular inter-university programmes within the CUSO. Mobility grants are awarded to allow Ph.D. students to visit and work in other laboratories and to present their research at international congresses.

Equal opportunities

A network of all Equal Opportunity Offices is currently settled to provide optimal conditions for the development of the future career of our NCCR female scientists.

In Neuchâtel, the university office ensures the advancement of women in academic careers and the reintegration of women with higher-level degree, after absence for maternity, by opening their courses, workshops and seminars to all NCCR scientists. Existing opportunities such as scholarships, mentoring programs and part-time employment are continued.

Further information see www.unine.ch/nccr/

Statistical Input – Output Data

Funding source (CHF)	Year 9	Year 10	Year 11	Year 12	Total	%
SNSF funding	2 265 000[6]	2 215 000[6]	1 600 000	400 000	6 480 000	41
Self-funding from home institution[1]	845 039	847 037	849 057	801 096	3 342 229	21
Self-funding from project participants	1 577 720[6]	1 559 720[6]	1 407 000	1 040 000	5 584 440	35
Third-party funding[2]	245 624[6]	312 633[6]	0[7]	0[7]	558 257	3
Total	4 933 383	4 934 390	3 856 057	2 241 096	15 964 926	100

Personnel[3]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	FR	US	GB	NL	
Management	5.15[4]	9	56	7	44	12	0	0	1	0	1	2
Master students	3	1	33	2	67	1	0	1	0	0	0	1
Doctoral students	59	25	42	34	58	26	11	12	2	0	1	7
Postdoctoral students	15	7	47	8	53	7	0	3	0	0	0	5
Research associates	5	2	40	3	60	2	2	0	0	0	0	1
Senior researchers[5]	51	11	22	40	78	29	9	2	1	4	3	3
Other staff	36	26	72	10	28	29	1	0	1	0	0	5
Total	174.15	81	44	104	56	106	23	18	5	4	5	24

[1] Personnel costs, equipment and consumables, not included infrastructure and basic equipment
[2] Not included is CTI funding (cf. page 6). Since the start of the NCCR 2 projects have been funded by CTI at a total amount of 2.7 million CHF.
[3] Persons involved in the NCCR in the last reporting period (12 months)
[4] Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training
[5] Including leaders of the individual projects and other organisational units of the NCCR
[6] Included funding of economic stimulus package projects (cf. projet list)
[7] Not yet budgeted, updated figures will be published in Guide 2011

Evaluation and Monitoring by the Swiss National Science Foundation (SNSF)

Members of the Review Panel

Ghisalba Oreste, Prof. (Chair)	Swiss National Science Foundation, Berne, CH
Harr Jost, Dr.	Landwirtschaftlicher Forschungsrat, Erfindungsverwertungs AG, Basel, CH
Lambers Hans, Prof.	Faculty of Natural and Agricultural Sciences, University of Western Australia, AU
Métraux Jean-Pierre, Prof.	Swiss National Science Foundation, Berne, CH
Pickett John, Prof.	Biological Chemistry Division, Rothamsted Research, Harpenden, GB
Scheel Dierk, Prof.	Department of Stress and Development Biology, Halle, DE
Schwarzenbach René, Prof.	Swiss National Science Foundation, Berne, CH
Louise E.M. Vet, Prof.	Netherlands Institute of Ecology (NIOO-KNAW), NL

NCCR Office SNSF

Christ Urs, Dr.

Schweiz. Nationalfonds, Wildhainweg 3, 3001 Bern
phone: + 41 (0)31 308 23 50, fax: + 41 (0)31 305 29 71
uchrist@snf.ch

Economy / Industry

- Affymetrix, Inc., Santa Clara, US
- AgriSense-BCS Limited, Pontypridd, GB
- BASF Chemical Company, Ludwigshafen, DE
- Bio-Protection & Development on Vineyards (BioProDev), Bettembourg, LU
- Burri Agricide, Ligerz, CH
- Cosmotec SA, Collombey-Le-Grand, CH
- Isagro S.p.A., Milano, IT
- Kael Cosmetic SA, San Francisco, US
- MONSANTO Company, Ecological Technology Center, St-Louis, US
- NimbleGen Systems Inc., Madison, US
- Omya AG Agro, Oftringen, CH
- Suterra LLC, Bend, US
- Syngenta Crop Protection, Research Biology, Stein, CH

Others

- Alliance, EPFL, Lausanne, CH
- CimArk SA, Sion, CH
- DLR-Rheinpfalz Phytomedizin / Biotechnologischer Pflanzenschutz, Neustadt, DE
- El Ceibo - Piaf, Sapecho, BO
- El Paraiso, Sapecho, BO
- Euresearch, Berne, CH
- Office cantonal d'agroécologie, Service de l'Agriculture, Châteauneuf, CH
- RACINES, Geneva, CH

Climate Variability, Predictability and Climate Risks
NCCR Climate

Home Institution
University of Bern

Start of the NCCR
April 1, 2001

NCCR Management
Director
Stocker Thomas, Prof.
stocker@climate.unibe.ch

Deputy Director
Stephan Gunter, Prof.
gunter.stephan@vwi.unibe.ch

NCCR Executive Director
Grosjean Martin, Prof.
phone: + 41 (0)31 631 31 47
grosjean@giub.unibe.ch

Science Officer
Martin Lorenz, Dr.
phone: + 41 (0)31 631 31 46
martin@giub.unibe.ch

Public Relations
Meuli Kaspar, Mr.
phone: + 41 (0)31 631 31 49
meuli@giub.unibe.ch

Knowledge and Technology Transfer
Grosjean Martin, Prof.

Event Manager
Wälti Monika, Mrs.
phone: + 41 (0)31 631 31 45
waelti@giub.unibe.ch

Administrative Manager
Möhl Margret, Mrs.
phone: + 41 (0)31 631 31 45
moehl@giub.unibe.ch

IT-Experts
Martin Lorenz, Dr.
phone: + 41 (0)31 631 31 46
martin@giub.unibe.ch

Ferrante Basilio, Mr.
phone: + 41 (0)31 631 31 46
basil@giub.unibe.ch

Education and Training
Martin Lorenz, Dr.

Advancement of Women
Martin Lorenz, Dr.

Address
NCCR Climate
Universität Bern
Zähringerstrasse 25
3012 Bern
phone: + 41 (0)31 631 31 45
fax: + 41 (0)31 631 43 38
nccr-climate@giub.unibe.ch

Web Address
www.nccr-climate.unibe.ch

Research

Work Package Reconstructing and modelling past drought variability
Leader: Raible C.

MONALISA-3 Modelling and Reconstruction of North Atlantic Climate System Variability
Head: Raible C.
Stocker T.F.

PALVAREX-3 PALeoclimate VARiability and EXtreme Events
H: Wanner H. and Brönnimann S.
Schwikowski M., Luterbacher J.

DE-TREE Drought effects and PDSI reconstruction from Southern and Central European trees
H: Esper J.
Frank D.C.

Work Package Future Climate
Leader: Schär C.

HYCLIM Intensification of the water cycle: Scenarios, processes and extremes
H: Wild M.
Schär C.

CCC Global climate processes: role of cirrus clouds for present and future climate
H: Lohmann U.
Peter T.

RECLIM Probabilistic climate change scenarios for mean and extremes in the Alpine region
H: Appenzeller C.
Liniger M., Knutti R.

Work Package 3 Ecosystem Impacts and Adaptation
Leader: J. Fuhrer

PLANT/SOIL Drought effects on Swiss grasslands and adapted plant mixtures as management options under changing climate conditions
H: Feller U.
Buchmann N.

AGRISK Climate change and agricultural production risks
H: Calanca P.
Fuhrer J., Lehmann, B., Finger R.

ECOWAT Impacts of changing drought conditions on catchment ecology and water cycle
H: Bugmann H.
Körner C., Seneviratne S.I., Wolf A.

Work Package Integrated assessment analysis of global climate change, economy and society
Leader: G. Stephan

CITEL Climate change and international trade from an economic and legal perspective
H: Cottier T.
Stephan G., Nartova O.

CVR Climate vulnerability, risk assessment and management in a Post-Kyoto World
H: Stephan G.
Buob S., Turton H.

MIADAC Modelling Climate Change Policies: Mitigation, Adaptation, and Acceptance
H: Thalmann Ph.
Altamirano-Cabrera J.-C.

CLER Climate Lessons from radiocarbon data
H: Joos F.

SOLAR Solar Forcing and Climate Change of the last 1000 years
H: Beer J.

Integrated Projects and Fast Track Studies

SECOND CHANCE Socio-economic Consequences Due to Changing Climate and Extreme Events
H: Beniston M.

Programmes

Yearly Summer School
H: Grosjean M.

PhD student meetings
H: Martin L.

Workshops co-organized with ProClim
H: Grosjean M.

Topics

Comprehensive insight and sound understanding of 1) natural climate variability, modelling and high-resolution climate reconstruction over the last 1000 years, 2) global and regional climate processes, seasonal and inter-annual climate variability and more accurate predictions, including extreme events, 3) assess implications of climate variability and change for ecosystems and to evaluate possible adaptive strategies for the management of forests and agriculture and, 4) potential perspectives for regional and global post-Kyoto climate policies, vulnerability of regional and global economies to the adaptation to global climate change. The NCCR Climate links four work-packages: "Past Climate Variability", "Climate Predictability, Processes, and Projections", "Ecosystem Impacts and Adaptation", and "Climate Risks". The NCCR Climate is a research network of institutions within Switzerland and collaborates with national and international programmes (ProClim, WCRP-CLIVAR, IGBP, UNFCCC, IPCC). The NCCR Climate commits itself to a firm effort in education, to knowledge transfer and interaction with administration, politics, the private sector and the public. The NCCR Climate is in the last phase (2009-2013).

Heads of Individual Research Projects and Subprojects

Altamirano Juan-Carlos, Dr.	Lab. de recherches en économie et management de l'environnement, EPF Lausanne
Appenzeller Christof, PD Dr.	MeteoSchweiz, Zürich
Beer Jürg, Prof.	EAWAG, Dübendorf
Beniston Martin, Prof.	Climate Research Group, Université de Genève
Brönnimann Stefan, Prof.	Institut für Atmosphäre und Klima, ETH Zürich
Buchmann Nina, Prof.	Institut für Pflanzenwissenschaften, ETH Zürich
Bugmann Harald, Prof.	Waldökologie, ETH Zürich
Buob Seraina	Volkswirtschaftliches Institut, Universität Bern
Calanca Pierluigi, Dr.	ART, Reckenholz
Cottier Thomas, Prof.	World Trade Institute, Universität Bern
Esper Jan, PD Dr.	WSL, Birmensdorf
Feller Urs, Prof.	Institut für Pflanzenwissenschaften, Universität Bern
Fischlin Andreas, Prof.	Terrestrische Systemökologie, ETH Zürich
Finger Robert, Dr.	Institut für Agrarwirtschaft, ETH Zürich
Frank David, Dr.	WSL, Birmensdorf
Fuhrer Jürg, Prof.	ART, Reckenholz
Grosjean Martin, Prof.	Geographisches Institut, Universität Bern
Joos Fortunat, Prof.	Abteilung Klima und Umweltphysik, Universität Bern
Knutti Reto, Prof.	Institut für Atmosphäre und Klima, ETH Zürich
Körner Christian, Prof.	Botanisches Institut, Universität Basel
Lehmann Bernhard, Prof.	Institut für Agrarwirtschaft, ETH Zürich
Liniger Mark, Dr.	Meteo Schweiz, Zürich
Lohmann Ulrike, Prof.	Institut für Atmosphäre und Klima, ETH Zürich
Luterbacher Jürg, Prof.	Geographisches Institut, Universität Bern
Nartova Olga, Dr.	World Trade Institute, Universität Bern
Peter Thomas, Prof.	Institut für Atmosphäre und Klima, ETH Zürich
Philipona Rolf, PD Dr.	MeteoSchweiz, Payerne
Raible Christoph, PD Dr.	Abt. Klima und Umweltphysik, Universität Bern
Schär Christoph, Prof.	Institut für Atmosphäre und Klima, ETH Zürich
Schwikowski Margit, Prof.	Paul Scherrer Institut, Villigen
Seneviratne Sonia, Prof.	Institut für Atmosphäre und Klima, ETH Zürich

Third Party Cooperation

Programmes

- ADAM (FP6)
- ALARM (FP6)
- AMIP II
- AustroClim
- CarboEurope-IP (FP6)
- CARBOOCEAN IP (FP6)
- CECILIA (FP6)
- CIRCE (FP6)
- COSMO-LEPS
- COST 725
- COST 733
- COST 734
- DILPA
- ECOCHANGE (FP6)
- ECSN
- ENSEMBLES (FP6)
- ENSEMBLES (FP6)
- EUROCEANS (FP6)
- GEOMON (FP6)
- GrassGas
- IGBP - PAGES
- Lignin Turnover
- MedCLIVAR
- MILLENNIUM (FP6)
- NDACC
- NEEDS (FP6)
- NICOLA
- SoilGas
- TOCSIN (FP6)
- WCRP-BSRN
- WCRP-CLIVAR
- WMO-LRF
- WWRP-MAP

Research Institutions

- Agenzia Regionale Prevenzione e Ambiente dell'Emilia Romagna (ARPA), Bologna, IT
- Alfred Wegener Institut, Bremerhaven, DE
- British Antarctic Survey, Cambridge, GB
- Canadian Institute for Climate Sciences, University of Quebec, Montreal, CA
- Center for Environmental Prediction, Rutgers University, New Brunswick, US
- Centre for Energy Policy and Economics, ETHZ, Zürich, CH
- Centre for Marine and Climate Research, University of Hamburg, DE
- Climate and Global Dynamics Divison, National Center for Atmospheric Research, Boulder, US
- Climate Research Unit, University of East Anglia, Norwich, GB
- Danish Meteorological Institute, Copenhagen, DK
- Département des sciences du milieu et de l'aménagement du territoire, Université catholique de Louvain, BE
- Département Energie et Politiques de l'Environnement du LEPII, Université Pierre Mendès-France, Grenoble, FR
- Department of Astrophysics and Atmospheric, The Complutense University of Madrid, ES

- Department of Atmospheric and Oceanic Sciences, University of California, Los Angeles, US
- Department of Earth Science, University of Bergen, NO
- Department of Environmental Sciences, University of Milano, IT
- Department of Finance Decision, Hong Kong Baptist University, CN
- Department of Geography, San Diego State University, US
- Department of Meteorology, University of Reading, GB
- Department of Physics, Unversity of Oxford, GB
- Department of Plant Biology, University of Illinois, Urbana, US
- Deutsches Institut für Wirtschaftsforschung, Humboldt-Universität zu Berlin, DE
- Ecosystem Modelling and Biodiversity Studies Group, Lund University, SE
- Eidgenössische Forschungsanstalt für Wald, Schnee und Landschaft (WSL), Davos, CH
- Eidgenössische Materialprüfungs- und Forschungsanstalt (EMPA), Dübendorf, CH
- Environmental Change Institute, University of Oxford, GB
- European Centre for Medium Range Weather Forecasts, Reading, GB
- Fachbereich Volkswirtschaftslehre, Universität Trier, DE
- Fondazione Eni Enrico Mattei, Milano, IT
- Fraunhofer-Institut für System- und Innovationsforschung, Karlsruhe, DE
- Geology and Geophysics Department, Woods Hole Oceanographic Institution, Woods Hole, US
- GKSS Research Centre Geesthacht, DE
- Groupe d'Etudes et de Recherche en Analyse des Décisions (GERARD), Mc Gill University, Montréal, CA
- Hadley Centre for Climate Prediction and Research, Exeter, GB
- Institut d'Economie et de Politique de l'Energie (IEPE-CNRS), Grenoble, FR
- Institut für Energiewirtschaft und Rationelle Energieanwendung (IER), Universität Stuttgart, DE
- Institut für Umweltphysik, Universität Heidelberg, DE
- Institut National sur la Recherche Agronomique (INRA), Clermont-Ferrand, FR
- Institute for Energy Environment Economy, Tsinghua University, Beijing, CN
- Institute of Geography, University of Augsburg, DE
- Institute of Geography, University of Würzburg, DE
- Institute of Geophysics, University of Copenhagen, DK
- Institute of Soil Science, TU Berlin, DE
- International Institute for Applied Systems Analysis (IIASA), Laxenburg, AT
- International Pacific Research Center, University of Honolulu, US
- Joint Research Centre, Ispra, IT
- Judge Business School, University of Cambridge, GB
- Laboratoire de Glaciologie et Géophysique de l'Environnement (LGGE-CNRS), Grenoble, FR
- Laboratoire des Sciences du Climat et de l'Environnement (LSCE-CNRS), Gif-sur-Yvette, FR

Climate Variability, Predictability and Climate Risks

NCCR Climate

Achievements of the previous years

The SNSF Review Panel stated in the Assessment Report 2004: "The NCCR Climate is unique in its interdisciplinary focus, not just for Switzerland or Europe, but globally".
Building on firm structural and institutional foundations, the NCCR Climate network led to significant achievements in four areas: distinct scientific impact, international leadership through networks, sustained education at postgraduate level, and extended public relations. The Graduate School "Climate Sciences" (M.Sc. and Ph.D. University of Bern) concerted with the M.Sc. "Atmospheric and Climate Sciences" (S-EN ETH) opened in 2006/2007.

Science

The NCCR Climate shaped the profile of Swiss climate research through collaborative novel and timely scientific contributions with a high impact. Examples are the reconstruction of temporally highly-resolved European temperature and precipitation fields back to AD 1000 or the assessment of extreme climate such as the European summer 2003 being the hottest of the last 500 years. Simulations with different climate models show that about every second summer can be as warm or warmer in 2070 - 2100 than the summer 2003. With a focus on Switzerland, a set of scenarios for severe climate events (heat-waves, wind, drought, heavy precipitation, flood) has been produced, and the impact on society, agriculture and forests has been assessed. Information about extreme events in a changing climate is vital for risk assessment in financial business (e.g., investment and insurance). Operational tools for the climate forecast of up to six months were developed, novel ways of coupling climate and economic models were explored, and future ways of the Kyoto process were studied. Evidently, a hierarchy of state-of-the-art models (global and regional climate models, regional and local impact models) and large observational datasets are a prerequisite to address such targets.

Other Aspects

NCCR Climate researchers take leadership in the UNFCC, IPCC process and in international programmes (IGBP, WCRP, WMO, ERA). The NCCR Climate Summer School is a highly competitive internationally recognised platform for young scientists and attracts distinguished teachers. The NCCR Climate works closely with stakeholders, governmental agencies and the private sector. Public interest in NCCR Climate research is unprecedented. In 2007 the NCCR Climate had its first major structural impact: the University of Berne inaugurated the Oeschger Center for Climate Change Research! In 2008 the Centre for Climate System Modelling C2SM was inaugurated at ETH Zurich.

Further information see
www.nccr-climate.unibe.ch

Stampfli Andreas, PD Dr.
Stephan Gunter, Prof.
Stocker Thomas, Prof.
Thalmann Philippe, Prof.

Tinner Willy, Prof.
Turton Hal, Dr.
Wanner Heinz, Prof.
Wild Martin, Dr.
Wolf Annett, Dr.
Wokaun Alexander, Prof.

Institut für Pflanzenwissenschaften, Universität Bern
Volkswirtschaftliches Institut, Universität Bern
Abt. Klima- und Umweltphysik, Universität Bern
Lab. de recherches en économie et management de l'environnement, EPF Lausanne
Institut für Pflanzenwissenschaften, Universität Bern
Paul Scherrer Institut, Villigen
Geographisches Institut, Universität Bern
Institut für Atmosphäre und Klima, ETH Zürich
Waldökologie, ETH Zürich
Paul Scherrer Institut, Villigen

Statistical Input – Output Data

Funding source (CHF)	Year 9	Year 10	Year 11	Year 12	Total	%
SNSF funding	1 800 000	1 700 000	1 600 000	400 000	5 500 000	48
Self-funding from home institution[1]	387 500	287 500	287 500	287 500	1 250 000	11
Self-funding from project participants	1 593 100	1 461 000	1 047 000	0	4 101 100	36
Third-party funding	200 000	200 000	200 000	100 000	700 000	6
Total	3 980 600	3 648 500	3 134 500	787 500	11 551 100	100

Personnel[2]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	FR	AT	GB	US	
Management	3.70[3]	3	33	6	67	6	1	0	0	0	0	2
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	53	19	36	34	64	30	10	3	1	1	2	6
Postdoctoral students	30	10	33	20	67	9	8	1	1	2	2	7
Research associates	11	7	64	4	36	2	5	1	1	0	0	2
Senior researchers[4]	50	4	8	46	92	28	12	2	2	2	1	3
Other staff	32	13	41	19	59	28	4	0	0	0	0	0
Total	179.70	56	30	129	70	103	40	7	5	5	5	20

[1] Personnel costs, equipment and consumables, not included infrastructure and basic equipment
[2] Persons involved in the NCCR in the last reporting period (12 months)
[3] Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training
[4] Including leaders of the individual projects and other organisational units of the NCCR

Evaluation and Monitoring by the Swiss National Science Foundation (SNSF)

Members of the Review Panel

Schwarzenbach René, Prof. (Chair)	Swiss National Science Foundation, Berne, CH
Böhringer Christoph, Prof.	Department of Economics, Carl von Ossietzky University Oldenburg, DE
Bradley Raymond, Prof.	Department of Geoscience, University of Massachussetts, US
Cramer Wolfgang, Prof.	Potsdam Institute for Climate Impact Research, Potsdam, DE
Endres Alfred, Prof.	Fernuniversität Hagen, Hagen, DE
Gregory Peter, Prof.	Scottish Crop Research Institute, Dundee, GB
Hartmann Dennis, Prof.	Department of Atmospheric Sciences, University of Washington, US
Höppe Peter, Prof.	Fachbereich GeoRisikoForschung/Umweltmanagement, Münchener Rückversicherungs-Gesellschaft, DE
Varone Frédéric, Prof.	Swiss National Science Foundation, Berne, CH
Van den Bergh Hubert, Prof.	Swiss National Science Foundation, Berne, CH

NCCR Office SNSF

Christ Urs, Dr.

Schweiz. Nationalfonds, Wildhainweg 3, 3001 Bern
phone: + 41 (0)31 308 23 50, fax: + 41 (0)31 305 29 71
uchrist@snf.ch

- Laboratory for Atmospheric Chemistry, Paul Scherrer Institute, Villigen, CH
- Laboratory of Paleobotany and Palynology, University of Utrecht, NL
- Massachusetts Institute of Technology, Cambridge, US
- Max Planck Institute for Biogeochemistry, Jena, DE
- Max Planck Institute for Meteorology, Hamburg, DE
- National Centre for Atmospheric Research (NCAR), Boulder, US
- National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce, Boulder, US
- Natural Resource Ecology Laboratory, Colorado State University, Fort Collins, US
- Physical Sciences Divsion, U.S. Department of Commerce, Boulder, US
- Potsdam Institute for Climate Impact Research (PIK), DE
- Public System Group, Indian Institute of Management, Ahmedabad, IN
- School of Computing, National University of Singapore, SG
- School of Environmental Sciences, University of East Anglia, Norwich, GB
- Swiss Center for Scientific Computing, Manno, CH
- U.S. Arid-Land Agricultural Research Center, Maricopa, US
- Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie (VAW), ETHZ, Zürich, CH

Economy / Industry

- KANLO Consultants, Lyon, FR
- Ordecsys Sàrl, Chêne-Bourgeries, CH
- SwissRe, Zürich, CH

Others

- Bundesamt für Energie (BFE), Bern, CH
- Bundesamt für Landestopographie (Swisstopo), Wabern, CH
- Bundesamt für Umwelt (BAFU), Bern, CH
- Bundesamt für Wasser und Geologie (BWG), Bern, CH
- Commissariat à l'Energie Atomique (CEA), Toulouse, FR
- Dendrolabor Wallis, Brig, CH
- French Ministry of equipment, transportation, and housing, Paris, FR
- German Advisory Council on Global Change, Berlin, DE
- Institut Français des Relations Internationales (IFRI), Paris, FR
- International Atomic Energy Acency (IAEA), Wien, AT
- MeteoFrance, Toulouse, FR
- MeteoSwiss, Zürich, CH
- Past Global Changes of IGBP (PAGES), Bern, CH
- ProClim Forum for Climate, Bern, CH
- Wissenschaftlicher Beirat der Bundesregierung Globale Umweltveränderungen (WBGU), Berlin, DE

Materials with Novel Electronic Properties – Basic Science and Applications

NCCR MaNEP

Home Institution

University of Geneva

Start of the NCCR

July 1, 2001

NCCR Management

Director
Fischer Øystein, Prof.
phone: +41 (0)22 379 62 70
Oystein.fischer@unige.ch

Deputy Directors
Renner Christoph, Prof.
phone: +41 (0)22 379 35 44
christoph.renner@unige.ch

Van der Marel Dirk, Prof.
phone: +41 (0)22 379 62 34
dirk.vandermarel@unige.ch

Scientific Managers
Decroux Michel, Prof.
phone: + 41 (0)22 379 63 24
Michel.decroux@unige.ch

Favre-Quattropani Lidia, Dr.
phone: + 41 (0)22 379 62 93
Lidia.quattropani@unige.ch

Administrative Manager
Bagnoud Marie, Mrs.
phone: + 41 (0)22 379 62 18
Marie.bagnoud@unige.ch

Knowledge and Technology Transfer
Bonito Aleman Adriana, ad. interim
phone: + 41 (0)22 379 64 99
adriana.aleman@unige.ch

Education and Training
Decroux Michel, Prof.
Berthod Christophe, Dr.
phone: +41 (0)22 379 68 95
Christophe.berthod@unige.ch

Advancement of Women
Decroux Michel, Prof.

Computer and Internet Resources
Maggio-Aprile Ivan, Dr.
phone: + 41 (0)22 379 61 13
Ivan.maggio-aprile@unige.ch

Communication
Bonito Aleman Adriana, Mrs.
phone: + 41 (0)22 379 64 99
adriana.aleman@unige.ch

Address

NCCR MaNEP
Section de physique
Université de Genève
24, quai E.- Ansermet
1211 Genève 4
phone: + 41 (0)22 379 30 13
fax: + 41 (0)22 379 35 89
manep@unige.ch

Web Address

www.manep.ch

Research

Novel phenomena at interfaces and in superlattices
Head: Triscone J.-M.
Participating members:
Aebi Ph., Bernhard Ch, Fischer Ø., Giamarchi T., Giannini E., Grioni M., Jaccard D., Keller H., Morenzoni E., Morpurgo A., Niedermayer C., Paruch P., Sigrist M., Triscone J.-M., van der Marel D., Willmott Ph.

Materials for future electronics
Head: Morpurgo A.
Participating members:
Büttiker M., Forró L., Giamarchi T., Morpurgo A., Paruch P., Renner Ch., Sigrist M., Triscone J.-M., van der Marel D.

Electronic materials for energy systems and other applications
Head: Fischer Ø.
Participating members:
Abplanalp M., Decroux M., Eckert D., Fischer Ø., Flükiger R., Kenzelmann M., Patzke G., Renner Ch., de Rooij N., Triscone G., Triscone J.-M., Weidenkaff A., Yvon K.

This project is carried out with six participating industries

Electronic properties of oxide superconductors and related materials
Head: van der Marel D.
Participating members:
Batlogg B., Baeriswyl D., Degiorgi L., Fischer Ø., Giannini E., Grioni M., Jaccard D., Karpinski J., Keller H., Mesot J., Morenzoni E., Niedermayer C., Rønnow H. M., Sigrist M., van der Marel D.

Novel electronic phases in strongly correlated electron systems
Head: Sigrist M.
Participating members:
Baeriswyl D., Blatter G., Degiorgi L., Fischer Ø., Giannini E., Jaccard D., Kenzelmann M., Morenzoni E., Ott H.-R., Rice T. M., Sigrist M., Troyer M., van der Marel D.

Magnetism and competing interactions in bulk materials
Head: Mila F. and Zheludev A.
Participating members:
Degiorgi L., Fischer Ø., Giamarchi T., Grioni M., Kenzelmann M., Mesot J., Mila F., Ott H.-R., Renner Ch., Rønnow H. M., Staub U., Troyer M., Zheludev A.

Electronic materials with reduced dimensionality
Head: Forró L.
Participating members: Aebi Ph., Degiorgi L., Fischer Ø., Forró L., Grioni M., Giamarchi T., Mila F., Ott H.-R., Rønnow H. M.

Cold atomic gases as novel quantum simulators for condensed matter
Head: Giamarchi T.
Participating members:
Blatter G., Esslinger T., Giamarchi T., Gritsev V., Troyer M.

Economic stimulus package

Cut-and-coat process by wire-EDM
H: Cors J., Perez R.

Electrochemical sensors with higher resolution
H: Cors J., Tsitos G.

Development of MgB2 wires with high critical current densities for economical NMR magnets at 4.2 and at 20 K
H: Flükiger R., Eckert D.

Neutron optical devices for small samples
H: Kenzelmann M., Böni P.

Platforms, Programmes etc.

Industry Network

Swiss Workshop MaNEP «Les Diablerets»

Winter School MaNEP «Saas-Fee»

MaNEP Mobile Post-Doc Program

Advancement of Women MaNEP Summer Internships. MaNEP Doctoral School

Forum Members (full members, participating to the research projects)

Abplanalp Markus, Dr.	ABB Corporate Research Ltd, Baden-Dättwil
Aebi Philipp, Prof.	Département de Physique, Université de Fribourg
Baeriswyl Dionys, Prof.	Département de Physique, Université de Fribourg
Batlogg Bertram, Prof.	Laboratorium für Festkörperphysik, ETH-Hönggerberg
Bernhard Christian, Prof.	Département de Physique, Université de Fribourg
Blatter Johann W., Prof.	Institut für Theoretische Physik, ETH-Hönggerberg
Büttiker Markus, Prof.	Département de Physique Théorique, Université de Genève
Decroux Michel, Prof.	Dép. de Physique de la Matière Condensée, Université de Genève
Degiorgi Leonardo, Prof.	Laboratorium für Festkörperphysik, ETH-Hönggerberg
De Rooij Nico, Prof.	SAMLAB, EPFL, Neuchâtel
Eckert Daniel, Dr.	Bruker-Biospin, Fällanden
Esslinger Tilman, Prof.	Institut für Quantenelektronik, ETH Hönggerberg
Fischer Øystein, Prof.	Dép. de Physique de la Matière Condensée, Université de Genève
Flükiger René, Prof.	Dép. de Physique de la Matière Condensée, Université de Genève
Forró László, Prof.	Laboratoire de Nanostructures et Nouveaux Matériaux Electroniques, EPF Lausanne
Giamarchi Thierry, Prof.	Dép. de Physique de la Matière Condensée, Université de Genève
Giannini Enrico, Dr.	Dép. de Physique de la Matière Condensée, Université de Genève
Grioni Marco, Prof.	Laboratoire de spectroscopie électronique, EPF Lausanne

Topics

In the last twenty years, numerous new electronic materials have been discovered with interesting and often complex crystalline structures and outstanding new electronic properties. These new striking properties are found in some magnetic, ferroelectric and superconducting compounds. All these compounds have a large potential for applications and we believe that they will play a key role in advanced future electronic devices. Among the materials displaying these unexpected exceptional properties, many share in common a low dimensionality and a low carrier density. Most of them are complex oxide systems and, in many of these materials, electronic interactions play an important role making these systems very difficult to treat theoretically. Another characteristic of these systems is that they often have competing ground states, for instance magnetic and superconducting, which makes them very sensitive to many external parameters, leading to interesting functionalities. In MaNEP, the main goals of our NCCR are to develop a basic understanding of these new materials, to prepare for their applications, and to train young scientists in this important field for future electronic applications. After the end of the third phase, these topics will be pursued at the University of Geneva with many of the present members of MaNEP.

