Guide2009

National Centres of Competence in Research

FNSNF
Swiss National Science Foundation

Guide2009

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

Beat Schenk, Werbeatelier, Berne
www.werbeatelierschenk.ch

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(The statistical data is based on the latest progress reports of the NCCRs.)

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 250 million in SNSF funding for 2005 - 2008.

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.

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. Gibson Rajna	University of Zurich	www.nccr-finrisk.unizh.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	ISREC Epalinges	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.unizh.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.unizh.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.unizh.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 persons involved in 2001 - 2004

(1st Call of NCCRs)

Personnel	Total of Persons	Female	%	Male	%	Swiss	Other Nations
Management	50[1]	86	44	111	56	141	80
Master students	172	83	48	89	52	80	98
Doctoral students	1 310	359	27	951	73	523	829
Postdoctoral students	654	161	25	493	75	161	505
Research associates	97	29	30	68	70	49	49
Senior researchers[2]	1 172	199	17	973	83	523	704
Other staff	758	398	53	360	47	471	297
Total	4 213	1 315	30	3 045	70	1 948	2 562

[1] Fulltime equivalent, including all NCCR-Directors, 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

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 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	94[1]	113	43	150	57	161	140
Master students	148	83	56	65	44	89	57
Doctoral students	1264	436	34	828	66	464	846
Postdoctoral students	569	163	29	406	71	117	470
Research associates	223	95	43	128	57	97	131
Senior researchers[2]	1175	215	18	960	82	522	782
Other staff	590	324	55	266	45	391	209
Total	4063	1429	34	2803	66	1841	2635

[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)21 692 58 41
jurgen.deka@epfl.ch

Office
Vania Sergy, Mrs.
phone: +41 (0)21 692 58 40
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
Chemin des Boveresses 155
Case postale
1066 Epalinges sur Lausanne
phone: + 41 (0)21 692 58 58
nccr.oncology@epfl.ch

Web Address
www.nccr-oncology.ch

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

Tumor Host Interactions - Research

Cell Signaling in Tumor Development and Metastasis

Signaling pathways important in breast cancer and breast development
Head: Brisken C.

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

The role of the tumor stroma
H: Stamenkovic I.

Apoptosis-inducing MegaFasL as novel anti-tumor agent
H: Tschopp J.

Study of gene networks implied in cancer biology
H: Naef F.

Gene Expression Signatures in Tumors

Gene expression signatures in human glioblastoma and their implications for tumor biology and treatment of cancer
H: Hegi M.

Microarray analysis of breast cancer
H: Iggo R.

Tumor Angiogenesis

Role of COX-2 and inflammatory cells in tumor angiogenesis and tumor progression
H: Rüegg C.

Unraveling the molecular regulation of tumor lymphangiogenesis and lymph node metastasis
H: Christofori G.

Tumor Immunity and Cancer Immunotherapy

Coordinator: Romero P.

T cell vaccination of cancer patients and cellular analysis of T cell responses
H: Speiser D.

Combining T cell vaccination with adoptive-cell-transfer (ACT) immunotherapy
H: Leyvraz S.

Molecular analysis of T cell immune responses
H: Rufer N.

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

Technology Development and Support

Bioinformatics core facility
H: Delorenzi M.

Mouse facility
H: Beermann F.

Microscopy, imaging & morphology facility
H: Garin N.

Clinical tumor proteome analysis facility
H: Servis C.

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
Beermann Friedrich, Dr.	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
Garin Nathalie, Dr.	EPFL, Epalinges
Hegi Monika, Dr.	Centre Hospitalier Universitaire Vaudois, Lausanne
Hülsken Jörg, Prof.	Institut Suisse de Recherche Expérimentale sur le Cancer, EPFL, Epalinges
Iggo Richard, Prof.	University of St Andrews, Scotland
Kraehenbuhl Jean-Pierre, Prof.	Health Sciences eTraining, Epalinges
Leyvraz Serge, Prof.	Centre Pluridisciplinaire d'oncologie, Lausanne
Michielin Olivier, Prof.	Swiss Institute of Bioinformatics, Lausanne

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.

Naef Felix, Prof.	Institut Suisse de Recherche Expérimentale sur le Cancer, EPFL, Epalinges
Romero Pedro, Prof.	Ludwig Institut for Cancer Research, Epalinges
Rüegg Curzio, Prof.	Centre pluridisciplinaire d'oncologie, Lausanne
Rufer Nathalie, Dr.	Centre pluridisciplinaire d'oncologie, Lausanne
Servis Catherine, Dr.	Department of Biochemistry, University of 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

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

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 5	Year 6	Year 7	Year 8	Total	%
SNSF funding	3 750 000	3 750 000	3 750 000	3 750 000	15 000 000	36
Self-funding from home institution[1]	2 120 852	2 226 935	1 491 686	1 058 319	6 897 792	17
Self-funding from project participants	3 614 847	3 012 917	2 651 382	2 362 364	11 641 510	28
Third-party funding[2]	1 609 891	2 168 496	2 316 519	2 137 793	8 232 699	20
Total	11 095 590	11 158 348	10 209 587	9 308 476	41 772 001	100

Personnel[3]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							FR	IT	DE	CA	BE	
Management	3.81	1	8	11	92	7	0	0	1	0	2	4
Master students	3	2	67	1	33	3	0	1	0	0	0	0
Doctoral students	30	14	47	16	53	14	3	2	1	2	0	10
Postdoctoral students	32	16	50	16	50	6	11	4	2	2	0	8
Research associates	4	3	75	1	25	0	1	1	1	0	0	1
Senior researchers[5]	48	14	29	34	71	29	5	4	4	1	1	11
Other staff	35	21	60	14	40	23	3	1	0	0	1	8
Total	155.81	71	43	93	57	82	23	13	9	5	4	42

[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

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
Huber Christoph, Prof.	Department of Hematology and Oncology, Johannes-Gutenberg-University Medical School, Mainz, DE
Kléber André, Prof.	Swiss National Science Foundation, Berne, CH
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
Varone Frédéric, Prof.	Swiss National Science Foundation, Berne, CH
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
Hartmann Reto, Dr.

Education and Training
Rodriguez Ivan, Prof.

Advancement of Women
Gasser Susanne, Prof.

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
- *Pole Position* Newsletter
- Leaflets (English, French or German)
- Press releases, news and adverts on website
- Public events (open doors, teaching, training, exhibitions)
- Meetings

Research

Work Packages

Novel approaches to study mammalian genetics and develop animal models of human diseases
Coordinator: Trono D.

Members: Antonarakis S., Duboule D., Schibler U., Trono D., Wahli W.

Functional genomics based on PhiC31 integrase; Integrase-mediated germ-line transformation of drosophila and design of shuttle systems in the mouse
Coordinator: Basler K.

Members: Basler K., Hafen E., Karch F.

Chromosome structure and nuclear dynamics
Coordinator: Shore D.

Members: Gasser S., Laemmli U., Lingner J., Shore D., Stutz F.

Genetic and viral mapping of neural circuits
Coordinators:
Arber S., Rodriguez I.

Members: Arber S., Rodriguez I., Roska B.

Energy homeostasis and size control: from physiology to pathology
Coordinator: Wahli W.

Members: Hafen E., Schibler U., Wahli W., Herrera P., Nef S., Thorens B.

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.

Mammalian genetics platform
H: Duboule D.

Doctoral School
Supervisors: Suarez Mougli, Dr. Rodriguez I.

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).
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.

Heads of Individual Research Projects

Antonarakis Stylianos E., Prof.	Division de Génétique Médicale, Université de Genève
Arber Silvia, Prof.	Departement für Zellbiologie, Universität Basel
Basler Konrad, Prof.	Institut für Molekularbiologie, Universität Zürich
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
Grapin-Botton Anne	ISREC, Epalinges
Hafen Ernst, Prof.	Institut für Zoologie, Universität Zürich
Herrera Pedro, Dr.	Département de Morphologie, Université de Genève
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
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
Spierer Pierre, Prof.	Département de Zoologie et Biologie Animale, Université de Genève
Stutz Françoise, Dr.	Département de Biologie Cellulaire, 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

Research and technology

In addition to the five research programs (Work Packages) already implemented, a pilot project entitled "stem cells and regeneration" has been developed this past year. The knowledge resulting from this multidisciplinary project will be useful for devising cell-based replacement therapies and will contribute to unravelling the mechanisms of tumour cell spreading.

The research carried out by the 20 laboratories and organised into Work Packages has resulted in maintaining, or even increasing, the leading position of Switzerland in genetics at the international level. During this past year, 20 of the scientific articles produced were published in the top "high impact" journals and four prizes were awarded to Frontiers in Genetics members. The cutting edge research done within the NCCR has had an unprecedented impact on our University, which has declared genetics a priority domain.

NCCR members are the key players in the creation of a new institute named IGe3 (Institut de Génétique et Génomique de Genève). This structure, resulting from collaboration between the Science and Medical Faculties of the University of Geneva, will allow completing the process of Frontiers in Genetics' integration within an institutional context.

The five platforms set up during the past years continue to be very well attended by the academic community and private sector, due to excellent expertise and a low "cost/quality" ratio. This concerns the genomics and bioimaging platforms, located in Geneva, the lentivirus and the mouse metabolic evaluation (MEF) platforms in Lausanne, as well as the site-specific integration system for high-throughput germ line transformation of Drosophila, in Zurich.

Education

The International Doctoral School developed by our NCCR, which has gained four new students in 2008, comprises to date 32 students of different nationalities.

The first four students of the program have graduated in 2007 and another five are expected to achieve the same feat in 2008. The NCCR students all prove to be excellent and highly motivated scientist.

One of the major goals of Frontiers in Genetics, which is to recruit and form tomorrow's top scientists, continues to be sustained through an excellent training program. A constant dialogue with the professors and students ensures that the School features are adapted to their needs.

Public relations

One of our main objectives is to communicate with the public. A new section, «Genetics for All», has been created on our web site. Lay summaries of all of the Work Packages were inserted on the site and scientific publications of interest have been translated into lay terms and posted in an attractive form.

Emphasis was put on the NCCR's participation to public manifestations such as La Nuit de la Science, Les Journées de la Génétique, La Science appelle les jeunes. Interviews related to these events were broadcasted on various radio channels.

Frontiers in Genetics has also resumed its collaboration with the TV channel TSR by leading the forum 300 questions à un biologiste.

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

Statistical Input – Output Data

Funding source (CHF)	Year 5	Year 6	Year 7	Year 8	Total	%
SNSF funding	4 100 000	4 100 000	4 000 000	3 800 000	16 000 000	36
Self-funding from home institution[1]	479 274	558 178	500 000	500 000	2 037 452	5
Self-funding from project participants	5 274 801	5 122 966	5 264 281	4 892 205	20 554 253	47
Third-party funding	1 369 893	1 032 422	1 508 327	1 642 403	5 553 045	13
Total	11 223 968	10 813 566	11 272 608	10 834 608	44 144 750	100

Personnel[2]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							FR	IT	US	DE	GB	
Management	4.84	4	40	6	60	10	2	0	7	0	0	0
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	66	24	36	42	64	25	9	9	2	7	5	19
Postdoctoral students	49	15	31	34	69	5	11	4	2	2	2	24
Research associates	2	2	100	0	0	0	2	0	0	0	0	0
Senior researchers[4]	32	8	25	24	75	21	9	0	2	2	0	9
Other staff	50	37	74	13	26	27	12	3	0	1	0	6
Total	203.84	90	43	119	57	88	45	16	13	12	7	58

[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

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)1 635 55 80
gruetter@bioc.uzh.ch

Deputy Director
Richmond Timothy J., Prof.
phone: + 41 (0)1 633 24 70
richmond@mol.biol.ethz.ch

Coordinator
Sticher Patrick, Dr.
phone: + 41 (0)1 635 54 84
sticher@bioc.uzh.ch

Administrative Assistant
Schmid Brigitte, Mrs.
phone: + 41 (0)1 635 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)1 635 54 84
fax: + 41 (0)1 635 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: Richmond T. J.