Jaccard Didier, Prof.	Dép. de Physique de la Matière Condensée, Université de Genève
Karpinski Janusz, Dr.	Laboratorium für Festkörperphysik, ETH-Hönggerberg
Keller Hugo, Prof.	Institut für Physik, Universität Zürich
Kenzelmann Michel, Dr.	Laboratory for Developments and Methods, PSI Villigen
Mesot Joël, Prof.	PSI Villigen
Mila Frédéric, Prof.	Institut de Physique Théorique, EPF Lausanne
Morenzoni Elvezio, Dr.	Laboratory for Muon-Spin Spectroscopy, PSI, Villigen
Morpurgo Alberto, Prof.	Dép. de Physique de la Matière Condensée, Université de Genève
Niedermayer Christof, Dr.	Laboratory for Neutron Scattering, PSI Villigen
Ott Hans-Rudolf, Prof.	Laboratorium für Festkörperphysik, ETH-Hönggerberg
Paruch Patrycja, Prof.	Dép. de Physique de la Matière Condensée, Université de Genève
Patzke Greta, Prof.	Anorganisch Chemisches Institut, Universität Zürich
Renner Christophe, Prof.	Dép. de Physique de la Matière Condensée, Université de Genève
Rice T. Maurice, Prof.	Institut für Theoretische Physik, ETH-Hönggerberg
Ronnow Henrik, Prof.	Laboratoire de magnétisme quantique, EPF Lausanne
Sigrist Manfred, Prof.	Institut für Theoretische Physik, ETH-Hönggerberg
Staub Urs, Dr.	Swiss Light Source, PSI Villigen
Triscone Gilles, Dr.	Hepia, Genève
Triscone Jean-Marc, Prof.	Dép. de Physique de la Matière Condensée, Université de Genève
Troyer Matthias, Prof.	Institut für Theoretische Physik, ETH-Hönggerberg
van der Marel Dirk, Prof.	Dép. de Physique de la Matière Condensée, Université de Genève
Weidenkaff Anke, Prof.	Festkörperchemie und Katalyse, EMPA Dübendorf und Departement für Chemie und Biochemie, Universität Bern
Willmot Philip, Prof.	Swiss Light Source, PSI Villigen
Yvon Klaus, Prof.	Laboratoire de Cristallographie, Université de Genève
Zheludev Andrey, Prof.	Laboratory for Neutron Scattering, PSI Villigen

Members of the Scientific Committee

Degiorgi Leonardo, Prof.	Laboratorium für Festkörperphysik, ETH-Hönggerberg
Fischer Øystein, Prof.	Dép. de Physique de la Matière Condensée, Université de Genève
Forró László, Prof.	Laboratoire de Nanostructures et Nouveaux Matériaux Electroniques, EPF Lausanne
Giamarchi Thierry, Prof.	Dép. de Physique de la Matière Condensée, Université de Genève
Mila Frédéric, Prof.	Institut de Physique Théorique, EPF Lausanne
Morpurgo Alberto, Prof.	Dép. de Physique de la Matière Condensée, Université de Genève
Renner Christoph, Prof.	Dép. de Physique de la Matière Condensée, Université de Genève
Sigrist Manfred, Prof.	Institut für Theoretische Physik, ETH-Hönggerberg,
Staub Urs, Dr.	Swiss Light Source, PSI Villigen
Triscone Jean-Marc, Prof.	Dép. de Physique de la Matière Condensée, Université de Genève
van der Marel Dirk, Prof.	Dép. de Physique de la Matière Condensée, Université de Genève
Zheludev Andrey, Prof.	Laboratory for Neutron Scattering, PSI Villigen

Communication

- The SupraFête in 2007: a big event to celebrate 20 years of high temperature superconductors
- The PhysiScope: official inauguration in 2008
- Movie: "Superconductivity: a short story of an enduring enigma"
- Exhibition and brochure illustrated by Swiss cartoonist "Mix&Remix"
- Partnerships with CERN: open doors, special exhibition, conferences
- Participation in the events of UniGE's 450th anniversary
- Telecom World 2009: exceptional KTT conference " A Quantum Leap for Telecommunications – Today and Tomorrow", organized by three NCCR
- MaNEP brochures: general presentation & KTT
- Electronic Newsletter
- Website: regular updates and improvements

Third Party Cooperation

(in progress)

Programme

- CMA (FP6-NMP)
- ECOM
- FUNCARS (FP5)
- INTAS (FP6-NIS)
- NES
- Pishift (ESF)
- PNANO-ANR
- SCOPES (SNSF)
- SINPHONIA (FP 6)
- THIOX (ESF)

Research Institutions

- Centre de Physique Théorique, Ecole Polytechnique, Palaiseau, FR
- Centre de Recherches sur Tres Basses Temperatures, CNRS, Grenoble, FR
- Centre for Nanotechnology, University College London, GB
- Chimie du Solide et Inorganique Moleculaire, Université de Rennes, FR
- Condensed Matter Physics and Materials Sciences Dept., Brookhaven National Laboratory, Upton, New York, US
- Departament de Fisica, Universitat de les Illes Balears, Palma de Mallorca, ES
- Dépt. de génie électrique, Ecole Polytechnique, Montreal, CA
- Dept. de Physique Thèorique des Matériaux, Université de Liège, BE
- Dept. of Applied Physics and Physics, Yale University, New Haven, US
- Dept. of Applied Physics, Osaka University, JP

- Dept. of Physics and Astronomy, Rutgers University, Piscataway, US
- Dept. of Physics and Astronomy, State University of New York (SUNY), Stony Brook, US
- Dept. of Physics and Astronomy, University of Rochester, US
- Dept. of Physics Solid State Theory, Lund University, SE
- Dept. of Physics, Louisiana State University, Baton Rouge, US
- Dept. of Physics, Stanford University, US
- Dept. of Physics, University La Sapienza, Rome, IT
- Dept. of Physics, University of Wisconsin-Milwaukee, US
- Dept. of Superconductivity, University of Tokyo, JP
- Dipartimento di Fisica, Politecnico di Milano, IT
- Dipartimento di Fisica, Università di Genova, IT
- Division of X-ray Physics, Dept. of Physical Sciences, University of Helsinki, FI
- Ecole Superieure d'Ingénieurs d'Annecy, Lab. d'instrumentation et des Matériaux, Université de Savoie, Annecy, FR
- Electrical & Computer Engineering, University of Rochester, GB
- Elettra Synchrotron light laboratory, AREA Science Park, Trieste, IT
- Faculty of Mathematics and Natural Sciences, University of Leiden, NL
- H.H. Wills Physics Laboratory, University of Bristol, GB
- IBM, T.J. Watson Research Center, Yorktown Heights, US
- Inst. Franche Comté Electronique Mécanique Thermique et Optique - Sciences et Technologies (FEMTO-ST),
- Lab. de Physique et de Métrologie des Oscillateurs (LPMO), Université de Besançon, FR
- Inst. für Festkörperphysik (IFP), Forschungszentrum Karlsruhe, DE
- Inst. für Festkörperphysik, Technische Universität, Wien, AT
- Inst. für Synchrotronstrahlung, Forschungszentrum Karlsruhe, DE
- Inst. für Theoretische Physik III, Universität Stuttgart, DE
- Inst. Non Linéaire de Nice, Université de Sophia Antipolis, Nice, FR
- Inst. for Physical Electronics, University of Stuttgart, DE
- Inst. for Physics, Faculty of Mathematics and Natural Sciences, University of Augsburg, DE
- Inst. for Planetary Research, German Aerospace Center (DLR), Berlin, DE
- Inst. for Solid State Physics, University of Tokyo, JP
- Inst. of Metal Physics, Ural Division, Russian Academy of Sciences, Ekaterinburg, RU
- Inst. of Micro and Nano Electronic Systems, University of Karlsruhe, DE
- Inst. of Physics, Dept. of Experimental Physics, Budapest University of Technology and Economics, HU
- Inst. of Physics, Polish Academy of Sciences (PAS), Warsaw University, PL
- Inst. of Physics, Superconductor Science and Technology, Zagreb, HR
- Inst. of Solid State Physics (ISSP), Kashiwa, JP

Materials with Novel Electronic Properties – Basic Science and Applications

NCCR MaNEP

Achievements of the previous years

Science

In MaNEP phase III, the scientific activities are organized around eight projects. The idea is to centre our efforts on the key questions in the area of MaNEP. Project 1, "Novel phenomena at interfaces and in superlattices" wants to demonstrate novel functionalities at oxide and organic interfaces. The specific aim is the discovery, understanding, and control of novel properties at artificially engineered interfaces. In Project 2, "Materials for future electronics", electronic devices and nanostructures for the investigation of materials with novel electronic properties will be used. The two main classes of materials addressed are heterostructures of transition metal oxides and carbon-based materials. New collaborations with the industry have started in the frame of Project 3, "Electronic materials for energy systems and other applications". They are based on technologies developed in MaNEP Phases I and II. Project 4, "Electronic properties of oxide superconductors and related materials", focuses on the microscopic origin of superconductivity and other states of matter with which it competes. Project 5, "Novel electronic phases in strongly correlated electron systems", complements Project 4 with work on the wide class of materials exhibiting special properties due to the presence of strong local correlation between the position and the motion of electrons. The goal of Project 6, "Magnetism and competing interactions in bulk materials", is to investigate a panoply of remarkable phenomena due to conflicts and competition between various degrees of freedom of the electrons. The leitmotif for Project 7, "Electronic materials with reduced dimensionality" is based on the fact that low-dimensional systems have features which are absent or less expressed in 3D materials, such as spin-charge separation or strong fluctuations. The aim of Project 8, "Cold atomic gases as novel quantum simulators for condensed matter", is to use cold atoms to realize model systems with an unprecedented level of control and tunability, allowing many issues pertinent to the field of strong correlations to be tested.

Know-how and technology transfer

MaNEP has established several collaborations with industry and the HES-Geneva in different domains where MaNEP skills and materials knowledge is needed. These collaborations are carried out within project 3 described above. A first spin-off company "PHASIS" is active in the field of thin film fabrication and build on know how developed in MaNEP. MaNEP is also at the origin of a project of reinforced collaboration between the Office de Promotion des Industries et des Technologies (OPI), the HES-Geneva and the University of Geneva.

Education and advancement of women

After having co-organised a summer school with PSI in 2002 in Zuoz, MaNEP organized two successful summer schools (2004, 2006) and one winter school (2009) at Saas-Fee. About 70 students followed lectures given by international experts. A large part of the students were MaNEP doctoral students, but the school also admitted students from other countries. The next winter school is planned for January 2011. The MaNEP doctoral program has been launched at the University of Geneva and the first courses started in autumn 2008.

MaNEP organises since 2004 summer internships for female students, giving the latter a chance to integrate research groups at the different universities and federal institutes in MaNEP. These internships are very appreciated by the participants. A young associate professor, Dr. Patrycja Paruch was appointed at the University of Geneva in 2007.

Communication and outreach

MaNEP has carried out ambitious communication/outreach projects, especially in the last 3 years. A special event called the SupraFête gathered over 1500 people who came to discover superconductivity. This provided the opportunity to create new PR tools: a new movie, a humorous exhibition - and brochure - illustrated by Swiss cartoonist Mix&Remix. In autumn 2008, the PhysiScope was launched; it is a public demolab to promote today's physics in a stimulating way, initiated and implemented by MaNEP, in collaboration with the Physics Section of UniGE. 2008 was also marked by fruitful PR collaborations with CERN: MaNEP participated in the LHC's Open Doors and organized a 3-month exhibition. In 2009, MaNEP partnered with the artistic company Exos to prepare an artistic performance featuring superconducting levitation. A limited public discovered a sample of this surprising show during ITU Telecom World 2009.

Further information see www.manep.ch

Statistical Input – Output Data

Funding source (CHF)	Year 9	Year 10	Year 11	Year 12	Total	%
SNSF funding	4 615 000[6]	3 615 000[6]	2 500 000	800 000	11 530 000	15
Self-funding from home institution[1]	3 128 380	3 666 834	4 323 259	7 252 594	18 371 067	24
Self-funding from project participants	10 917 950[6]	10 662 550[6]	10 328 150	8 920 550	40 829 200	54
Third-party funding[2]	1 558 205[6]	1 558 205[6]	1 058 205	1 058 205	5 232 820	7
Total	20 219 535	19 502 589	18 209 614	18 031 349	75 963 087	100

Personnel[3]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	FR	IT	RU	AT	
Management	5.66[4]	7	35	13	65	14	0	1	2	0	0	3
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	97	17	18	80	82	30	13	8	7	2	2	35
Postdoctoral students	64	14	22	50	78	8	5	9	6	4	0	32
Research associates	0	0	0	0	0	0	0	0	0	0	0	0
Senior researchers[5]	134	6	4	128	96	56	11	11	7	8	4	37
Other staff	28	2	7	26	93	18	2	3	3	0	0	2
Total	328.66	46	13	297	87	126	31	32	25	14	6	109

[1] Personnel costs, equipment and consumables, not included infrastructure and basic equipment
[2] Not included is CTI funding (cf. page 6). Since the start of the NCCR 3 project has been funded by CTI at a total amount of 2,8 million CHF.
[3] Persons involved in the NCCR in the last reporting period (12 months)
[4] Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training
[5] Including leaders of the individual projects and other organisational units of the NCCR
[6] Included funding of economic stimulus package projects (cf. project list)

Advisory Board

Blank Dave, Prof.	Technische Natuur Wetenschappen, University of Twente, Enschede, NL
Cava Robert, Prof.	Department of Chemistry, Princeton University, USA
Georges Antoine, Prof.	Centre de Physique Théorique, Ecole Polytechnique, Palaiseau, FR
Jerome Denis, Prof.	Lab. de Physique des Solides, Université Paris-Sud Orsay, Orsay, FR
Millis Andrew, Prof.	Departement of Physics, Columbia University, USA
Sawatzky George, Prof.	Physics Department, University of British Columbia, Vancouver, CA

Evaluation and Monitoring by the Swiss National Science Foundation (SNSF)

Members of the Review Panel

Leiderer Paul, Prof. (Chair)	Swiss National Science Foundation, Berne, CH
Claeson Tord, Prof.	Department of Nanotechnology and Nanoscience, Chalmers /Göteborg Universities, Göteborg, SE
Deutscher Guy, Prof.	School of Physics and Astronomy, Tel Aviv University, IL
Ensslin Klaus, Prof.	Swiss National Science Foundation, Berne, CH
Hallberg Karen, Prof.	Centro Atomico Bariloche, Bariloche, AR
Larbalestier David, Prof.	Department of Mechanical Engineering, Tallahassee, US
Raveau Bernard, Prof.	Laboratoire de Cristallographie et Sciences des Matériaux (CRISMAT),Université de Caen, FR
Schlom Darrell G., Prof.	Materials Research Laboratory, Pennsylvania State University, US
Siegwart Roland, Prof.	Swiss National Science Foundation, Berne, CH
Vollhardt Dieter, Prof.	Center for Electronic Correlations and Magnetism, University of Augsburg, Augsburg, DE

NCCR Office SNSF

Bachmann Stefan, Dr. — Schweiz. Nationalfonds, Wildhainweg 3, 3001 Bern, phone: + 41 (0)31 308 23 49, fax: + 41 (0)31 305 29 71, sbachmann@snf.ch

- Inst. of the Low Temperature Physics, Polish Academy of Sciences (PAS), Wroclaw, PL
- Inst. dei Materiali per Elettronica e Magnetismo, Parma-Fontanini, IT
- Inst. Nazionale di Ricerca Metrologica (INRIM), Torino, IT
- International Physics Center, Donostia University, ES
- Istituto Nazionale per la Fisica della Materia (INFM-LAMIA), Dipartimento di Fisica, Politecnico di Torino, IT
- Istituto Nazionale per la Fisica della Materia, CNR, Trieste, IT
- Lab. de Physique des Solides, Faculté des sciences d'Orsay, Université Paris XI, FR
- Lab. de Physique des Solides, Université d'Orsay, Paris, FR
- Lab. de Physique Théorique des Liquides, Université Pierre et Marie Curie/CNRS, Paris, FR
- Lab. de Physique Théorique et Modèles Statistiques (LPTMS), CNRS/Paris XI Université, FR
- Lab. de Physique Théorique, Université Paul Sabatier, Toulouse, FR
- Lab. des Matériaux Physiques de Grenoble, FR
- Laboratory of Applied and Solid State Physics, University of Groningen, NL
- London Center for Nanotechnology, University College London, GB
- Max Planck Inst. for Chemical Physics, Dresden, DE
- Max Planck Inst. for Metal Research, Stuttgart, DE
- Max-Planck-Inst. für Polymerforschung, Mainz, DE
- Naval Research Lab., theory group, Washington, US
- Physics Dept., Columbia University, New York, US
- Physics Dept., University of Massachusetts, Amherst, US
- Research Inst. for Solid State Physics and Optics, University of Budapest, HU
- Rutherford Appleton Laboratory, ISIS Innovation Ltd, University of Oxford, GB
- School of Chemical and Physical Sciences, Victoria University, Wellington, NZ
- School of Physics and Astronomy, University of Birmingham, GB
- School of Physics and Astronomy, University of St. Andrews, GB
- Spallation Neutron Source (SNS), Oak Ridge National Laboratory, US
- The Weizmann Inst. of Science, Rehovot, IL
- Theoretical Physics Research, University of Birmingham, GB

Economy / Industry

- ABB Switzerland Ltd Corporate Research, Baden, CH
- AGIE-Charmilles, Meyrin, CH
- Bruker BioSpin AG/ Bruker Optics GmbH, Fällanden, CH
- IBM Research Laboratory GmbH, Rüschlikon, CH
- METROLAB Instruments SA, Geneva, C
- Microsoft Research, Santa Barbara, US
- Nirva Industries SA, Genève, CH
- Phasis Sàrl, Plan-les-Ouates, CH
- ROLEX SA, Genève, CH
- SwissNeutronics, Klingnau, CH
- Toyota Research & Development, Nagoya, J

Others

- Feasibility project CTI, Geneva, CH

Nanoscale Science – Impact on Life Sciences, Sustainability, Information and Communication Technologies

NCCR Nanoscale Science

Home Institution
University of Basel

Start of the NCCR
June 1, 2001

NCCR Management

Director
Schönenberger Christian, Prof.
phone: + 41 (0)61 267 36 90
christian.schoenenberger@unibas.ch

Deputy Director
Loss Daniel, Prof.
phone: + 41 (0)61 267 37 49
daniel.loss@unibas.ch

Scientific Communication
Gerber Christoph, Prof. Dr.
phone: + 41 (0)61 267 07 60
christoph.gerber@unibas.ch

Administration
Fischer Audrey, Mrs.
phone: + 41 (0)61 267 12 38
audrey.fischer@unibas.ch

Communications
Gyalog Tibor, Dr.
phone: +41 (0) 61 267 14 72
tibor.gyalog@unibas.ch

Education and Training
Meier Wolfgang, Prof.
phone: +41 (0)61 267 38 02
wolfgang.meier@unibas.ch

Advancement of Women
Hornstein Meret, Mrs.
phone: +41 (0)61 267 15 21
meret.hornstein@unibas.ch

Address
Swiss Nanoscience Institute
NCCR Nanoscale Science
Universität Basel
Klingelbergstrasse 82
4056 Basel

phone: + 41 (0)61 267 12 38
fax: + 41 (0)61 267 34 08
audrey.fischer@unibas.ch

Web Address
www.nanoscience.ch

Research

Module Nanobiology
Heads: D. Klostermeier, R. Lim

Bio-Synthetic Cellular Nanomachines
H: R.Y.H. Lim

Observing Biological Nanomachines by Single Molecule Spectroscopy
H: D. Klostermeier

AFM-SECM to Image Structure and Function of Proteins and Cells
H: P. Frederix

Photonic Force Nanospectroscopy in Living Systems
H: S. Jeney

Correlating Tumorogenic Effects with the Mechanobiology of Cells in 3D Cultures
H: C.-A. Schönenberger

Applying Cantilever-Array Technology
H: Ch. Gerber

Complex Nanosystems for Medical Application based on Polymer Carriers
H: P. Hunziker

Module Quantum Computing and Quantum Coherence
Heads: D. Loss, K. Ensslin

Qubit and Spintronics (theory)
H: D. Loss

Experimental Manipulation of Quantum Systems
H: K. Ensslin

Interference of Spin-Orbit Interaction
H: G. Salis

Quantum Coherence in Nanoscale Systems
H: D. Zumbühl

Mesoscopic Nuclear Spin Ensembles
H: A. Imamoglu

Quantum Coherence and Quantum Computing in Superconducting Nanostructures (theory)
H: C. Bruder

Module Atomic and Molecular Nanosystems
Heads: E. Meyer, H.-J. Hug

Energy Dissipation of Nanosystems
H: E. Meyer

Nanomagnetism
H: H.-J. Hug

Molecular Machinery
H: G. Meyer, R. Fasel

Atomistic Simulations
H: S. Goedecker

Coupling Ultrasensitive Cantilevers to Mesoscopic Devices
H: M. Poggio

Module Molecular Electronics
Heads: C. Schönenberger, T. A. Jung

Molecular Thin Film Devices
H: T. A. Jung

Molecular Nanowires
H: C. Schönenberger

Molecular Junctions
H: M. Calame

Plasmonic Junctions
H: O.J.F. Martin

Single Molecule Switches and Potentiometers
H: M. Mayor

Donor-Acceptor Architectures for Photovoltaics
H: F. Diederich

Module Self-Assembly at Surfaces
Heads: F. Diederich, W. Meier

Self-Assembly at Surfaces
H: F. Diederich, T. Jung, E. Constable

Self-Assembling Peptides and Polymers
H: W. Meier, H. Wennemers, T. Ward, T. Pfohl

Metal-based self-assembled nanostructures
H: K. M. Fromm, F. Montagne, R. Pugin, M. Textor

Module Supplementary Research Activities
Head: C. Schönenberger

Nanosafety
H: P. Gehr

Nanoethics
H: Stella Reiter-Theil, N. Stingelin

Economic stimulus package

Multimodal AFM for Applied Material Recognition (MAAM)
H: Meyer E., Brändlin D.

Development of Robust and Standardized Cantilever Sensors
H: Gerber Ch., Knowles T., Hubler U.

Nanocomposite Polymer Additives: Characterization and Enhancement of Dispersion Performance
H: Gobrecht J., Height M., Siegenthaler H.U.

Biophysical and immunological profiling of a nanoparticle nicotine vaccine
H: Aebi U., Forer K.

Platforms

Industrial Applications
H: J. Gobrecht, P. Reimann

Nanocurriculum

Bachelor and Master Degree in Nanoscience at University of Basel
H: Meier W.
Contact: Spieler K., Ms.
phone: +41 (0) 61 267 16 05
Katrein.Spieler@unibas.ch

Topics

Nanoscale science's research focuses at the nanometer scale. This is the scale of the matter building blocks, namely, atoms and molecules. Therefore, at this scale the traditional scientific disciplines merge, giving place to a highly interdisciplinary interaction between physicists, chemists, physicians, biologists, pharmacologists, computer scientists and engineers. This is clearly reflected in the very interdisciplinary work carried out within the NCCR Nanoscale Science, where scientists from different disciplines come together to gain insight in this field and develop further the methods, scientific tools and understanding achieved. The goal of the teams taking part in this network is to come up with outstanding scientific achievements that will secure the position of the NCCR as a leader in the nanoscale science. The different and strongly interconnected topics covered by the researchers include: Impact of nanoscale science on life sciences and medicine, biology at the nanoscale, molecular machinery and nanorobotics, quantum devices and systems for computing and communication and quantum coherence, nanoscale science at the ultimate limits, nanomaterials ranging from biological systems, carbon-nanotubes to nanoclusters and molecular electronics.

Heads of Individual Research Projects and Subprojects

Bruder Christoph, Prof.	Departement Physik, Universität Basel
Burkhard Peter, Dr.	Biozentrum, Universität Basel
Calame Michel, Dr.	Departement Physik, Universität Basel
Constable Edwin, Prof.	Departement Chemie, Universität Basel
Diederich François, Prof.	Laboratorium für Organische Chemie, ETH Zürich
Ensslin Klaus, Prof.	Laboratorium für Festkörperphysik, ETH Zürich
Fasel Roman, Dr.	Abteilung Oberflächen, Beschichtungen, Magnetismus, EMPA
Frederix Patrick, Dr.	Biozentrum, Universität Basel
Fromm Katharina, Prof.	Departement Chemie, Universität Basel
Gerber Christoph, Prof.	Departement Physik, Universität Basel
Gobrecht Jens, Prof.	Paul Scherrer Institut, Villigen
Goedecker Stefan, Prof.	Departement Physik, Universität Basel
Hegner Martin, Dr.	Departement Physik, Universität Basel
Heinzelmann Harry, Dr.	CSEM Neuchâtel
Hug Hans Josef, Prof.	Nanoscale Materials Science, EMPA
Hunziker Patrick, Prof.	Dept. of internal medicine, Cardiology, University Hospital Basel
Imamoglu Atac, Prof.	Institute of Quantum Photonics, ETH Zürich
Jeney Sylvia, Prof.	Laboratoire de nanostructures et nouveaux matériaux électroniques, EPFL
Jung Thomas, Prof.	Lab for Micro- and Nanostructures, Paul Scherrer Institut, Villigen PSI
Klok Harm-Anton, Prof.	Laboratoire des Polymères, EPF Lausanne
Klostermeier Dagmar, Prof.	Biozentrum, Universität Basel
Lim Roderick Y.H., Prof.	Biozentrum, Universität Basel
Loss Daniel, Prof.	Departement Physik, Universität Basel
Martin Olivier F., Prof.	EPF Lausanne
Mayor Marcel, Prof.	Departement Chemie, Universität Basel
Meier Wolfgang, Prof.	Departement Chemie, Universität Basel
Meyer Ernst, Prof.	Departement Physik, Universität Basel
Meyer Gerhard, Dr.	IBM Research Laboratory, Rüschlikon
Montagne Franck, Dr.	CSEM
Pfohl Thomas, Prof.	Departement Chemie, Universität Basel
Pieles Uwe, Prof.	FHNW Life Sciences, Muttenz
Poggio Martino, Prof.	Departement Physik, Universität Basel
Pugin Raphaël, Dr.	CSEM
Reiter-Theil Stella, Prof.	Institut für Angewandte Ethik und Medizinethik, Universität Basel
Schönenberger Christian, Prof.	Departement Physik, Universität Basel
Schönenberger Cora-Ann, Dr.	Biozentrum, Universität Basel
Salis Gian, Dr.	IBM Research Laboratory, Rüschlikon
Stingelin Nicola	Universität Basel
Textor Marcus, Prof.	Oberflächentechnik, ETH Zürich
Ward Thomas, Prof.	Departement Chemie, Universität Basel
Wennemers Helma, Prof.	Departement Chemie, Universität Basel
Zumbühl Dominik, Prof.	Departement Physik, Universität Basel

Public Relations

- News on website
- Information Brochures (in German/English)
- Electronic Newsletter nanonews
- Annual Reports

Third Party Cooperation

(in progress)

Programmes

- Frontiers (FP6)
- HYSWITCH
- NanoBio-RAISE)
- Pico-Inside

Research Institutions

(foreign only)

- Abteilung Molekulare Medizin, Max-Planck-Institut für Biochemie, Martinsried, DE
- Anorganische Chemie, Universität Heidelberg, DE
- Applied and Environmental Chemistry Dept., University of Szeged, HU
- Australian Commonwealth Scientific and Research organization (CSIRO), Melbourne, AU
- Biophysical Chemistry, University of Bonn, DE
- Biophysical Engineering, University of Twente, NL
- Biotechnologisches Zentrum, TU Dresden, DE
- Center for Nanoscience, Ludwig-Maximilians-Universität, Munich, DE
- Center for Spintronics and Quantum Computation, University of California, Santa Barbara, US
- Centre d'Elaboration de Matériaux et d'Etudes Structurales, Centre National de la Recherche Scientifique, Toulouse, FR
- Centre for Research on Adaptive Nanostructures and Nanodevices, Trinity College Dublin, IE
- Consiglio Nazionale delle Ricerche, Istituto per la Sintesi Organica e la Fotoreattivita, Bologna, IT
- Dept. de Chimie, Institut de Science et d'Ingénierie Supramoléculaires, Strasbourg, FR
- Dept. of Biochemistry, Duke University, Chapel Hill, US
- Dept. of Biophysical and Electronic Engineering University of Genoa, IT
- Dept. of Chemistry, Clemson University, US
- Dept. of Chemistry, Lab. II, University of Copenhagen, DK
- Dept. of Chemistry, McMaster University, Hamilton, CA
- Dept. of Chemistry, University of Durham, GB
- Dept. of Chemistry, University of Washington, Seattle, US
- Dept. of Condensed Matter Physics, Josef Stefan Institute, Ljubliana, SI
- Dept. of Molecular and Cellular Interactions, Vrije Universiteit Brussel, BE

- Dept. of Physical Chemistry, University of Mainz, DE
- Dept. of Physics McGill University, Montreal, CA
- Dept. of Physics, Bilkent University, Bilkent, TR
- Dept. of Physics, Columbia University, New York, US
- Dept. of Physics, Harvard University, Cambridge, US
- Dept. of Physics, Ohio State University, Columbus, US
- Dept. of Solid State Physics, University of Ulm, DE
- Dipart. di Chimica Organica e Industriale e Consorzio Interuniversitario Nazionale per la Scienza Tecnologia dei Materiali, Unità di Ricerca, Parma, IT
- Dipart. di Chimica, Istituto per la Sintesi Organica e la Fotoreattività, Bologna, IT
- Dipart. di Farmacia, Universita degli studi di Trieste, IT
- Division of Structural Studies, MRC Laboratory of Molecular Biology, Cambridge, GB
- Divisions of Chemistry and Medicine, University College of London, GB
- Electrochimie et Physiochimie des Complexes et des Systemes Interfaciaux, Université Louis Pasteur, Strasbourg, FR
- Fachbereich Chemie Universität Marburg, DE
- Fachbereich II: Biologie und Chemie, Universität Bremen, DE
- Fachbereich Physik, Universität Konstanz, DE
- Faculté des Sciences, Université de Namur, Facultés Universitaires Notre-Dame de la Paix, Namur, BE
- Fisica de la Materia Condensada, Universidad Autonoma, Madrid, ES
- Forschungsinstitut für Technik- und Wissenschaftsgeschichte, Deutsches Museum, Müchen, DE
- Graduiertenkolleg „Technisierung und Gesellschaft", Technische Universität Darmstadt, DE
- IBM Almaden Research Center, San Jose, US
- Inst. de Physique et Chimie des Matériaux de Strasbourg (IPCMS), Strasbourg, FR
- Inst. für Organische Chemie und Biochemie, Universität Freiburg, DE
- Inst. of Applied Physics, National Academy of Science of Belarus, Minsk, RU
- Inst. of Materials Research and Engineering (IMRE), Singapore, SG
- Interdisciplinary Nanoscience Center (iNANO), Dept. of Physics and Astronomy, University of Aarhus, DK
- IRC in Nanotechnology, University of Cambridge, GB
- Kavli Institute of Nanoscience Delft, Delft University of Technology, NL
- M. D. Anderson Cancer Center, University of Texas, Houston, US
- Materials Dept., University of California, Santa Barbara, US
- Mecánica de los Medios Continuos y Teoría de las Estructuras, Universidad de Castilla La Mancha, Almaden, ES
- Micro and Nano Engineering, Delft Centre for Mechatronics and Microsystems, Delft, NL
- Molecular Parasitology, Walter Reed Army Institute of Research, Silver Spring, US

Nanoscale Science – Impact on Life Sciences, Sustainability, Information and Communication Technologies

NCCR Nanoscale Science

Achievements of the previous years

Meeting the public interest

The public interest in topics dealing with nanoscience and nanotechnology has grown significantly over the last years. In order to meet this increasing demand for information, the NCCR Nanoscale Science has participated in a variety of outreach events. Together with the academies SATW and sc|nat the members of the NCCR Nanoscale Science showed their work at a variety of sites and occasions. Additionally, the researchers participated actively in the public discussion about the economic potential of nanoscience, visions for the future and the debate on safety and risk in nanotechnology.