Technologies
Coordinator: Plückthun A.

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

Synthetic protein libraries
H: Plückthun A.

Assessing the structure and dynamics of membrane proteins by electron and atomic force microscopy
H: Engel A.

X-ray crystallography of supramolecular systems and membrane transporters
H: Grütter M.

Supramolecular assemblies: structures of chromatin and associated multiprotein complexes
H: Richmond T. J.

Signalling and transport through biological membranes
H: Winkler F.

Solution NMR with soluble and membrane proteins, including supramolecular structures
H: Wüthrich K.

Computer simulation of membrane proteins, supramolecular complexes and macromolecular folding
H: van Gunsteren W. F.

X-ray crystallography and electron microscopy of supramolecular systems
H: Ban N.

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

Mechanisms of ion transport across membranes: The structural biology of ion channels and ion transporters
H: Dutzler R.

Structure and mechanism of bacterial drug and antibiotic transporters
H: Locher K.

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

Associated Groups
Automation of protein crystallography beamlines for challenging projects at the swiss light source
H: Schulze-Briese C.

New isotope labeling strategies of protein and RNA for NMR spectroscopy investigations
H: Wüthrich K.

Calorimetric and biophysical analysis of protein-ligand binding and protein folding
H: Jelezarov I.

Technical development for automated and high-throughput data collection and 3D reconstruction in electron microscopy
H: Ishikawa T.

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.

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
Ishikawa Takashi, Dr.	Institut für Molekularbiologie und Biophysik, Universität Zürich
Jelezarov Ilian, Dr.	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

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 5	Year 6	Year 7	Year 8	Total	%
SNSF funding	3 900 000	3 800 000	3 400 000	3 300 000	14 400 000	34
Self-funding from home institution[1]	955 801	1 368 021	1 700 235	3 477 004	7 501 061	18
Self-funding from ETH Zurich	980 393	1 164 405	1 002 515	867 275	4 014 588	9
Self-funding from project participants	4 820 225	4 729 873	4 941 086	1 080 880	15 572 064	37
Third-party funding[2]	800 000	250 260	50 000	50 000	1 150 260	3
Total	11 456 419	11 312 559	11 093 836	8 775 159	42 637 973	100

Personnel[3]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	FR	NL	IT	HR	
Management	2.93	2	20	8	80	5	2	1	1	0	0	1
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	76	26	34	50	66	27	24	2	1	2	3	18
Postdoctoral students	56	13	23	43	77	16	10	5	5	3	2	17
Research associates	0	0	0	0	0	0	0	0	0	0	0	0
Senior researchers[5]	46	8	17	38	83	12	12	5	2	1	1	14
Other staff	25	17	68	8	32	14	2	1	0	1	0	10
Total	205.93	66	31	147	69	74	50	14	9	7	6	60

[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

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 2009

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., Relvas J., Sommer L., Thallmair M.

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

Acute-phase predictors and modulators for long-term outcome after stroke
H: Luft A.
Wegener S.

Immunotherapy for malignant glioma
H: Weller M.
Aguzzi A., Bertalanffy H., Eisele G., Frei K., Roth P.

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

Infection and immunity of the central nervous system
H: Fontana A.
Aguzzi A., Becher B., Dreano M., Goebels N., Kappos L., Reith W., Suter T.

Spinal cord repair
H: Schwab M., Dietz V., Courtine G., Curt A., Kollias S., Micera S., Mir A., Rouiller E., Schurch B., Sonderegger P., Stoeckli E., Zurn A.

Rehabilitation technology matrix
H: Riener R.
Bassetti C., Gassert R., Kiper D., Kollias S., Micera S., Schwab M.

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

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

Center for proteomics
H: Wollscheid B.

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

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

Topics

Today there is still little that can be done to help the victims of brain damage or other kinds of diseases that afflict the brain or spinal cord. Only since the beginning of the 1980's research has been devoted to repairing brain trauma or disease. But at the same time, great strides have been made in the understanding of disease mechanisms and the possibilities of restoring neural functions. It is said that neuroscience made more progress in the last ten years than in the whole of last century.

The fundamental goal of the NCCR on "Neural Plasticity and Repair" is the restoration of function after damage or disease of the nervous system. The NCCR will elucidate the basic cellular and molecular mechanisms of regeneration, plasticity and functional repair of the damaged nervous system. The synergies between experimental and clinical sciences in conjunction with engineering sciences, neuroinformatics and brain imaging will generate new knowledge on the impairment and repair of brain functions, in particular in Alzheimer's disease, multiple sclerosis, prion disease, immune surveillance and in neuronal regeneration and rehabi-litation after spinal cord injury. Indeed, the first clinical trials have been initiated to assess the immunotherapy of spinal cord injury.

Heads of Individual Research Projects and Subprojects

Aguzzi Adriano, Prof.	Institut für Neuropathologie, Universitätsspital Zürich
Bassetti Claudio, Prof.	Neurologische Poliklinik, Universitätsspital Zürich
Becher Burkhard, Prof.	Institut für Experimentelle Immunologie, Universität Zürich
Bertalanffy Helmut, Prof.	Neurochirurgische Klinik, Universitätsspital Zürich
Boesiger Peter, Prof.	Institut für Biomedizinische Technik, Universität und ETH Zürich
Caflisch Amedeo, Prof.	Biochemisches Institut, Universität Zürich
Courtine Grégoire, Prof.	Experimental Neurorehabilitation Laboratory, Universität Zürich
Curt Armin, Prof.	Paraplegikerzentrum, Universitätsklinik Balgrist, Zürich
Dreano Michel, Dr.	Merck Serono International S.A., Geneva
Dietz Volker, Prof.	Paraplegikerzentrum, Universitätsklinik Balgrist, Zürich
Eisele Günter, Dr.	Neurologische Klinik, Universität 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
Goebels Norbert, Prof.	Neurologische Klinik, Universitätsspital Zürich
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

Third Party Cooperation

(in progress)

Programme

- CORTEX
- 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

Jäncke Lutz, Prof.	Psychologisches Institut, Universität Zürich
Jessberger Sebastian, Prof.	Institut für Zellbiologie, ETH Zürich
Kappos Ludwig, Prof.	Abteilung Neurologie, Universitätsspital Basel
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
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
Raineteau Olivier, Dr.	Institut für Hirnforschung, Universität Zürich
Reith Walter, Prof.	Département de Pathologie et Immunologie, Université de Genève
Relvas João, Dr.	Institut für Zellbiologie, ETH Zürich Hönggerberg
Riener Robert, Prof.	Labor für Sensomotorische Systeme, ETH Zürich
Roth Patrick, Dr.	Neurologische Klinik, Universität 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
Scherberger Hans, PD Dr.	Institut für Neuroinformatik, 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
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
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
Zurn Anne, Dr.	Service de Chirurgie Expérimentale, CHUV, Lausanne

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

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, eight new professorships were 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, and one each in experimental and clinical neurorehabilitation.

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 90 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 Zurich. Thirty-three 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
- Merck Serono International S.A., Geneva, CH
- 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 5	Year 6	Year 7	Year 8	Total	%
SNSF funding	4 100 000	4 100 000	4 100 000	4 100 000	16 400 000	19
Self-funding from home institution[1]	1 500 000	1 500 000	2 200 000	2 200 000	7 400 000	8
Self-funding from ETH Zurich	1 500 000	1 500 000	1 500 000	1 500 000	6 000 000	7
Self-funding from project participants	12 276 006	13 604 557	12 059 836	15 828 456	53 768 855	61
Third-party funding[2]	999 384	1 089 819	1 319 241	1 083 334	4 491 778	5
Total	20 375 390	21 794 376	21 179 077	24 711 790	88 060 633	100

Personnel[3]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	FR	IT	GB	AT	
Management	2.25	4	44	5	56	5	3	1	0	0	0	0
Master students	34	20	59	14	41	29	3	1	0	0	0	1
Doctoral students	157	63	40	94	60	56	49	6	10	2	2	35
Postdoctoral students	34	13	38	21	62	8	9	5	1	2	1	8
Research associates	19	11	58	8	42	11	3	0	2	0	0	4
Senior researchers[5]	129	35	27	94	73	46	39	10	3	2	2	29
Other staff	55	42	76	13	24	38	8	0	1	1	1	6
Total	430.25	188	43	249	57	193	114	23	17	7	6	83

[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

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.	Neurology Unit, 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.	Neurologische Universitätsklinik, Universität 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

Work Package "Governance and Conflict"

Head: Goetschel L.
Deputy Head: Carton M.

- Negotiating Statehood
- Governance
- Conflict and Economy

Work Package "Livelihoods and Globalisation"

Head: Müller-Böker U.
Deputy Head: Rabinovich A.

- Livelihoods, Concepts and Contexts
- Livelihood Strategies and Poverty
- Livelihoods and Territory

Work Package "Health and Environmental Sanitation"

Head: Tanner M.
Deputy Heads: Schertenleib R., Zinsstag J.

- Determinants of vulnerability and resilience
- Improved environmental sanitation
- Equity-effective interventions to alleviate poverty

Work Package "Natural Resources in Sustainable Development"

Head: Wiesmann U.
Deputy Head: Hurni H.

- Environmental dynamics, natural resources and livelihoods
- Knowledge, values and power in natural resource management
- Development-environment nexus in trans-contexual settings

Transversal Package "Syndrome Mitigation and its Scientific Foundations"

Head: Hurni H.
Coordinator: Rist S.

Extensive production systems in semi-arid regions – Options for sustainable future livelihoods
Leader: Bonfoh B.

The political economy of coffee: Global markets, local production and options for sustainable development
Leader: Ludi E.

The effect of development interventions disparities on the poverty - environment nexus: Negotiation and decision-making in trans-contextual settings
Leader: Messerli P.

From vulnerability to resilience: Assessing the potential and limitation of a new conceptual approach for pathways to sustainable development
Leader: Obrist B.

Innovations in decision-making processes for sustainable urban projects
Leader: Rabinovich A.

Operationalising human security for livelihood protection: Analysis, monitoring and mitigation of existential threats by and for local communities
Leader: Schnabel A.

Sustaining livelihoods in trans-local and trans-national settings
Leader: Thieme S.

Knowledge, power and politics: Evaluating institutional and social practices in sustainable development and syndrome mitigation research
Leader: Zingerli C.

Research in Joint Areas of Case Studies (JACS)

The NCCR North-South carries out integrated, context-specific, problem- and mitigation-oriented research in the following regions:

East Africa (EAF)
Coordinator: Kiteme B. (Kenya)
Horn of Africa (HOA)
Coordinator: Debele B. (Ethiopia)
West Africa (WAF)
Coordinator: Cissé G. (Ivory Coast)
South-East Asia (SEA)
Coordinator: Koottatep T. (Thailand)
South Asia (SAS)
Coordinator: Upreti B. (Nepal)
Central Asia (CAS)
Coordinator: Arynova M. (Kyrgyzstan)
Central America and Caribbean (CCA)
Coordinator: Perez Gutierrez M.A. (Costa Rica)
South America (SAM)
Coordinator: De la Fuente M. (Bolivia)
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 partners and associated institutions through programme calls, selected by the Board, and executed in partnership with the WPs in JACS 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.

Education and Training
Herweg Karl, Dr.

Advancement of Women / Career Building
Zimmermann Anne, Dr.