In addition, nano-technology has become interesting for new industry branches. Small Spin-off enterprises as well as multinational companies are entering the field. The Nanotechday is a platform where representatives from industry, economics and politics meet once a year. It has become an important networking event for researchers and actual or future users of nanotechnology.

Beside all other activities, basic research remained our main task. Numerous papers have been published in journals of high international reputation. Some of our research highlights were mentioned in daily newspapers like Basler Zeitung or the New York Times.

Scientific Highlights

For the first time, a three-dimensional image of a biological virus has been reported. A new technique has been used that has some similarity to magnetic resonance imaging. The results were 100 million times better in terms of resolution with the new technique, magnetic resonance force microscopy. This new technique is less destructive of biological samples than the traditional ones and in addition the new microscope can peer beneath the surface of nanoscopic structures.

A tiny electronic device, less than two thousandths of a millimeter across, has been used to produce and then split 'entangled' pairs of electrons. This technique may open the way to new tests of quantum mechanics in the solid state, and provides a possible component for quantum computing on a chip. The new device has a superconducting contact, in which the electrons are naturally entangled in pairs. The superconductor is connected in a 'Y'-configuration to two quantum dots – nanoscale semiconducting islands that can be configured to accept only one electron at a time. In this way, entangled electron pairs from the superconductor can be split apart, with each one travelling down a different branch of the 'Y'.

A major step forward has been made in the development of addressable and functional supramolecular structures. Single porphyrin molecules have been incorporated into a self-assembled perylene network. The porphyrin molecules are comparable to tiny gears and turning like rotors in the pores of the network. On this network surface, they behave totally different from porphyrin molecules in a solid state body, in solution or in the gas phase. The researchers are able to slow down the molecule movement by bringing the tip of a scanning tunneling microscope into very close proximity to an individual molecule.

Further information see www.nccr-nano.org.

Statistical Input – Output Data

Funding source (CHF)	Year 9	Year 10	Year 11	Year 12	Total	%
SNSF funding	4 705 000[6]	3 285 000[6]	1 700 000	1 500 000	11 190 000	39
Self-funding from home institution[1]	2 190 000	1 470 000	1 470 000	1 470 000	6 600 000	23
Self-funding from project participants	367 100[6]	293 500[6]	0	0	660 600	2
Third-party funding[2]	2 804 885[6]	2 686 185[6]	2 468 000	2 468 000	10 427 070	36
Total	10 066 985	7 734 685	5 638 000	5 438 000	28 877 670	100

Personnel[3]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	FR	CN	IT	RU	
Management	2.99[4]	3	38	5	63	6	1	0	0	0	0	1
Master students	1	0	0	1	100	1	0	0	0	0	0	0
Doctoral students	71	23	32	48	68	20	18	5	5	5	1	17
Postdoctoral students	81	25	31	56	69	13	12	8	7	6	6	29
Research associates	5	3	60	2	40	2	0	1	0	2	0	0
Senior researchers[5]	78	12	15	66	85	35	14	3	2	1	1	22
Other staff	35	6	17	29	83	30	1	1	0	0	0	3
Total	273.99	72	26	207	74	107	46	18	14	14	8	72

[1] Personnel costs, equipment and consumables, not included infrastructure and basic equipment
[2] Not included is CTI funding (cf. page 6). Since the start of the NCCR 8 projects have been funded by CTI at a total amount of 6.8 million CHF. In addition there was close collaboration with TOP NANO 21. At least in 25 projects of this programme technology transfer to the NCCR took place.
[3] Persons involved in the NCCR in the last reporting period (12 months)
[4] Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training
[5] Including leaders of the individual projects and other organisational units of the NCCR
[6] Included funding of economic stimulus package (cf. project list)

Members of the Scientific Advisory Board

Baumeister Wolfgang, Prof.	Max Planck Institute, Martinsried, DE
Binnig Gerd, Prof.	Definiens AG, Munich, DE
Eigler Don, Dr.	IBM Almaden, US
Kroto Sir Harry, Prof.	University of Sussex, GB
Melchers Fritz, Prof.	University of Basel, CH
Quate Calvin, Prof.	Stanford University, US
Rohrer Heinrich, Dr.	Wollerau, CH

Evaluation and Monitoring by the Swiss National Science Foundation (SNSF)

Members of the Review Panel

Folkers Gerd, Prof. (Chair)	Swiss National Science Foundation, Berne, CH
Altshuler Boris, Prof.	Department, of Physics, Columbia University, New York, US
Awschalom David D., Prof.	Center for Spintronics and Quantum Computation University of California, US
Gaub Hermann, Prof.	Lehrstuhl für Angewandte Physik, Universität München, DE
Hüfner Stefan, Prof.	Fachbereich Physik, University of the Saarland, DE
Leiderer Paul, Prof.	Swiss National Science Foundation, Berne, CH
Osterwalder Jürg, Prof.	Swiss National Science Foundation, Berne, CH
Reinhoudt David, Prof.	Faculty of Chemical Technology, University of Twente, NL
von Löhneysen Hilbert, Prof.	Physikalisches Institut, Universität Karlsruhe, DE

NCCR Office SNSF

Bachmann Stefan, Dr. — Schweiz. Nationalfonds, Wildhainweg 3, 3001 Bern, phone: + 41 (0)31 308 23 49, fax: + 41 (0)31 305 29 71, sbachmann@snf.ch

- Nano Ethics Network, University of Aarhus, DK
- Nanofabrication and Characterization Facility, Institute of Materials Research and Engineering, Singapore, SG
- Neuroengineering and Bionanotechnology Group, University of Genova, IT
- Organic Chemistry, University of Florence, IT
- Physical Chemistry, Hungarian Academy of Sciences, Budapest, HU
- Physics Dept., Ben-Gurion University, Jerusalem, IL
- Physics Dept., Harvard University, Cambridge, US
- Physics Dept., Massachussetts Institute of Technology, Cambridge, US
- Physics Dept., McGill University, Montreal, CA
- Physics Dept., University of Regensburg, DE
- Physics, University of Liverpool, GB
- Physik / Chemie, Technische Universität Kaiserslautern, DE
- Physik / Chemie, Universita di Modena, IT
- School of Chemistry, University of Sydney, AU
- School of Mechanical Systems Engineering, Chonnam National University, Gwangjuu, KR
- Scuola Normale Superiore, Pisa, IT
- Surface Science Research Centre, University of Liverpool, GB
- Synthetic chemistry group, Max-Planck-Insititute for Polymer Research, Mainz, DE
- Theoretical and Computational Biophysics Group, University of Illinois, Urbana-Champaign, US
- Universidad de Castilla-La Mancha, Almaden, ES
- Université Paul Cézanne Aix-Marseille III, Centre Scientifique de Saint Jérôme, Marseille, FR
- Walther-Meissner-Inst., Deptartment of Physics, Ludwig-Maximilians-University of Munich, DE

Economy / Industry

- Bell Labs, Lucent Technologies, Murray Hill, US
- BioCure (Schweiz) GmbH, Rebstein, CH
- Bühler AG, Uzwil, CH
- Concentris GmbH, Basel, CH
- Corporate Research, BASF, Strasbourg, FR
- IBM Zürich Research Laboratory, Rüschlikon, CH
- JPK-Instruments AG, Berlin, DE
- Molecular Partners AG, Zürich, CH
- MorphoSys AG, Martinsried, DE
- Nanonis GmbH, Zürich, CH
- Nanosurf AG, Liestal, CH
- Nanoworld AG, Neuchâtel, CH
- Novartis Institutes for BioMedical Research (NIBR), Cambridge, US
- NTT Basic Research Laboratories, Atsugi-shi, JP
- Quantum Science Research Group, Hewlett Packard Laboratories, Palo Alto, US
- Schering AG, Berlin, DE
- Sony Deutschland, Materials Science Laboratory, Stuttgart, DE
- Süss Micro Optics, Neuchâtel, CH
- Veeco Instruments Inc., Santa Barbara, US

Others

- Life Science, Fachhochschule Nordwestschweiz, Muttenz, CH

Quantum Photonics
NCCR Quantum Photonics

Home Institution
Swiss Federal Institute of Technology, Lausanne

Start of the NCCR
July 1, 2001

NCCR Management
Director
Deveaud-Plédran Benoît, Prof.
phone: + 41 (0)21 693 54 96
benoit.deveaud-pledran@epfl.ch

Deputy Director
Faist Jérôme, Prof.
phone: + 41 (0)44 633 72 80
jerome.faist@phys.ethz.ch

Project Officer
Pochon Sandra, Mrs.
phone: + 41 (0)21 693 54 12
sandra.pochon@epfl.ch

Administration and Secretariat
Vaucher Ursula, Mrs.
phone: + 41 (0)21 693 54 15
ursula.vaucher@epfl.ch

Knowledge and Technology Transfer
Pochon Sandra, Mrs.

Education and Training
Pochon Sandra, Mrs.

Media Relations
Pochon Sandra, Mrs.
phone: +41 (0)21 693 54 12

Advancement of Women
Moser Farnaz
phone: +41 (0)21 693 19 81
farnaz.moser@epfl.ch

Berseth Nicole, Mrs.
phone: +41 (0)21 693 00 78
nicole.berseth@epfl.ch

Andrea Fabian Montabert
phone: +41 (0)21 693 00 75
andrea.fabian@epfl.ch

Marion Albertini
phone: +41 (0)21 693 00 75
marion.albertini@epfl.ch

Address
NCCR Quantum Photonics
Post Office Box 123
1015 Lausanne

phone: + 41 (0)21 693 54 15
fax: + 41 (0)21 693 54 10
nccr-qp@epfl.ch

Web Address
http://nccr-qp.epfl.ch

Research
Quantum Optics
Quantum coherence in semi-conductors nanostructures
H: Deveaud P.

Theory of quantum coherence in polaritonic nano devices
H: Savona V.

Quantum communication
H: Gisin N.

Single photon detectors
H: Zbinden H.

Coupling quantum dot spins to nano-cavities
H: Imamoglu A.

Quantum Devices
Cavity quantum optomechanics (cQOM)
H: Kippenberg T.

Photonic crystals devices
H: Houdré R.

Advanced Light Sources
Nitride based light emitters
H: Grandjean N.

Quantum cascade interlevel sources
H: Faist J.

Ultrafast sources from near infrared to X-Rays
H: Keller U.

Economic stimulus package
High-speed single photon counting module
H: Zbinden H., Ribordy G.

TERASCOPE
H: Scalari G., Hvozdara Lubos

Epitaxial structures for blue photonics (EPIBLUE)
H: Grandjean N., Feltin E.

Single mode plasmonic VCSEL's
H: Stanley R., Moser M.

Second generation QKD engine
H: Gisin N., Ribordy G.

Hybrid Light
H: Feurer T., Krainer L.

Technology Platforms, Programmes etc.
Summer School & Workshops
"Monte Verità", "Muenchen-wiler", "Bad Honnef"

Science Bus
Moser F.

Industrial Project and 7P Programs
Pochon S.

Doctoral Program in Quantum Photonics
Martin O.

Scientific camps for young girls: 7-10 and 11-13 years old
Moser F.

Heads of Individual Research Projects

Deveaud-Plédran Benoit, Prof.	Institut de Photonique et d'Electronique Quantiques, EPF Lausanne
Faist Jérôme, Prof.	Institut de Physique, Université de Neuchâtel
Gisin Nicolas, Prof.	Groupe de Physique Appliquée, Université de Genève
Grandjean Nicolas, Prof.	Institut de Photonique et d'Electronique Quantiques, EPF Lausanne
Houdré Romuald, Dr.	Institut de Photonique et d'Electronique Quantiques, EPF Lausanne
Imamoglu Atac, Prof.	Institut für Quantenelektronik, ETH Zürich
Keller Ursula, Prof.	Institut für Quantenelektronik, ETH Zürich
Kippenberg Tobias, Prof.	Institut de photonique et d'électronique quantiques, EPF Lausanne
Savona Vincenzo, Prof.	Group of Theory of Nanosystems, EPF Lausanne
Zbinden Hugo, Dr.	Groupe de Physique Appliquée, Université de Genève

Members of the Advisory Board

Rosencher Emmanuel, Prof. (President)	ONERA, Université Paris-Sud, FR
De Silvestri Sandro, Prof.	Politecnico de Milano, Italy
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Heffernan Jon, Dr.	Sharp Laboratories, Oxford, UK
Kröll Stefan, Prof.	Lund Institute of Technology, Sweden
Riechert Henning, Prof.	Paul Drude Institut, Berlin, DE
Skolnick Maurice, Prof.	University of Sheffield, United Kingdom
Weisbuch Claude	University of California, Santa Barbara, USA

Topics

Since Einstein's famous discoveries in the early 1900s, we know that light exhibits a double nature – it can be considered as both a wave and as a stream of photons. This is the so-called quantum behavior. In the very same way, particles such as electrons bear the same duality. Therefore, at an infinitesimal scale, the interaction of light with matter can be manipulated, revealing novel phenomena that might prove useful.

From this starting point, scientists at the NCCR Quantum Photonics conduct fundamental research as well as develop novel technologies that carry the potential for numerous future applications. Such as: Quantum Cryptography guaranteeing transaction security by preventing hackers from intercepting messages transmitted through an optical link. Quantum Cascade Lasers will take part in NASA's Mars Exploration Program, to study the red planet habitability to assess whether Mars ever was, or is still today, an environment able to support microbial life.

For the third phase 2009-2013 the NCCR QP International Advisory board opted for 10 Projects covering a wide range of fields such as quantum optics, quantum devices and advanced light sources. Besides oriented research and technology transfer, the NCCR Quantum Photonics also supports workshops and scientific camps for 11-13 year old girls demonstrating that mathematics and physics are rewarding. These activities promote and strengthen long-term excellence in the field of photonics in Switzerland.

Achievements of the previous years

Research results

The Quantum Photonics NCCR allows strengthening the quality of research in the field in Switzerland, with outstanding scientific achievements. Since the beginning of the NCCR, more than 1000 papers (out of which 9 hot papers) have appeared in scientific journals and more than 1000 conference presentations have been given by scientists of the different teams. To select just a few, the NCCR is proud of the following ones: 3 of the Project Leaders of the NCCR QP are winners of the European Research Council grants: Prof. Atac Imamoglu, Prof Nicolas Gisin and Prof. Tobias Kippenberg. 3 Project Leaders participated in 2009 to CLEO/IQEC conference as tutorial and invited speakers. NCCR research groups are actively involved in 30 Projects sponsored by the European Community that are a strong foundation for the future of Photonics in Switzerland and for the European Research and Development Programmes: FP7.

Following the impact of IWN 2008 and considering that LED is presently a very hot topic, The NCCR QP decided to organize a dedicated event for professionals and open to the public, the event gathered 350 people and was widely featured in the news (radio, TV and Newspapers)

Spin Offs and Technology Transfer

Many Spin-off companies have been created by NCCR QP Scientists: AlpesLasers, BeamExpress, id Quantique, Timebandwidth. Recently two start ups have been launched by NCCR QP PostDocs: Attolight (Samuel Sonderegger) and NovaGan (Eric Feltin).

Bridging the gap between the fundamentally oriented researches carried out within the NCCR QP and the industrial world has been achieved with the NCCR QP Industrial Project Program. For instance in 2008 BeamExpress secured a first round of investment of 1.3 Mio US$, once the joint industrial project was finished. The successes encountered during the second phase of the NCCR QP, pushed us to further develop this existing program with a new one: "7P Program", whose goal is to promote PostDocs of our network to develop their career in the Swiss Photonics Industry.

Education and training / Advancement of Women

The Photonic Doctoral School is developing a "Tandem Partner Program" allowing PHD's from all over Switzerland to share and exchange their scientific experience. Strong collaboration with the Equal Opportunity Office and the NCCR MICS allows us to leverage on existing initiatives to promote women and youngsters in the scientific world through tangible actions: 6 scientific camps are organized each year, industry visits, networking events and invited guest's seminars. The "Polythèque" has been created in order for youngsters to get in touch with scientific Medias, to learn and to ask questions around afternoon themes. Two major events have been organized the exhibition "Women in Sciences", who gathered around 3000 visitors from March to May 2008, and in May 2009, the "Science Bus" has been launched on the road to improve the contact with the population, and bring science to the people.

Further information see
http://nccr-qp.epfl.ch

Third Party Cooperation
(in progress)

Programmes

- COST
- COST MP0702
- COST288
- COST299
- COSTP11
- CTI 8552.1;2 NMPP-NM
- CTI/KTI
- CTI-PHOTODOT
- EPIXNET
- EU CA-QUROPE
- EU IP SECOQC 2004-2008
- EU-ANSWER
- EU-MOSEL
- IST-VISTA
- NITWAVE
- SNF and DFG
- STIMSCAT
- STREP-Sinphonia
- Teramobile
- ULTRAGAN

Research Institutions
(new cooperations since 2005 only)

- Advanced Technology and Nanoscience (TASC), Trieste, IT
- Applied Physics Integrated Optics Group, Paderborn University, DE
- Centre des Technologies de l'Information, Geneva, CH
- Centre d'Etudes de Saclay, CEA, Gif-sur-Yvette, FR
- Centre d'Etudes de Saclay, CEA-SPAM, Gif-sur-Yvette, FR
- Centre for Quantum Technologies, National University of Singapore, SG
- Clarendon Lab., University of Oxford, GB
- Département de physique, Université de Neuchâtel, CH
- Dept. of Applied Physics, Stanford University, Palo Alto, US
- Dept. of Chemistry, Massachusetts Inst. of Technology (MIT), Boston, US
- Dept. of Physics and Astronomy, Cardiff University, GB
- Dept. of physics, University of Torino, IT
- Dip. Fisica della Materia e Tecnologie Fisiche Avanzate, Università Messina, IT
- Dip. di Fisica A. Volta, University of Pavia, IT
- EMPA, Dübendorf, CH
- Foundation for Fundamental Research on Matter(FOM), Amsterdam, NL
- High Pressure Materials Synthesis Group, Swiss Federal Inst. of Technology Zurich (ETHZ), CH
- Inst. für Physik, Theoretische Physik, Humboldt University of Berlin, DE
- Inst. für Physikalische Chemie, University Wuerzburg, DE

- Inst. of Photonic Science, University of Barcelona, ES
- Inst. of Technology, University of Lund, DK
- Lab. de Chimie de la matière condensée de Paris, Ecole National de Chimie de Paris, FR
- Lab. de physique des nanostructures, Swiss Federal Institue of Technology Lausanne (LPN-EPFL), Lausanne, CH
- Lab. d'Etude des Microstructures, l'Office national d'études et recherches aérospatiales (ONERA), Chatillon, FR
- Lab. en semiconducteurs avancés pour la photonique et l'électronique, Swiss Federal Inst. of Technology Lausanne
- (LASPE-EPFL), CH
- L'Inst. de Photonique et d'Électronique Quantiques (IPEQ), Swiss Federal Inst. of Technology (EPFL), Lausanne, CH
- Matériaux et Phénomènes Quantiques, University of Paris Diderot (MPQ), FR
- Photonics and Semiconductor Nanophysics, University of Technology Eindhoven, NL
- Physics Dept., Université de Genève, CH
- Quantum Optics, Institue of Photonic Sciences, (ICFO), Barcelona, ES
- Unité de Formation et de Recherche en Physique, Université Claude Bernard Lyon1, FR

Economy / Industry

- Aerodyne Research Inc, Billerica, US
- Alpes Lasers SA, Neuchâtel, CH
- Attolight Sarl, Lausanne, CH
- Beamexpress, Lausanne, CH
- Dätwyler/Silitec, Boudry, CH
- Daylight Solutions, Poway, US
- Delong Instruments a.s., Brno, CZ
- Exalos AG, Schlieren, CH
- EXFO Inc., Ontario, CA
- HP International, Geneva, CH
- HP, Bristol, GB
- Id Quantique SA, Geneva, CH
- Lab. Optique Electronique Appliquée (OPEA), Vincennes, FR
- Lasag Inc, Thun, CH
- Lovalite, Bezancon, FR
- METAS Swiss Federal Office for Metrology, Bern, CH
- METAS Swiss Federal Office for Metrology, Regensburg, CH
- Namiki Precision Jewel Co., Tokyo, JP
- Partner Y, Confidential Information, FR
- Rolex SA, Geneva, CH
- Swisscom Group, Geneva, CH
- ZODIAC, Marcoussis, FR

Statistical Input – Output Data

Funding source (CHF)	Year 9	Year 10	Year 11	Year 12	Total	%
SNSF funding	3 905 000[6]	2 825 000[6]	1 700 000	1 500 000	9 930 000	54
Self-funding from home institution[1]	2 347 500	1 596 500	1 289 000	1 299 000	6 532 000	36
Self-funging from project participants	620 900[6]	452 600[6]	0[7]	0[7]	1 073 500	6
Third-party funding[2]	465 200[6]	355 400[6]	0[7]	0[7]	820 600	4
Total	7 338 600	5 229 500	2 989 000	2 799 000	18 356 100	100

Personnel[3]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	FR	IT	CN	CA	
Management	3.59[4]	7	78	2	22	6	0	1	0	0	1	1
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	64	9	14	55	86	19	12	5	6	3	3	16
Postdoctoral students	28	1	4	27	96	4	2	7	7	2	0	6
Research associates	1	1	100	0	0	1	0	0	0	0	0	0
Senior researchers[5]	53	5	9	48	91	20	5	11	5	0	0	12
Other staff	39	26	67	13	33	33	0	1	1	0	0	4
Total	188.59	49	25	145	75	83	19	25	19	5	4	39

[1] Personnel costs, equipment and consumables, not included infrastructure and basic equipment
[2] Not included is CTI funding (cf. page 6). Since the start of the NCCR 7 projects have been funded by CTI at a total amount of 8,5 million CHF.
[3] Persons involved in the NCCR in the last reporting period (12 months)
[4] Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training
[5] Including leaders of the individual projects and other organisational units of the NCCR
[6] Included funding of economic stimulus package projects (cf. project list)
[7] Not yet budgeted, updated figures will be published in Guide 2011

Evaluation and Monitoring by the Swiss National Science Foundation (SNSF)

Members of the Review Panel

Leiderer Paul, Prof. (Chair)	Swiss National Science Foundation, Berne, CH
Baets Roel, Prof.	Department of Information Technology, Universiteit Gent, BE
Ebeling Karl Joachim, Prof.	Rektor der Universität Ulm, DE
Forchel Alfred, Prof.	Technische Physik, Universität Würzburg, DE
Knop Karl, Dr.	CSEM Zurich, CH
Mourou Gérard, Prof.	ENSTA, Ecole Polytechnique, Paris, FR
Osterwalder Jürg, Prof.	Swiss National Science Foundation, Berne, CH
Rarity John G., Prof.	Electrical and Electronic Engineering, Bristol University, GB
Schurtenberger Peter, Prof.	Swiss National Science Foundation, Berne, CH

NCCR Office SNSF

Bachmann Stefan, Dr.

Schweiz. Nationalfonds, Wildhainweg 3, 3001 Bern,
phone: + 41 (0)31 308 23 49, fax: + 41 (0)31 305 29 71,
sbachmann@snf.ch

Interactive Multimodal Information Management
NCCR IM2

Research

Integrated Multimodal Processing
H: Billard A.

Human Centered Design and Evaluation
H: Lalanne D.

Social Signal Processing
H: Vinciarelli A.

Economic stimulus package

K-Content: Content abstraction and retrieval for largescale mobile service
H: Van Gool L., Quack T.

Measuring Consumer Behaviour for Marketing and Advertising Research
H: Thiran J.P., Sorci Matteo

Platforms, Programmes etc.

Doctoral School
Supervisor: Bourlard H.
Co-Supervisor: Ebrahimi T.
Female Fellowship: Bourlard H.

Visitor exchange program with ICSI, Berkeley, US
Supervisor: Bourlard H.

Smart Meeting Room
Supervisor: Bourlard H.

Multimedia File Server
Supervisor: Popescu-Belis A.

Heads and Deputy Heads of Individual Research Projects

Billard Aude, Prof.	LASA, EPF Lausanne
Dufaux Frédéric, Dr.	Signal Processing Institute, EPF Lausanne
Lalanne Denis, Dr.	Department of informatics, University of Fribourg
Marchand-Maillet Stéphane, Dr.	Centre Universitaire d'Informatique, Université de Genève
Popescu-Belis Andrei, Dr.	Idiap Research Institute, Martigny
Vinciarelli Alessandro, Dr.	Idiap Research Institute, Martigny

Steering Committee

Bourlard Hervé, Prof.	IM2 Director, Idiap Director, Professor at EPFL
Ebrahimi Touradj, Prof.	IM2 Deputy Director, EPFL
Bunke Horst, Prof.	University of Bern
Pasquier Jacques, Prof.	Vice-rector of the University of Fribourg
Pun Thierry, Prof.	Vice-dean of the Faculty of Sciences of the University of Geneva
van Gool Luc, Prof.	ETHZ, Katholieke Universiteit Leuven (B)

Members of the Scientific Advisory Board

Peters Carol, Prof.	Institute for Information Science and Technologies, Pisa (IT)
Rigoll Gerhard, Prof.	Technische Universität, München (DE)
Renals Steve, Prof.	University of Edinburgh (UK)
Oviatt Sharon, Prof.	Headquarters Adapx, Seattle (USA)
Pelachaud Catherine, Prof.	IUT de Montreuil, Université Paris 8 (FR)

Home Institution
Idiap Research Institute, Martigny

Start of the NCCR
January 1, 2002

NCCR Management

Director
Bourlard Hervé, Prof.
phone: + 41 (0)27 721 77 20
bourlard@idiap.ch

Deputy Director
Ebrahimi Touradj, Prof.
phone: + 41 (0)21 693 26 06
touradj.ebrahimi@epfl.ch

Officer
Foglia François, Dr.
phone: + 41 (0)27 721 77 50
foglia@idiap.ch

Knowledge and Technology Transfer
Rodriguez Yann, Dr.
phone: + 41 (0)27 721 77 72

Education and Training
Ebrahimi Touradj, Prof.
phone: + 41 (0)21 693 26 06

Advancement of Women
Devanthéry Valérie, Mrs.
phone: + 41 (0)27 721 77 62

Communication
Aymon Fournier Céline, Ms.
phone: + 41 (0)27 721 77 15

Address
NCCR IM2
Idiap Research Institute
P.O. Box 592
1920 Martigny

phone: + 41 (0)27 721 77 11
fax: + 41 (0)27 721 77 12
im2@idiap.ch

Web Address
www.im2.ch
www.nccr-im2.ch

Public Relations
- Newsletter IM2, www.im2.ch
- IM2 Flyer
- Festival "Science et Cité" 2005
- Brochure IM2
- Public Day at the "Foire du Valais"
- "Let's talk about your future"

Interactive Multimodal Information Management
NCCR IM2

Third Party Cooperation
(in progress)

Programmes
- BACS (EU-FP6)
- BioSecure
- BioSecure
- CHIRON (EU-FP6)
- COBOL
- COST 2101
- COST BM0601
- DIRAC (EU-FP6)
- ERGOMIND (EU-FP7)
- MOBIO (EU-FP7)
- NeuroMath (COST)
- PetaMedia (NoE EU-FP7)
- SCOVIS (EU-FP7-ICT)
- SIMILAR
- TACT (EU-FP6)
- TOBI (EU-FP7)
- URUS (EU-FP6)
- VISMASTER (EC FP7 Coordination Action)

Research Institutions
- Center for Vision, Speech and Signal Procession, University of Surrey, Guildford, GB
- Dept. of computing, University of Lancaster, GB
- Dept. of Informatics, University of Zurich, CH
- Dept. of Physiology, University of Arizona, Tucson, US
- Dept. of Signal Theorie and Communications, Universitat Politecnica de Catalunya, Barcelona, ES
- Ecole d'ingénieurs de Genève (EIG), CH
- Ecole d'ingénieurs et d'architectes de Fribourg, CH
- French Ministry of Research and Education, University of Avignon, FR
- Haute Ecole d'Ingénierie et de Gestion du Canton de Vaud (HEIG-VD), Yverdon, CH
- Hautes Ecoles Spécialisées de Suisse Occidentale (HES-SO), Sion, CH
- Laboratoire d'Informatique pour la Mécanique et les Sciences de l'Ingénieur (LIMSI), CNRS, Paris, FR
- NCCR Affective Sciences, Geneva, CH
- Visual Information Processing for Enhanced Retrieval (VIPER), University of Geneva, CH

Topics

The National Center of Competence in Research (NCCR) on Interactive Multimodal Information Management, in short IM2, is concerned with the development of natural multimodal interfaces for human-computer interaction. By "multimodal", we mean the different technologies that coordinate natural input modes (such as speech, pen, touch, hand gestures, head and body movements, and eventually physiological sensors) with multimedia system output (such as speech, sounds, and images). Ultimately, these multimodal interfaces should flexibly accommodate a wide range of users, tasks, and environments for which any single mode may not suffice.

The field of multimodal interaction thus covers a wide range of critical activities and applications, including recognition and interpretation of spoken, written and gestural language, particularly when used to interface with multimedia information systems, and biometric user authentication (protecting information access). As addressed by IM2, management of multimedia information systems is a wide ranging and important research area that includes not only the multimodal interaction described above, but also multimedia document analysis, indexing, and information retrieval. The development of this technology is necessarily multi-disciplinary, requiring the collaborative contributions of experts in engineering, computer science, linguistics and, more recently, in social sciences and psychology.

As a particular kind of complex multimodal interaction, and to foster collaboration, IM2 decided to focus on the common vision of "computer-enhanced human-to-human interaction" and, more specifically, on the analysis, understanding and retrieving of face-to-face and remote (videoconferencing) multimodal meeting data. Indeed, understanding human-human interaction is fundamental to the long term pursuit of powerful and natural multimodal interfaces for human-computer interaction. In addition to better understanding of group processes, our progresses in language and video processing, multimedia indexing, as well as the advanced tools for working with multimodal data, will improve research and development in numerous related areas.

In this context, IM2 thus aims to enhance the value of multimodal meeting recordings and to make human interaction more effective in real time. These goals will be achieved by developing new tools for computer supported cooperative work and by designing new ways to search and browse meetings as part of an integrated multimodal group communication, captured from a wide range of devices. Several technology prototypes, able to record meetings and to automatically generate searchable multimedia meeting archives are now available and some of the resulting technologies are being exploited by IM2 spin-offs or have been adopted by companies working in the multiple fields of Information and Communication Technology (ICT), including, e.g., video-conferencing and meeting facilitation. During its last 3-years phase, IM2 will further research and improve key multimodal technologies, while also testing its generalization properties on new domains related to brainstorming and tutorials. It will also investigate further new areas related to Social Signal Processing, a new research area which naturally arose from IM2.

The IM2 NCCR, headed by the Idiap Research Institute in Martigny, combines many partners from a number of university institutions (EPFL, ETHZ, University of Geneva, University of Fribourg, and University of Bern), the HES (Universities of Technology) of Fribourg, Sion and Sierre, and a range of commercial companies. The NCCR also has numerous international contacts, including an agreement for the exchange of young researchers with the International Computer Science Institute (ICSI) in Berkeley, California.