Partnership Actions
Salmi Annika, lic. phil.

Communication
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
www.nccr-north-south.unibe.ch

Public Relations

- Research Partnerships for Global Change, Innovation and Sustainable Development, 2008 brochure
- Research Partnerships for Mitigating Syndromes of Global Change, 2007, flyer
- News on websites
- External Newsletter

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

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

Heads of Individual Research Projects

Bonfoh Bassirou, Dr.	Swiss Tropical Institute STI and Centre Suisse de Recherches Scientifiques, Abidjan, CI
Carton Michel, Prof.	Graduate Institue of International and Development Studies (IHEID), Genève, CH
Goetschel Laurent, Prof.	swisspeace, Bern, CH
Hurni Hans, Prof.	Centre for Development and Environment, GIUB, University of Bern, CH
Ludi Eva, Dr.	Overseas Development Institute ODI, London, GB
Messerli Peter, Dr.	Centre for Development and Environment, Vientiane, LA
Müller-Böker Ulrike, Prof.	Development Study Group, GIUZ, University of Zurich, CH
Obrist Brigit, Prof.	Swiss Tropical Institute STI, University of Basel, CH
Rabinovich Adriana, Dr.	Laboratoire de Sociologie Urbaine LaSUR, INTER, EPF Lausanne, CH
Schertenleib Roland, Dipl. Ing.	SANDEC, EAWAG-ETHZ, Dübendorf, CH
Schnabel Albrecht, Dr.	swisspeace, Bern, CH
Tanner Marcel, Prof.	Swiss Tropical Institute STI, University of Basel, CH
Thieme Susan, Dr.	Division of Human Geography, GIUZ, University of Zurich, CH
Wiesmann Urs, Prof.	Centre for Development and Environment, GIUB, University of Bern, CH
Zingerli Claudia, Dr.	Division of Human Geography, GIUZ, University of Zurich, CH

Regional JACS Coordinators

Arynova Mira	Regional Coordination Office Central Asia, Bishkek, KG
Cissé Guéladio, Prof.	Centre Suisse de Recherches Scientifiques, Abidjan, CI
Debele Berhanu	Regional Coordination Office Horn of Africa, Addis Abeba, ET
De la Fuente Manuel	Regional Coordination Office South America, Cochabamba, BO
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

Topics

The present-day world is threatened by increasing insecurity, which is caused by processes of global change, globalisation, and global disparities. There are regions where a number of core problems form clusters, which eventually lead to syndromes, the mitigation of which is a global challenge and a precondition for achieving sustainable development. The NCCR North-South will contribute, through high-quality, disciplinary, interdisciplinary and transdisciplinary research, to an improved understanding of the status of different syndromes of global change, the pressures these syndromes and their causes exert on different resources (human, natural, economic), and the responses of different social groups and society as a whole. By identifying the potentials of social systems for mitigating syndromes, by considering their dynamics, and by adhering to existing innovative solutions, the NCCR will also contribute to designing ways of mitigating syndromes. The NCCR North-South will enable Swiss research institutions to enhance partnerships with institutions in developing and transition countries, thereby building competence and capacity in order to develop socially robust knowledge for mitigation action. Through its activities and partnerships, the NCCR North-South will contribute to developing the capabilities of partner institutions and societies at large in developing and transition countries, thereby eventually helping these institutions to find sustainable solutions with the means available in their own local contexts.

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
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

- Human and Natural Resource Studies Centre (HNRSC), 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

Four Work Packages (WP) and one Transversal Package (TP) form the scientific core of the NCCR North-South. Each of these brings together at least two Institutional Partners (IPs), representing specific fields of scientific competence that contribute to syndrome mitigation research. The four Work Packages focus on (1) governance and conflict transformation, (2) livelihoods and globalisation, (3) health and environmental sanitation, and (4) natural resources in sustainable development. Activities are carried out in nine partnership regions worldwide (JACS) on four continents. These regions form the focal point and platform of partnership-based disciplinary, inter- and transdisciplinary research projects on global change and sustainable development.

Scientific Output

Activities in the first seven years led to 848 publications (of which over 297 were refereed), 500 reports and more than 1500 presentations, all of which resulted directly from the research carried out in the programme. A total of 150 PhD studies have been launched so far, of which 65 are now completed. In the past year, almost 20 new PhD students were selected.

Integration and Synthesis

The most important means of integration is the Transversal Package (TP). The TP focuses on "Syndrome mitigation and its scientific foundations", and works with eight TP projects at the interface between at least two Work Package themes and in different partnership regions to allow comparison of patterns of global change. These TP projects have been entrusted to research teams under the leadership of promising post-doctoral researchers from the North and the South who aspire to academic careers. After three years of activity, the TP projects have already produced a multitude of scientific outputs, proving their effectiveness in integrating research across disciplinary boundaries.

After six years of programme activity, the NCCR North-South has also started a mid-term synthesis of the programme's research results. The core output of this synthesis project will be two publications of about 400 pages each, with contributions by researchers from all programme entities. Different contributions to this publication were discussed at an International Conference, held from 2 to 4 July 2008 in Switzerland.

Institutionalisation

On 1 October 2008 the NCCR North-South started an inter-university 'Doctoral Programme on Global Change, Innovation and Sustainable Development'. The idea behind this cooperative project is to build on the experience of the NCCR North-South by creating a permanent structure for sustainability research that focuses on the needs of developing and transition countries. By incorporating the experience of the NCCR North-South, the doctoral programme will be a unique addition to the landscape of higher education in Switzerland, guaranteeing training at doctoral, post-doctoral and possibly also master's levels in the long term. Participating institutions so far are the Universities of Bern, Zurich, and Basel, including the Swiss Tropical Institute and Swisspeace. The existing partnerships with research institutions in developing countries will continue to be an integral component of the programme.

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

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

- 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 5	Year 6	Year 7	Year 8	Total	%
SNSF funding	3 500 000	3 500 000	3 500 000	3 500 000	14 000 000	39
Self-funding from home institution[1]	490 714	499 800	562 470	785 180	2 338 164	6
Self-funding from project participants	1 396 046	1 394 679	1 188 039	1 241 163	5 219 927	14
Third-party funding from SDC	2 879 258	3 202 190	4 074 528	4 589 926	14 745 902	41
Total	8 266 018	8 596 669	9 325 037	10 116 269	36 303 993	100

Personnel[2]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							NP	KG	AR	KE	DE	
Management	6.70	8	40	12	60	17	0	0	0	0	2	5
Master students	69	35	51	34	49	25	19	0	0	2	0	19
Doctoral students	80	30	38	50	63	20	5	4	1	0	4	45
Postdoctoral students	4	2	50	2	50	1	0	0	0	0	0	3
Research associates	79	40	51	39	49	20	1	9	14	5	2	28
Senior researchers[4]	122	34	28	88	72	34	6	4	5	5	11	67
Other staff	75	46	61	29	39	29	4	8	4	9	1	22
Total	435.70	195	43	254	57	146	35	25	24	21	20	189

[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 30 08
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

Module "Natural and Agro-Ecosystems"

Multitrophic interactions
Head: Turlings T.
Bacher S., Benrey B., Bshary R., Farmer T., Kuhlemeier C., Rahier M.

Genetic introgression and ecological consequences
H: Bigler F.
Bernasconi G., Felber F., Nentwig W., Romeis J.

Evolution and spread of potentially invasive plants
H: Guisan A.
Buttler A., Gillet F., Müller-Schärer H., Schaffner U., Steinger T.

Module "Disease Resistance and Pest Control"

Grapevine diseases and resistance mechanisms
H: Neuhaus J.-M.
Métraux J.-P., Gindro K., Mauch-Mani B., Tamm L., Viret O.

Development of novel control methods for grape moths based on their sex pheromones and host plant attractants
H: Guerin P.

Module "Energy-Resources"

Plastid function and plant survival
H: Kessler F.
Hörtensteiner S., Fankhauser C., Rentsch D., Rochaix D., Zeeman S.

Mycorrhiza development and functioning, and its effect on soil structure
H: Martinoia E.
Gobat J.-M., Reinhardt D., Paszkowski U.

Module "Modelling and Statistics"

Statistical and dynamical modelling
H: Davison A.
Gillet F., Goldstein D., Bersier L.-F.

Technological Platforms, Programmes etc.

Sequencing and microarrays
H: Neuhaus J.-M.

Chemical analysis
H: Vallat A.

ICP-MS analysis
H: Föllmi K.

Greenhouse facilities
H: Felber F.

Data analysis
H: Davison A.

Doctoral Programme
H: Turlings T.

GIS facilities (ECOSPAT lab)
H: Guisan A.

Heads of Individual Research Projects and Subprojects

Bacher Sven, Prof.
Benrey Betty, Dr.
Zoologisches Institut, Universität Bern
Institut de Biologie, Université de Neuchâtel

Bernasconi Giorgina, Prof.
Bersier Louis-Félix, Dr.
Institut de Biologie, Université de Neuchâtel
Département de Biologie, Université de Fribourg

Bigler Franz, Dr.
Bshary Redouan, Prof.
Eidg. Forschungsanstalt für Agrarökologie und Landbau, Zürich
Institut de Zoologie, Université de Neuchâtel

Buttler Alexandre, Prof.
Institut fédéral de recherches sur la forêt, la neige et le paysage, Antenne romande c/o EPF Lausanne

Davison Anthony C., Prof.
Département de Mathématiques, EPF Lausanne

Fankhauser Christian, Prof.
Farmer Edward E., Prof.
Center for Integrative Genomics, University of Lausanne
Département de Biologie Moléculaire Végétale, Université de Lausanne

Felber François, Dr.
Gillet François, Dr.
Institut de Botanique, Université de Neuchâtel
Laboratoire des Systèmes Ecologiques, EPF Lausanne

Gindro Katia, Dr.
Gobat Jean-Michel, Prof.
Agroscope ACW Changins, Nyon
Institut de Botanique, Université de Neuchâtel

Goldstein Darlene, Dr.
Guerin Patrick, Dr.
Département de Mathématiques, EPF Lausanne
Laboratoire de Physiologie Sensorielle, Université de Neuchâtel

Topics

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
Métraux Jean-Pierre, Prof.	Institut de Biologie Végétale, Université de Fribourg
Müller-Schärer Heinz, Prof.	Département de Biologie, Université de Fribourg
Nentwig Wolfgang, Prof.	Zoologisches Institut, Universität Bern
Neuhaus Jean-Marc, Prof.	Laboratoire de Biologie Moléculaire et Cellulaire, Université de Neuchâtel
Paszkowski Uta, Dr.	Dép. de Biologie Moléculaire Végétale, Université de Lausanne
Rahier Martine, Prof.	Institut de Biologie, Université de Neuchâtel
Reinhardt Didier, Dr.	Département de Biologie et Zoologie, Université de Fribourg
Rentsch Doris, Prof.	Pflanzenbiologisches Institut, Universität Bern
Rochaix Jean-David, Prof.	Département de Biologie Moléculaire, Université de Genève
Romeis Jörg, Prof.	Agroscope ART Reckenholz, Zürich
Schaffner Urs, Prof.	CABI Bioscience Swiss Centre, Delémont
Tamm Lucius, Dr.	Pflanzenschutz "Pflanzenkrankheiten", Forschungsinstitut für biologischen Landbau FiBL, Frick
Turlings Ted, Prof.	Institut de Biologie, Université de Neuchâtel
Viret Olivier, Dr.	Agroscope ACW Changins, Nyon
Zeeman Samuel C., Dr.	Institut für Pflanzenwissenschaften, ETH-Zentrum, Zürich

Members of the Advisory Board

Appel Klaus, Prof.	Institut für Pflanzenwissenschaften, ETH-Zentrum, Zürich, CH
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
Töpfer Reinhard, Prof.	Institut für Rebenzüchtung, BA Züchtungsforschung, DE

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

Interdisciplinary research

The NCCR Plant Survival is interested in the interactions between plants and their environment. We were able to show that induced maize volatiles not only attract natural enemies of herbivores, but can also cause resistance to pathogens and prime defences in neighbouring plants. Key petunia flower colour and odour genes involved in pollinator attraction have been discovered. Research on insecticidal toxins from transgenic plants did not show any negative effect on non-target invertebrates studied so far. While investigating the causes of invasiveness in plants, a climatic niche shift was identified for the first time in the new range, together with a genetic change.

Regarding grapevine resistance to pathogens, the possible role of soil and soil management was thoroughly assessed. The control of grapevine pests by using sex pheromones for the grape berry and codling moths can be increased by admixture of plant volatiles. Finally, research on energy and resources included the study of metabolic processes in the chloroplast and of arbuscular mycorrhizal colonization. All these investigations have been completed by statistical and modelling approaches: for instance, stochastic modelling of insect behaviour or new tools to target good candidate genes in high dimensional datasets.

Technology transfer

Our partner institutions are oriented towards applied research and closely involved in our NCCR: Agroscope ACW Changins-Wädenswil, ART Reckenholz, HSW Wädenswil, HES Changins, HEV Sion, SHL Zollikofen, FiBL, CABI. Twenty-seven applied projects are currently ongoing: five European Projects (1 FP6, 4 COST), two CTI/KTI, eight NFP, seven projects are directly supported by industries, two projects are subsidised by foundations and three are financed by Swiss Agencies.

Public relations

The newsletter Plant Survival News appears twice a year in a trilingual issue (English, French and German). Additionally, a small brochure presenting the Third Phase research themes will be available in Spring 2009, together with the presentation of the NCCR's Work Packages on the website. Up to 10 press releases per year are sent to the Swiss media to inform the public about the broad spectrum of our research network. Additionally, meetings with local journalists have been organised in order to show the daily work of NCCR Plant Survival scientists.

Doctoral programme

During the academic year 2007-2008, the 71 Ph.D. students enrolled in the Doctoral programme "Plants and their Environment" were offered a choice between 8 courses in communication, tools for research, and scientific topics. The Doctoral programme is part of the regular offer of the CUSO and as such also organized several courses in collaboration with the 3ème cycle romand en sciences biologiques. Mobility grants were awarded to allow Ph.D. students to visit and work in other laboratories and to present their research at international congresses. As of April 2009, the financing and management of the doctoral programme will be taken over by the University of Neuchâtel and will become one of the regular inter-university programmes within the CUSO.

Equal opportunities

This year, all projects were jointly organised with the equal opportunities (EO) office of the University of Neuchâtel. Measures continue to be taken allowing young parents and highly qualified women to deal with the challenges of contemporary academic and administrative environments. Animations, experiments and exhibitions were proposed for children to awake their interest for a scientific career.

Further information see
www.unine.ch/nccr/

Statistical Input – Output Data

Funding source (CHF)	Year 5	Year 6	Year 7	Year 8	Total	%
SNSF funding	3 250 000	3 250 000	3 250 000	3 250 000	13 000 000	39
Self-funding from home institution[1]	1 240 025	1 379 964	1 404 183	600 000	4 624 172	14
Self-funding from project participants	3 125 324	4 145 506	3 932 096	3 507 582	14 710 508	44
Third-party funding[2]	270 162	492 088	604 729	0	1 366 979	4
Total	7 885 511	9 267 558	9 191 008	7 357 582	33 701 659	100

Personnel[3]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							FR	DE	GB	NL	US	
Management	5.53	9	64	5	36	9	0	0	1	1	1	2
Master students	4	2	50	2	50	3	0	1	0	0	0	0
Doctoral students	62	28	45	34	55	33	13	9	0	1	2	8
Postdoctoral students	22	12	55	10	45	5	7	2	0	1	0	7
Research associates	5	3	60	2	40	3	0	1	0	0	0	1
Senior researchers[5]	62	16	26	46	74	32	7	9	4	3	1	7
Other staff	21	15	71	6	29	20	0	0	1	0	0	0
Total	181.53	85	45	105	55	105	27	22	6	6	4	25

[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

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
Godfray Charles, Prof.	University of Oxford, Department of Zoologie, Oxford, UK
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

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
Xoplaki Elena, Dr.
phone: + 41 (0)31 631 31 48
xoplaki@giub.unibe.ch

Communication
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
Xoplaki Elena, Dr.

Advancement of Women
Xoplaki Elena, 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 'Past Climate Variability'
Leader: Luterbacher J.

MONALISA Modelling and reconstruction of North Atlantic atmosphere-ocean variability (P 1.1)
Head: Stocker T.
Raible C.

PALVAREX Paleoclimate variability and extreme events
H: Wanner H.
Luterbacher J.

VIVALDI Variability in Ice, Vegetation and Lake Deposits- Integrated
H: Schwikowski M.
Gäggeler H., Beer J.,
Grosjean M., Leuenberger M.

EXTRACT Extended Thousand-year Reconstruction of Alpine Climate from Tree-rings
H: Esper J.
Frank D.

Work Package 'Climate Dynamics and the Future'
Leader: Davies H.

GLOBCLIM Global Climate Processes and Scenarios

H: Wild M.
Lohmann U.

REGCLIM Regional Climate Processes and Scenarios
H: Schär C.

VARCLIM Intra-seasonal and Inter-annual Climate Variability

H: Davies H.C.
Martius O.

STARTWAVE Acquisition and Analysis of Critical Observations
H: Mätzler C.
Philipona R., Kämpfer N.,
Morland J., Schmutz W.,
Vuilleumier L.

PRECLIM Operational Climate Prediction and Risk Analysis
H: Appenzeller C.
Liniger M.

Work Package 'Ecosystems impacts and management'
Leader: Fuhrer J.

PLANT/SOIL How Do Extreme Climate Events Affect Plant/Soil Interactions in Agroecosystems?

H: Feller U.
Buchmann N., Schmidt M.

GRASS Climate Change and Food Production
H: Fuhrer J.
Calanca P. L., Lehmann B.

CANOPY Hydrological Implications of Atmospheric CO_2 Enrichment in Forests
H: Körner C.
Leuzinger S.

ECOHYDRO Projecting the Impacts of Changes in Climate and Land Use on the Ecology and Hydrology of Mountain Catchments
H: Bugmann H.
Fahse L., Wolf A.

Work Package 'Climate Risks'
Leader: Stephan G.

ETS Assessment of Energy Technology Strategies
H: Wokaun A.
Turton H.

CVR Climate Vulnerability and Risk in a Post-Kyoto World
H: Stephan G.
Buob S.

MIADAC Modelling Sectoral Climate Change Policies: Mitigation, Adaptation, and Acceptability
H: Thalmann P.
Altamirano J.-C.

CAPRICORN Climate Anomalies and Coping Strategies of Societies in Central Europe: the Historical Dimension
H: Pfister Ch.

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: Xoplaki E.

Workshops co-organized with ProClim
H: Grosjean M.
Xoplaki E.

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 with ONE common scientific vision and collaborates with national and international programmes (ProClim, WCRP-CLIVAR, IGBP, UNFCCC, IPCC, ERA). The NCCR Climate commits itself to a firm effort in education, to knowledge transfer and interaction with key-persons in administration, politics, the private sector and the public.

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
Davies Huw C., Prof.	Institut für Atmosphäre und Klima, ETH Zürich
Esper Jan, PD Dr.	WSL, Birmensdorf
Fahse Lorenz, Dr.	Waldökologie, ETH Zürich
Feller Urs, Prof.	Institut für Pflanzenwissenschaften, Universität Bern
Fischlin Andreas, Dr.	Terrestrische Systemökologie, ETH Zürich
Frank David, Dr.	WSL, Birmensdorf
Fuhrer Jürg, Prof.	ART, Reckenholz
Gäggeler Heinz, Prof.	Departement für Chemie und Biochemie, Universität Bern
Grosjean Martin, Prof.	Geographisches Institut, Universität Bern
Gyalistras Dimitrios, Dr.	Terrestrische Systemökologie, ETH Zürich
Kämpfer Niklaus, Prof.	Institut für Angewandte Physik, Universität Bern
Körner Christian, Prof.	Botanisches Institut, Universität Basel
Lehmann Bernhard, Prof.	Institut für Agrarwirtschaft, ETH Zürich
Leuenberger Markus, PD Dr.	Abt. Klima- und Umweltphysik, Universität Bern
Liniger Mark, Dr.	Meteo Schweiz, Zürich
Lohmann Ulrike, Prof.	Institut für Atmosphäre und Klima, ETH Zürich
Luterbacher Jürg, PD Dr.	Geographisches Institut, Universität Bern
Martius Olivia, Dr.	Institut für Atmosphäre und Klima, ETH Zürich
Mätzler Christian, Prof.	Institut für Angewandte Physik, Universität Bern
Morland June, Dr.	Institut für Angewandte Physik, Universität Bern
Pfister Christian, Prof.	Historisches Institut, Universität Bern
Philipona Rolf, PD Dr.	MeteoSchweiz, Payerne
Raible Christoph, Dr.	Abt. Klima und Umweltphysik, Universität Bern
Schär Christoph, Prof.	Institut für Atmosphäre und Klima, ETH Zürich
Schmidt Michael W.I., Prof.	Geographisches Institut, Universität 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

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 Science" (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 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 inaugurate at ETH Zurich.

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

Schmutz Werner, Prof.
Schwikowski Margit, PD Dr.
Seneviratne Sonia, Prof.
Stampfli Andreas, PD Dr.
Stephan Gunter, Prof.
Stocker Thomas, Prof.
Thalmann Philippe, Prof.

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

Physikalisch-Meteorologisches Observatorium Davos
Paul Scherrer Institut, Villigen
Institut für Atmosphäre und Klima, ETH Zürich
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
MeteoSwiss, Payerne
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 5	Year 6	Year 7	Year 8	Total	%
SNSF funding	2 900 000	2 612 000	2 466 000	2 022 000	10 000 000	21
Self-funding from home institution[1]	910 638	450 194	637 141	759 280	2 757 253	6
Self-funding from project participants	5 732 839	4 925 175	4 671 161	4 515 548	19 844 723	42
Third-party funding	12 893 713	563 911	419 141	458 000	14 334 765	31
Total	22 437 190	8 551 280	8 193 443	7 754 828	46 936 741	100

Personnel[2]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							CH	FR	AT	IT	GB	
Management	4.55	3	27	8	73	8	1	0	0	1	0	1
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	54	14	26	40	74	35	13	2	0	4	0	3
Postdoctoral students	36	7	19	29	81	13	10	3	2	0	2	6
Research associates	12	9	75	3	25	3	4	2	1	0	0	2
Senior researchers[4]	53	5	9	48	91	30	14	3	2	0	2	5
Other staff	26	12	46	14	54	23	2	0	0	0	0	0
Total	185.55	50	26	142	74	112	44	10	5	5	4	17

[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
Kuhn Matthias, Mr.
phone: + 41 (0)22 379 34 87
Matthias.kuhn@manep.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
Anne Rougemont, Mrs.
phone: + 41 (0)22 379 64 99
Anne.rougemont@manep.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

Strongly interacting electrons, low-dimensional and quantum fluctuation dominated systems
Head: Sigrist M.

Participating members:
Blatter G., Büttiker M., Degiorgi L., Forró L., Giamarchi T., Grioni M., Mesot J., Mila F., Ott H.R., Renner C., Schlapbach L., Sigrist M., Troyer M., Van der Marel D.