Achievements of the previous years

Multimodal Processing

IM2 has significantly contributed to the development of a new research field referred to as multimodal processing, which is now viewed as increasingly important at the international level. IM2 is also recognized worldwide for its contributions in related areas such as speech and language understanding, computer vision, multichannel processing and fusion, and multimedia indexing.

Meeting Recordings

IM2 was among the first projects worldwide to focus on multimodal meeting recordings, which is now attracting more and more attention. IM2 thus works on large multimodal meeting databases, and makes them available to the scientific community. IM2 is not only significantly contributing to the field, but is also in a good position to set up international research and development standards.

Knowledge Dissemination/ Technology Transfer

In addition to new university courses and doctoral programs, IM2 was also among the initiators of the series of international Multimodal Interaction and Related Machine Learning Algorithms (MLMI) workshops. In 2008, it also initiated a joint summer institute in collaboration with the Affective Sciences NCCR, already resulting in new collaboration. In terms of technology transfer, IM2 also fostered the creation of several start-up companies, such as Anteleon Imaging, Klewel, Kooaba, Keylemon. Thanks to IM2, Idiap Research Institute and its subsidiary IdeArk S.A. are core components of the new Economic Development strategy of the Canton of Valais.

Young and Female Researchers

The exchange programme supported by IM2 helped create a privileged relationship between Swiss institutions, researchers and the International Computer Science Institute (ICSI) in Berkeley/USA. IM2 has made significant efforts to increase the visibility of women active in science (public events, publications, meeting recordings). IM2 supported (until 2007) a successful Female Fellowship programme aimed specifically at boosting the careers of female researchers.

Structural Impact

IM2 is having a strong and visible structural impact in several of the IM2 institutions. Based on its growing reputation, Idiap is now recognized by SER (Federal Government) as part of a "strategic alliance with the EPF-ETH domain" (since January 2008). This came with a joint, Idiap-EPFL development plan (signed July 2008), involving common research activities, development of a common doctoral program and including the provision for 2 to 3 new joint EPFL/Idiap assistant professor tenure track positions. In addition, the Individual Project in Brain machine Interaction yielded the creation of a new chair at EPFL. New (assistant) professor positions directly related to IM2 were created at ETHZ and University of Geneva. Finally, the University of Fribourg is seriously considering the creation of a new "institute" (Human- IST) directly leveraging on IM2 activities. Several of the IM2 partners have an excellent integration in the ERA (European Research Area) as key partners in, and often coordinators of, several key FP6 and FP7 projects.

Further information see www.im2.ch

Economy / Industry

- Alro Engineering SA, Martigny, CH
- Alto-Service, Vufflens le Château, CH
- Atonce Capital Management AG, Bätterkinden, CH
- Cinetis SA, Martigny, CH
- Deutsche Telekom Laboratories, Berlin, DE
- EyeP Media SA, Yverdon, CH
- Fastcom Technology SA, Lausanne, CH
- IBM TJ Watson Research Center, New York, US
- Intel Corp., Santa Clara, US
- Invacare International, Gland, CH
- KeyLemon, Martigny, CH
- Kooaba AG, Zürich, CH
- Memoria, Sion, CH
- MHT Optic Research AG, Niederhasli, CH
- Microsoft, Lausanne, CH
- NASA, Ames Research Center, Moffett Field, US
- Nestlé Research Center, Vevey, CH
- NEXThink S.A, Fribourg, CH
- Odermatt AG, Hunzenschwil, CH
- Odysis SA, Lausanne, CH
- Procedural AG, Zürich, CH
- Qualcomm Inc, San Diego, US
- Sowoon Technologies Sàrl, St-Imier, CH
- SVOX AG, Zürich, CH
- Telecontrol, , CH
- Veovox, Pully, CH

Others

- Armaswiss, Bern, CH
- HASLER Foundation, Bern, CH
- HASLER Foundation, Fribourg, CH
- HASLER Foundation, Geneva, CH
- HASLER Foundation, Martigny, CH

Statistical Input – Output Data

Funding source (CHF)	Year 9	Year 10	Year 11	Year 12	Total	%
SNSF funding	2 205 000[6]	1 295 000[6]	1 000 000	800 000	5 300 000	37
Self-funding from home institution[1]	698 000	698 000	698 000	698 000	2 792 000	20
Self-funding from project participants	770 797[6]	647 587[6]	627 000	627 000	2 672 384	19
Third-party funding[2]	1 069 912[6]	950 200[6]	745 000	745 000	3 510 112	25
Total	4 743 709	3 590 787	3 070 000	2 870 000	14 274 496	100

Personnel[3]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							FR	IT	IN	US	IR	
Management	6.94[4]	5	38	8	62	10	0	0	0	1	0	2
Master students	1	1	100	0	0	0	0	0	0	0	0	1
Doctoral students	65	15	23	50	77	15	5	4	12	4	6	19
Postdoctoral students	30	10	33	20	67	5	1	5	0	0	0	19
Research associates	4	0	0	4	100	1	0	1	0	0	0	2
Senior researchers[5]	40	6	15	34	85	10	6	4	1	4	0	15
Other staff	20	2	10	18	90	12	5	0	0	1	1	1
Total	166.94	39	23	134	77	53	17	14	13	10	7	59

[1] Personnel costs, equipment and consumables, not included infrastructure and basic equipment
[2] Not included is CTI funding (cf. page 6). Since the start of the NCCR 17 projects have been funded by CTI at a total amount of 9.3 million CHF.
[3] Persons involved in the NCCR in the last reporting period (12 months)
[4] Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training
[5] Including leaders of the individual projects and other organisational units of the NCCR
[6] Included funding of economic stimulus package (cf. project list)

Evaluation and Monitoring by the Swiss National Science Foundation (SNSF)

Members of the Review Panel

Steger Angelika, Prof. (Chair)	Swiss National Science Foundation, Berne, CH
Chang Shih-Fu, Prof.	Department of Electrical Engineering, Columbia University, New York, US
Chua Tat-Seng, Prof.	Department of Computer Science, National University of Singapore, SG
Hirsbrunner Béat, Prof.	Swiss National Science Foundation, Berne, CH
Hofmann Thomas, Dr.	Google Switzerland GmbH, CH
Jain Ramesh, Prof.	School of ECE and College of Computing, Georgia Tech, US
Meng Helen Mei-Ling, Prof.	Department of Systems Engineering and Engineering Management, The Chinese University of Hong Kong, HK
Schwarzenbach René, Prof.	Swiss National Science Foundation, Berne, CH
Timmerer Christian, Dr.	Universität Klagenfurt, Klagenfurt, AT
Zhang Yu-Jin, Prof.	Department of Electronic Engineering, Tsinghua University, Beijing, CN

NCCR Office SNSF

Bachmann Stefan, Dr.	Schweiz. Nationalfonds, Wildhainweg 3, 3001 Bern, phone: + 41 (0)31 308 23 49, fax: + 41 (0)31 305 29 71, sbachmann@snf.ch

Computer Aided and Image Guided Medical Interventions
NCCR CO-ME

Research

Computer Aided and Image Guided Support for the Treatment of Neurodegeneration and Brain Tumours
Head: Székely, G.
Baur, C., Hirsch, S., Koumoutsakos, P., Kroschewski, R., Kurtcuoglu, V., Kuster, N., Martin, E., Poulikakos, D., Rudin, M., Werner, B.

Ophthalmology
Head: Nelson, B.
Buechler, P., Kowal, J., Kratochvil, B.

Patient Specific Intervention Planning in CMF Surgery
Head: Zeilhofer, H.F.
Baur, C., Cattin, P., Gross, M., Juergens, P., Mazza, E., Reyes Aguirre, M., Scheffler, K., Vetter, T., von Rechenberg, B.

Oto-Rhino-Laryngology
Head: Caversaccio, M.
Baur, C., Ferguson, S., Weber, S., Zheng, G.

The Virtual Skeleton Database
Head: Büchler, P.
Pfahrer, M., Reyes Aguirre, M., Székely, G., Tannast, M., Thali, M., Vetter, T., Weber, S.,

Economic stimulus package

Patient-Specific Model Generation for Surgical Training Simulation
H: Harders M., Tuchschmid S.

A new Planning and Navigation System for CMF Surgery
H: Cattin P., Zeilhofer H.F.

Haptic guided ORL force guided robot
H: Baur C., Helmer P.

Heads of Individual Projects and Key Researchers

Amstutz Christoph, Dr.	Ophthalmology, Universitätsspital Zürich
Baur Charles, Dr.	Robotic Systems Laboratory, EPF Lausanne
Bertalanffy Helmut, Prof.	Neurochirurgische Klinik, Universitätsspital Zürich
Bozinov Oliver, Dr.	Neurochirurgische Klinik, Universitätsspital Zürich
Blanc Rémi, Dr.	Institut für Bildverarbeitung, ETH Zürich
Büchler Philippe, Dr.	Institute for Surgical Technology & Biomechanics, Universität Bern
Cattin Philippe, Prof.	Medical Image Analysis Center, Universität Basel
Caversaccio Marco, Prof.	Universitätsklinik für Hals-, Nasen- und Ohrenkrankheiten, Kopf- und Halschirurgie, Inselspital Bern
Ferguson Stephen, PD Dr.	Institute for Surgical Technology & Biomechanics, Universität Bern
Gross Markus, Prof.	Institute for Visual Computing, ETH Zürich
Harders Matthias, PD Dr.	Institut für Bildverarbeitung, ETH Zürich
Hirsch Sven, Dr.	Institut für Bildverarbeitung, ETH Zürich
Jürgens Philipp, Dr.	Klinik für Kiefer- und Gesichtschirurgie, Kantonsspital Basel
Koumoutsakos Petros, Prof.	Computational Science & Engineering Laboratory, ETH Zürich
Kowal Jens, Prof.	Universitätsklinik für Augenheilkunde, Inselspital Bern
Kratochvil Brad, Dr.	Institut für Robotik und intelligente Systeme, ETH Zürich
Kroschewski Ruth, Dr.	Institut für Biochemie, ETH Zürich
Kurtcuoglu Vartan, Dr.	Institut für Energietechnik, ETH Zürich
Kuster Niels, Prof.	IT'IS Laboratories, Zürich
Martin Ernst, Prof.	MR-Zentrum, Kinderspital Zürich
Mazza Edoardo, Prof.	Institut für Mechanische Systeme, ETH Zürich

Home Institution
Swiss Federal Institute of Technology Zurich

Start of the NCCR
July 1, 2001

NCCR Management

Director
Székely Gábor, Prof.
phone: + 41 (0)44 632 52 88
szekely@vision.ee.ethz.ch

Deputy Director
Nolte Lutz-Peter, Prof.
phone: + 41 (0)31 631 59 68
lutz.nolte@istb.unibe.ch

General Manager
Reber Bernhard, Dr.
phone: + 41 (0)44 632 05 23
breber@vision.ee.ethz.ch

Communication
Steinmann Ruth, Mrs.
phone: + 41 (0)44 632 51 63
steinman@vision.ee.ethz.ch

Finances
Vogt Vreni, Mrs.
phone: +41 (0)44 632 04 72
vogt@vision.ee.ethz.ch

Officer
Neuenschwander Annelies, Mrs.
phone: +41 (0)31 631 59 58
annelies.neuenschwander@istb.unibe.ch

Knowledge and Technology Transfer
Nolte Lutz-Peter, Prof.
phone: + 41 (0)31 631 59 68
lutz.nolte@istb.unibe.ch

Education and Training
Reber Bernhard, Dr.

Advancement of Women
Thoeny Harriet, Prof.
Inselspital Bern

Address
NCCR CO-ME
ETHZ - Bildverarbeitung
Sternwartstr. 7
8092 Zürich
phone: + 41 (0)44 632 51 63
fax: + 41 (0)44 632 11 99
steinman@vision.ee.ethz.ch

Web Address
http://co-me.ch

Third Party Cooperation

(in progress)

Programmes

- KTI Nr. 7961.2
- KTI Nr. 8075.1
- KTI Nr. 8173.1
- KTI Nr. 7812.2
- KTI Nr. 8558.1
- KTI Nr. 8059.2
- Research Funding Award Program
- KTI Nr. 9193.1
- ARES (FP6)
- ImmerSence IST (FP6)
- Marie Curie Actions (FP6)

Research Institutions

- BG-Unfallklinik, Frankfurt a.M., DE
- BG-Unfallklinik, Ludwigshafen, DE
- Biox and Artificial Intelligence Lab, Stanford University, San Francisco, US
- Brigham and Women's Hospital, Harvard Medical School, Boston, US
- Center for Integration of Medicine and Innovative Technology (CIMIT) Simulation Group, Boston, US
- Center for Processing Speech and Images, Catholic University, Leuven, BE
- Center of Advanced European Studies and Research (CAESAR), Bonn, DE
- Christian-Doppler-Klinik, Salzburg, AT
- CMF Division, Medical University Warsaw, Katowice, PL
- Daniel den Hoed Cancer Center, Erasmus University, Rotterdam, NL
- Dépt. de Neurochirurgie, CHUV, Lausanne, CH
- Dept. of Computer Science and Engineering, Nagoya University, JP
- Dept. of Computer Science, University of North Carolina, Chapel Hill, US
- Dept. of Physics, Aristotle University of Thessaloniki, GR
- Ecole d'Ingenieurs de Genève (EIG), Genève, CH
- Fachhochschule Nordwestschweiz, Brugg, CH
- Faculty of Electrical Engineering, Dept. of Measurement, Czech Technical University, Prague, CZ
- Faculty of Engineering, Hokkaido University, JP

Nelson Bradley, Prof.	Institut für Robotik und intelligente Systeme, ETH Zürich
Neufeld Esra, Dr.	IT'IS Laboratories, Zürich
Nitsch, Roger, Prof.	Psychiatry Research, Universität Zürich
Nolte Lutz-Peter, Prof.	Institute for Surgical Technology & Biomechanics, Universität Bern
Pfahrer Marcel, Prof.	Berner Fachhochschule, Biel
Poulikakos Dimos, Prof.	Institut für Energietechnik, ETH Zürich
Reyes Aguirre Mauricio, Dr.	Institute for Surgical Technology & Biomechanics, Universität Bern
Rudin Markus, Prof.	Institut für Biomedizinische Technik, ETH Zürich
Rudolph Tobias, Dr.	Ophthalmology, Inselspital Bern
Scheffler Klaus, Prof.	Radiologische Physik, Kantonsspital Basel
Siebenrock Klaus, Prof.	Klinik für Orthopädische Chirurgie, Inselspital Bern
Spyros Kollias, Dr.	Neuroradiologie, Universitätsspital Zürich
Stieger Christof, Prof.	Universitätsklinik für HNO, Inselspital Bern
Szczerba Dominik, Dr.	IT'IS Laboratories, Zürich
Székely Gabor, Prof.	Institut für Bildverarbeitung, ETH Zürich
Tannast Moritz, Dr.	Klinik für Orthopädische Chirurgie, Inselspital Bern
Thali Michael, Prof.	Institut für Rechtsmedizin, Inselspital Bern
Tuchschmid Stefan	VirtaMed AG, Zürich
Vetter Thomas, Prof.	Graphics & Vision Research Group, Universität Basel
von Rechenberg Brigitte, Prof.	Departement für Pferde, Tierspital der Universität Zürich
Weber Stefan, Prof.	Institute for Surgical Technology & Biomechanics, Universität Bern
Weller Michael, Prof.	Neurologie, Universitätsspital Zürich
Werner Beat	MR-Zentrum, Kinderspital Zürich
Zeilhofer Hans-Florian, Prof.	Klinik für Kiefer- und Gesichtschirurgie, Kantonsspital Basel
Zheng Guoyan, Dr.	Institute for Surgical Technology & Biomechanics, Universität Bern

Topics

Improving medical image guidance, surgical navigation and patient specific treatment through information technology are the primary goals of the Co-Me network. The methodological strengths of the NCCR are simulation, navigation and instrumentation, including robotics. In its third phase Co-Me concentrates on the challenges of computer aided surgery around the head (CAS-H). It relies on selected clinical problems for driving the technological development and strengthening the clinical and commercial translation. The key questions relate to the reliability and accuracy of intervention procedures, tissue protection with regard to minimal invasive surgery, reduction of tool size and therapy development for clinical routine.

A further objective is to consolidate the structural impact on the national science landscape and to phase-out the NCCR into a self-sufficient, collateral spin-off network.

Achievements of the previous years

Co-Me has achieved an international reputation and visibility which, at the end of phase 2, is also represented by the performance figures for research (600 publications with a field impact index significantly above world average: 1.8), for knowledge and technology transfer (60 industrial partners, 28 patents and 8 start-up companies) as well as for education and career building.

Research

During the past eight years, i.e. in the first and second phases of Co-Me R&D activities, advanced cutting edge technologies and new high-fidelity surgical tools for training, planning, and intraoperative support have been developed. Their focus is on the translation to the practical use in the operating room.

Some highlights are:

• A successful first set of clinical trials, validating the usage of MR-guided focused ultrasound technology for the treatment of functional neurological disorders. This novel technology now opens up new horizons allowing to develop non-invasive intervention procedures for a variety of brain diseases including brain tumors.

• The virtual reality based hysteroscopy training system resulting in the start-up Virtamed which won the first place at the Swiss venture kick seed capital competition. A collaboration agreement with Simbionix will allow the world-wide distribution of the HystSim training system.

• A method for orthopedic implant design based on the statistical description of the human skeleton giving rise to high interest of implant industry.

• A planning and navigation module for cranio-maxillo-facial osteotomies in daily clinical routine application at the University Hospital Basel supported by the ARTORG Center/ISTB Bern.

Knowledge and Technology transfer

The close cooperation between research labs and clinical sites guarantees the effective transfer of scientific results to patient care.

Education and Training

In 2005 two Master's Programs in Biomedical Engineering were established at the ETH Zürich and at the University of Bern. Both programmes are running very well with a steady increase of student numbers. A third program will start in Basel in 2010. Various surgical training seminars were established on a continuous regular basis as a platform for the transfer of Co-Me technolgies into the clinical practice.

- Inst. for Rapid Product Development, University of Applied Science, St. Gallen, CH
- Klinik für Plastische Chirurgie, Klinikum rechts der Isar der TU München, DE
- MeVis, Zentrum für Medizinische Diagnosesysteme und Visualisierung, Bremen, DE
- Microsoft Research, Cambridge, GB
- Paul Scherrer Inst., Villigen, CH
- Poliklinik für Kieferorthopädie, Ludwig Maximilians-Universität, München, DE
- Precision and Intelligence Lab. at Tokyo Institute of Technology, Tokyo, JP
- Robotics Lab, Stanford University, US
- School of Electrical and Computer Engineering, Georgia Inst. of Technology, Atlanta, US
- Virginia Modeling, Analysis and Simulation Center (VMASC) at Old Dominion University, Norfolk, US

Economy / Industry

- ABW GmbH, Frickenhausen, DE
- Atracsys SARL, Bottens, CH
- B. Braun Medical AG, Sempach, CH
- Boston Scientific Corporation, Natick, US
- BrainLAB AG, Feldkirchen, DE
- BrainLAB AG, Heimstetten, DE
- Camlog Holding AG, Basel, CH
- Celon AG, Teltow, DE
- Cochlear AG, Lausanne, CH
- Codman Neuro Sciences Sàrl, Le Locle, CH
- Ethicon GmbH (Johnson & Johnson), Norderstedt, DE
- Ethicon Medical Ltd. - Women's Health and Urology, Neuchâtel, CH
- Force Dimension, Lausanne, CH
- Fotona, Ljubljana, SI
- fssb Chirurgische Nadeln GmbH, Jestetten, DE
- General Electric Health Care, Milwaukee, US
- Gesellschaft für optische Messtechnik mbH, Braunschweig, DE
- H. Häberli AG, Grenchen, CH
- Hansen Medical, Palo Alto, US
- Image Guided Therapy SA, Pessac, FR
- Imricor Medical Systems, Inc., Burnsville, US
- InSightec - Image Guided Treatment Ltd., Tirat Carmel, IL
- Kontron Medical AG, Basel, CH
- Kuros Biosurgery AG, Zürich, CH
- Leica Microsystems AG, Glattbrugg, CH
- Materialise GmbH, Oberpfaffenhofen, DE
- Maxon Motor AG, Sachseln, CH

- Medelec Minimeca SA, Puidoux, CH
- Medtronic Suisse SA, Tolochenaz, CH
- MeVis Research GmbH, Bremen, DE
- Minolta GmbH, Langenhagen, DE
- Mobile Manufacturer Forum, Bruxelles, BE
- Philips Medical Systems, Best, NL
- Philips Medical Systems, Zürich, CH
- Polymed Medical Center, Glattbrugg, CH
- Proform AG, Marly, CH
- Richard Wolf GmbH, Knittlingen, DE
- SARIX SA, Losone, CH
- Siemens AG, Erlangen, DE
- Siemens AG, Medical Solutions, Erlangen, DE
- Sinus-Point AG, Welschenrohr, CH
- SMD Strain Measurement Devices, Bury St Edmunds, GB
- Speag (Schmid & Partner Engineering AG), Zürich, CH
- Steinbichler Optotechnik GmbH, Neubeuern, DE
- Stryker Trauma AG, Selzach, CH
- Synthes AG, Oberdorf, CH
- Treier Endoscopie AG, Beromünster, CH
- Unimed SA, Lausanne, CH
- xitact SA, Morges, CH
- ZMT Zurich MedTech AG, Zürich, CH

Others

- Bundesminister für Umwelt, Naturschutz und Reaktorsicherheit, Bonn, DE
- Food and Drug Administration (FDA), Center for Devices and Radiological Health, Rockville, US
- M.E. Müller-Stiftung, Bern, CH
- Mobile Manufacturers Forum (MMF), Group Special Mobile (GSMA), Bruxelles, BE
- National Institute of Environmental Health Sciences (NIEHS), Research Triangle Park, US
- Oncosuisse, Krebsliga Schweiz, Bern, CH

Members of the Scientific Advisory Board

Davies Brian, Prof.	Imperial College London, Mechanical Engineering, London, GB
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Hirsch Jan, Prof.	University Hospital Uppsala, Dept. of Oral and Maxillofacial Surgery, Uppsala, SE
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Taylor Chris, Prof.	University of Manchester, Division of Imaging Science & Biomedical Engineering, Manchester, GB
Thorpe Chuck, Prof.	Carnegie Mellon University, Qatar
Troccaz Jocelyne, Dr.	Laboratoire TIMC/IMAG, Université Joseph Fourier, La Tronche, FR

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Landmann-Suter Regine, Prof.	Departement Forschung, Kantonsspital/Universität Basel, Basel, CH
Reber Bernhard, Dr.	Institut für Bildverarbeitung, ETH Zürich, CH
Steinmann Ruth	Institut für Bildverarbeitung, ETH Zürich, CH
Thoeny Harriet, Prof.	Institut für Diagnostische Radiologie, Inselspital Bern, CH
Vogt Vreni, Mrs.	Project Office NCCR CO-ME, ETH Zürich, CH
Von Rechenberg Brigitte, Prof.	Pferdeklinik, Universität Zürich, CH

Statistical Input – Output Data

Funding source (CHF)	Year 9	Year 10	Year 11	Year 12	Total	%
SNSF funding	4 575 000[6]	2 665 000[6]	1 500 000	1 000 000	9 740 000	34
Self-funding from home institution[1]	2 450 000	1 050 000	1 050 000	1 050 000	5 600 000	20
Self-funding from project participants	2 431 440[6]	2 335 190[6]	1 888 630	1 890 500	8 545 760	30
Third-party funding[2]	1 384 460[6]	1 390 190[6]	910 290	910 290	4 595 230	16
Total	10 840 900	7 440 380	5 348 920	4 850 790	28 480 990	100

Personnel[3]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	FR	US	AT	PL	
Management	4.61[4]	4	50	4	50	6	2	0	0	0	0	0
Master students	6	1	17	5	83	2	1	3	0	0	0	0
Doctoral students	60	11	18	49	82	19	15	2	2	2	1	19
Postdoctoral students	20	3	15	17	85	5	4	2	2	0	0	7
Research associates	34	2	6	32	94	20	1	4	0	2	2	5
Senior researchers[5]	105	13	12	92	88	46	40	3	2	1	2	11
Other staff	174	11	65	6	35	13	1	0	0	0	0	3
Total	403.61	45	18	205	82	111	64	14	6	5	5	45

[1] Personnel costs, equipment and consumables, not included infrastructure and basic equipment
[2] Not included is CTI funding (cf. page 6). Since the start of the NCCR 15 projects have been funded by CTI at a total amount of 18,2 million CHF.
[3] Persons involved in the NCCR in the last reporting period (12 months)
[4] Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training
[5] Including leaders of the individual projects and other organisational units of the NCCR
[6] Included funding of economic stimulus package projects (cf. project list)

Evaluation and Monitoring by the Swiss National Science Foundation (SNSF)

Members of the Review Panel

Siegwart Roland, Prof. (Chair)	Swiss National Science Foundation, Berne, CH
Bucholz Richard, Prof.	Division of Neurosurgery, St. Louis University School of Medicine, US
Duncan James, Prof.	Department of Diagnostic Radiology, Yale University School of Medicine, New Haven, US
Hirsbrunner Béat, Prof.	Swiss National Science Foundation, Berne, CH
Hirzinger Gerd, Prof.	Institut für Robotik und Mechatronik, DLR Oberpfaffenhofen, DE
Jolesz Ferenc A., Prof.	Harvard University, Brigham & Women's Hospital, Boston, US
Lorensen Bill	General Electric Corporate R&D, Niskayuna NY, US
Steiger Jürg, Prof.	Swiss National Science Foundation, Berne, CH

NCCR Office SNSF

Bachmann Stefan, Dr.
Schweiz. Nationalfonds, Wildhainweg 3, 3001 Bern,
phone: + 41 (0)31 308 23 49, fax: + 41 (0)31 305 29 71,
sbachmann@snf.ch

Mobile Information and Communication Systems
NCCR MICS

Home Institution
Swiss Federal Institute of Technology, Lausanne

Start of the NCCR
November 1, 2001

NCCR Management
Director
Aberer Karl, Prof.
phone: + 41 (0)21 693 46 79
karl.aberer@epfl.ch

Deputy Director
Thiele Lothar, Prof.
phone: + 41 (0)1 632 70 31
thiele@tik.ee.ethz.ch

Coordinator
Bovay Jacques, Mr.
phone: + 41 (0)21 693 56 38
jacques.bovay@epfl.ch

Finances & Administration
Bernau Heidi, Mrs.
phone: + 41 (0)21 693 81 06
heidi.bernau@epfl.ch

Knowledge and Technology Transfer
Pesty Roland, Mr.
phone: + 41 (0)21 693 69 77
roland.pesty@epfl.ch

Education and Training
Bovay Jacques, Mr.
phone: + 41 (0)21 693 56 38
jacques.bovay@epfl.ch

Advancement of Women
Berseth Nicole, Mrs.
phone: + 41 (0)21 693 00 78
nicole.berseth@epfl.ch

Albertini Marion, Ms.
phone: + 41 (0)21 693 00 75
marion.albertini@epfl.ch

Communication Officer
Luy Florence, Mrs.
phone: + 41 (0)21 693 21 05
florence.luy@epfl.ch

Address
EPFL IC PRN MICS
Station 14
1015 Lausanne

phone: + 41 (0)21 693 56 38
fax: + 41 (0)21 693 81 40
nccr-mics@epfl.ch

Web Address
www.mics.org

Public Relations
- Web site
- Bimonthly newsletter

Research

Environmental monitoring for scientific purposes
H: Süsstrunk S.
Ancey C., Fua P., Parlange M., Vetterli M.

End-to-end sensor data management
H: Barrenetxea G.
Aberer K., Ailamaki A., Parlange M., Thiran P., Vetterli M.

Permasense
H: Beutel J.
Gruber S., Mattern F., Römer K., Thiele L., Tschudin C.

High-throughput UWB localization for mobile robots
H: Botteron C.
Dehollain C., Farine P.-A., Farserotu J., Le Boudec J.-Y., Martinoli A., Robert S., Skrivervik A.

Security for wireless networks
H: Basin D.
Capkun S., Hubaux J.-P., Vaudenay S.

Customizing the world of pervasive data
H: Alonso G.
Kossmann D., Tatbul N., Wattenhofer R.

Economic stimulus package

P2P streaming of scalable content for PCs and consumer electronics
H: Wattenhofer R.,
von Rickenbach P.

Tamperproof monitoring solution for weather risk management
H: Vetterli M., Ariarajah S.

PermaSense Rugged Sensor Technology
H: Beutel J., Schmid R.

Distributed Algorithm for Vehicle Detection
H: Buhmann J., Meier R.

Programmes

Doctoral Program in Computer, Communication and Information Sciences
Direction: Henzinger T., Bovay J.

Undergrad Research Opportunity Program
Direction: Bovay J.

Internship Program for Female Undergraduate Students
Direction: Berseth N., Albertini M.

Industrial Liaison Program
Direction: Monti M.

Participants to the research projects

Aberer Klaus, Prof.	Faculté Informatique et Communications, EPF Lausanne
Ailamaki Anastasia, Prof.	Faculté Informatique et Communication, EPF Lausanne
Alonso Gustavo, Prof.	Departement Informatik, ETH-Zentrum, Zürich
Ancey Christophe, Prof.	Faculté Environnement naturel, architectural et construit, EPF Lausanne
Barrenetxea Guillermo, Dr.	Faculté Informatique et Communications, EPF Lausanne
Basin David, Prof.	Departement Informatik, ETH-Zentrum, Zürich
Beutel Jan, Dr.	Departement Informationstechnologie und Elektrotechnik, ETH-Zentrum, Zürich
Botteron Cyrille, Dr.	Faculté Sciences et techniques de l'ingénieur, EPF Lausanne
Capkun Srdjan, Prof.	Departement Informatik, ETH-Zentrum, Zürich
Charbon Edoardo, Prof.	Faculté Informatique et Communications, EPF Lausanne
Dehollain Catherine, MER	Faculté Sciences et techniques de l'ingénieur, EPF, Lausanne
Farine Pierre-André, Prof.	Faculté Sciences et techniques de l'ingénieur, EPF Lausanne
Farserotu John, Dr.	CSEM, Neuchâtel
Fua Pascal, Prof.	Faculté Informatique et Communications, EPF Lausanne
Gruber Stefan, Dr.	Geographisches Institut, Universität Zürich
Hubaux Jean-Pierre, Prof.	Faculté Informatique et Communications, EPF Lausanne
Kossmann Donald, Prof.	Departement Informatik, ETH-Zentrum, Zürich
Le Boudec Jean-Yves, Prof.	Faculté Informatique et Communications, EPF Lausanne
Martinoli Alcherio, Prof.	Faculté Environnement naturel, architectural et construit, EPF Lausanne
Mattern Friedemann, Prof.	Departement Informatik, ETH-Zentrum, Zürich
Meier Willi, Prof.	Fachhochschule Nordwestschweiz, Brugg
Parlange Marc, Prof.	Faculté Environnement naturel, architectural et construit, EPF Lausanne
Robert Stephan, Prof.	Institut des télécommunications, Ecole d'Ingénieurs du Canton de Vaud, Yverdon-les-Bains
Römer Kay, Dr.	Departement Informatik, ETH-Zentrum, Zürich
Skrivervik Anja, Prof.	Faculté Sciences et techniques de l'ingénieur, EPF Lausanne

Topics

Wireless communication is fundamentally changing the way we use information technology: information becomes embedded into our physical environment by means of personal devices and embedded computers, and the physical environment becomes increasingly intertwined with the Internet information space through sensor and actuator technology. In parallel with this qualitative change, the number of devices and the amount of information is growing exponentially.