Superconductivity, unconventional mechanisms and novel materials
H: Van der Marel D.
Participating members:
Baeriswyl D., Bernhard C., Blatter G., Büttiker M., Fischer Ø., Giamarchi T., Grioni M., Keller H., Mesot J., Morenzoni E., Sigrist M., van der Marel D.

Crystal growth
H: Forró L.

Participating members:
Karpinski J., Margaritondo G., Mesot J., Schlapbach L., van der Marel D.

Novel materials
H: Hulliger J.

Participating members:
Forró L., Hulliger J., Karpinski J., Nesper R., Schilling A., Schlapbach L.

Thin films, artificial materials and novel devices
H: Triscone J.-M.

Participating members: Aebi P., Fischer Ø., Morpurgo A., Paruch P., Schilling A., Triscone J.-M., van der Marel D.

Industrial applications and pre-application development
H: Fischer Ø.

Participating members:
Abplanalp M., Böni P., Eckert D., Fischer Ø., Flükiger R., Forró L., Hasler M., Mesot J., Nesper R., Sommer P., Triscone J.-M., Yvon K.

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 (participating to the research projects)

Abplanalp Markus, Dr.	ABB Corporate Research Ltd, Baden-Dättwil
Aebi Philipp, Prof.	Institut de Physique, Université de Neuchâtel
Baeriswyl Dionys, Prof.	Institut de Physique Théorique, Université de Fribourg
Bernhard Christian, Prof.	Département de Physique, Université de Fribourg
Blatter Gianni, Prof.	Institut für Theoretische Physik, ETH-Hönggerberg
Büttiker Markus, Prof.	Département de Physique Théorique, Université de Genève
Degiorgi Leonardo, Prof.	Laboratorium für Festkörperphysik, ETH-Hönggerberg
Eckert Daniel, Dr.	Bruker AG, Fällanden
Fischer Øystein, Prof.	Département de Physique de la Matière Condensée, Université de Genève
Flükiger René, Prof.	Département de Physique de la Matière Condensée, Université de Genève
Forró László, Prof.	Institut de Génie Atomique, EPF Lausanne
Giamarchi Thierry, Prof.	Département de Physique de la Matière Condensée, Université de Genève
Grioni Marco, Prof.	Laboratoire de spectroscopie électronique, EPF Lausanne
Hasler Martin, Prof.	Laboratoire de Systèmes Nonlinéaires, EPF Lausanne
Hulliger Jürg, Prof.	Chemistry & Biochemistry, Universität Bern
Karpinski Janusz, Dr.	Laboratorium für Festkörperphysik, ETH-Hönggerberg
Keller Hugo, Prof.	Institut für Physik, Universität Zürich
Margaritondo Giorgio, Prof.	Laboratoire de Physique des Matériaux Electroniques, EPF Lausanne
Mesot Joel, Dr.	Laboratory for Neutron Scattering, ETHZ/PSI
Mila Frédéric, Prof.	Institut de Physique Théorique, BSP, EPF Lausanne
Morenzoni Elvezio, Dr.	Laboratory for Muon-Spin Spectroscopy, PSI, Villigen
Morpurgo Alberto, Prof.	Département de Physique de la Matière Condensée, Université de Genève
Nesper Reinhard, Prof.	Laboratorium für Anorganische Chemie, ETH-Hönggerberg
Ott Hans-Rudolf, Prof.	Laboratorium für Festkörperphysik, ETH-Hönggerberg
Paruch Patrycja, Prof.	Département de Physique de la Matière Condensée, Université de Genève

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.

Renner Christophe, Prof.	Dép. de Physique de la Matière Condensée, Université de Genève
Rice T. Maurice, Prof.	Institut für Theoretische Physik, ETH-Hönggerberg
Schilling Andreas, Prof.	Institut für Physik, Universität Zürich
Schlapbach Louis, Prof	Materialprüfungs- und Forschungsanstalt, EMPA Dübendorf
Sigrist Manfred, Prof.	Institut für Theoretische Physik, ETH-Hönggerberg
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
Yvon Klaus, Prof.	Laboratoire de Cristallographie, Université de Genève

Members of the Scientific Committee

Fischer Øystein, Prof.	Dép. de Physique de la Matière Condensée, Université de Genève
Forró László, Prof.	Institut de Génie Atomique, EPF Lausanne
Hulliger Jürg, Prof.	Chemistry & Biochemistry, Universität Bern
Sigrist Manfred, Prof.	Institut für Theoretische Physik, ETH-Hönggerberg
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

Members of the Internal Evaluation Board

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.	Institut de Génie Atomique, EPF Lausanne
Hulliger Jürg, Prof.	Chemistry & Biochemistry, Universität Bern
Ott Hans-Rudolf, Prof.	Laboratorium für Festkörperphysik, ETH-Hönggerberg
Rice T. Maurice, Prof.	Institut für Theoretische Physik, ETH-Hönggerberg
Sigrist Manfred, Prof.	Institut für Theoretische Physik, ETH-Hönggerberg
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, Universitéde Genève

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.	Laboratoire de Physique des Solides, Université Paris-Sud Orsay, Orsay, France
Martinoli Piero, Prof.	Università della Svizzera Italiana, Lugano, CH
Millis Andrew, Prof.	Departement of Physics, Columbia University, USA
Sawatzky George, Prof.	Physics Department, University of British Columbia, Vancouver, CA

Communication

In 2007 and 2008:

- The SupraFête: a big event to celebrate 20 years of high-temperature superconductors
- Contribution to the PSI open days
- The PhysiScope: official inauguration on 3 October 2008
- New movie (3-language DVD): "Superconductivity: a short story of an enduring enigma"
- Exhibition and brochure illustrated by Swiss cartoonist "Mix&Remix": "La Guerre du Froid: la superconductivité (re)vue par Mix&Remix
- Partnerships with CERN: Open Doors, special exhibition and conference
- Participation in UniGE's Science Cafés for high-school students
- New MaNEP brochures: general presentation & KTT
- Electronic Newsletter (4-6 per year)
- 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

Science

In MaNEP phase II, the scientific activities are organized around six projects. The main idea which led to this structure was to center our efforts on the key questions in the area of MaNEP. In the following we give examples of some of the highlights: In Project I, "Strongly interacting electrons, low-dimensional and quantum fluctuation dominated systems", a collaboration of several groups (PSI, ETHZ, EPFL, UNIGE) has investigated the properties of quantum spin systems whose connectivity involves spin multimer units. In particular Bose Einstein condensation was demonstrated in spin dimer systems. In Project II, "Superconductivity, unconventional mechanisms and novel materials", a collaboration (UNIGE, PSI, EPFL) has been established to investigate the mechanism behind high temperature superconductivity by spectroscopic methods. One important result is the quantitative interpretation of tunnelling spectra involving a coupling of electrons to a bosonic mode. Another collaboration (PSI, UNIGE, UNIZH) demonstrated the presence of an anomalous proximity effect in artificial oxide multilayers. With the establishment of Project III, "Crystal growth", we have achieved to reinforce crystal growth activities in Switzerland and to establish a close collaboration between four crystal growth groups (UNIGE, EPFL, ETHZ, PSI). A large selection of crystals is presently available for the members of MaNEP. Project IV, "Novel Materials", is a focused effort introducing novel chemical approaches to search for new electronic materials. In project V, "Thin Films, Artificial Materials, and Novel Devices", thin films, heterostructures, and superlattices of correlated oxides have been realized and studied. A MaNEP collaboration (UNIGE, UNINE) has demonstrated that ferroelectricity can exist in layers as thin as one unit cell and discovered superconductivity at the interface between two insulating oxides. Finally, Project VI, "Industrial applications and pre-application development", has three main themes: Applied Superconductivity, Sensors and Thin Film Development and Applications. Each of these themes is composed of several applied projects involving a total of 5 industrial companies, one start-up, the technical university HES-Genève and four member institutions of MaNEP.

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 VI 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.

Education and advancement of women

After having co-organised a summer school with PSI in 2002 in Zuoz, MaNEP organized two successful summer schools at Saas-Fee (2004, 2006). 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 event in this series is a winter school in January 2009 in Saas-Fee. 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 2 years. In June 2007, a special three-day event called the SupraFête gathered over 1500 people who came to discover superconductivity. This provided the opportunity to create new PR tools: a new 10-minute movie was thus produced, as well as a humorous exhibition - and brochure - illustrated by Swiss cartoonist Mix&Remix. In October 2008, MaNEP celebrated the official launch of the PhysiScope, a public demo-lab for high-school students to promote today's physics in a fun, stimulating and hands-on way. The project was initiated, implemented and publicised by a MaNEP team, in collaboration with staff from the Physics Section at UniGE. An estimated 5000 visitors are expected to visit the PhysiScope in the coming year. 2008 was also marked by fruitful PR collaborations with CERN, with MaNEP participing in the LHC's Open Doors in April, and in a 3-month exhibition from November 2008 to January 2009.

Further information see www.manep.ch

Statistical Input – Output Data

Funding source (CHF)	Year 5	Year 6	Year 7	Year 8	Total	%
SNSF funding	4 750 000	4 750 000	4 750 000	4 750 000	19 000 000	32
Self-funding from home institution[1]	974 456	1 154 795	1 154 795	1 125 060	4 409 106	7
Self-funding from project participants	9 011 086	8 139 789	8 139 789	5 943 736	31 234 400	52
Third-party funding	1 695 660	1 352 514	1 352 514	981 185	5 381 873	9
Total	16 431 202	15 397 098	15 397 098	12 799 981	60 025 379	100

Personnel[2]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	FR	IT	RU	NL	
Management	4.60	6	40	9	60	13	0	2	3	0	1	2
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	84	14	17	70	83	29	13	7	6	1	2	27
Postdoctoral students	55	11	20	44	80	7	6	9	3	3	2	29
Research associates	0	0	0	0	0	0	0	0	0	0	0	0
Senior researchers[4]	105	8	8	97	92	47	12	10	8	8	2	27
Other staff	19	4	21	15	79	10	2	1	6	0	1	3
Total	267.60	43	15	235	85	106	33	29	26	12	8	88

[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

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
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
- Bruker BioSpin AG/ Bruker Optics GmbH, Fällanden, CH
- IBM Research Laboratory GmbH, Rüschlikon, CH
- MecSens SA, Carouge, CH
- METROLAB Instruments SA, Geneva, C
- Microsoft Research, Santa Barbara, US
- 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 Advisor
Gerber Christoph, Prof.
phone: + 41 (0)61 267 07 60
christoph.gerber@unibas.ch

Administrative Director; Finance, Personnel
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

Knowledge and Technology Transfer
Cerletti Verónica, Dr.
phone: + 41 (0)61 267 37 66
veronica.cerletti@unibas.ch

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

Advancement of Women
Cerletti Verónica, Dr.

Address
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.nccr-nano.org

Research

Module "Nanobiology"
Head: Engel A., Aebi U.

Endoscopic Nanotools for Diagnosis and Intervention
H: Friederich N., Daniels A. U., Aebi U., Staufer U.

High-resolution imaging and nanomanipulation with the AFM
H: Engel A., Aebi U., Lüthi A., Staufer U.

Nanomechanics in biology
H: Gerber Ch., Hegner M.

Nanomedicine
H: Hunziker P.

Dynamics of DNA topoisomerase
H: Klostermeier D.

Single cell proteomics
H: Vettiger P., Plückthun A., Engel A.

Studies of cytoskeletal filaments by photonic force microscopy
H: Jeney S.

Developing Novel Peptide Nanoparticles for Medical Applications
H: Burkhard P., Aebi U.

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

Qubit and spintronics (theory)
H: Loss D.

Quantum coherence and quantum computing in superconducting nanostructures (theory)
H: Bruder C.

Experimental manipulation of quantum systems
H: Ensslin K., Salis G., Staufer U.

Quantum dot nuclear spins
H: Imamoglu A.

Entanglement and coherence in nanostructures
H: Oberholzer S.

Coherence in Nanoscale Systems
H: Zumbühl D.

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

Magnetic nanosystems and single spin experiments
H: Hug H.

Mechanics on the nanometer-scale
H: Meyer E.

Direct stencil type lithography
H: Meyer G.

Atomistic simulations of nanosystems
H: Goedecker S.

Molecular conformations on surfaces
H: Fasel R.

Module "Molecular Electronics"
H: Schönenberger C., Jung T.

Molecular wires
H: Trbovic J., Forró L.

Transport properties of molecular junctions
H: Schönenberger Ch., Calame M.

Networks of molecular junctions
H: Calame M., Oelhafen P.

Electron Spectroscopy of Single Molecules and Thin-Film Transistors
H: Jung T.

Optical Properties of Single Molecules
H: Diederich F.

Optical Transport in Plasmonic Systems
H: Martin O.F.

Chemical synthesis of functional molecules for optoelectronics
H: Diederich F., Mayor M.

Module "Functional Materials by Hierarchical Self-Assembly"
H: Diederich F., Meier W.

Functional biomimetic dendrimers
H: Diederich F.

Functional nanosystems
H: Jung T., Spillmann H.

Self-assembling (bio-) polymers
H: Meier W., Textor M., Klok H.-A.

Molecular structures
H: Constable E.

Functional surface structures
H: Fromm K., Pfaltz A., Heinzelmann H.

Nanocrystals
H: Forró L., Setter N.

Module "Nanotechnology and Applications"
H: Gobrecht J., Pieles U.

Nano Argovia projects in Applied Sciences
H: Gobrecht J.

Module "Supplementary Research Activities"
H: NCCR Board of Directors

Toxicity of Nanoparticles
H: Gehr P.

NanoEthics - Deliberating the vision of an emergent nano-science
H: Rehmann-Sutter C., Maasen S.

Ethics of Science: A course for scientists provided by the NCCR Nanoscale Science
H: Reiter-Theil S.

Platforms

Education Platform
Supervisor: Meier W.

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

Aebi Ueli, Prof.	M. E. Müller-Institut für Strukturbiologie, Universität Basel
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
Daniels Alma U., Prof.	Labor für Orthopädische Biomechanik, Felix Platter Spital, Basel
Diederich François, Prof.	Laboratorium für Organische Chemie, ETH Zürich
Engel Andreas, Prof.	M. E. Müller-Institut für Strukturbiologie, Universität Basel
Ensslin Klaus, Prof.	Laboratorium für Festkörperphysik, ETH Zürich
Fasel Roman, Dr.	Abteilung Oberflächen, Beschichtungen, Magnetismus, EMPA
Forró László, Prof.	Institute de Genie Atomique, EPF Lausanne
Friederich Niklaus, Prof.	Klinik für Orthopädische Chirurgie und Traumatologie des Bewegungsapparates, Kantonsspital Bruderholz, 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, PD Dr.	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, Dr.	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
Loss Daniel, Prof.	Departement Physik, Universität Basel
Lüthi Anita, PD Dr.	Abteilung Pharmakologie/Neurobiologie, Universität Basel
Maasen Sabine, Prof.	Wissenschaftsforschung / Wissenschaftssoziologie, 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
Oberholzer Stefan, Dr.	Universität Basel
Oelhafen Peter, Prof.	Departement Physik, Universität Basel
Pfalz Andreas, Dr.	Departement Chemie, Universität Basel
Pieles Uwe, Prof.	FHNW Life Sciences, Muttenz
Plückthun Andreas, Prof.	Institute of Biochemistry, Universität Zürich
Rehmann-Sutter Christoph, Prof.	Institut für Geschichte und Epistemologie der Medizin, Universität Basel
Reiter-Theil Stella, Prof.	Institut für Angewandte Ethik und Medizinethik, Universität Basel
Schönenberger Christian, Prof.	Departement Physik, Universität Basel
Salis Gian, Dr.	IBM Rüschlikon
Setter Nava, Prof.	Laboratoire de céramique, EPF Lausanne
Spillmann Hannes, Dr.	Departement Physik, Universität Basel
Staufer Urs, Dr.	Universität Neuchâtel
Textor Marcus, Prof.	Oberflächentechnik, ETH Zürich
Trbovic Jelena, Dr.	Departement Physik, Universität Basel
Vettiger Peter, Dr.	Universität Neuchâtel
Zumbühl Dominik, Prof.	Departement Physik, Universität Basel

Public Relations

- News on website
- Electronic Newsletter
- Broadcast by the Swiss National Television on our Center and Research

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
- Nano Ethics Network, University of Aarhus, DK

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

NCCR Nanoscale Science

Achievements

Sustainability of the network of competence and contact to industry

The NCCR network of competence in Nanoscale Science has been intensified and extended to in-dustrial research and development. The Swiss Nanoscience Institute (SNI), being the most important offspring of the NCCR Nanoscale Science, mustered its efforts to combine basic research with applied research. Parallel to the success in the establishment of collaborations with R&D, basic research remains a main pillar of our NCCR Nanoscale Science.

The youngest of our Professors, Dominik Zumbühl, was among the first researchers in Europe to be awarded one of the distinguished European Research Council (ERC) research grants.

Scientific Highlights

In a strong collaboration with Prof. Kastner's laboratory at the Massachusetts Institute of Technology, we have achieved results that open the door for unprecedented quantum coherent physics. In collaboration between the University of Basel and the ETHZ, supported by the NCCR Nanoscience, a breakthrough in directing single molecules has been achieved which might be used for applications in artificial photosynthesis and molecular electronics. Synthetic organelles based on nanometer-sized polymer vesicles have been designed and introduced into cells in a target-specific fashion. Their intact biochemical functionality in the cellular environment has been documented, and their intracellular trafficking has been studied.

Work published in the open access journal PLoS Biology sheds light on the mechanism by which bacteria transfer DNA to other cells, a process which can allow resistance to jump between species of bacteria. Bacteria transfer DNA to other bacteria via a process called `conjugation.' It's about as close to sexual reproduction as bacteria - which reproduce clonally - can get.

A breakthrough in establishing reliable electrical contacts with molecules could be reported. Most existing experiments rely on the synthesis of functional rod-like molecules with chemical linker groups at both ends to provide strong, covalent anchoring to the source and drain contacts. This approach has proved very successful, providing quantitative measures of single-molecule conductance, and demonstrating rectification and switching at the single-molecule level. This is a significant finding for molecular electronics

Know-how and technology transfer

Our Center supports the establishment of and contribution to the development of the initiative i-net BASEL Nano. i-net BASEL Nano's purpose is to offer the key players in Nanoscience and Technology a platform for knowledge exchange, team building and facilitation of the flow of research results in applications for industrial products and processes.

Education

The Bachelor and Master curriculum on Nanoscience at the University of Basel have been consolidated and are completely integrated into the Science faculty. We co-organized a Workshop for young researcher on `Global Challenges and How Nanotechnology can help'.

Advancement of Women: Following a survey conducted among female researchers of our NCCR on the most relevant issues related to gender and work-life balance, we now offer a supplementary family allocation.

Communication

Owing to the high public interest on nanotechnology, numerous journalists visited the NCCR Nano to interview its members. A TV-portrait of the NCCR and its Director has been realised by the Swiss National TV for its broadcast on the 22nd February 2009.

Further information see www.nccr-nano.org.

Statistical Input – Output Data

Funding source (CHF)	Year 5	Year 6	Year 7	Year 8	Total	%
SNSF funding	4 750 000	4 750 000	4 750 000	4 750 000	19 000 000	35
Self-funding from home institution[1]	572 473	587 004	514 764	1 325 758	2 999 999	6
Self-funding from project participants	6 757 564	6 391 783	5 028 826	6 399 651	24 577 824	45
Third-party funding[2]	1 948 656	1 284 659	1 394 214	2 875 662	7 503 191	14
Total	14 028 693	13 013 446	11 687 804	15 351 071	54 081 014	100

Personnel[3]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	FR	CN	IT	PL	
Management	3.45	3	38	5	63	5	2	0	0	0	0	1
Master students	2	0	0	2	100	2	0	0	0	0	0	0
Doctoral students	80	23	29	57	71	25	18	4	2	1	0	30
Postdoctoral students	79	19	24	60	76	12	16	12	7	5	2	29
Research associates	4	1	25	3	75	1	0	0	0	2	0	1
Senior researchers[5]	80	14	18	66	83	39	16	4	2	1	6	19
Other staff	29	6	21	23	79	24	1	0	0	0	0	3
Total	277.45	66	23	216	77	108	53	20	11	9	8	83

[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 4.9 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

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
Lindelof Poul Erik, Prof.	University of Copenhagen, DK
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

- 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
Katherine Foster, Mrs.
phone: + 41 (0)21 693 54 15

Advancement of Women
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 communication
Head: Gisin N.

Single photon detectors
H: Zbinden H.

Cavity-QED and spin based quantum information processing
H: Imamoglu A.

Cavity Quantum Optomechanics
H: Kippenberg T.

Ordered pyramidal quantum dots for quantum photonics applications
H: Kapon E.

Quantum coherence in semi-conductor nanostructures
H: Deveaud-Plédran B.

Time resolved cathodoluminescence
H: Ganière J.D.

Theory and modelling of quantum coherence in polaritonic nanodevices
H: Savona V.

Nitrides based light emitters
H: Grandjean N.

Advanced photonic crystal structures
H: Houdré R.

MEMS photonic crystals and gratings
H: Stanley R.

Coherent control of matter in photonic crystal fibers
H: Feurer T.

Quantum cascade interlevel sources
H: Faist J.

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

Imaging applications of second harmonic generation in nanoparticles
H. Psaltis D.

XUV-IR Laser Pulse Shaping using MEMS
H: Wolf J.P.

Towards directlymodulated VCSELs at 40Gbit/s
H: Witzigmann B.

Technology Platforms, Programmes etc.
Industrial Project Program
Pochon S.

Doctoral programme in quantum photonics
Martin O.

Tandem Partner Program
Pochon S.

Summer School & Workshops
"Monte Verità, Ascona", "Ovronnaz"

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

Heads of Individual Research Projects and Subprojects

Deveaud-Plédran Benoit, Prof.	Institut de Photonique et d'Electronique Quantiques, EPF Lausanne
Faist Jérôme, Prof.	Institut de Physique, Université de Neuchâtel
Feurer Thomas, Prof.	Institut für Angewandte Physik, Universität Bern
Ganière Jean-Daniel, Dr.	Institut de Photonique et d'Electronique Quantiques, EPF Lausanne
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
Kapon Eli, Prof.	Institut de Photonique et d'Electronique Quantiques, EPF Lausanne
Keller Ursula, Prof.	Institut für Quantenelektronik, ETH Zürich
Kippenberg Tobias, Prof.	Institut de photonique et d'électronique quantiques, EPF Lausanne
Psaltis Demetri, Prof.	Institut d'imagerie et optique appliqué, EPF Lausanne
Savona Vincenzo, Prof.	Group of Theory of Nanosystems, EPF Lausanne
Stanley Ross, Dr.	CSEM Neuchâtel
Witzigmann Bernd, Prof.	Institute für Integrierte Systeme, ETH Zürich
Wolf Jean-Pierre, Prof.	Biophotonics Group, University of Geneva
Zbinden Hugo, Dr.	Groupe de Physique Appliquée, Université de Genève

Members of the Advisory Board

Rosencher Emmanuel, Prof. (President)	ONERA, Université Paris-Sud, FR
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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 second phase 2005-2008, we currently have 17 projects covering a wide range of fields such as quantum optics, advanced photonics applications 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

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 850 papers have appeared in scientific journals and more than 850 conference presentations have been given by scientists of the different teams. To select just a few, the NCCR is proud of the following ones: The NCCR QP has organized in 2008 major events in the research field, in January 2008 the Latsis symposium prize was granted to the NCCR QP and a conference on: "Bose Einstein Condensation in dilute atomic gases and in condensed matter". Professor Nicolas Grandjean organized the International Workshop on Nitride semiconductors Conference in Montreux in October 2008.