Classical models of designing and controlling centralized IT systems will not be able to scale up. Decentralized approaches, based on self-organization principles, need to be studied and developed in order to master the complexity of the resulting systems.

The NCCR MICS is tackling exactly these problems, combining the study of the fundamental principles (network structures, distributed algorithms, information and communication theory) that will underlie these next-generation systems, and an engineering and empirical approach by developing and deploying platforms (wireless sensor technology, ad-hoc networks, in-network information processing, verification) and testing technologies in applications, as well as looking at economic implications. A particularly interesting class of applications, from a Swiss perspective, will be the environmental monitoring of the behaviour of landslide, permafrost and glaciers.

The NCCR MICS strongly believes that this mutual exchange between theoretical work and systems/applications will lead to real progress and to fruitful technology transfer. Wireless communication is fundamentally changing the way we use information technology: information becomes embedded into our physical environment by means of personal devices and embedded computers, and the physical environment becomes increasingly intertwined with the Internet information space through sensor and actuator technology. In parallel with this qualitative change, the number of devices and the amount of information is growing exponentially.

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In its 3rd phase, the NCCR MICS will pursue the technological developments and deployments started in phases 1 and 2, and strongly believes that the mutual exchange between theoretical work and systems/applications will lead to fruitful technology transfer.

Süsstrunk Sabine, Prof.	Faculté Informatique et Communications, EPF Lausanne
Tatbul Nesime, Prof.	Departement Informatik, ETH Zentrum, Zürich
Thiele Lothar, Prof.	Departement Informationstechnologie und Elektrotechnik, ETH-Zentrum, Zürich
Thiran Patrick, Prof.	Faculté Informatique et Communications, EPF Lausanne
Tschudin Christian, Prof.	Departement Informatik, Universität Basel
Vaudenay Serge, Prof.	Faculté Informatique et Communication, EPF Lausanne
Vetterli Martin, Prof.	Faculté Informatique et Communications, EPF Lausanne
Wattenhofer Roger, Prof.	Departement Informatik, ETH-Zentrum, Zürich

Third Party Cooperation

(in progress)

Programmes

- AEOLUS (FP6)
- ARTIST2 (FP6)
- ARTISTDesign
- COMBEST
- CONET (FP7)
- COST 2100
- DEPLOY
- DustBot (FP6)
- Euro FGI (FP6)
- Euro-NF
- FP7CONET
- HAGGLE (FP6)
- Hydrosys - STREP
- MASTER (FP7)
- MEGAFRAME (FP6)
- MINAml (FP6)
- Noe ArtistDesign (FP7)
- OKKAM
- Predator
- SHAPES (FP6)
- STREP
- WASP
- WASP (FP6)

Research Institutions

(new cooperations since 2007 only)

- Baskin School of Engineering, University of California Santa Cruz, US
- Center of Excellence for Embedded Systems Applied Research (CEESAR), Lucerne University of Applied Sciences and Art (HSLU), CH
- Computational Systems Group, Dept. of Computer Sciences, University of Salzburg, AT
- Computer Science Dept., Jacobs School of Engineering, University of California, San Diego, US
- Database Group, Faculty of Electrical Engineering, Mathematics and Computer Science (EEMCS), University of Twente, Enschede, NL
- Dept. of Computer Science, Ben-Gurion University of the Negev, Beer-Sheba, IL
- Dept. of Computer Science, Brown University, Providence, US
- Dept. of Computer Science, University of California, Los Angeles, US
- Dept. of Electrical and Electronics Engineering, Bilkent University, Ankara, TR
- Dept. of Mathematics and Computer Science, University of Passau, DE
- Digital Enterprise Research Inst. (DERI), Galaway, IE
- Ecole d'ingénieurs et d'architectes de Fribourg (EIF), CH
- Eidgenössische Anstalt für Wasserversorgung, Abwasserreinigung und Gewässerschutz (EAWAG) Record project, Dübendorf, CH
- Haute Ecole Pédagogique (HEP) Valais, St Maurice, CH
- Haute Ecole Spécialisée de la Suisse Occidentale (HES SO) Valais, Sion, CH
- Info4Dourou Institut International d'Ingénierie de l'Eau et de l'Environnement, Ouagadougou, BF
- Institut für Angewandte Informationsverarbeitung und Kommunikationstechnologie (IAIK), Technische Universität Graz (TU Graz), AT
- Kavli Inst. for Theoretical Physics, Dept. of Physics, University of California Santa Barbara (UCSB), US

- Kungliga Tekniska högskolan (KTH), Stockholm, SE
- Paderborn Center for Parallel Computing (PC2), University of Paderborn, DE
- Pattern Recognition and Applications group (PRA), Dept. of Electrical Engineering, University of Cagliari, IT
- School of Computing, University of Utah, Salt Lake City, US
- School of Mathematics, University of Manchester, GB
- Signal Processing and Communication Lab. (SPSC), Graz University of Technology (TU Graz), AT
- Snow and Permafrost, Schnee- und Lawinenforschung in Davos (SLF), Eidgenössiche Forschungsanstalt für Wald,
- Schnee und Landschaft (WSL), Davos, CH
- Transmission Systems Research Group, University of Pisa, IT
- Verimag Lab., Institut d'Informatique et Mathématiques Appliquées de Grenoble (IMAG), Grenoble, FR

Economy / Industry

- Agilent Technologies Deutschland GmbH, Böblingen, DE
- Amadeus Information Technology (IT) Group SA, Sophia-Antipolis, FR
- Amstein + Walthert SA, Lausanne, CH
- Art of Technology AG, Zürich, CH
- British Telecommunications plc (BT), London, GB
- Brugg Kabel AG, Brugg, CH
- Cottet SA, Monthey, CH
- Cyberbotics Sàrl, Ecublens, CH
- Danfoss A/S, Nordborg, DK
- Deutsche Telekom AG, Germany, DE
- DOCOMO Communications Laboratories Europe GmbH, Munich, DE
- egnite GmbH, Castrop-Rauxel, DE
- Forum Nokia (FN) Champion Reward & Recognition Program, Espoo, FI
- Forum Nokia (FN) University PRO Developer Program, Espoo, FI
- Institut für Mobil- und Satellitenfunktechnik (IMST) GmbH, Kamp-Lintfort, DE
- Intel Corporation WCG Group, Portland, US
- Intel Corporation, Portland, US
- Intel Research, Santa Clara, US
- International Business Machines Corporation (IBM) Deutschland Research & Development GmbH, Boeblingen, DE
- International Business Machines Corporation (IBM) Research & Development Laboratories in Israel, Haifa, IL
- International Business Machines Corporation (IBM) Research GmbH, Zurich Research Lab., Rüschlikon, CH
- K-TEAM S.A., Ecublens, CH
- Logitech SA, Romanel sur Morges, CH

Achievements of the previous years

The center achieved excellent scientific productivity with a steadily increasing number of publications (about 1200 accepted/published peer-reviewed papers by now). MICS has also remarkable achievements in applications and technology transfer, particularly in the area of wireless sensor networks for environmental monitoring. As a result, MICS is not only recognized as a worldwide leading and well connected research center in mobile information and communication systems, but also as highly-reputed partner for conducting projects in the domain of wireless sensor networks.

Key areas in which we achieved these results are theory of wireless communications, wireless communication systems, security in wireless networks, embedded software systems and networked information management. The impact of MICS research is documented by academic awards, technical breakthroughs, impact on education, application projects (such as the Swiss Experiment and the projects funded by the Spin Fund initiative and the federal stabilization program) leading to the creation of several companies, and recognition by industry (such as the creation of the Nokia Research Center at EPFL and an important funding by Microsoft Research).

Wireless sensor networks have a fundamental impact on how environmental monitoring will be done in the future. They transform a science which has traditionally starved for data, but has always been rich in computational models, into a science in which data is easily accessible and readily available. Environmental monitoring has a very tangible societal impact; it is essential for informed predictions of local conditions (glaciers, permafrost, water cycles) but also delivers some of the necessary data to confirm global meteorological models.

The Swiss Experiment, as a framework for providing wireless sensor network technology and a cyber-infrastructure to environmental engineers, has initiated rich collaborations and evolved into an important showcase for MICS research. SensorScope is being or going to be used by several environmental monitoring projects of the CCES. It has also recently been adopted by the Institute for Preventive Medicine at University of Basel to monitor indoor air quality, and a deployment in Burkina Faso has been launched to examine eco-hydrological processes. PermaSense is now fully operational and, on the Matterhorn site, the system has been operating flawlessly over the 2008/2009 winter. The Hydromon project has been successful and an operational system is now surveying Chiasso's aqueduct for water pollutants and its. Global Sensor Networks is part of the operational infrastructure of the Wannengrat site of SLF in Davos.

Further information see www.mics.org

Members of the Advisory Board

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Reberez Martine, Prof.	University of Neuchâtel, WSL, EPFL, CH

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Landrock Peter, Prof.	Cryptomathic Inc. and Aarhus University, Aarhus, DK
Massey James L., Prof.	ETH Zürich, CH
Perkins Charles E., Dr.	Wichorus Inc., US
Rabaey Jan M., Prof.	UC Berkeley, US
Weikum Gerhard, Prof.	Saarland University, DE

Statistical Input – Output Data

Funding source (CHF)	Year 9	Year 10	Year 11	Total	%
SNSF funding	3 170 000[6]	2 550 000[6]	1 200 000	6 920 000	36
Self-funding from home institution[1]	1 070 000	1 739 000	969 000	3 778 000	20
Self-funding from project participants	3 106 610[6]	2 811 360[6]	1 433 540	7 351 510	38
Third-party funding[2]	539 000[6]	486 000[6]	200 000	1 225 000	6
Total	7 885 610	7 586 360	3 802 540	19 274 510	100

Personnel[3]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	FR	IN	IR	RO	
Management	3.82[4]	13	57	10	43	11	1	5	0	0	0	6
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	93	16	17	77	83	28	11	3	4	6	9	32
Postdoctoral students	31	3	10	28	90	5	6	4	1	2	1	12
Research associates	22	4	18	18	82	15	2	0	1	0	0	4
Senior researchers[5]	53	6	11	47	89	21	12	1	1	0	0	18
Other staff	17	4	24	13	76	6	0	0	6	2	0	3
Total	219.82	46	19	193	81	86	32	13	13	10	10	75

[1] Personnel costs, equipment and consumables, not included infrastructure and basic equipment
[2] Not included is CTI funding (cf. page 6). Since the start of the NCCR 7 projects have been funded by CTI at a total amount of 8.3 million CHF.
[3] Persons involved in the NCCR in the last reporting period (12 months)
[4] Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training
[5] Including leaders of the individual projects and other organisational units of the NCCR
[6] Included funding of economic stimulus package (cf. project list)

Evaluation and Monitoring by the Swiss National Science Foundation (SNSF)

Members of the Review Panel

Steger Angelika, Prof. (Chair)	Swiss National Science Foundation, Berne, CH
Effros Michelle, Prof.	California Institute of Technology, Caltech, Pasadena, US
Gray Robert, Prof.	Department of Electrical Engineering, Stanford University, Stanford, US
McAuley Derek, Prof.	Intel Research, Cambridge, GB
Odlyzko Andrew, Prof.	Digital Technology Centre, University of Minnesota, Minneapolis, US
Perrig Adrian, Prof.	CIC (Collaborative Innovation Center), Pittsburgh, US
Pottie Greg, Prof.	Electrical Engineering Department, University of California, Berkeley, US
Walrand Jean, Prof.	Department of EECS, University of California, Berkeley, US
Siegwart Roland, Prof.	Swiss National Science Foundation, Berne, CH

NCCR Office SNSF

Christ Urs, Dr.	Schweiz. Nationalfonds, Wildhainweg 3, 3001 Bern, phone: + 41 (0)31 308 23 50, fax: + 41 (0)31 305 29 71, uchrist@snf.ch

- Metro AG, Düsseldorf, DE
- Microsoft Research Cambridge, Cambridge, GB
- Microsoft Research Redmond, Redmond, US
- Moteiv Corporation, San Fransisco, US
- Nokia Research Center, Tampere, FI
- Phonak AG, Stäfa, CH
- Qualcomm Inc., San Diego, US
- Rincon Research Corporation, Tucson, US
- Samsung Advanced Inst. of Technology (SAIT), Suwon, KR
- ScatterWeb GmbH, Berlin, DE
- Shockfish SA, Lausanne, CH
- Siemens AG, München, DE
- Siemens Schweiz AG Building Technologies, Zug, CH
- STMicroelectronics NV, Geneva, CH
- Sun Microsystems Inc., Menlo Park, US
- Swisscom AG, Bern, CH
- Thales Research & Technology Ltd., Weybridge, GB
- Von Roll AGE SA, , CH
- Withestein Technologies AG, Zürich, CH

Others

- Advanced Process Understanding and prediction of hydrological extremes and Complex Hazards (APUNCH),
- Competence Center Environment and Sustainability (CCES), Zürich, CH
- Aginova Sàrl, Lausanne, CH
- Canton Valais, Martigny, CH
- Digital Games Research Association (DiGRA), Tampere, Finland, FI
- European Space Agency (ESA), Noordwijk, NL
- Extremes project, Competence Center Environment and Sustainability (CCES), Lausanne, CH
- Federal Office of Meteorology and Climatology (MeteoSwiss), Zurich, CH
- FLOWR Foundation, Zürich, CH
- Hasler Foundation, Bern, CH
- International Game Developers Association (IGDA), Frankfurt/Main Chapter, Frankfurt / Main, Germany, DE
- Office Fédéral de la Communication (OFCOM), Bienne, CH
- Serious Games Initiative (seriousgames.org), Washington DC, US
- Siemens ; Centre Suisse d'Electronique et de Microtechnique (CSEM), Zürich - Neuchâtel, CH
- STMicroelectronics NV, Plan les Ouates, CH
- Swiss Design Inst. for Finance and Banking, Zurich, CH
- Triggering of Rapid Mass Movements in Steep Terrain project (TRAMM), Competence Center Environment and
- Sustainability (CCES), Zürich, CH
- Zurich Information Security Center (ZISC), Zurich, CH

Financial Valuation and Risk Management
NCCR FINRISK

Home Institution
University of Zurich

Start of the NCCR
November 1, 2001

NCCR Management
Director
Habib Michel, Prof.
phone: +41 (0)44 634 25 07
habib@isb.uzh.ch

Deputy Director
Gibson Brandon Rajna, Prof.
phone: +41 (0)22 379 89 83
Rajna.Gibson@unige.ch

Administrative Director
Jaeger Eckart, Mr.
phone: + 41 (0)44 634 39 55
jaeger@nccr-finrisk.ch

Research
Hens Thorsten, Prof.

Knowledge and Technology Transfer
Vanini Paolo, Prof.

Education and Training
Morellec Erwan, Prof.
Paolella Marc, Prof.

Advancement of Women
Ravanelli Claudia, Dr.

International Scientific Council
Loubergé Henri, Prof.

Communication
Eckart Jaeger, Mr.

Address
NCCR FINRISK
Plattenstrasse 14
8032 Zurich

phone: + 41 (0)44 634 39 55
fax: + 41 (0)44 634 43 45
admin@nccr-finrisk.ch

Web Address
www.nccr-finrisk.ch

Public Relations
- Folder «NCCR FINRISK»
- "FINRISK Letter"
- Booklet "Risk and Risky Management"
- Booklet "Challenges to Executive Compensation"
- Booklet "FINRISK – Competence in Finance"

Research
Module "Asset Pricing and Portfolio Management"
Coordinator: Trojani F.

Behavioural finance
Head: Hens T.

Macro risk, capital flows and asset pricing in international finance
H: Imbs J.

New methods in theoretical and empirical asset pricing
H: Trojani F.

Module "Corporate Finance"
Coordinator: Degeorge F.

Corporate finance, market structure and the theory of the firm
H: Habib M.

Dynamic corporate finance: theory and tests
H: Morellec E.

Module "Risk Management"
Coordinator: Mancini L.

Credit risk and non-standard sources of risk in finance
H: Gibson Brandon, R.

Volatility and stability in financial markets
H: Barone-Adesi G.

Module "Quantitative Methods in Finance"
Coordinator: Scaillet O.

Mathematical methods in financial risk management
H: Schweizer M.

Financial econometrics for risk management
H: Scaillet O.

Computational financial economics
H: Kuebler F.

Programme
Swiss Doctoral School in Finance
Supervisor: Morellec, E. and Paolella, M.

Heads of Individual Research Projects, Modules and Supervisors of Doctoral School

Barone-Adesi Giovanni, Prof.	Facoltà di Scienze Economiche, Università della Svizzera Italiana, Lugano
Degeorge François, Prof.	Facoltà di Scienze Economiche, Università della Svizzera Italiana, Lugano
Gibson Brandon Rajna, Prof.	Ecole des HEC, Université de Genève
Habib Michel, Prof.	Institut für schweizerisches Bankwesen, Universität Zürich
Hens Thorsten, Prof.	Institut für schweizerisches Bankwesen, Universität Zürich
Imbs Jean, Prof.	Ecole des HEC, Université de Lausanne
Kuebler Felix, Prof.	Institut für schweizerisches Bankwesen, Universität Zürich
Mancini Loriano, Prof.	Swiss Finance Institute at EPF Lausanne
Morellec Erwan, Prof.	Swiss Finance Institute at EPF Lausanne
Paolella Marc, Prof.	Institut für schweizerisches Bankwesen, Universität Zürich
Scaillet Olivier, Prof.	Ecole des HEC, Université de Genève
Schweizer Martin, Prof.	Departement Mathematik, ETH Zürich
Trojani Fabio, Prof.	Facoltà di Scienze Economiche, Università della Svizzera Italiana, Lugano

Members of the Advisory Board

Brennan Michael, Prof.	University of California, Los Angeles, US
Duffie Darrell, Prof.	Stanford University, California, US
Gourieroux Christian, Prof.	University of Toronto, CA and CREST, Paris, FR
Pagano Marco, Prof.	University of Napoli, IT
Schachermayer Walter, Prof.	Universität Wien, AT
Stulz René, Prof.	Ohio State University, Colombus, US

Topics

Assessing risks and modelling their impact on agents' micro- and macroeconomic decision-making processes represents the central theme that unites the research topics covered by FINRISK. Thus, the main research questions during its final phase III (2009 - 13) relate to the analysis and the modelling of risks. They are examined in four FINRISK research modules as follows:

- Asset Pricing and Portfolio Management: How do risks affect asset prices and investors' portfolio decisions?
- Corporate Finance: How do risks affect corporations' fundamental decisions?
- Risk Management: How should financial and non-financial risks be quantified and managed?
- Quantitative Methods in Finance: Which are the mathematical, statistical and computational tools that are necessary to provide meaningful answers to the above cited research questions?

Achievements of the previous years

In the following we identify four main areas in which substantial achievements have been generated since the start of FINRISK in 2001.

Research

Within eight years of operation, FINRISK has led to the competitive establishment of 10 research projects in areas of great significance to the financial services industry. Our research output further comprises more than 600 working papers and 400 publications in internationally renowned academic journals. For detailed information on our research achievements please visit our website.

Knowledge transfer

FINRISK promotes a mutually beneficial dialogue between academics and practitioners interested in the application of modern finance. Through targeted publications as well as the organization of joint conferences, workshops and collaborative projects FINRISK has strengthened the cooperation between the Swiss universities and the financial services industry. Each year, the annual meeting organized together with the Swiss Finance Institute, attracts more than 200 practitioners and features presentations by both researchers and practitioners on topics of central interest to the finance community.

Education

A close cooperation between the doctoral programmes in Geneva, Lausanne, Lugano and Zurich has been established over the past years. We now offer a large variety of specialised doctoral courses in finance to more than 100 students from Swiss universities. Furthermore, the annual Swiss Doctoral Workshop in Finance provides an ideal forum for our students to present their research to a mix of local and international faculty. Ultimately, our efforts have led to the launching of the Swiss Finance Institute PhD program in finance.

Structural Effects

The activities of FINRISK have contributed to the fact that several Swiss universities have declared Finance to be one of their top priority research areas. In 2006, the Swiss Bankers Association, recognising the importance of research and high level education in finance for the reputation of the Financial Centre Switzerland, has launched the Swiss Finance Institute that aims to secure and extend the research and educational efforts of FINRISK in the long-term, see also www.swissfinanceinstitute.ch .

Further information see www.nccr-finrisk.ch

Third Party Cooperation

(in progress)

Research Institutions

(new cooperations since 2003 only)

- Dépt. de sciences économiques, Université de Montréal, CA
- Dept. of Economics and Finance, University of Lugano, CH
- Dept. of Economics, Anderson School of Management, Los Angeles, US
- Dept. of Economics, London School of Economics and Political Science, GB
- Dept. of Economics, University of Basel, CH
- Dept. of Economics, University of Napoli, IT
- Dept. of Economics, University of Virginia, Charlottesville, US
- Dept. of Finance, Boston University, US
- Dept. of Finance, California Inst. of Technology, Caltech, US
- Dept. of Finance, Carnegie Mellon University, Pittsburgh, US
- Dept. of Finance, Columbia University, New York, US
- Dept. of Finance, Concordia University, Montreal, US
- Dept. of Finance, Cornell University, Berkeley, US
- Dept. of Finance, Duke University, Durham, US
- Dept. of Finance, George Mason University, Fairfax, US
- Dept. of Finance, Norwegian School of Economics and Business Administration, Bergen, NO
- Dept. of Finance, University of California, Berkeley, US
- Dept. of Finance, University of Minnesota, US
- Dept. of Finance, University of Rochester, US
- Dept. of Finance, University of Toronto, CA
- Dept. of Finance, Washington University, St Louis, US
- Dept. of Management Sciences, HEC Montréal, CA
- Dept. of Mathematics and Statistics, Boston University, US
- Federal Reserve Bank of New York, US
- Finance Dept., Columbia Business School, New York, US
- Finance Dept., Fuqua School of Business, Duke University, Durham, US
- Finance Dept., School of Business, University of Wisconsin at Madison, US
- Finance Dept., The London Business School, GB
- Finance Dept., The Warton School, University of Pennsylvania, Philadelphia, US
- Finance Dept., The Wharton School of the University of Pennsylvania, Philadelphia, US
- Graduate School of Business, Stanford University, US
- Graduate School of Business, University of Chicago, US

- Institut für Mathematik, Humboldt Universität zu Berlin, DE
- Inst. of Finance and Accounting, London Business School, GB
- L'école des Hautes Etudes Commerciales (HEC), Université de Genève, CH
- Manchester School of Accounting and Finance, University of Manchester, GB
- Research Dept., European Central Bank, Frankfurt, DE
- Research Dept., International Monetary Fund, Washington, US
- School of Mathematics, University of Leeds, GB

Economy / Industry

- Associazione Bancaria Ticinese, Lugano, CH
- Banca Del Ceresio, Lugano, CH
- Banca della Svizzera Italiana, Lugano, CH
- Banque de France, Paris, FR
- Banque Nationale de Paris (BNP) Paribas, London, GB
- Caisse de dépôt et placement du Québec (CDPQ), Montreal, CA
- Caisse des Dépôts et Consignations (CDC) Ixis Capital Markets, Paris, FR
- Cédric Bancaire Privée, Geneva, CH
- Cortal Consors S.A., Paris, FR
- Credit Suisse Group, Zurich, CH
- CSS Krankenversicherungen, Luzern, CH
- European Central Bank, Frankfurt am Main, DE
- LGT Capital Management AG, Zürich, CH
- Risk Solution Division - Standard and Poors, Leeds, GB
- Standard and Poors, London, GB
- Zurich Financial Services, Zürich, CH

Others

- Ausbildungszentrum für Experten der Kapitalanlage (AZEK) / Centre de Formation des Professionnels de
- l'Investissement (CFPI), Bülach, CH
- Banca della Svizzera Italiana (BSI) Gamma Foundation, Lugano, CH
- Edizioni Universitarie della Svizzera Italiana (EUSI), Fondazione della Svizzera italiana per la ricerca scientifica e
- gli studi universitari, Lugano, CH
- Swiss National Bank, Bern, CH

Statistical Input – Output Data

Funding source (CHF)	Year 9	Year 10	Year 11	Year 12	Total	%
SNSF funding	2 300 000	2 100 000	2 100 000	0	6 500 000	73
Self-funding from home institution[1]	486 750	486 750	486 750	486 750	1 947 000	22
Self-funding from project participants[5]	0	0	0	0	0	0
Third-party funding	440 000	0	0	0	440 000	5
Total	3 226 750	2 586 750	2 586 750	486 750	8 887 000	100

Personnel[2]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	IT	FR	RU	BE	
Management	2.71[3]	3	30	7	70	3	2	0	2	0	1	2
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	63	18	29	45	71	11	9	9	2	6	1	25
Postdoctoral students	12	6	50	6	50	2	3	1	1	1	0	4
Research associates	2	0	0	2	100	0	2	0	0	0	0	0
Senior researchers[4]	61	4	7	57	93	14	7	9	14	1	6	10
Other staff	7	4	57	3	43	5	0	0	0	0	0	2
Total	147.71	35	23	120	77	35	23	19	19	8	8	43

[1] Personnel costs, equipment and consumables, not included infrastructure and basic equipment
[2] Persons involved in the NCCR in the last reporting period (12 months)
[3] Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training
[4] Including leaders of the individual projects and other organisational units of the NCCR
[5] Not yet budgeted, updated figures will be published in Guide 2011

Evaluation and Monitoring by the Swiss National Science Foundation (SNSF)

Members of the Review Panel

Foray Dominique, Prof. (Chair)	Swiss National Science Foundation, Berne, CH
Anderson Ron, Prof.	London School of Economics, GB
Errunza Vihang R., Prof.	Faculty of Management, McGill University, Montreal, CA
Geman Hélyette, Prof.	School of Economics, Mathematics and Statistics, University of London, GB
Gromb Denis, Prof.	INSEAD, FR
Herrmann Andreas, Prof.	Swiss National Science Foundation, Berne, CH
Linton Oliver B., Prof.	London School of Economics and Political Science, GB
Servaes Henri, Prof.	London Business School, GB
Sørensen Michael, Prof.	Department of Applied Mathematics and Statistics, University of Copenhagen, DK
Varone Frédéric, Prof.	Swiss National Science Foundation, Berne, CH

NCCR Office SNSF

Bachmann Stefan, Dr.	Schweiz. Nationalfonds, Wildhainweg 3, 3001 Bern, phone: + 41 (0)31 308 23 49, fax: + 41 (0)31 305 29 71, sbachmann@snf.ch

The Power and Meaning of Images
NCCR Iconic Criticism

Research

Image Boundaries and Image Sequences
Head: A. Beyer

Notation and Script
Heads: B. Schellewald, M. Schmidt

Ornament
Heads: C. Spies, V. Beyer

Perception, Implicit Visual Knowledge and Cognition
Heads: M. Hagner, G. Meynen, A.Schubbach

Image and Sociality
Head: C. Bohn

Image and Model
Heads: M. Merz, T. Vetter, I. Hinterwaldner

Design Process
Heads: M. Renner, N. van der Meulen

Image Theory
Head: G. Boehm

Graduate School „Image and Time“

01.01.09 - 31.12.11
Supervisor: A. Schubbach

Heads of Individual Research Projects

Beyer Andreas, Prof.	Department of the History of Art, University of Basel
Bohn Cornelia, Prof.	Soziologisches Seminar, Universität Luzern
Hagner Michael, Prof.	Chair for Science Studies, ETH Zürich
Hinterwaldner Inge, Dr.	Department of the History of Art, University of Basel
Merz Martina, Prof.	Soziologisches Seminar, Universität Luzern
Meynen Gloria, Dr. des	NCCR Iconic Criticism, University of Basel
Renner Michael, Prof.	Department Visual Communication, University of Art and Design, Basel
Schellewald Barbara, Prof.	Department of the History of Art, University of Basel
Schmidt Matthias, Prof.	Departement of Musicology, University of Basel
Schubbbach Arno, Prof.	NCCR Iconic Criticism, University of Basel
Spies Christian, Dr.	Department of the History of Art, University of Basel
Vetter Thomas, Prof.	Computer Science Department, University of Basel
Van der Meulen Nicolaj	Departement Visual Communication, University of Art and Design, Basel
Vischer Theodora, Dr.	Schaulager, Münchenstein/Basel

Members of the Advisory Board

not yet realised

Home Institution

University of Basel

Start of the NCCR

October 1, 2005

NCCR Management

Director
Boehm Gottfried, Prof.

Managing Director
Budelacci Orlando, Dr.
phone: + 41 (0)61 207 18 05

Administrative Manager
Dunkel Helen, Mrs.
phone: + 41 (0)61 267 18 03

Administrative Assistant
Annina Völlmy, Mrs.
phone: + 41 (0)61 267 18 10

Communications
Freiberger Heike, Dr.
phone: + 41 (0)61 267 18 10

Advancement of Women
Freiberger Heike, Dr.

Knowledge and Technology Transfer
Boehm Gottfried, Prof.
Budelacci Orlando, Dr.
phone: + 41 (0)61 267 18 05

Education and Training
Schubbach Arno, Prof.
phone: +41 (0)61 267 18 61

Address

eikones/NCCR Iconic Criticism
University of Basel
Rheinsprung 11
4051 Basel

phone: + 41 (0)61 267 18 10
fax: + 41 (0)61 267 18 11
bildkritik@unibas.ch

Public Relations

- Homepage

Web Address

www.eikones.ch

Third Party Cooperation

Programmes

- Independent Research Group "Das wissende Bild"
- Forschergruppe "Bild – Schrift – Zahl", "Das Technische Bild"
- Graduiertenkolleg "Bild Körper Medium. Eine anthropologische Perspektive"
- Graduiertenkolleg "Mediale Historiographien"
- Graduiertenkolleg "Körperinszenierungen"
- DFG-Projekt "Visuelle Navigation. Entwicklung und Kritik schematischer Karten"
- SFB 447
- SFB 447
- SFB 626
- SFB/FK 427
- SFB/FK 427
- SFB/FK 615

Research Institutions

- Ägyptologisches Inst., Universität Leipzig, DE
- Center for Art and Media (ZKM), Karlsruhe, DE
- Centro Internazionale di Studi di Architettura Andrea Palladio, Vicenza, IT
- Datenströme GbR, Berlin, DE
- Dept. of Adult and Continuing Education, University of Glasgow, GB
- Dept. of Egyptology, Hebrew University, Jerusalem, IL
- Dept. of German, Northwestern University, Chicago, US
- Dipart. di Discipline storiche, artistiche, archeologiche e geografiche, Università di Verona, IT
- Ecole des Hautes Etudes en Sciences Sociales (EHESS), Paris, FR
- Fachgebiet Formale Modelle, Logik und Programmierung (FLP), Technische Universität, Berlin, DE
- Facultad de Arquitectura, Diseño y Urbanismo, Universidad de Buenos Aires, AR
- Fakultät Bildende Kunst, Hochschule der Künste Berlin, DE
- Fakultät Medien, Bauhaus-Universität Weimar, DE
- Hermann von Helmholtz-Zentrum für Kulturtechnik, Berlin, DE
- Historisches Seminar, Universität Luzern, CH
- Hochschule für Gestaltung (HGK), Fachhochschule Nordwestschweiz (FHNW), Basel, CH
- Inst. für Ägyptologie, Universität München, DE
- Inst. für deutsche Literatur, Humboldt-Universität Berlin, DE
- Inst. für deutsche Sprache und Literatur, Humboldt-Universität Berlin, DE
- Inst. für Film- und Theaterwissenschaften, Freie Universität Berlin, DE
- Inst. für Geschichte und Theorie der Architektur (gta), ETH Zürich, CH
- Inst. für Informatik, Humboldt-Universität Berlin, DE
- Inst. für Mathematik, Humboldt-Universität Berlin, DE
- Inst. für Medizinische Radiologie, Universität Basel, CH
- Inst. für Neuere deutsche Literatur, Justus-Liebig-Universität, Giessen, DE
- Inst. für Philosophie, Technische Universität Darmstadt, DE

The Power and Meaning of Images

NCCR Iconic Criticism

Topics

The digital revolution, which has been unfolding globally since the beginning of the nineties, turns the old, inert image into an extremely flexible instrument that everyone can use, serving global communication and, above all, the generation of knowledge. Especially in the natural sciences, many new insights can only be realized with iconic methods. Images no longer illustrate what was first thought; they now represent an independent mode of thinking.

The knowledge society has become a society of images. This transformation can probably only be compared with such epochal moments as the invention of the printing press or the general spread of literacy since the eighteenth century. Now we are all users and producers of images – but without necessarily understanding how they create meaning, how their power is generated, and what becomes of reality when it is understood as a function of the flexible perspective of the image. That is the starting point for our project: the image-oriented society is increasingly dependent on iconic criticism if it wants to master its problems.

The paradigm of the image, which had not previously existed, deserves the scholarly attention language has received for centuries. Linguistics is a matter of course; iconic criticism must be one, too. The two complement each other – but only if the particular capacity of the image can be determined. This demands a fundamental reorientation, for we are used to identifying knowledge with language. The meaning potentials of the image create new openings to the present, to history and tradition, and into the future. An iconic criticism that addresses epistemic principles and exemplary applications is – as mentioned above – the task of a generation.

Achievements of the previous years

After completing its setup phase and fully consolidating its work in the whole range of its modules, the NCCR Iconic Criticism has now established itself as a visible, recognized research competence center, the heart of a network with regional, national, and international connections. In only a few years, the project has succeeded in assuming a position as one of the leading institutions in image research. The great frequency of its scholarly events and publications, including a Summer School, cooperation with institutions all over the world, intensive collaboration between senior scholars and younger researchers, and last but not least a Graduate School, have made it possible to create a first-class interdisciplinary academic institution. The projects suggested in the first proposal have proven successful and are now being extended, supplemented, and developed further. The overall project's trademark is an exciting balance between empiricism and theory, between individual research and a general critical interest in images. The NCCR has a group of all its members that meets regularly and is dedicated to the common interest in basic issues of the image and the task of "iconic criticism". The project defines itself in terms of the overall coherence of its results, connecting basic research with case studies and theories with applications. In terms of both organization and content, the NCCR has steadily adapted to new challenges and changing situations.

Further information see www.eikones.ch

Statistical Input – Output Data

Funding source (CHF)	Year 5	Year 6	Year 7	Year 8	Total	%
SNSF funding	1 875 000	1 875 000	1 875 000	1 875 000	7 500 000	41
Self-funding from home institution[1]	2 133 500	655 500	655 500	655 500	4 100 000	23
Self-funding from project participants	1 193 000	1 193 000	1 193 000	1 193 000	4 772 000	26
Third-party funding	460 000	460 000	460 000	460 000	1 840 000	10
Total	5 661 500	4 183 500	4 183 500	4 183 500	18 212 000	100

Personnel[2]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	IT	AT	BE	ES	
Management	4.73[3]	7	58	5	42	6	5	1	0	0	0	0
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	36	23	64	13	36	11	16	3	2	1	1	2
Postdoctoral students	11	2	18	9	82	2	7	1	0	0	0	1
Research associates	2	1	50	1	50	0	1	0	0	0	0	1
Senior researchers[4]	14	2	14	12	86	3	9	1	0	0	0	1
Other staff	8	3	38	5	63	6	1	0	0	0	0	1
Total	75.73	38	46	45	54	28	39	6	2	1	1	6

[1] Personnel costs, equipment and consumables, not included infrastructure and basic equipment
[2] Persons involved in the NCCR in the last reporting period (12 months)
[3] Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training
[4] Including leaders of the individual projects and other organisational units of the NCCR

Evaluation and Monitoring by the Swiss National Science Foundation (SNSF)

Members of the Review Panel

Folkers Gerd, Prof. (Chair)	Swiss National Science Foundation, Berne, CH
Bätschmann Oskar, Prof.	Swiss National Science Foundation, Berne, CH
Belting Hans, Prof.	Institut für Kunstwissenschaft, Staatliche Hochschule für Gestaltung Karlsruhe, DE
Cohn Danièle, Prof.	Ecole des Hautes Etudes en Sciences Sociales, Centre de Sociologie du Travail et des Arts CESTA, Paris, FR
Daston Lorraine, Prof.	Max-Planck-Institut für Wissenschaftsgeschichte, Berlin, DE
Elkins James, Prof.	Department of Art History, School of the Art Institute, Chicago, US
Giesen Bernhard, Prof.	Universität Konstanz, DE
Jäger Ludwig, Prof.	Lehrstuhl für Deutsche Philologie, RWTH Aachen, DE
Krämer Sybille, Prof.	Institut für Philosophie, Freie Universität Berlin, DE
Lethen Helmut, Prof.	Internationales Forschungszentrum Kulturwissenschaften, Wien, AT
Suter Christian, Prof.	Swiss National Science Foundation, Berne, CH
Waldenfels Bernhard, Prof.	München (Emeritus Universität Bochum), DE

NCCR Office SNSF

Bachmann Stefan, Dr.
Schweiz. Nationalfonds, Wildhainweg 3, 3001 Bern
phone: + 41 (0)31 308 23 49, fax: + 41 (0)31 305 29 71
sbachmann@snf.ch

- Inst. für Philosophie, Universität Wien, AT
- Inst. für Sprach- und Kommunikationswissenschaft, Rheinisch-Westfälische Technische Hochschule (RWTH), Aachen, DE
- Inst. für Theorie der Gestaltung und Kunst, Hochschule für Gestaltung und Kunst Zürich (HGKZ), CH
- Inst. für Vorderasiatische Archäologie, Freie Universität Berlin, DE
- Inst. of Archaeology and Antiquity, University of Birmingham, GB
- Internationales Forschungszentrum Kulturwissenschaften (IFK), Wien, AT
- Kulturwissenschaftliches Seminar, Humboldt-Universität Berlin, DE
- Kunstgeschichtliches Inst., Unversität Bochum, DE
- Kunsthistorisches Inst. Florenz, Max-Planck-Inst., Florenz, IT
- Kunsthistorisches Inst., Universität Köln, DE
- Kunsthistorisches Seminar, Humboldt-Universität, Berlin, DE
- Kunsthistorisches Seminar, Ruhr-Universität Bochum, Ornament-Netzwerk, DE
- Kunsthistorisches Seminar, Universität Basel, CH
- Kunsthistorisches Seminar, Universität Bern, CH
- Kunsthistorisches Seminar, Universität Hamburg, DE
- Kunsthistorisches Seminar, Universität Zürich, CH
- Leerstoelgroep Theaterwetenschap, Faculteit der Geesteswetenschappen, Universiteit van Amsterdam, NL
- Max-Planck-Inst. für Hirnforschung, Frankfurt a. M., DE
- Museo Gregoriano Egizio, Vatican Museum, Vatican City State (Holy See), VA
- Professur für Philosophie, ETH Zürich, CH
- Professur für Technikgeschichte, ETH Zürich, CH
- Research Network "History of Scientific Objects", Max-Planck-Inst. für Wissenschaftsgeschichte, Berlin, DE
- Seminar für Archäologie und Kulturgeschichte Nordostafrikas, Humboldt-Universität Berlin, DE
- Seminar für Ästhetik, Humboldt-Universität Berlin, DE
- Swiss Inst.e of Banking and Finance, Universität St. Gallen, CH
- Tandemprojekt "Ikonotext. Historische Wahrnehmungsformen in Text und Bild", Universität Leipzig, DE
- Theologisches Inst., Universität Basel, CH
- Vakgroep Duits, Universiteit Gent, BE
- Zentrum für Bewegungsforschung, Inst. für Theaterwissenschaft, Freie Universität Berlin, DE
- Zentrum zur Erforschung der Frühen Neuzeit, Johann Wolfgang-Goethe-Universität Frankfurt a. M., DE

Others

- IG Tanz - Tanzbüro Basel, Basel, CH
- Mediathek tanz.ch, Zürich, CH
- Stiftung Bibliothek Werner Oechslin, Einsiedeln, CH

International Trade Regulation: From Fragmentation to Coherence

NCCR Trade Regulation

Home Institution
University of Bern

Start of the NCCR
September 1, 2005

NCCR Management
Director
Cottier Thomas, Prof.
thomas.cottier@wti.org

Deputy Director
N.N.

Scientific Coordinator
Brown Susan, Dr.
susan.brown@wti.org

Administrative Manager
Vetter Margrit, Ms.
margrit.vetter@wti.org

HR and Financial Coordinator
Kövesdi Olivia, Ms.
olivia.koevesdi@wti.org

IT Administrator
Steiger Christian, Mr.
christian.steiger@wti.org

Librarian
Stahl Wulfhard
wulfhard.stahl@wti.org

Administrative Assistant
Hofer Gaby
gaby.hofer@wti.org

Science Editor
Kaplan Susan, Ms.
susan.kaplan@wti.org

Knowledge and Technology Transfer
Brown Susan, Dr.

Education and Training
Brown Susan, Dr.

Advancement of Women
Biber-Klemm Susette, Dr.

Communication
Karlaganis Corinne
corinne.karlaganis@wti.org

Address
NCCR Trade Regulation
World Trade Institute
Hallerstrasse 6
3012 Bern

phone: + 41 (0)31 631 30 80
fax: + 41 (0)31 631 36 30
http://www.nccr-trade.ch/

Research

Work Package
Trade governance
H: Kaufmann C.
Gehne K., Bernauer T., Elsig M.

The creation of the DSU
H: Elsig M.

Dispute initiation
H: Bernauer Th.

Judicial governance at the WTO
H: Elsig M.

Compliance with WTO dispute rulings
H: Bernauer Th.

Human rights as drivers for corporate governance
H: Kaufmann C.

Investment contracts and human rights
H: Gehne K.

Linking corporate governance and WTO law
H: Aaronson S.

Work Package
Preferential trade
H: Sauvé P., Ziegler A.

Preferential trade agreements
H: Elsig M.

The optimal provision of regional public goods
H: Estevadeordal A.

Regional safe havens in a fragmented trade world
H: Dupont C.

Regional dispute settlement bodies in trade and investment and their interference with the WTO Dispute Settlement System
H: Ziegler A.

Mapping the universe of services disciplines in PTAs
H: Sauvé P.

Completing the international investment architecture
H: Enchandi R.

Regional integration and the global downturn
H: Gasiorek M.

Vertical specialisation and regionalism
H: Holmes P.

Work Package
Innovation and competitiveness in international trade
H: Burri M.
Cottier T.

Access to content (A2C) in the digital environment
H: Burri M.

The role of interoperability in international trade
H: Gaser U.

Revisiting patent law and policy
H: Cottier Th.

The protection of intellectual property rights through international investment agreements
H: Boie B.

Rights to animal genetic resources for food and agriculture
H: Biber-Klemm S.

The law, economics and policy of financial innovation
H: Delimatsis P.

Testing selected innovation-targeted tools in practice
H: Aerni P.

The role of intellectual property rights protection in encouraging FDI spillovers in developing countries
H: Fink C.

Work Package
Trade, development and migration
H: Häberli Ch.
Panizzon M., Karapinar B.

The enabling clause revisited
H: Häberli Ch.

Empowered asymmetry
H: Panizzon M.

References to domestic labour standards in preferential trade agreements
H: Häberli Ch.

Food security, WTO and FDI in agriculture
H: Karapinar B., Häberli Ch.

Tax breaks as trade policy tools
H: Matteotti R.

Migration partnerships in multilayered migration governance
H: Panizzon M.

Temporary labour mobility in France and Spain's bilateral migration agreements
H: Panizzon M.

The private sector as facilitator of labour mobility in France's and Spain's migration agreements
H: Panizzon M.

Swiss migration and European mobility partnerships compared
H: Panizzon M.

Work Package
Trade and climate change
H: Cottier T.
Gunter S., Nartova O.

Impact of global climate change on international trade
H: Stephan G.

Climate Change Adaptation in Agriculture and International Trade
H: Karapinar B.

Role of technology and innovation in agriculture to climate change
H: Aerni P.

Climate change risk management and regulation of services
H: Nartova O.

International trade in water resources
H: York V.

An institutional framework for the global carbon market
H: de Sépibus J.

Technology transfer and CDM
H: de Sépibus J.

WTO negotiations and EGS
H: Cottier Th.

Subsidization of fossil fuel and renewable energy
H: Cottier Th.

Implementing and monitoring PPMs
H: Cottier Th.

Work Package

Impact assessment in international trade
H: Cadot Olivier

Trade, wages and location
H: Brühlhart M.

Trade preferences and adjustment at the firm level
H: Porto G.

Regionalism and governance
H: Cadot O.

Trade indices and trade patterns
H: Cadot O.

Threshold impact analysis, progressive trade regulation and development assistance
H: Ferrarini B.

Legal dimension of trade and investment impact assessments
H: Gehne K.

Financial markets and their regulation
H: Föllmi

Horizontal Research
H: Cottier T., Brown S.

Topics

NCCR Trade Regulation aims to provide a better understanding of how the world trading system functions and to explore the sources and drivers of fragmentation and coherence in the global trading system. WTO law provides the main institutional framework, although it constitutes only one of many potentially applicable international regimes. As international trade regulation transcends law and politics, the project is based on insights from the disciplines of law, economics and political science.
The project is premised on the idea that academia should play a key role in identifying, analysing and offering innovative policy and rule-making solutions to key challenges in modern trade diplomacy to improve the balance between economic and other regulatory objectives in global governance. NCCR Trade Regulation addresses the following specific regulatory challenges: a shifting global balance of trade powers; a growing web of preferential trade agreements; stimulating innovation and creativity in international trade; trade, development and migration; climate change and innovative responses, as well as; impact assessment of trade policies and norms.

Heads of Individual Research Projects and Subprojects

Aaronson Susan, Dr. The Elliott	School of International Affairs, The George Washington University, Washington
Aerni Philipp, Dr.	c/o World Trade Institute, Bern
Bernauer Thomas, Prof.	Politikwissenschaft, ETH Zürich
Biber-Klemm Susette, Dr.	c/o World Trade Institute, Bern
Boie Bertram	c/o World Trade Institute, Bern
Brühlhart Marius, Prof.	Departement of Economics, University of Lausanne, Lausanne
Burri Mira, Dr.	c/o World Trade Institute, Bern
Cadot Olivier, Prof.	Universität Lausanne, Lausanne
de Sépibus Joëlle, Dr.	c/o World Trade Institute, Bern
Delimatsis Panagiotis, Dr.	c/o World Trade Institute, Bern
Dupont Cédric, Prof.	Graduate Institute of International and Development Studies, Geneva
Elsig Manfred, Dr.	c/o World Trade Institute, Bern
Enchadi Robert	c/o World Trade Institute, Bern
Estevadeordal Antoni, Dr.	Inter-American Development Bank, Washington
Ferrarini Benno, Dr.	Asian Development Bank
Fink Carsten, Dr.	World Intellectual Property Organization
Föllmi Reto, Prof.	Departement Volkswirtschaftslehre, Universität Bern
Gaser Urs, Dr.	Berkman Center for Internet and Society, Harvard University, USA
Gasiorek Michael, Dr.	Departement of Economics, University of Susssex
Gehne Katja, Dr.	c/o World Trade Institute, Bern
Häberli Christian, Dr.	c/o World Trade Institute, Bern
Holmes Peter, Dr.	Department of Economics, University of Sussex
Karapinar Baris, Dr.	c/o World Trade Institute, Bern
Kaufmann Christine, Prof.	Rechtswissenschaftliches Institut, Universität Zürich
Matteotti René, Prof.	Institut für Steuerrecht, Universität Bern
Nartova Olga, Mrs.	c/o World Trade Institute, Bern
Panizzon Marion, Prof.	c/o World Trade Institute, Bern
Porto Guido, Prof.	Universidad Nacional de la Plata, Argentina
Sauvé Pierre, Mr.	c/o World Trade Institute, Bern
Stephan Gunter, Prof.	Departement Volkswirtschaft der WISO Fakultät, Universität Bern
York Valérie, Dr.	Consultant
Ziegler Andreas, Prof.	Droit International Public Centre, Université de Lausanne

Third Party Cooperation

(international cooperations only)

Programmes

- Global Trading System IADB-WTO Joint Research Programme
- Geneva Trade and Development Forum

Research Institutions

(foreign only)

- (Iranian) Centre for Globalization Studies, Teheran, IR
- Abteilung internationales Wirtschaftsrecht, Max-Planck-Institut für ausländisches öffentliches Recht und Völkerrecht der Georg-August Universität Göttingen, Heidelberg, DE
- African Economic Research Consortium, Nairobi, KE
- Agricultural research for developing countries (CIRAD), Montpelier, FR
- Berkman Center for Internet and Society, Cambridge, US
- Birkbeck College, Faculty of Law, University of London, GB
- Businsess School, Dept. of Economics, University Reading, GB
- Collaborative Research Center 597 "Transformations of the State", Centre for Social Policy Research and Inst. For
- Intercultural and International Studies, University of Bremen, DE
- Danish Inst. for International Studies (DIIS), Copenhagen, DK
- Dept. of Economics and Sussex European Inst., University of Sussex, GB
- Dept. of Economics, Bosporus University, Istanbul, TR
- Dept. of Economics, Open University, Milton Keynes, GB
- Dept. of Economics, University of Melbourne, AU
- Dept. of International and Applied Economics, Massey University, Palmerston North, NZ
- Dept. of Management, Glasgow University, GB
- Dept. of Monetary Theory and Policy, University of Economics, Prague, CZ
- Dept. of Political Economy, University of Genoa, IT
- European Center for Advanced Research in Economics and Statistics (ECARES), Université Libre de Bruxelles, BE
- European Center for Advanced Research in Economics and Statistics (ECARES), University of Warwick, GB
- European center for international political economy (ECIPE), Bruxelles, BE
- Executive Director of the Brooks World Poverty Inst., University of Manchester, GB
- Faculty of Law, University of Maastircht, NL
- Faculty of Law, University of Wollongong, AU
- Global Development Network, Dehli, IN
- Indian Council for Research on International Economic Relations, New Delhi, IN
- Indian Inst. of Foreign Trade, New Delhi, IN
- Inst. of Agricultural Economics and Development, Chinese Academy of Agricultural Sciences, Beijing, CN
- Inst. of Development Studies, University of Sussex, Brighton, GB

- Inst. of Economics at Newton College, Brno, CZ
- Inst. of Labour, Economic and Civil Law, University of Frankfurt, DE
- Inst. of statistical social and economic research (ISSER), University of Ghana, Accra, GH
- Intellectual Property Innovation, Technology and Law, University of Edinburgh, GB
- Law Dept., McGill University, Montreal, CA
- Law School, University of Waikato, NZ
- London School of Economics, International Relations Dept., London, GB
- Malaysian Inst. of Economic research (Mier), Kuala Lumpur, MY
- North-South Inst., Ottawa, CA
- Queen Mary Intellectual Property Research Inst., University of London, GB
- Research Centre in Industrial Organisation, University Paris XIII, Faculty of economics, Paris, FR
- Research Inst. on Contemporary southeast Asia (IRASEC), Bangkok, TH
- School of Management and Business, University of Wales, Aberystwyth, GB
- School of Social and Politics Studies (SSPS) Dept., University of Edinburgh, GB
- Tanzania Coffee Research Inst. (TACRI), Moshi, TZ
- Ukiriguru - Agricultural Research and Training Inst., Mwanza, TZ
- Unicamp, State University of Campinas, BR
- Utrecht School of Arts, Utrecht, NL
- World Inst. for Development Economics Research (Wider), United Nations University (UNU), Helsinki, FI

Economy / Industry

- Asian Development Bank, Investment and enterprises section, Manila, PH
- Bank of America, London, GB
- Bank of Zambia, Lusaka, ZM
- Bloomsbury Metals Economics, Ltd, London, GB
- Central Bank of Brasil, Rio de Janeiro, BR
- European Broadcasting Union, Geneva, CH
- International Network for Cultural Diversity (INCD), Ottawa, CA
- Malaysian Biotechnology Corporation, Kuala Lumpur, MY
- Organisation for Economic Cooperation and Development (OECD), division investment and agriculture, Paris, FR
- Organisation for Economic Cooperation and Development (OECD), Finance and investment divison, Paris, FR
- SRG idée suisse, Zurich, CH
- Swiss Authors' Rights Society for Audiovisual Works (Suissimage), Zurich, CH
- Swiss National Bank (SNB), Zurich, CH
- Swiss Society for the Rights of Authors of Musical Works (SUISA), Zurich, CH
- United Nations (UN), Economic and Social Commission for Asia and the Pacific, Investment and Enterprises section, Thailand, TH
- Zurich Financial Services, Government and Industry Affairs, Zurich, CH

International Trade Regulation: From Fragmentation to Coherence

NCCR Trade Regulation

Achievement of the previous years

Until fairly recently, international trade regulation has been undertaken as a specialized field of international law and economic policy, insufficiently interlinked with other areas of law and policy that WTO rules increasingly affect, as well as the institutions that generate these norms. We are involved in establishing a unique, multidisciplinary research network that seeks to bring greater coherence to the study of these fragmented interfaces.

Research accomplishments – the final book project

The NCCR's key research-related output during the past year has been our collective authorship of the volume, The Fragmentation of International Trade Regulation: An Agenda for Change. To be published later this year with Cambridge University Press, this volume incorporates the primary results from each of our 12 IPs during our first phase; it is designed to offer a practically-oriented, theoretically-informed overview of the NCCR's research output to one of our most important stakeholder communities - members of the international regulatory community. Each IP has a chapter representing the joint work of its membership. To the extent that an IP is multidisciplinary, the chapter was drafted from such a perspective. Several contributions go as far as to propose concrete amendments in various provisions. or parts of the relevant WTO agreements. This was possible because of the open approach that we adopted, encouraging work in research groups rather than individualist scholarship. The overwhelming majority of the contributions were drafted in a manner that reflects joint thinking and effort by both experienced, renowned trade experts and junior-level researchers, reflecting the knowledge-transfer philosophy of the NCCR research network. We had several rounds of discussions on the twelve chapters of this volume at the WTI; the most recent consisted of a peer-review process during the NCCR Annual Conference earlier this year. Just as with the whole NCCR endeavour, the fragmentation versus coherence problematic informs all the contributions included in the volume. In this sense, the overall objective of this publication is that the proposed changes or the presentation of our achievements and innovative findings would allow a better understanding of the WTO mechanics for our readership, ultimately contributing to enhanced coherence in international trade regulation.

Knowledge transfer and communications

A key focus of our efforts in this area during the past year has been our development of coherent and structured KT and communications strategies and their implementation. The strategies seek to support strategic and targeted KT and communications efforts. Communications aims at supporting ongoing KT activities and promoting the dissemination of research results in accessible or non-technical language to various target groups identified in the strategies. This includes sharing the results of our research with trade policy makers and interested groups of the Swiss public. The NCCR's KT strategy reflects the centre's organisation as a research network. Objectives consist of 1) the dissemination of high-quality research via publications and participation in academic conferences; 2) coordination and participation in workshops and seminars for and with different target groups that are important either for the respective work packages, or the NCCR as a whole, and 3) Education and training designed to promote interest in the subject of international trade regulation, or secure it. During our first phase, we have made great strides in putting international trade issues on the agendas of Swiss universities, and educating the next generation of trade policy scholars. These efforts will henceforth be actively and publicly reinforced.

Restructuring of the World Trade Institute and the NCCR

In 2009 the World Trade Institute, as the leading house of the NCCR Trade Regulation, was integrated as an interdisciplinary centre into the institutional structures of the University of Bern. The University of Bern has committed itself to guaranty a sustainable development of the WTI so as to secure the national and international outreach of its teaching and research as part of the University of Bern's strategy 2012. The NCCR is serving as a vehicle for this exercise. By the end of this year, three new assistant professors – in international economic law, trade economics and international relations - will have been engaged, a concrete and enduring attestation of this commitment.

Further information see www.nccr-trade.ch

Statistical Input – Output Data

Funding source (CHF)	Year 5	Year 6	Year 7	Year 8	Total	%
SNSF funding	2 345 000	2 345 000	2 345 000	2 345 000	9 380 000	57
Self-funding from home institution[1]	1 921 600	721 600	721 600	721 600	4 086 400	25
Self-funding from project participants	721 600	721 600	721 600	721 600	2 886 400	18
Third-party funding[5]	0	0	0	0	0	0
Total	4 988 200	3 788 200	3 788 200	3 788 200	16 352 800	100

Personnel[2]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	GB	IT	US	BG	
Management	6.72[3]	13	62	8	38	13	2	1	0	1	0	4
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	21	12	57	9	43	6	2	2	2	0	0	9
Postdoctoral students	2	0	0	2	100	0	0	0	0	0	0	2
Research associates	15	7	47	8	53	5	2	0	1	0	1	6
Senior researchers[4]	30	11	37	19	63	19	2	1	0	2	1	5
Other staff	1	1	100	0	0	0	1	0	0	0	0	0
Total	75.72	44	49	46	51	43	9	4	3	3	2	26

[1] Personnel costs, equipment and consumables, not included infrastructure and basic equipment
[2] Persons involved in the NCCR in the last reporting period (12 months)
[3] Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training
[4] Including leaders of the individual projects and other organisational units of the NCCR
[5] Not yet budgeted, updated figures will be published in Guide 2011

IEW / WTI NCCR International Scientific Advisory Board

Ehlermann Claus Dieter, Prof. em.	Wilmer Cutler Pickering LLP, Brussels, BE
Hufbauer Gary, Dr.	Institute of International Economics IIE, Washington D.C., US
Jackson John H., Prof. em.	Georgetown University Law Center, Washington D.C., US
Müller Jörg Paul, Prof. em.	University of Berne, CH
Ostry Sylvia, Prof.	University of Toronto, CA

Evaluation and Monitoring by the Swiss National Science Foundation (SNSF)

Members of the Review Panel

Foray Dominique, Prof. (Chair)	Swiss National Science Foundation, Berne, CH
Low Patrick, Prof.	World Trade Organization, Genève, CH
Maskus Keith E., Prof.	Department of Economics, University of Colorado, Boulder, US
McGrew Anthony, Prof.	School of Social Sciences, University of Southampton, GB
Probst Thomas, Prof.	Swiss National Science Foundation, Berne, CH
Odell John S., Prof.	School of International Relations, University of Southern California, US
Opitz Belakhal Claudia, Prof.	Swiss National Science Foundation, Berne, CH
Ruiz-Fabri Hélène, Prof.	Unité Mixte de Recherche de Droit Comparé, Université de Paris I, FR
Steger Debra, Prof.	Faculty of Law, University of Ottawa, CA
Tietje Christian, Prof.	Institut für Wirtschaftsrecht, Universität Halle Wittenberg, DE
Van Overwalle Geertrui, Prof.	Centre for Intellectaul Property Rights, Catholic University Leuven, BE

NCCR Office SNSF

Griessen Thomas

Schweiz. Nationalfonds, Wildhainweg 3, 3001 Bern
phone: + 41 (0)31 308 23 51, fax: + 41 (0)31 305 29 71
tgriessen@snf.ch

Others

- Advisory Centre on WTO Law, Geneva, CH
- Budin&Partner, Genf, CH
- Center for Corporate Responsibility and Sustainability, Zurich, CH
- Center on Migration Policy and Society, Oxford, GB
- Central bank of the Czech Republic, Prague, CZ
- Commonwealth Secretariat, London, GB
- Division on Investment, Technology and Enterprise, Development (UNCTAD), Geneva, CH
- European Central Bank, Frankfurt, DE
- European Commission Delegation in Zambia, Lusaka, ZM
- European Commission, Directorate for Trade, Division of Trade and Investment, Brussels, BE
- Food and Agriculture Organisation, Animal Production and Health Division, Rome, IT
- Förderverein Menschenrechtsinstitution, Bern, CH
- Friedrich-Ebert-Stiftung (FES), Genf, CH
- Global Economic Governance Centre, University of Oxford, GB
- International Centre For Trade And Sustainable Development (ICTSD) - Programme on Services (ICTSD), Geneva, CH
- International Coffee Organisation, London, GB
- International Law Association, Committee on Biotechnology and International Law, London, GB
- International Organization for Migration (IOM), Geneva, CH
- Investment Issues Analysis Branch at UNCTAD, Geneva, Geneva, CH
- Norwegian Centre for Human Rights, Oslo, NO
- Organisation for Economic Cooperation and Development (OECD), Paris, FR
- Society of International Economic Law, London, GB
- Society of International Economic Law, Washington, US
- South Center, Intergovernmental Organization of Developing Countries, Geneva, CH
- South Centre, Innovation, an Access to Knowledge Programme, Geneva, CH
- Staatssekretariat für Wirtschaft SECO, Investment unit, Bern, CH
- Swiss Delegation to OECD in Paris, Paris, FR
- Swiss Federal Inst. of Intellectual Property, Berne, CH
- Swiss Federal Office of Communications, Biel, CH
- Swiss Federal Office of Culture, Berne, CH
- Swiss Foreign Ministry (EDA), International Law Directorate (DV), Berne, CH
- UK Dept. of Trade and Industry, London, GB
- United Nation Educational, Scientific and Cultural Organization, Paris, CH
- United Nations Conference on Trade and Development (UNCTAD), Geneva, CH
- WilmerHale, Washington, US
- World Bank, Washington, US
- World Trade Organisation (WTO), Geneva, CH
- World Trade Organisation, Trade in Services Division, Geneva, CH

Mediality – Historical Perspectives
NCCR Mediality

Home Institution
University of Zurich

Start of the NCCR
October 1, 2005

NCCR Management
Director
Kiening Christian, Prof.
phone: + 41 (0)44 634 25 53
ckiening@access.uzh.ch

Deputy Director
Glessgen, Martin-D., Prof.
phone: + 41 (0)44 634 36 20
glessgen@rom.uzh.ch

Deputy Director (Coordination)
Stercken Martina, Prof.
phone: + 41 (0)44 634 51 16
stercken@hist.uzh.ch

Knowledge and Technology Transfer
Thier Andreas, Prof.

Education and Training
Glauser Jürg, Prof.

Advancement of Women
Herberichs Cornelia, Dr.

Address
NCCR Mediality
University of Zurich
Rämistr. 69
8006 Zürich
phone: + 41 (0)44 634 51 19
sekretariat@mediality.ch

Web Address
www.mediality.ch

Research

Interference

Mythological Interference
H: Glauser J.

Diagrammatic structures
H: Lutz E. C.

Plastic Writing
H: Glaser E., Rübekeil L.

Urban Sounds
H: Roeck B.

Display

Medial Metonymies
H: Kiening Ch.

Texts, Images, and Propaganda
H: Zey C.

Mapping Territories
H: Stercken M.

Literary Effects of Presence
H: Schneider S.

Dynamics of Cinematic Display
H: Schweinitz J., Tröhler M.

Instrumentalization

Monarchic Enthronement and Consecration
H: Thier A.

Media of Order
H: Teuscher S.

Peculiarities of Charter Language
H: Glessgen M.

Mediality of Stained Glass Ensembles
H: Kurmann B.

Transference

Figurations of the Chosen Ones
H: Naumann B.

Rhetoric of Transference
H: Müller Nielaba D.

Charismatic Figures
H: Wagner K., Gamper M.

The Artistic Transplant
H: Stoichita V.

Narrations of the Foreign Holy
H: Schnyder M.

Reception of Arabic Music
H: Hinrichsen H.-J.

Iconology of the Textile
H: Weddigen T.