European collaborations

The European Research Council announces the first successful candidates in the ERC Advanced Grants competition in the domain Physical Sciences and Engineering. Over 997 applications, 105 have been successful, Switzerland received 9 of them. The NCCR Quantum Photonics is pleased to announce that two Project Leaders: Prof. Atac Imamoglu and Prof. Nicolas Gisin are amongst the winners. NCCR research groups are actively involved in 20 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

Spin-offs and Technology Transfer

Many Spin-off companies have been created by NCCR Scientists: AlpesLasers, BeamExpress, IDQuantique, Timebandwidth and recently the start up Attolight has been founded, a new project sponsored by an EPFL Innogrant. The exchanges between the NCCR and the Start-ups / Small and Medium Enterprises (SME) create new ideas, allow experience sharing and develop market oriented spirit. Moreover bridging the gap between the fundamentally oriented research carried out within the NCCR and the industrial world has been achieved with the financing of small industrial projects: 9 projects are running, already showing excellent results. Finding matching funds from Industry or support organizations is worth while.

Education and Knowledge transfer, Adv of Woman

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… Nevertheless a Science Bus will be 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 5	Year 6	Year 7	Year 8	Total	%
SNSF funding	5 200 000	4 000 000	3 600 000	3 200 000	16 000 000	34
Self-funding from home institution[1]	2 266 363	3 048 423	1 393 934	129 700	6 838 420	15
Self-funging from project participants	4 674 179	6 181 281	3 770 002	3 784 000	18 409 462	40
Third-party funding[2]	859 634	3 041 753	1 061 158	325 400	5 287 945	11
Total	13 000 176	16 271 457	9 825 094	7 439 100	46 535 827	100

Personnel[3]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							FR	IT	DE	IL	US	
Management	3.20	6	60	4	40	8	2	0	0	0	1	0
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	65	11	17	54	83	17	6	6	12	0	0	26
Postdoctoral students	34	4	12	30	88	8	6	7	2	0	3	8
Research associates	1	1	100	0	0	1	0	0	0	0	0	0
Senior researchers[5]	65	6	9	59	91	29	12	8	4	6	2	14
Other staff	35	19	54	16	46	30	1	3	0	0	0	4
Total	203.20	47	22	163	78	93	27	24	18	6	6	52

[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

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

Audio processing
Head: Dines J.

Database management and access
H: Popescu-Belis A.

Visual/video processing
H: Thiran J.-P.

Multimodal processing and recognition
H: Billard A.

Multimodal context abstraction
H: Marchand-Maillet S.

Human-machine integration
H: Lalanne D.

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 of Individual Research Projects

Billard Aude, Prof.	LASA, EPF Lausanne
Dines John, Dr.	Idiap, Martigny
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, Martigny
Thiran Jean-Philippe, Prof.	Signal Processing Institute, EPF Lausanne

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.

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

Multimodal Processing

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

Meeting Recordings

IM was among the frist 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 Spiderphone, Anteleon Imaging, Klewel, Kooaba, Keylemon. Thanks to IM2, Idiap Research Institute and its subsidiary IdeArk S.A. are a core component 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 (unitl 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

Interactive Multimodal Information Management
NCCR IM2

Statistical Input – Output Data

Funding source (CHF)	Year 5	Year 6	Year 7	Year 8	Total	%
SNSF funding	3 500 000	3 500 000	2 800 000	2 100 000	11 900 000	38
Self-funding from home institution[1]	789 019	934 189	1 461 278	755 210	3 939 696	13
Self-funding from project participants	1 962 398	1 752 623	1 623 887	597 500	5 936 408	19
Third-party funding[2]	1 935 388	2 520 036	3 552 122	1 340 812	9 348 358	30
Total	8 186 805	8 706 848	9 437 287	4 793 522	31 124 462	100

Personnel[3]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							FR	IN	IT	US	RO	
Management	10.40	6	40	9	60	12	0	0	0	1	0	2
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	85	22	26	63	74	27	10	12	5	1	6	28
Postdoctoral students	28	7	25	21	75	4	2	0	5	1	1	15
Research associates	2	0	0	2	100	1	0	0	0	0	0	1
Senior researchers[5]	45	8	18	37	82	13	7	3	3	7	4	20
Other staff	24	1	4	23	96	15	5	0	0	2	0	1
Total	194.40	44	22	155	78	72	24	15	13	12	11	67

[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

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
Beretta Giordano Bruno, Dr.	Hewlett Packard Laboratories, Palo Alto, US
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
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

Real-time sensor fusion and 3D model update for minimally invasive surgery
Head: Baur C.
Blanc R., Zheng G.

Magnet-resonance image-guided radio-frequency ablation of liver tumors
H: Becker C.
Blanc R., Kuster N., Székely G., Terraz S.

Computer-aided surgery around the head
H: Caversaccio M.
Zheng G., Weber S.

Virtual-reality based training of medical procedures
H: Harders M.
Bajka M., Bleuler H., Gantert W., Gross M., Thaler M., Rudin M., Szczerba D., Müller B.

Image-guided neurosurgery – neurosurgical treatment of functional brain disorders
H: Jeanmonod D.
Martin E., Morel A., Székely G., Kiper D., Werner B.

Load sensing surgical instruments and implants
H: Ryser P.
Hierold C., Jacq C., Kowal J., Maeder T., Neuenschwander J., Sennhauser U., Koch V.

Interactive clinical visualisation for joint examination
H: Magnenat-Thalmann N.
Ferguson S., Hoffmeyer P., Siebenrock K., Thalmann D.

Advanced image guided surgical interventions in ophthalmology
H: Nelson B.
Kowal J., Büchler P., Kratochvil B.

Soft-tissue modelling: from mechano-biology to real-time simulation
H: Ferguson S.
Baur C., Gross M., Kroschewski R., Koumoutsakos P., Mazza E., Büchler P., Poulikakos D.

Computer assistance in orthopaedic surgery
H: Reyes Aguirre, M.
Chopard B., Rüfenacht D., Székely G., Zheng G., Büchler P., Thali M.

Diagnosis patient-specific flow simulation and advanced wessel wall analysis
H: Alkadhi H.
Kurtcuoglu V., Blanc R.

Systems face: Computer aided treatment of facial diseases
H: Zeilhofer H.-F.
Caversaccio M., Gross M., Kuttenberger J., Sader R., Schwenzer Zimmerer K., Vetter T., von Rechenberg B.

Semiautomatic coronary anastomosis using cobra and helical needle concept
H: Zünd G.,
Van de Venn H.

Heads of Individual Projects and Key Researchers

Alkadhi Hatem, PD Dr.	Institut für Diagnostische Radiologie, Universitätsspital Zürich
Bajka Michael, PD Dr.	Klinik für Gynäkologie, Universitätsspital Zürich
Baur Charles, Dr.	Institut de Systèmes Robotiques, EPF Lausanne
Becker Christoph, Prof.	Division de Radiodiagnostic et Radiologie Interventionnelle, Hôpitaux Universitaires, Genève
Blanc Rémi, Dr.	Institut für Bildverarbeitung, ETH Zürich
Bleuler Hannes, Prof.	Institut de Systèmes Robotiques, EPF Lausanne
Büchler Philippe, Dr.	ARTORG Center for Biomedical Engineering Research, Universität Bern
Caversaccio Marco, Prof.	Klinik für Hals-, Nasen-, Ohrenkrankheiten, Kopf- und Halschirurgie, Inselspital Bern
Chopard Bastien, Prof.	Scientific and Parallel Computing Group, CUI, University of Geneva
Ferguson Stephen, Prof.	ARTORG Center for Biomedical Engineering Research, Universität Bern
Gantert Walter, Dr.	Klink St. Anna, Luzern
Gross Markus, Prof.	Computer Graphics Group, ETH Zürich
Harders Matthias, PD Dr.	Institut für Bildverarbeitung, ETH Zürich
Hierold Christopher, Prof.	Micro- und Nanosysteme, ETH Zürich
Hoffmeyer Pierre, Prof.	Département d'Orthopédie, Hôpital Cantonal, Université de Genève
Jacq Caroline	Laboratoire de production microtechnique, EPF Lausanne

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 34
lutz.nolte@artorg.unibe.ch

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

Communication
Roth Patrick
phone: + 41 (0)31 631 59 51
patrick.roth@artorg.unibe.ch

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@artorg.unibe.ch

Knowledge and Technology Transfer
Nolte Lutz-Peter, Prof.
phone: + 41 (0)31 631 59 34
lutz.nolte@artorg.unibe.ch

Education and Training
Reber Bernhard, Dr.

Advancement of Women
Thoeny Harriet, PD Dr.
Inselspital Bern

Address
NCCR CO-ME
ETHZ - Bildverarbeitung
Sternwartstr. 7
8092 Zürich
phone: + 41 (0)44 632 04 72
fax: + 41 (0)44 632 11 99
vogt@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

Jeanmonod Daniel, Prof.	Neurochirurgische Klinik, Universitätsspital Zürich
Kiper Daniel, Dr.	Institut für Neuroinformatik, Universität Zürich
Koch Volker, Prof.	Hochschule für Technik und Informatik, Biel
Koumoutsakos Petros, Prof.	Computational Sciences, ETH Zürich
Kowal Jens, Prof.	ARTORG Center for Biomedical Engineering Research, Universität Bern
Kratochvil Brad	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 Foundation, ETH Zürich
Kuttenberger Johannes, PD Dr.	Klinik für Mund-, Kiefer- und Gesichtschirurgie, Kantonsspital Luzern
Maeder Thomas, Dr.	Laboratoire de production microtechnique, EPF Lausanne
Magnenat-Thalmann Nadia, Prof.	MIRALab, Université de Genève
Martin Ernst, Prof.	MR-Zentrum, Kinderspital Zürich
Mazza Edoardo, Prof.	Mechanische Systeme, ETH Zürich
Morel Anne, Dr.	Neurochirurgische Klinik, Universitätsspital Zürich
Müller Bert Prof.	Biomaterials Science Center, Universität Basel
Nelson Bradley, Prof.	Institut für Robotik und Intelligente Systeme, ETH Zürich
Neuenschwander Jürg, Dr.	Electronics/Metrology, EMPA Dübendorf
Nolte Lutz-Peter, Prof.	ARTORG Center for Biomedical Engineering Research, Universität Bern
Poulikakos Dimos, Prof.	Institut für Energietechnik, ETH Zürich
Reyes Aguirre Mauricio, Dr.	ARTORG Center for Biomedical Engineering Research, Universität Bern
Rudin Markus, Prof.	Institut für Biomedizinische Technik, ETH Zürich
Rüfenacht Daniel, Prof.	Département de Radiologie, Hôpital Cantonal, Université de Genève
Ryser Peter, Prof.	Laboratoire de production microtechnique, EPF Lausanne
Sader Robert, PD Dr.	Klinik für Kiefer- und Gesichtschirurgie, Kantonsspital Basel
Schwenzer Zimmerer Katja, Dr.	Klinik für Kiefer- und Gesichtschirurgie, Kantonsspital Basel
Sennhauser Urs, Dr.	Electronics/Metrology, EMPA Dübendorf
Siebenrock Klaus, Prof.	Orthopädische Chirurgie, Inselspital, Bern
Szczerba Dominik, Dr.	Institut für Bildverarbeitung, ETH Zürich
Székely Gábor, Prof.	Institut für Bildverarbeitung, ETH Zürich
Terraz Sylvain, Dr.	Département de Radiologie, Hôpital Cantonal, Université de Genève
Thaler Markus, Dr.	Zürcher Hochschule, Winterthur, ZHW
Thali Michael Prof.	Institut für Rechtsmedizin, Universität Bern
Thalmann Daniel, Prof.	Virtual Reality Laboratory, EPF Lausanne
Van de Venn, Hans Wernher, Prof.	Inst. für Mechatronische Systeme, Zürcher Hochschule, Winterthur
Vetter Thomas, Prof.	Graphics and Vision Research Group, Universität Basel
von Rechenberg Brigitte, Prof.	Pferdeklinik, Tierspital, Universität Zürich
Weber Stefan, Prof.	ARTORG Center for Biomedical Engineering Research, University of Bern
Werner Beat	MR Center, University Children's Hospital, Zurich
Zeilhofer Hans-Florian, Prof.	Klinik für Kiefer- und Gesichtschirurgie, Kantonsspital Basel
Zheng Guoyan, Dr.	ARTORG Center for Biomedical Engineering Research, Universität Bern
Zünd Gregor, Prof.	Klinik für Herz- und Gefässchirurgie, Universitätsspital Zürich