Common Field

Assiststant Professor
Sandl M.

Senior Researchers
Beil U. J., Herberichs C.

Permanent Cooperations

Mediated Origins
H: Aris M-A.

Medialising death
H: Stoellger Ph.

Heads of Individual Research Projects

Aris Marc-Aeilko, Prof.	Departement Griechische und Lateinische Philologie, Universität München
Beil Ulrich J., PD	Deutsches Seminar, Universität Zürich
Gamper Michael, Prof.	Professur für Literaturwissenschaft, ETH-Zürich
Glaser Elvira, Prof.	Deutsches Seminar, Universität Zürich
Glauser Jürg, Prof.	Deutsches Seminar, Universität Zürich
Glessgen Martin-Dietrich, Prof.	Romanisches Seminar, Universität Zürich
Herberichs Cornelia, Dr.	Deutsches Seminar, Universität Zürich
Hinrichsen Hans-Joachim, Prof.	Musikwissenschaftliches Institut, Universität Zürich
Kiening Christian, Prof.	Deutsches Seminar, Universität Zürich
Kurmann-Schwarz Brigitte, Prof.	Kunsthistorisches Seminar, Universität Zürich
Lutz Eckart Conrad, Prof.	Departement für Germanistik, Université de Fribourg
Müller-Nielaba Daniel, Prof.	Deutsches Seminar, Universität Zürich
Naumann Barbara, Prof.	Deutsches Seminar, Universität Zürich
Roeck Berndt, Prof.	Historisches Seminar, Universität Zürich
Rübekeil, Ludwig, Prof.	Deutsches Seminar, Universität Zürich
Sandl Marcus, Prof.	Historisches Seminar, Universität Zürich
Schneider Sabine Prof.	Deutsches Seminar, Universität Zürich
Schnyder Mireille, Prof.	Deutsches Seminar, Universität Zürich
Schweinitz Jörg, Prof.	Seminar für Filmwissenschaften, Universität Zürich
Stercken Martina, Prof.	Historisches Seminar, Universität Zürich
Stoichita Viktor, Prof.	Département d'Histoire de l'Art et Musicologie, Université de Fribourg
Stoellger Philipp, Prof.	Institut für Bildtheorie an der Theologischen Fakultät, Universität Rostock

Topics

Historical Perspectives
In its second phase the NCCR focuses on the historicity of media and mediality. It investigates forms of communication, transfer, and perception before the era of mass-media dominance and modern teleologically and technologically oriented media discourses, whose historical reach goes no further back than the introduction of film, radio, or television. The aim of the NCCR is a historical mediology which particularly examines change in communication practices, new dynamics in medial forms, and reflection on the conditions of communication. Special moments and constellations will be analysed, in which the medial can be grasped and described, as well as longer periods of change.

The task of the historical mediology already in progress is to develop patterns of description that allow us to understand how mediality has formed cultural meaning. The question is not so much what media are, but rather, what in which situations and processes works as a medium, and what are the specific conditions that make the medial possible. Emphasis is put therefore not only on the images that media present of the world, but also on those images of the medial that shape our notions of what media are. The historicity and imagination of the medial, as well as the particular historical dynamics and logics of mediality will be brought to light. Organised into a general overall field (A.) and four issue-related fields (B. Interference, C. Ostentation, D. Instrumentalisation and E. Transference), texts, images, maps, sculptures, architecture, textiles, sounds and films will serve to develop different but related perspectives on medial peculiarities of the premodern period. The period between the 12th and the 15th centuries forms the focus of research in the second phase of the NCCR as it did in the first. At the same time, however, the borders of European-Christian cultural traditions will be brought into focus, perspectives on the early modern period will be opened, and selected aspects of modernity will provide a basis to observe those phases of modernity in which in literature, art, and science media discourses begin to take shape - discourses which in turn formed the idea of a premodern mediality. Participating fields of the NCCR are: German Literature and Linguistics, History, History of Art, Film Studies, Musicology, Scandinavian Studies, Romance Literature and Linguistics, and Law.

Teuscher Simon, Prof.	Historisches Seminar, Universität Basel
Tröhler Margrit, Prof.	Seminar für Filmwissenschaften, Universität Zürich
Thier Andreas, Prof.	Rechtswissenschaftliches Institut, Universität Zürich
Wagner Karl, Prof.	Deutsches Seminar, Universität Zürich
Weddigen Tristan, Prof.	Kunsthistorisches Institut, Universität Zürich
Zey Claudia, Prof.	Historisches Seminar, Universität Zürich

Evaluation and Monitoring by the Swiss National Science Foundation (SNSF)

Members of the Review Panel

Opitz-Belakhal Claudia, Prof. (Chair)	Swiss National Science Foundation, Berne, CH
Coleman Janet, Prof.	Department of Government, London School of Economics, GB
Geary Patrick J., Prof.	Department of History, University of California, Los Angeles, US
Kasten Ingrid, Prof.	Institut für Deutsche und Niederländische Philologie, Freie Universität Berlin, DE
Krüger Klaus, Prof.	Kunsthistorisches Institut, Freie Universität Berlin, DE
Landfester Ulrike, Prof.	Swiss National Science Foundation, Berne, CH
Ruhe Doris, Prof. em.	Würzburg (emeritus Universität Greifswald), DE
Strohschneider Peter, Prof.	Institut für Deutsche Philologie, Universität München, DE
Vosskamp Wilhelm, Prof.	Institut für deutsche Sprache und Literatur, Universität Köln, DE

NCCR Office SNSF

Bachmann Stefan, Dr.	Schweiz. Nationalfonds, Wildhainweg 3, 3001 Bern, phone: + 41 (0)31 308 23 49, fax: + 41 (0)31 305 29 71, sbachmann@snf.

Third Party Cooperation

Research Institutions

- Ältere deutsche Germanistik, Universität Trier, DE
- Anglistische Literatur- und Kulturwissenschaft, Universität Bern, CH
- Centre for Medieval Studies (CMS), University of Bergen, NO
- Centre for Medieval Studies, University of Oslo, NO
- Dept. of Comparative Literature, Stanford University, US
- Dept. of German, University of Berkeley, US
- Dept. of Germanic Studies, University of Chicago, US
- Dept. of History, University of Maynooth, IE
- Deutsches Seminar, Albert-Ludwigs-Universität, Freiburg i. Br., DE
- Deutsches Seminar, Eberhard-Karls-Universität, Tübingen, DE
- Ecole Nationale des Chartes, Paris, FR
- Fachbereich 05: Gesellschaftswissenschaften, Universität Kassel, DE
- Fachbereich Germanistik und Kunstwissenschaften, Philipps-Universität Marburg, DE
- Fachbereich Literaturwissenschaft, Universität Konstanz, DE
- Fakultät der Geisteswissenschaften, Universität Amsterdam, NL
- German Medieval and Linguistic Studies, University of Oxford, GB
- Historisches Institut, Universität Stuttgart, DE
- Historisches Seminar, Abt. für Westfälische Landesgeschichte, Universität Münster, DE
- Historisches Seminar, Universität Lausanne, CH
- Historisches Seminar, Universität Strasbourg, FR
- Hochschule für Gestaltung und Kunst Zürich, CH
- Inst. für Allgemeine und Vergleichende Literaturwissenschaft, Universität Frankfurt a. M., DE
- Inst. für Bildende Kunst und Kulturwissenschaften, Kunstuniversität Linz, AT
- Inst. für Deutsche Sprache und Literatur, Universität Köln, DE
- Inst. für Deutsche und Niederländische Philologie, Freie Universität Berlin, DE
- Inst. für Germanistik, Germanistische Mediävistik, Universität Erlangen-Nürnberg, DE
- Inst. für Kunstgeschichte, Radboud-Universität Nijmegen, NL

- Inst. für Philosophie, Freie Universität Berlin, DE
- Inst. für Theaterwissenschaft, Freie Universität Berlin, DE
- Inst. for Nordisk Filologi, University of Copenhagen, SE
- Inst. für Linguistik und Romanistik, Universität Stuttgart, DE
- Istituto Svizzero di Roma, IT
- Lab. de Français Ancien, Université d'Ottawa, CA
- Lehrstuhl für Deutsche Sprachwissenschaft, Katholische Universität Eichstätt-Ingolstadt, DE
- Lehrstuhl für Deutsche Sprachwissenschaft, Universität Bamberg, DE
- Maison Méditerranéenne des Sciences de l'Homme, Aix-en-Provence, FR
- Mediävistisches Institut, Universität München, DE
- Medieval English Studies, Harvard University, US
- Medieval Studies, University of Oslo, NO
- Medieval Studies, University of Reykjavik, IS
- Musikwissenschaft, Universität Hamburg, DE
- Newsham College, University of Cambridge, GB
- Philosophisches Seminar, Universität Basel, CH
- Romanische Philologie, Freie Universität Bozen, IT
- Royal Irish Academy, University of Dublin, IE
- Schweizerische Akademische Gesellschaft für Germanistik (SAGG), Genf, CH
- Section d'histoire de l'art, Université de Lausanne, CH
- Sorbonne, Université Paris, FR
- Università degli Studi della Tuscia, Viterbo, IT
- University of California at Berkeley (several departments), US
- Vitrocentre Romont, Centre Suisse de Recherche et d'information sur le Vitrail, Romont, CH
- Zentrum für Datenverarbeitung, Eberhard Karls Universität Tübingen, DE

Achievements of the previous years

The NCCR stimulates research on premodern medial phenomena. Its added value is to concentrate and amalgamate theories, approaches, and observations made in different scientific fields and create a new understanding of mediality before the period of mass media and media theories. Thus it has social relevance and can change traditional knowledge.

Not media but mediality

Unlike most contemporary media studies the NCCR does not focus on single media but on complex media situations. It asks the question of what can be used as a medium, how in specific situations and constellations meaning can be generated, how the usage of mediality was institutionalized, and in which ways it has been reflected by contemporaries.

Theories and models of mediality

Bringing together researchers from different fields and scientific traditions the NCCR studies historical theories and models of mediality plumbing antique, medieval, and early modern reflection on language, texts, and images of different kind. It also examines the artefacts themselves and how they reveal knowledge of the ways and means of communication.

Conditions of the possibilities of mediality

Setting the focus on the analysis of historical issues of huge variety the NCCR's single projects considerate the basic conditions that enable communication. Looking into premodern forms of mediality, they widen the modern discussion on media bringing in epistemological and ontological aspects.

Further information see www.mediality.ch

Statistical Input – Output Data

Funding source (CHF)	Year 5	Year 6	Year 7	Year 8	Total	%
SNSF funding	1 500 000	1 500 000	1 500 000	1 500 000	6 000 000	64
Self-funding from home institution[1]	765 875	765 875	765 875	765 875	3 063 500	33
Self-funding from project participants	70 000	70 000	70 000	70 000	280 000	3
Third-party funding[5]	0	0	0	0	0	0
Total	2 335 875	2 335 875	2 335 875	2 335 875	9 343 500	100

Personnel[2]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	AT	IT	RO	FR	
Management	3.20[3]	4	44	5	56	2	6	0	1	0	0	0
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	18	13	72	5	28	10	6	1	1	0	0	0
Postdoctoral students	9	6	67	3	33	2	4	0	0	1	0	2
Research associates	0	0	0	0	0	0	0	0	0	0	0	0
Senior researchers[4]	33	10	30	23	70	14	16	1	0	1	1	0
Other staff	5	3	60	2	40	4	1	0	0	0	0	0
Total	68.20	36	49	38	51	32	33	2	2	2	1	2

[1] Personnel costs, equipment and consumables, not included infrastructure and basic equipment
[2] Persons involved in the NCCR in the last reporting period (12 months)
[3] Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training
[4] Including leaders of the individual projects and other organisational units of the NCCR
[5] Not yet budgeted, updated figures will be published in Guide 2011

Challenges to Democracy in the 21st Century
NCCR Democracy

Research

Module "Constituting democracy in multinational polities"
Leader: Lavenex S.

Conceptions of Europe – alternative demos conceptions in the EU
Head: Caramani D., Imhof K., Lucht J.

Designing demoicracy in Europe
H: Cheneval F., Lavenex S., Schimmelfennig F.

Institutional strategies for post-conflict democratization
H: Cederman L.-E., Hug S., Wenger A.

Module "Elected and non-elected political actors in de-nationalized policy-making"
Leader: Kübler D.

Civil society – government interactions in global governance
H: Koubi V., Bernauer T.

Internationalization, mediatization, and the accountability of regulatory agencies
H: Papadopoulos I., Gilardi F.

Cleavages, governance and the media in European metropolitan areas
H: Kübler D., Marcinkowski F.

Module "Mediatization – Implications for politics, news media and the public"
Leader: Donges P.

Mediatization of political reality: Implications of media-centered reporting styles for democracy
H: Esser F.

Mediatization of political interest groups: Changes of organizational structure and communication repertoire
H: Donges P., Jarren O.

The mediatization of political decision-making
H: Sciarini P., Tresch A., Nicolet S.

Mediatization of political attitudes: Becoming a democratic citizen in a multi-media environment
H: Bonfadelli H., Esser F., de Vreese C.

Module "Changing processes and strategies of political participation and representation: comparing public debates"
Leader: Wirth W.

Strategies of political actors
H: Kriesi H.

Strategies and processes of issue selection and construction: comparing public debates
H: Siegert G.

The strategies and processes of attitude formation and public participation in comparative perspective
H: Wirth W.

The antecedents of public opinion expression – a cross-national study of debate participation
H: Matthes J.

Module "Political representation"
H: Ladner A.

Democracy barometer
H: Merkel W., Bühlmann M.

E-voting: Smart-voting 2.0
H: Ladner A.

Deliberative experiments and direct democratic voting
H: Bächtiger A., Steenbergen M., Gautschi T.

Contextual factors and the spatial model of electoral competition
H: Lachat R.

Knowledge Transfer Projects

Democracy under the influence of globalisation and mediatisation – A series of teaching units for level secondary I
H: Ziegler B.

Narrative space
H: Wyss V.

Heads of Individual Research Projects

Bächtiger André, Dr.	Insitut für Politikwissenschaft, Universität Bern
Bernauer Thomas, Prof.	Center for Comparative and International Studies (CIS), ETH Zürich
Bonfadelli Heinz, Prof.	Institut für Publizistikwissenschaft und Medienforschung, Universität Zürich
Bühlmann Marc, Dr.	Zentrum für Demokratie Aarau (ZDA), Universität Zürich
Caramani Daniele, Prof.	Institute of Political Science, University of St. Gallen
Cederman Lars-Erik, Prof.	Center for Comparative and International Studies (CIS), ETH Zürich
Cheneval Francis Prof.	Philosophisches Seminar, Universität Zürich
Donges Patrick, Prof.	Institut für Politik- und Kommunikationswissenschaft, Ernst-Moritz-Arndt-Universität Greifswald
Esser Frank, Prof.	Institut für Publizistikwissenschaft und Medienforschung, Universität Zürich

Home Institution
University of Zurich

Start of the NCCR
October 1, 2005

NCCR Management

Director
Kriesi Hanspeter, Prof.
phone: + 41 (0)44 634 40 10
hanspeter.kriesi@ipz.uzh.ch

Deputy Director
Esser Frank, Prof.
phone: + 41 (0)44 635 20 44
f.esser@ipmz.uzh.ch

Administrative Director
Rosteck Yvonne, Mrs.
phone: + 41 (0)44 634 52 02
rosteck@nccr-democracy.uzh.ch

Administration
Cavegn Barbara, Mrs.

Communication
Rosteck Yvonne, Mrs.

Knowledge and Technology Transfer
Ladner Andreas, Prof.

Education and Training
Papadopoulos Ioannis, Prof.

Advancement of Women
Hug Simon, Prof.
Siegert Gabriele, Prof.

Address
NCCR Democracy
University of Zurich
Stampfenbachstr. 63
8006 Zürich

phone: + 41 (0)44 634 52 01
fax: + 41 (0)44 634 52 00
infodesk@nccr-democracy.uzh.ch

Web Address
www.nccr-democracy.uzh.ch

Public Relations
- Newsletter (print)
- Public events
- Website
- Press releases
- E-Newsletter

Challenges to Democracy in the 21st Century
NCCR Democracy

Third Party Cooperation

Programmes

- Demanc
- EDP
- ERC
- GEG
- GROW-Net
- IMO
- NCCR Trade Regulation
- NEWGOV
- RECON
- SELECTS
- SFB 597
- SVC

Research Institutions

- Amsterdam Inst. for Advanced Labour, University of Amsterdam, NL
- Centre de Théorie Politique, Université Libre de Bruxelles, BE
- Dept. of Communication, University of California, San Diego, US
- Dept. of Communication, University of Missouri, Columbia, US
- Dept. of Political and Social Sciences, European University Inst. (EUI), Florence, IT
- Dept. of Political Communication, University of Krems, AT
- Dept. of Political Science, Erasmus University, Rotterdam, NL
- Dept. of Political Science, University of Koblenz Landau, DE
- Dept. of Social Cultural Studies, Free University of Amsterdam, NL
- Dept. of Sociology, University of California, Los Angeles, US
- Environmental Policy Research Center, Free University Berlin, DE
- German Inst. for International and Security Affairs (SWP), Berlin, DE
- Inst. for Environmental Decisions (IED), ETH Zurich, CH
- Inst. of Communication Studies, Leeds University, GB
- Inst. of Mass Communication and Media Research, Free University Berlin, DE
- Inst. of Mass Communication and Media Research, University of Düsseldorf, DE
- Inst. of Political Science, University of Innsbruck, AT
- Inst. of Political Science, University of Munich, DE

Topics

Well-functioning democratic processes and institutions constitute the backbone of political legitimacy, social stability, economic growth and prosperity. However, these days democracy is faced with serious challenges:
First, the process of **globalization** has undermined the problem-solving capacities of established democracies. Governments no longer have the degree of control that they once had, and their decisions are increasingly affected by decisions taken elsewhere. At the same time, international institutions to which political authority is increasingly transferred lack democratic legitimacy. Furthermore, the process of extending democracy into unstable countries and regions has proven to be more difficult than expected.
Second, democratic systems are confronting the increasingly powerful role of the media in politics. In this **mediatization** process over recent decades, the mass media have been moving from being merely a channel of communication to being a major actor in the political arena. This can be problematic as the media are able to influence the entire decision-making process and they can assign political relevance and importance to societal problems according to their own logic.
Since 2005, social scientists have been working together for the NCCR Democracy in order to better understand how democracy is developing under these two conditions. While globalization and mediatization pose significant challenges to democracy, they also provide new opportunities for both new and established democracies to adapt to changing conditions and can contribute to a reinforcement of democracy. The researchers' common goal is to give explanations for the current changes and to propose new solutions and therefore improve the quality of democracy.

Gautschi Thomas, Dr.	Institut für Politikwissenschaft, Universität Bern
Gilardi Fabrizio, Prof.	Institut für Politikwissenschaft, Universität Zürich
Hug Simon, Prof.	Département de science politique, Université de Genève
Imhof Kurt, Prof.	Institut für Publizistikwissenschaft und Medienforschung und Soziologisches Institut der Universität Zürich
Jarren Otfried, Prof.	Institut für Publizistikwissenschaft und Medienforschung, Universität Zürich
Koubi Vally, Prof.	Volkswirtschaftliches Institut, Universität Bern
Kriesi Hanspeter, Prof.	Insitut für Politikwissenschaft, Universität Zürich
Kübler Daniel, Prof.	Zentrum für Demokratie Aarau ZDA, Universität Zürich
Ladner Andreas, Prof.	IDHEAP, Universität Lausanne
Lachat Romain, Dr.	Institut für Politikwissenschaft, Universität Zürich
Lavenex Sandra, Prof.	Institut für Politikwissenschaft, Universität Luzern
Lucht Jens, Dr.	Institut für Publizistikwissenschaft und Medienforschung und Soziologisches Institut der Universität Zürich
Marcinkowski Frank, Prof.	Institut für Kommunikationswissenschaft, Universität Münster
Matthes Jörg, Prof.	Institut für Publizistikwissenschaft und Medienforschung, Universität Zürich
Merkel Wolfgang, Prof.	Wissenschaftszentrum Berlin für Sozialforschung
Nicolet Sarah, Dr.	Département de science politique, Université de Genève
Papadopoulos Ioannis, Prof.	Institut d'Etudes Politiques et Internationales, Université de Lausanne
Sciarini Pascal, Prof.	Département de science politique, Université de Genève
Schimmelfennig Frank, Prof.	Center for Comparative and International Studies (CIS), ETH Zürich
Siegert Gabriele, Prof.	Insitut für Publizistikwissenschaft und Medienforschung, Universität Zürich
Steenbergen Marco, Prof.	Institut für Politikwissenschaft, Universität Bern
Tresch Anke, Dr.	Département de science politique, Université de Genève
de Vreese Claes, Prof.	The Amsterdam School of Communtications Research, University of Amsterdam
Wenger Andreas, Prof.	Center for Comparative and International Studies (CIS), ETH Zürich
Wirth Werner, Prof.	Institut für Publizistikwissenschaft und Medienforschung, Universität Zürich
Wyss Vinzenz, Prof.	Institut für Angewandte Medienwissenschaft, Zürcher Hochschule Winterthur ZHW
Ziegler Béatrice, Prof.	Zentrum für Demokratie Aarau ZDA, Fachhochschule Nordwestschweiz

Achievements of the previous years

Multi-disciplinary research

The 24 research projects completed in Phase I show how the two challenges of globalization and mediatization jeopardize or reinforce democracy: While globalization poses new threats to democracy at the national level, it also allows for the democratization of supranational organizations and of non-democratic countries. However, the projects also indicate the unfavourable consequences of democratization. While mediatization leads to a commercialization of news and extends the techniques of manipulating public opinion, it also diversifies the sources of news reporting, opens politics to the scrutiny of an ever more sophisticated public, and increases the focus on dialogue. The research results have been or are in the process of being published with leading publishers and in major journals in the fields. Furthermore, the NCCR has launched a refereed e-journal Living Reviews on Democracy, providing up-to-date reviews of the state of research in all fields of democracy studies.

Knowledge transfer

The projects in the Knowledge Transfer Module have provided tools either for democracy research or for the transfer of research results to the public: The Democracy Barometer has completed data collection for 75 democracies; the publicly accessible website www.democracybarometer.org presents country rankings and diagrams allowing for an assessment of the quality of democracy in established democracies. Two projects have produced e-learning tools in order to support courses in Swiss secondary schools or at Swiss universities. One project developed an instrument to monitor mass media performance in modern democracies. Another project developed decision-aids for voters in the domain of e-democracy and identified the risks and potentials of such tools from a legal perspective. Finally, one project promoted knowledge transfer of NCCR research into society by mediating joint meetings with researchers and journalists.

Education and training

The NCCR Democracy provides an interdisciplinary doctoral program in order to enable its participants to obtain Ph.D. degrees of such a quality that they can place themselves at the forefront of their discipline(s) in Switzerland or abroad. In Phase I, the NCCR supported the training of 26 Ph.D. students; the completion rate and professional perspectives of the students are very positive: Most of them completed their Ph.D. in time and plan to continue their academic career. By the end of Phase I, ten students have already accepted a job offer in the academic field. In the future, we will also focus on promoting the postdoctoral researchers. Furthermore, an NCCR assistant professorship in democratization will be created in 2010 at the University of Zurich.

The core of our efforts to promote female researchers is the peer mentoring program. The peer group Stepping Stone in Phase I consisted of 15 female doctoral students and post-docs aiming to advance the careers of its members in academia and beyond. The group organized a variety of successful activities designed to develop skills vital to building up successful careers and to create networks. Most female doctoral students plan to stay in academia after finishing their dissertation. The program has been a very positive experience for all of its members, and they consider it one of the most effective forms of supporting the advancement of women in academia. The NCCR will therefore continue with its peer mentoring program.

Structural effects

The NCCR Democracy initiated the Zentrum für Demokratie Aarau (ZDA). The ZDA is the first democracy research center in Switzerland and a unique model for a partnership between a municipality (City of Aarau), a canton (Argovia), a university of applied sciences (FHNW) and a university (University of Zurich). The establishment of the center has also led to the creation of a new professorship in Democracy Studies at the University of Zurich. The founding of ZDA is an important measure for institutionalizing the NCCR Democracy and for securing and extending its research and educational efforts in the long run.

Further information see www.nccr-democracy.uzh.ch

Partner Institutions

Institut für Völkerrecht, Universität Zürich
Laboratoire de Sociologie Urbaine, Ecole Polytechnique Fédérale de Lausanne
Schweizerisches Institut für Aussenwirtschaft und Angewandte Wirtschaftsforschung, Universität St. Gallen
SIDOS, Universität Neuchâtel
Soziologisches Institut, Universität Zürich
Università della Svizzera Italiana, Lugano
Zentrum für Demokratie (ZDA), Aarau

- Laboratoire "Communication et politique", Centre national de la recherche scientifique, Paris, FR
- Ludwig Boltzmann Inst. for European History and Public Spheres, Basel, CH
- Nachwuchsgruppe "Mikropolitik bewaffneter Gruppen", Humboldt Universität zu Berlin, DE
- Pädagogisches Institut, Universität Zürich, CH
- Political Science Dept., University of Oslo, NO
- Politics & International Studies, Open University, Milton Keynes, GB
- Professorship "Theory and History of Democracy", Social Science Research Center Berlin, DE
- School of Politics and International Relations, University College Dublin, IE
- Social Sciences Division, University of Oxford, GB
- Vakgroep Politieke Wetenschappen, Vrije Universiteit Brussels, BE
- Zentrum für Sozialpolitik, Universität Bremen, DE

Economy / Industry

- Bertelsmann Transformation Index, Bertelsmann Stiftung, Gütersloh, DE
- Politools, Bern, CH
- Redaktion Schulfernsehen, Schweizer Fernsehen, Zürich, CH

Others

- Federal Office of Public Health (FOPH), Bern, CH
- Study Group on Democratization, National Intelligence Council and Intelligence Community, US Government, Washington, US

Statistical Input – Output Data

Funding source (CHF)	Year 5	Year 6	Year 7	Year 8	Total	%
SNSF funding	1 875 000	1 875 000	1 875 000	1 875 000	7 500 000	50
Self-funding from home institution[1]	1 134 681	1 084 705	1 089 529	1 101 285	4 410 200	29
Self-funding from project participants	742 270	688 395	740 832	735 982	2 907 479	19
Third-party funding	49 950	87 813	47 813	53 113	238 689	2
Total	3 801 901	3 735 913	3 753 174	3 765 380	15 056 368	100

Personnel[2]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	CA	FR	GR	AM	
Management	3.63[3]	5	38	8	62	6	6	0	0	1	0	0
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	31	15	48	16	52	19	8	0	1	0	0	3
Postdoctoral students	1	1	100	0	0	0	1	0	0	0	1	0
Research associates	19	6	32	13	68	7	8	0	0	0	0	3
Senior researchers[4]	44	6	14	38	86	25	12	2	1	2	0	2
Other staff	57	34	60	23	40	49	7	0	0	0	0	1
Total	155.63	67	41	98	59	106	42	2	2	3	1	9

[1] Personnel costs, equipment and consumables, not included infrastructure and basic equipment
[2] Persons involved in the NCCR in the last reporting period (12 months)
[3] Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training
[4] Including leaders of the individual projects and other organisational units of the NCCR

Members of the Scientific Advisory Board

de Bens Els, Prof.	Universiteit Gent, BE
Humphreys Peter, Prof.	University of Manchester, GB
Kitschelt Herbert, Prof.	Duke University, Durham, US
Grande Edgar, Prof.	Universität München, DE
Kepplinger Hans Mathias, Prof.	Universität Mainz, DE

Evaluation and Monitoring by the Swiss National Science Foundation (SNSF)

Members of the Review Panel

Varone Frédéric, Prof. (Chair)	Swiss National Science Foundation, Berne, CH
Benz Arthur, Prof.	Institut für Politikwissenschaft, FernUniversität Hagen, DE
Braun Dietmar, Prof.	Swiss National Science Foundation, Berne, CH
Butera Fabrizio, Prof.	Swiss National Science Foundation, Berne, CH
Entman Robert, Prof.	School of Media and Public Affairs, The George Washington University, Washington, US
Héritier Adrienne, Prof.	European University Institute, San Domenico di Fiesole, IT
Kaase Max, Prof. em.	Berlin (emeritus Universität Mannheim), DE
Leftwich Adrian, Prof.	Department of Politics, University of York, GB
Mazzoleni Gianpietro, Prof.	Department of Social and Political Studies, University of Milan, IT
Mény Yves, Prof.	European University Institute, San Domenico di Fiesole, IT
Stefaan Walgrave, Prof.	University Antwerpen, Antwerpen, BE

NCCR Office SNSF

Griessen Thomas	Schweiz. Nationalfonds, Wildhainweg 3, 3001 Bern, phone: + 41 (0)31 308 23 51, fax: + 41 (0)31 305 29 71, tgriessen@snf.ch

Swiss Etiological Study of Adjustment and Mental Health
NCCR SESAM

Research

An experimental variation of individual and systemic risk factors: Their significance for etiology and prevention
Head: Bodenmann G.
Perrez M.

Psychobiological programming of the stress response, behavioral self-regulation and parental bonding in infants
H: Hellhammer D. H.
Meinlschmidt G., Bolten M., Holzgreve W.

The impact of grandparental investment on the health and well-being of children and grandchildren
H: Hertwig R.
Wänke M.

Psychobiological consequences of mental health during pregnancy
H: Hösli I.
Holzgreve W., Alder J., Bitzer J.

A transgenerational perspective on risk factors related to neuroticism, affective and substance use disorders
H: N.N.
Dammann G., Seifritz E., Wilhelm F.

The genetic basis of major psychopathological phenotypes
H: Papassotiropoulos A.
Meyer U.A.

Primate and rodent models of stress-related disorders: Neurobehavioral studies of interactions between stress in early life and adulthood
H: Pryce C.
Knüsel I.

Postnatal programming of human mesolimbic dopaminergic function
H: Schächinger H.
Wilhelm F., Blumenthal T.

Prospective and retrospective parental memory: The accuracy of autobiographical memories of birth and infancy behavior problems
H: Schneider S.
Opwis K., Steinhausen H.-C.

Social determinants of family environments and children's health
H: Siegrist J.
Grob A.

Triadic family functioning in pregnancy and the first 3 months postpartum: An integrated psychosomatic approach to obstetrics and infant development
H: Stadlmayr W.
Bürgin D., Grob A., Favez N., Surbek D.

Autonomic nervous system activity assessed by spectral analysis of fetal and infant heart rate variability and its relationship to psychosocial development
H: Wilhelm F.
Grossman P., Schächinger H.

Database Project
H: Bernstein A.

Non-invasive markers and fetal programming in preeclampsia
H: Holzgreve W., Surbek D., Alder J., Baumann M., Hösli I., Lapaire O., Mohaupt M., Stadlmayr W.

Core Study

H: Margraf J.
Alder J., Bitzer J., Blumenthal T. D., Bodenmann G., Bolten M., Bürgin D., Dammann G., Dittrich K., Favez N., Grob A., Grossmann D. P., Hellhammer D. H., Hertwig R., Holzgreve W., Hösli I., Lieb R., Meinlschmidt G., Meyer U., Papassotiropoulos A., Perrez M., Pryce C., Schächinger H., Schneider S., Seifritz E., Siegrist J., Stadlmayr W., Steinhausen H. C., Surbek D., Wänke M., Wilhelm F. H., Wolke D.

Home Institution
University of Basel

Start of the NCCR
October 1, 2005

NCCR Management

Director
Margraf Jürgen, Prof.
juergen.margraf@unibas.ch

Deputy Director
Grob Alexander, Prof.
alexander.grob@unibas.ch

NCCR Scientific CEO
Lieb Roselind, Prof.
roselind.lieb@unibas.ch

Deputy Scientific CEO
Meinlschmidt Gunther, Dr.
gunther.meinlschmidt@unibas.ch

Office
Coste Catherine, Ms.
phone: + 41 (0)61 276 02 78
catherine.coste@unibas.ch

Communication
–

Database Manager
Georg Brein, Mr.
georg.brein@unibas.ch

Knowledge and Technology Transfer
–

Education and Training
Schneider Silvia, Prof.

Advancement of Women
Schneider Silvia, Prof.

Address
NCCR SESAM
Birmannsgasse 8
P.O. Box
4009 Basel
sesam@unibas.ch

Web Address:
www.sesamswiss.ch

Heads of Individual Research Projects and Subprojects

Alder Judith, Dr.	Frauenklinik, Universitätsspital Basel
Baumann Marc, Dr.	Klinik und Poliklinik für Frauenheilkunde, Inselspital Bern
Bernstein Abraham, Prof. Dr.	Institut für Informatik, Universität Zürich
Bitzer Johannes, Prof.	Frauenklinik, Universitätsspital Basel
Blumenthal Terry D., Prof.	FBI – Psychobiologie, Universität Trier
Bodenmann José-Guy, Prof.	Psychologisches Institut, Universität Zürich
Bolten Margarete, Dr.	Institut für Psychologie, Universität Basel
Bürgin Dieter, Prof.	Prof. em. Dr. med. , Basel
Dammann Gerhard, Dr.	Psychiatrische Klinik Münsterlingen
Favez Nicolas, Prof.	Faculté de Psychologie et des Sciences de l'Education, Université de Genève
Grob Alexander, Prof.	Institut für Psychologie, Universität Basel
Grossman Paul, Dr.	Abteilung für Psychosomatik, Psychophysiologisches Forschungslabor, Universitätsspital Basel

Swiss Etiological Study of Adjustment and Mental Health
NCCR SESAM

Third Party Cooperation

Programmes

- SHARELIFE Employment and health at 50+: A life history approach to European welfare state interventions
- (CIT 028812)

Research Institutions

- Center for Family Research, University of Lausanne, CH
- Child and Family Research Inst., Center for Community Child Health Research, Vancouver, CA
- Dept. für Psychologie, Persönlichkeitspsychologie, Psychologische Diagnostik und Familienpsychologie, Universität München, DE
- Dept. of Child and Adolescent Psychiatry, University of Berne, CH
- Dept. of Psychology, University of Callifornia, Los Angeles, US
- Dept. of Psychology, University of Warwick, GB
- Fakultät Rehabilitationswissenschaften, Universität Dortmund, DE
- Inst. für Psychologie, Abt. Klinische Psychologie, Psychotherapie und Diagnostik, Technische Universität Braunschweig, DE
- Inst. of Psychiatry, Kings's College, London, GB
- Lehrstuhl für Entwicklungsförderung und Diagnostik, Humanwissenschaftliche Fakultät, Universität Köln, DE
- Zentrum für Klinische Psychologie und Rehabilitation, Universität Bremen, DE

Economy / Industry

- F.Hoffmann-La Roche AG, Basel, CH

Others

- Freiwillige Akademische Gesellschaft, Basel, CH

Topics

Mental health is one of the societies most precious commodities. The rapid rise in emotional disorders is a growing cause for concern. According to WHO estimates, depression will be the second most important cause of premature death and health impairment by 2020.

The fundamental topic of the NCCR sesam is to elucidate the complex interplay of psychological, physiological, social and biological factors that may influence the development of mental health in human development. To reach this goal, the NCCR sesam created an interdisciplinary network of scientists from different disciplines which work together on this general goal of sesam. Initially, the overall research design included one core-study and several independent individual projects. Within the core-study, sesam aimed to study the longitudinal development of mental health in 3000 children and their families, beginning in pregnancy and following them up until age 20 years.

Hellhammer Dirk, Prof.	Institut für Psychologie, Universität Basel
Hertwig Ralph, Prof.	Institut für Psychologie, Universität Basel
Holzgreve Wolfgang, Prof.	Universitätsklinik Freiburg, DE
Hösli Irene, Dr.	Frauenklinik, Universitätsspital Basel
Knüsel Irene, Dr.	Verhaltensneurobiologie, ETH Zürich
Lapaire Olaf, Dr.	Frauenklinik, Universitätsspital Basel
Lieb Roselind, Prof.	Institut für Psychologie, Universität Basel
Margraf Jürgen, Prof.	Institut für Psychologie, Universität Basel
Meinlschmidt Gunther, Dr.	Institut für Psychologie, Universität Basel
Meyer Urs, Prof.	Abteilung für Psychiatrische Forschung, Universität Zürich
Mohaupt Markus, Prof.	Klinik und Poliklinik für Nephrologie und Hypertonie, Inselspital Bern
Papassotiropoulos Andreas, Prof.	Institut für Psychologie und Life Science Training Facility, Biozentrum, Universität Basel
Perrez Meinrad, Prof.	Departement für Psychologie, Universität Fribourg
Pryce Christopher, Dr.	Psychiatrische Universitätsklinik, Zürich
Schächinger Hartmut, Prof.	Institut für Psychologie, Universität Basel
Schneider Silvia, Prof.	Institut für Psychologie, Universität Basel
Seifritz Erich, Prof.	Psychiatrische Universitätsklinik, Zürich
Siegrist Johannes, Prof.	Institut für medizinische Soziologie, Heinrich Heine Universität Düsseldorf, DE
Stadlmayr Werner, Dr.	Klinik und Poliklinik für Frauenheilkunde, Inselspital Bern
Steinhausen Hans-Christoph, Prof. em.	Zentrum für Kinder- und Jugendpsychiatrie, Universität Zürich
Surbek Daniel, Prof.	Klinik und Poliklinik für Frauenheilkunde, Inselspital Bern
Wänke Michaela, Prof.	Institut für Psychologie, Universität Basel
Wilhelm Frank, Prof.	Institut für Psychologie, Universität Basel
Wolke Dieter, Prof.	Department of Psychology and Health, Sciences, Research Institute, University of Warwick

Members of the Advisory Board

Barr Ronald G., Prof.	B.C. Research Institute for Children´s & Women´s Health, Centre for Community Child Health Research, Vancouver, CA
Diener Ed, Prof.	University of Illinois, US
Marmot Michel, Prof.	International Centre for Health and Society, Department of Epidemiology and Public Health, University College London, GB
Meaney Michael, Prof.	Douglas Hospital Research Centre Montreal, Quebec, CA
Moffitt Terrie, Prof.	Institute of Psychiatry, Social, Genetic & Developmental Research Center, London, GB
Rapee Ronald M., Prof.	Department of Psychology, Macquarie University, Sydney, AU
Wadhwa Pathik D., Prof.	Departments of Psychiatry and Human Behavior and Obstetrics & Gynecology, University of California, Irvine, College of Medicine, US
Wettstein Joseph G., Dr.	Department of Neuroscience, F. Hoffmann-La Roche Ltd., Basel

Achievements of the previous years

Research

Due to the low recruitment rate, the recruitment for the sesam core-study was stopped in March 2009, while individual studies that recruit individuals independent of the core-study are still ongoing. Therefore, the NCCR sesam in its originally designed form will be finished after the first funding period in 2009 and an additional one-year discontinuation phase.

The ongoing individual focus on research topics such as the impact of family socialisation factors on child development, the psychobiological programming of stress response, the psychobiological consequences of mental health during pregnancy, maternal sensitivity and amygdala functioning, the postnatal programming of human mesolimbic dopaminergic function, family functioning as well as the relationship between fetal heart rate variability and psychosocial development of children. In ongoing prestudies, new methods (e.g., digital diaries, specific questionnaires, translated questionnaires or methods for the collection of biological samples) that have been developed for the application within the core study are evaluated. It has to be mentioned that due to the long and complicated process of ethical evaluation, the start of the recruitment within the whole NCCR was markably delayed.

Scientific achievements that have been obtained so far include the successful completion of one individual project (Primate and rodent models of stress-related disorders: Neurobiological studies of interactions between stress and early life; PI: Pryce, C. & Knüsel, I) in the first year. Results that have been obtained in this project have already successfully been published. Further, a broad range of new methods (see above) including the development of a specific translation concept as well as the translation of specific questionnaires have been established, which are currently being evaluated in separate studies. Papers addressing these evaluations are in preparation. Due to the delay of the start of recruitment, papers based on data that were obtained directly from the research carried out in the ongoing individual studies will be published in the next years. Nevertheless, other research activities of sesam team members that address research topics close to sesam led to an output of more than 150 peer reviewed papers since 2005 not including a series of book chapters and abstracts.

Other scientific achievements that have been obtained so far include the development of a sophisticated security concept and the development and implementation of a highly secure database schema as well as several client applications.

Education and training

Specifically for sesam, an education and training program has been developed and well established. The program includes several components for master and PhD students. For master students, a specific master program was established and integrated into the Faculty of Psychology. Until today, 51 master students have been/are enrolled in the sesam master program. For PhD students, the NCCR sesam established a PhD program that includes – besides the individual and peer mentoring by junior and senior scientists – training activities such as a journal club, workshops, an interdisciplinary research colloquium and also an annual summer school. Three summer schools have successfully been realized. The annual evaluation of the program showed that it is largely appreciated by the students. Especially the scientific career of young female scientists is strongly supported by the recruitment of predominantly female PhD students. A total of 29 PhD studies have been launched so far, of which 6 are already completed.

Organisational and Structural Development

The NCCR sesam has been responsible for intensive, interdisciplinary cooperation in the life sciences area. Within this framework, many new cooperative research efforts (e.g. projects between various University's Research Departments and the nine medical hospitals, and the cooperative projects with several high ranking, high profile studies) have been established. Partly, as a result of the NCCR sesam initiative, high calibre scientists and professors have been attracted and recruited to meet the University of Basel's personnel requirements.

Since the start of the NCCR sesam, in the year 2005, important advancements within the various functional units and the infrastructure have been set in place. At the NCCR headquater in Basel, a research centre has been developed, with up to fifty personnel. Established here are the knowledge and the know-how, with the appropriate infrastructure for research within the behavioural-biological area. This also includes the areas of physiological, medical and analytical biochemical laboratory testing, biological IT-supported databases, outpatient assessment, telephone and postal surveys and interviews, and statistical analyses. It gives the flexibility and ability of mixing and combining all these techniques as needed. The research centre also meets the highest requirements of personal data security, specialist psychological and psychiatric software application development, and research quality.

Further information see www.sesamswiss.ch

Statistical Input – Output Data

Funding source (CHF)	Year 5	Total	%
SNSF funding	1 007 767	1 007 767	60
Self-funding from home institution[1]	665 011	665 011	40
Self-funding from project participants[5]	0	0	0
Third-party funding[5]	0	0	0
Total	1 672 778	1 672 778	100

Personnel[2]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	AU	FR	AT	CM	
Management	5.19[3]	9	60	6	40	8	4	0	2	0	0	1
Master students	32	25	78	7	22	22	7	1	0	0	2	0
Doctoral students	27	25	93	2	7	13	10	0	0	0	0	4
Postdoctoral students	3	2	67	1	33	0	2	1	0	0	0	0
Research associates	15	7	47	8	53	9	3	0	0	0	0	3
Senior researchers[4]	35	6	17	29	83	14	19	0	0	1	0	1
Other staff	35	27	77	8	23	24	5	1	1	1	0	3
Total	152.19	101	62	61	38	90	50	3	3	2	2	12

[1] Personnel costs, equipment and consumables, not included infrastructure and basic equipment
[2] Persons involved in the NCCR in the last reporting period (12 months)
[3] Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training
[4] Including leaders of the individual projects and other organisational units of the NCCR
[5] Not yet budgeted, updated figures will be published in Guide 2011

Evaluation and Monitoring by the Swiss National Science Foundation (SNSF)

Members of the Review Panel

Kléber André, Prof. (Chair)	Swiss National Science Foundation, Berne, CH
Blane David, Prof.	Department of Primary Care and Social Medicine, Imperial College London, GB
DeLoache Judy S., Prof.	Department of Psychology, University of Virginia, US
Eisenberg Nancy, Prof.	Department of Psychology, Arizona State University, US
Esser Günter, Prof.	Institut für Psychologie, Universität Potsdam, DE
Levy René, Prof.	Swiss National Science Foundation, Berne, CH
Maier Wolfgang, Prof.	Klinik und Poliklinik für Psychiatrie und Psychotherapie, Universitätsklinikum Bonn, DE
Merikangas Kathleen, Prof.	Section on Developmental Genetic Epidemiology, National Institute of Mental Health, Bethesda, US
Pauli Paul, Prof.	Institut für Psychologie, Universität Würzburg, DE
Perrig-Chiello Pasqualina, Prof.	Swiss National Science Foundation, Berne, CH
Rutter Michael Sir, Prof.	Social, Genetic and Developmental Psychiatry Centre, Institute of Psychology, London, GB
Visser Gerard H.A., Prof.	Department of Perinatology, University Medical Centre, Utrecht, NL

NCCR Office SNSF

Christ Urs, Dr.	Schweiz. Nationalfonds, Wildhainweg 3, 3001 Bern, phone: + 41 (0)31 308 23 50, fax: + 41 (0)31 305 29 71, uchrist@snf.ch

Affective Sciences: Emotion in Individual Behaviour and Social Processes

NCCR Affective Sciences

Research

Work Package Appraisal / Values / Norms

The neuro-cognitive architecture of emotion elicitation and differentiation
Heads: Sander D., Scherer K.R.

The impact of emotional cues on prosocial behavior and norm compliance
H: Fehr E.

Emotion, feeling & value
H: Mulligan K.

Myths & rites as cultural expression of emotion
H: Borgeaud P.

Work Package Individual differences / Disposition

Experiencing and regulating emotions, issues of self-involvement, and relationships to well-being and performance
H: Semmer N., Tschan F.

The cognitive-affective interplay of self regulation
H:Van der Linden M.

Emotion and gender under a power perspective
H: Schmid-Mast M., Kaiser S.

Work Package Systems / Dynamics

Emotional response patterning and its mental representation
H: Grandjean D., Scherer K.R.

Cerebral bases of individual differences in affect perception and regulation
H:Vuilleumier P., Landis T.

Affective dynamics and aesthetic emotions
H: Lombardo P., Soldati G.

Research Foci
H: Stearing Board

Aesthetic emotions

Emotion in language and culture

Emotional basis of other-regarding behaviour: Empathy and fairness

The nature and consequences of gender differences

Development of methods
H: Grandjean D.

Programmes

Graduate School

Post-Doc Program

Workshops

Colloquium

Summer/School

Female Careers: Special Stipends and Mentoring

Lab Rotation

Invited Professorships

Home Institution

University of Geneva

Start of the NCCR

September 1, 2005

NCCR Management

Director
Scherer Klaus R., Prof.
phone: + 41 (0)22 379 92 11
Klaus.Scherer@unige.ch

Deputy Director
Mulligan Kevin, Prof.
phone: + 41 (0)22 379 70 51
Kevin.Mulligan@unige.ch

Scientific Coordinator
Sander David, Prof.
phone: + 41 (0)22 379 92 12
David.Sander@unige.ch

Administrative Manager
Sauge Daniela, Mrs.
phone: + 41 (0)22 379 98 04
Daniela.Sauge@unige.ch

Administrative Assistant
Schneider Antoinette
phone: + 41 (0)22 379 98 01
Antoinette.Schneider@unige.ch

Education and Training
Grandjean Didier, Prof.
phone: +41 (0)22 379 92 13
Didier.Grandjean@unige.ch

Advancement of Women
Kaiser Susanne, Prof.
phone: + 41 (0)22 379 92 16
Susanne.Kaiser@unige.ch

Schmid Mast Marianne, Prof.
phone: + 41 (0)32 718 13 94
marianne.schmid@unine.ch

Sauge Daniela, Mrs.

Computer and Internet Resources / Methods
Grandjean Didier, Prof.
Kapusova Dajana, Mrs.
phone: + 41 (0)22 379 98 19
Dajana.KapusovaLeconte@unige.ch

Communication Officer
Varone Carole, Mrs.
phone: +41 (0)22 379 98 05
Carole.Varone@unige.ch

Knowledge and Technology Transfer
Varone Carole, Mrs.

Address

NCCR Affective Sciences
CISA Centre Interfacultaire en Sciences Affectives
Université de Genève
7, rue des Battoirs, 1205 Genève
phone: + 41 (0)22 379 98 00
fax: + 41 (0)22 379 98 44

Web Address

www.affective-sciences.org

Affective Sciences: Emotion in Individual Behaviour and Social Processes

NCCR Affective Sciences

Public Relations

- Newsletter
- Website
- Participation in radio and TV programs
- Newspaper, magazine interviews and articles
- Nuit de la Science
- Cité des Métiers
- Semaine du Cerveau
- Salon de l'étudiant
- Le temps d'une découverte, Université de Genève
- Journée des filles
- Journée des Collégiens
- Museum exhibitions and workshops
- Montreux Festival Jazz

Third Party Cooperation

Programmes

- ENABLE
- ICCRA
- INTACT

Research Institutions
(foreign only)

- Adaptive Systems Research Group, University of Hertfordshire, Hatfield, GB
- Affective Neuroscience Lab, University of Wisconsin, Madison, US
- Brain and creativity Inst., University of Southern California, Los Angeles, US
- Centre de droit privé fondamental, Université Robert Schuman, Strasbourg, FR
- Centre de Recherche Psychotropes, Santé Mentale, Société (CNRS-INSERM) - Université René Descartes, Paris, FR
- Centre européen d'enseignement et de recherche en éthique, Strasbourg, FR
- Centre for the Study of Emotion at the University of Portsmouth, GB
- Cognitive psychopathology Unit, University of Liège, BE
- Computational Neuroscience Group, Kings College of London, GB
- Dept. of History and Archaeology, University of Crete, GR
- Dept. of Philosophy, University of Lund, SE
- Dept. of Philosophy, University of Montreal, CA
- Dept. of Philosophy, University of Toronto, CA
- Dept. of Psychology, Blaise Pascal University, Clermont-Ferrand, FR
- Dept. of Psychology, Ghent University, BE
- Dept. of Psychology, Harvard University, Boston, US
- Dept. of Psychology, Northwestern University, Chicago, US
- Dept. of Psychology, Princeton University, US
- Dept. of Psychology, Rutgers University, Brunswik, US

Topics

This interdisciplinary NCCR investigates a phenomenon playing a central role in human behaviour and social interaction, emotion, on several levels of analysis from the perspectives of many different disciplines: psychology, neuroscience, economics, philosophy, law, comparative anthropology, as well as the humanities and the social sciences.

The following research questions illustrate some of the central topics currently addressed by the NCCR Affective Sciences:

- How are emotions elicited and differentiated into different response patterns? Topics: the role of brain structures, individual predispositions, cognitive appraisals, and situational factors; the patterning and synchronisation of emotional responses and action tendencies; the expression and communication of emotion;

- How are emotions regulated? Topics: the control of bodily reactions and feelings by social norms and interpersonal expectations; the ability to cope with emotions to avoid stress and burnout; the loss of control as a risk factor for affective disorders such as pathological anxiety and depression; the role of individual personality traits such as impulsivity;

- What role plays emotion in social relations and interactions? Topics: the central role of empathy, affective processes in family, workplace, and society as a whole; the role of social norms and values, such as justice, in shaping the nature of the emotional response; the role of religion and myths; the socializing function of shame; effects of economic and socio-political changes on affective experiences and well-being.

Special emphasis is being placed on the application of research findings as well as joint research activities with transfer partners in order to deal with social issues in the areas of health, work and organizations, the family, law, the problem of violence, economics, and the arts. The NCCR is also committed to training the first generation of "affective scientists".

Heads of Individual Research Projects and Associates

Borgeaud Philippe, Prof.	Faculté des Lettres, Université de Genève
Fehr Ernst, Prof.	Institut für Empirische Wirtschaftsforschung, Universität Zürich
Grandjean Didier, Prof.	Centre Interfacultaire en Sciences Affectives et Faculté de Psychologie et des Sciences de l' Education, Université de Genève
Kaiser Susanne, Prof.	FPSE, Université de Genève
Landis Theodor, Prof.	Département des Neurosciences Cliniques et Dermatologie, Hôpitaux Universitaires de Genève
Lombardo Patrizia, Prof.	Faculté des Lettres, Université de Genève
Mulligan Kevin, Prof.	Faculté des Lettres/Département de Philosophie, Université de Genève
Sander David, Prof.	Faculté de Psychologie et des Sciences de l'Education, Université de Genève
Scherer Klaus, Prof.	FPSE, Université de Genève
Schmid Mast Marianne, Prof.	Département de Psychologie, Université de Fribourg
Semmer Norbert, Prof.	Institut für Psychologie, Universität Bern
Soldati Gianfranco, Prof.	Département de Philosophie, Université de Fribourg
Tschan Franziska, Prof.	Institut de Psychologie du Travail et des Organisations, Université de Neuchâtel
van der Linden Martial, Prof.	FPSE, Université de Genève
Vuilleumier Patrik, Prof.	Faculté de Médecine, Centre Médical Universitaire, Genève

Members of the International Scientific Council

Manstead Tony, Prof.	School of Psychology,Cardiff University, GB
Niedenthal Paula, Prof.	Departement of Psychology, Université de Clermont-Ferrand, FR
Robinson Jenefer, Prof.	Departement of Philosophy, University of Cincinnati, US
Stemmler Gerhard, Prof.	Departement of Psychology, University of Marburg, DE

Achievements of the previous years

Research

During its first phase, the NCCR Affective Sciences has demonstrated a high level of productivity, resulting in many publications in leading international journals and books. Among the concrete research achievements are: the experimental confirmation of cumulative-sequential processing of external stimuli; the creation of a reference corpus and data bank of emotional expressions; the experimental demonstration of the role of social context and personality on brain responses to other people's emotions; pioneering ambulatory assessment of emotional reactions and regulation in real life settings (e.g., in the work place and in the family); the confirmation that social stressors at work have a powerful and measurable impact on human emotions and, consequently, on health and well-being; the experimental confirmation that lack of perseverance and other aspects of impulsivity are related to interference in working memory and response inhibition (demonstrating potential consequences for emotional stability); the demonstration that the intranasal administration of the neuropeptide Oxytocin, which plays a central role in social approach behaviour in non-human mammals, causes a substantial increase in trust in humans; the conceptual analysis of the nature of shame and guilt, establishing a fundamental distinction between these two emotions; the analysis of the emotional issues related to individual attitudes towards organ donation; and a comparison of the emotional aspects of myths and rites in different ancient and classical cultures.

The newly created interdisciplinary Research Foci have been an outstanding success, in particular the foci on Aesthetic emotions, Empathy, and Language and culture. In addition to a large number of pluridisciplinary international workshops and symposia, mostly published as books or special journal issues, several major interdisciplinary research projects are currently being conducted. For example, a large intercultural project has established semantic profiles for emotion words in over 30 languages, which, in addition to producing valuable scientific insights, will allow more appropriate translations in cross-cultural research and in international negotiations. The Transversal Module Methods has produced several important toolboxes to be shared within the NCCR and the scientific community at large. The NCCR is also a leading partner in the University of Geneva's new Brain and Behavior Laboratory, which combines in a single facility top notch brain imaging, and psychophysiological measurement, behavioural interaction and expression analysis with virtual reality tools used to elicit emotions.

The NCCR also has a large number of Associate members, academics and professionals from inside and outside Switzerland, contributing to project research and foci activities. The research expertise and past achievements of several of our scientists has been acknowledged by prizes and grants such as the Marcel Benoist prize (E. Fehr), the Théodore Ott prize (T. Landis), ERC Starting grants (G. Pourtois, T. Singer), and an ERC Advanced grant (K. R. Scherer).

Education and training & Advancement of women

The NCCR's interdisciplinary doctoral program provides leading edge training for the large number of graduate students working in the NCCR projects. Similarly, the postdoctoral program provides top-level seminars and a forum of international exchange for the postdoctoral fellows. Both programs organize thematic and methodological meetings with invited speakers from Switzerland and abroad. In 2009, the NCCR launched the first International Summer School in Affective Sciences (ISSAS). In order to support women and young researchers with family responsibilities, the NCCR has implemented stipends to help with day care costs and allow researchers to pursue their academic career.

Knowledge transfer & Public information

The NCCR is strongly committed to transferring scientific knowledge to society. Successful projects are being conducted in collaboration with (and additional funding from) Firmenich, a world leader in fragrance research and production, the German technology institute Fraunhofer, and the foundation for marketing research Gesellschaft für Konsumforschung.

During the past years, our researchers participated in several major events for the general public organized by the University, such as "la Semaine du cerveau" and "la Nuit de l'Université". The Center has also responded to numerous requests from the media, and has collaborated with local museums and other partners in several exhibitions. Its large website continues to draw an international audience. Both research results and knowledge transfer activities are featured prominently in the Center's quarterly newsletter.

Further information see www.affective-sciences.org

- Dept. of Psychology, Stanford University, Palo Alto, US
- Dept. of Psychology, Tilburg University, NL
- Dept. of Psychology, University of Berkeley, US
- Dept. of Psychology, University of Birmingham, GB
- Dept. of Psychology, University of Chicago, US
- Dept. of Psychology, University of Gent, BE
- Dept. of Psychology, University of Graz, AT
- Dept. of Psychology, University of Munich, DE
- Dept. of Psychology, University of Sheffield, GB
- Dept. of Psychology, University of Singapore, SG
- Dept. of psychology, University of Stanford, Palo Alto, US
- Dept. of Psychology, University of Würzburg, DE
- Dept. of Psychology, Uppsala University, SE
- Dept. of Psychology, Yale University, New Haven, US
- Douglas Psychiatry Research Hospital, McGill University, Montreal, CA
- Embodied Agents Research Group, German Research Centre for AI (DFKI), Saarland University, Saarbrücken, DE
- Environnements Virtuels pour l'Animation et la Synthèse d'Images d'Objets Naturels, Inst. National de Recherche en Informatique et en Automatique Rhone-Alpes, Grenoble, FR
- Faculté de droit, Université de Louvain-la-Neuve, BE
- Harvard Medical School, Cambridge, US
- Health Psychology Section, University of Ulm, DE
- InfoMus Lab, Dipartimento di Informatica Sistematica e Telematica, University of Genoa, IT
- Inst. Communication Parlée, Université de Grenoble, FR
- Inst. de Neurosciences Cognitives de la Méditerranée (CNRS), Marseille, FR
- Inst. für Psychologie, Christian-Albrechts Universität zu Kiel, DE
- Inst. National de la Santé et de la Recherche Médicale U 610 "Neuro-anatomie fonctionnelle du comportement et de ses troubles", Hôpital de la Salpétrière, Paris, FR
- Inst. National de la Santé et de la Recherche Médicale, Centre de Recherche CErveau et COgnition, Toulouse, FR
- Lab. d'Informatique et Communication, University of Paris, FR
- Lab. d'Informatique pour la Mécanique et les Sciences de l'Ingénieur, (CNRS), Paris, FR
- Language Technology Lab, DFKI GmbH, Saarbrücken, DE
- LENA, Lab. de Neurosciences Cognitives & Imagerie Cérébrale,

(CNRS), Hôpital de la Salpétrière, Paris, FR
- Maine Medical Center, Portland, Maine, US
- Memory Resources and Research Centre, University of Lille, FR
- Neurological Reeducation Centre, Hospital Raymond Poincaré, Paris, FR
- Nonconscious Information Processing Laboratory, University of Tulsa, US
- Philosophy Dept., University of Manchester, GB
- Psychiatry III, University of Ulm, DE
- Psychology Dept., Central Michigan University, Mount Pleasant, US
- Psychology Dept., University of California, Berkeley, US
- School of psychology, Cardiff University, GB
- School of Psychology, Georgia Tech, Atlanta, US
- School of Psychology, Normal University of Bejing, CN
- School of Psychology, Queen's University Belfast, IE
- Section Sciences Religieuses, Ecole Pratique des Hautes Etudes, Paris, FR
- Service de neurologie, University of Rennes, FR
- Social Cognition Lab, University of Aberdeen, GB
- Social Psychology Dept., Oxford University, GB
- The Computation Emotion Group, University of Southern California, Marina del Rey, US•
Unité Fairburn (anorexie, boulimie), Clinique des Vallées, Ville-La-Grand, FR
- Walton College, University of Arkansas, Fayettville, US

Economy / Industry

- Firmenich SA, Genève, CH
- European Group on Public Option and Justice (GPOJ), University of Oxford, Oxford, GB
- International Committee of the Red Cross, Geneva, CH
- International Federation of Telephone Emergency Services, Geneva, CH
- Jardin et Conservatoire Botaniques, Genève, CH
- Service de la Formation Continue, Université de Genève, Genève, CH
- Service Médico-Pédagogique, Genève, CH
- Swisstransplant, Berne, CH
- Télévision Suisse Romande, Genève, CH

Statistical Input – Output Data

Funding source (CHF)	Year 5	Year 6	Year 7	Year 8	Total	%
SNSF funding	2 500 000	2 500 000	2 500 000	2 500 000	10 000 000	34
Self-funding from home institution[1]	1 650 000	1 650 000	2 150 000	1 600 000	7 050 000	24
Self-funding from project participants	2 134 288	2 139 688	2 059 403	2 059 403	8 392 782	29
Third-party funding	955 939	964 218	881 811	838 323	3 640 291	13
Total	7 240 227	7 253 906	7 591 214	6 997 726	29 083 073	100

Personnel[2]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	FR	IT	BE	US	
Management	4.51[3]	8	57	6	43	5	0	3	0	1	0	5
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	53	35	66	18	34	26	8	8	3	1	2	5
Postdoctoral students	36	14	39	22	61	7	7	7	3	3	1	8
Research associates	7	3	43	4	57	5	1	1	0	0	0	0
Senior researchers[4]	64	22	34	42	66	27	20	2	2	3	3	7
Other staff	29	18	62	11	38	21	4	3	0	0	0	1
Total	193.51	100	49	103	51	91	40	24	8	8	6	26

[1] Personnel costs, equipment and consumables, not included infrastructure and basic equipment
[2] Persons involved in the NCCR in the last reporting period (12 months)
[3] Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training
[4] Including leaders of the individual projects and other organisational units of the NCCR

Evaluation and Monitoring by the Swiss National Science Foundation (SNSF)

Members of the Review Panel

Butera Fabrizio, Prof. (Chair)	Swiss National Science Foundation, Berne, CH
Clark Margaret, Prof.	Department of Psychology, Yale University, US
De Sousa Ronald B., Prof.	University of Toronto, Canada
Ellsworth Phoebe, Prof.	Department of Psychology, University of Michigan, US
Menninghaus Winfried, Prof.	Peter Szondi Institut, Berlin, DE
Opitz-Belakhal Claudia, Prof.	Swiss National Science, Foundation, Berne, CH
Phelps Elisabeth A., Prof.	Department of Psychology, New York University, US
Reusser Kurt, Prof.	Swiss National Science Foundation, Berne, CH
Ricci Bitti Pio Enrico, Prof.	Dipartimento di Psicologia, Università di Bologna, IT
Rüpke Jörg, Prof.	Professur für Vergleichende Religionswissenschaft, Universität Erfurt, DE
Thoits Peggy A., Prof.	Department of Sociology, Indiana University, US

NCCR Office SNSF

Griessen Thomas

Schweiz. Nationalfonds, Wildhainweg 3, 3001 Bern,
phone: + 41 (0)31 308 23 51, fax: + 41 (0)31 305 29 71,
tgriessen@snf.ch

Swiss National Science Foundation

Wildhainweg 3, P.O.Box, CH-3001 Bern, www.snf.ch