Topics

The fundamental target of this NCCR is to understand, realise, and demonstrate the potential, which information technology offers for the optimisation of medical interventions in order to improve the treatment of individual patients and overall health care for society as a whole. The focus of the NCCR is on the development, integration and validation of enabling technologies towards advanced computer aided, image guided systems for medical interventions that support the complete treatment process from therapeutic planning and simulation via intra-operative action to post-operative care, monitoring and documentation. In addition, the utility of the underlying strategies and concepts for novel forms of medical education and training is being explored.

Achievements

Basic and applied research

Major advances achieved in biomedical simulation allow modelling the complex behaviour of living human tissue. Numerous applications have been developed for the optimal support of a variety of medical interventions by functional pre-operative planning, as well as for offering realistic skill training environments for surgical residents using high-fidelity training simulators. For surgical navigation, different devices have been realised including a small, cost-saving optical tracking system marketed by our spin-off Atracsys. Another highlight for the integration of advanced sensor technology into surgical environment is the intra-operative force-measuring device supporting balancing the ligaments during total knee arthroplasty. A recent initiative on sensor integration into othopaedic instruments and implants is further advancing precise intra-operative support and post-operative follow-up. Force feedback for improving medical diagnosis, therapy, and education belongs to the main areas of competence.

Technology transfer

The close cooperation between research labs and clinical sites guarantees the effective transfer of scientific results to patient care, demonstrated by numerous patent applications and spin-offs as well as collaborations with global market leaders in computer-aided surgery including BrainLAB.

Advancement of women

The scientific career of female clinicians is supported every year by a research grant. The organisation of the annual research-networking workshop is headed by female PhD-students.

Education and Training

The members of the NCCR play a decisive role in creating new Master Curricula: Master of Science in Biomedical Engineering (University of Berne) – with the focus areas Musculoskeletal System and Microsensor and Actuator Technology – and interdepartmental Master of Biomedical Engineering (ETH Zurich).

- 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

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Davies Brian, Prof.	Imperial College London, Mechanical Engineering, London, GB
Freysinger Wolfgang, Prof.	Universitätsklinik für Hals-, Nasen- und Ohrenheilkunde, Innsbruck, AT
Kikinis Ron, Prof.	Harvard Medical School, Brigham and Women's Hospital, Boston, US
Metaxas Dimitris, Prof.	University of Pennsylvania, Computer and Information Science, Philadelphia, US
Schlenzka Dietrich, Prof.	Orton Hospital, The Invalid Foundation, Helsinki, FI
Taylor Chris, Prof.	University of Manchester, Division of Imaging Science & Biomedical Engineering, Manchester, GB
Thorpe Chuck, Prof.	Carnegie Mellon University, Qatar
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Burckhardt Kathrin	Institut für Bildverarbeitung, ETH Zürich, CH
Landmann-Suter Regine, Prof.	Departement Forschung, Kantonsspital/Universität Basel, Basel, CH
Reber Bernhard, Dr.	Institut für Bildverarbeitung, ETH Zürich
Thoeny Harriet,PD Dr.	Institut für Diagnostische Radiologie, Inselspital Bern
Vogt Vreni, Mrs.	Project Office NCCR CO-ME, ETH Zürich, CH
Von Rechenberg Brigitte, PD Dr.	Pferdeklinik, Universität Zürich, CH

Members of the Technical Advisory Board

Responsible: Nolte Lutz-Peter, Prof.	ARTORG Center for Biomedical Engineering Research, Universität Bern, CH

Statistical Input – Output Data

Funding source (CHF)	Year 5	Year 6	Year 7	Year 8	Total	%
SNSF funding	4 000 000	4 000 000	4 000 000	4 000 000	16 000 000	35
Self-funding from home institution[1]	2 144 085	2 010 100	1 556 236	3 253 228	8 963 649	20
Self-funding from project participants	3 872 863	4 191 544	3 476 751	3 045 954	14 587 112	32
Third-party funding[2]	1 165 326	1 886 437	1 385 347	1 299 977	5 737 087	13
Total	11 182 274	12 088 081	10 418 334	11 599 159	45 287 848	100

Personnel[3]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	FR	ES	TR	AT	
Management	4.51	4	44	5	56	7	2	0	0	0	0	0
Master students	4	1	25	3	75	4	0	0	0	0	0	0
Doctoral students	70	13	19	57	81	25	16	2	3	5	1	18
Postdoctoral students	25	1	4	24	96	6	6	3	2	0	0	8
Research associates	32	3	9	29	91	25	2	2	0	0	2	1
Senior researchers[5]	110	13	12	97	88	49	43	2	2	0	2	12
Other staff	20	12	60	8	40	17	1	0	0	1	0	1
Total	265.51	47	17	223	83	133	70	9	7	6	5	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 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

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
Monti Max, Dr.
phone: + 41 (0)21 693 69 77
max.monti@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

Cluster "Theory of Self-Organized, Distributed Communication and Information"
Head: Urbanke R.

Information and coding theory for wireless multi-hop networks
Diggavi S., Telatar E., Urbanke R.

Network theory for wireless multi-hop networks
Diggavi S., Grossglauser M., Telatar E., Thiran P.

Distributed signal processing and communication in sensor networks
Vetterli M.

Algorithmic foundations of ad hoc and sensor networks
Wattenhofer R., Widmayer P.

Sensorscope and its application to environmental monitoring
Parlange M., Vetterli M.

Reliable computing in sensor networks
Guerraoui R.

Cluster "Mobile Communication and Processing Platforms"
H: Le Boudec J.-Y.

Very low radiated power UWB communication
Le Boudec J.-Y., Decotignie J.-D., Dehollain C., Robert S., Skrivervik A., Wittneben A.

Deployment of sensor networks
Mattern F., Thiele L.

Modular and composable platform for sensor and actuator networks
Henzinger T., Thiele L.

Application: Distributed odour source localization using a miniature multi-robot system
Martinoli A.

Application: Real-time avalanche and landslide analysis through sensor networks
Ancey C., Charbon E.

Application: Wireless sensor network for pollution monitoring
Robert S.

Cluster "Networked Software Systems"
H: Gross T.

Checking properties of flexible programs in the presence of modularity
Gross T.

VerSePro: Verification of security and privacy protocols for wireless networks
Basin D., Hubaux J.-P.

Secure stream ciphers
Meier W.

Spam detection based on self-organization
Le Boudec J.-Y.

Permasense
Tschudin C.

WaterSense
Hubaux J.-P.

Cluster "In-Network Information Management"
H: Alonso G.

XTream
Alonso G., Kossmann D., Tatbul N.

Distributed event detection and localization architecture for wireless sensor networks
Braun T.

Data dissemination in mobile ad hoc sensor environments
Murphy A., Pedone F.

Sensor awareness
Aberer K., Henzinger M., Süsstrunk S.

Serious building games
Gross T., Hovestadt L., Morari M., Thiele L.

Idea futures market for MICS technology foresight
Pigneur Y.

Distributed software transactional memory for resource-constrained networked devices
Felber P.

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.

Heads of Clusters and Participants to the Research Projects

Aberer Klaus, Prof.
Faculté Informatique et Communications, EPF Lausanne

Alonso Gustavo, Prof.
Departement Informatik, ETH-Zentrum, Zürich

Ancey Christophe, Prof.
Faculté Environnement naturel, architectural et construit, EPF Lausanne

Basin David, Prof.
Departement Informatik, ETH-Zentrum, Zürich

Braun Torsten, Prof.
Institut für Rechnernetze und Verteilte Systeme, Universität Bern

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.

Charbon Edoardo, Prof.	Faculté Informatique et Communications, EPF Lausanne
Decotignie Jean-D. , Prof.	CSEM, Faculté Informatique et Communications, EPF Lausanne
Dehollain Catherine, MER	Faculté Sciences et techniques de l'ingénieur, EPF, Lausanne
Diggavi Suhas, Prof.	Faculté Informatique et Communications, EPF Lausanne
Felber Pascal, Prof.	Institut d'informatique, Université de Neuchâtel, Neuchâtel
Gross Thomas, Prof.	Departement Informatik, ETH-Zentrum, Zürich
Grossglauser Matthias, Prof.	Faculté Informatique et Communications, EPF Lausanne
Guerraoui Rachid, Prof.	Faculté Informatique et Communications, EPF Lausanne
Henzinger Monika, Prof.	Faculté Informatique et Communications, EPF Lausanne
Henzinger Thomas, Prof.	Faculté Informatique et Communications, EPF Lausanne
Hovestadt Ludger, Prof.	Departement Architektur, ETH 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
Morari Manfred, Prof.	Departement Informationstechnologie und Elektrotechnik, ETH-Zentrum, Zürich
Murphy Amy, Prof.	Facoltà di scienze informatiche, Università della Svizzera Italiana, Lugano
Parlange Marc, Prof.	Faculté Environnement naturel, architectural et construit, EPF Lausanne
Pedone Fernando, Prof.	Facoltá di scienze informatiche, Universitá della Svizzera Italiana, Lugano
Pigneur Yves, Prof.	Université de Lausanne, Ecole des HEC, Lausanne
Robert Stephan, Prof.	Institut des télécommunications, Ecole d'Ingénieurs du Canton de Vaud, Yverdon-les-Bains
Skrivervik Anja, Prof.	Faculté Sciences et techniques de l'ingénieur, EPF Lausanne
Süsstrunk Sabine, Prof.	Faculté Informatique et Communications, EPF Lausanne
Tatbul Nesime, Prof.	Departement Informatik, ETH Zentrum, Zürich
Telatar Emre, Prof.	Faculté Informatique et Communications, EPF Lausanne
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
Urbanke Rüdiger, Prof.	Faculté Informatique et Communications, EPF Lausanne
Vetterli Martin, Prof.	Faculté Informatique et Communications, EPF Lausanne
Wattenhofer Roger, Prof.	Departement Informatik, ETH-Zentrum, Zürich
Widmayer Peter, Prof.	Departement Informatik, ETH-Zentrum, Zürich
Wittneben Armin, Prof.	Departement Informationstechnologie und Elektrotechnik, 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

The NCCR MICS investigates a wide range of fundamental problems including routing algorithms for temporarily disconnected wireless networks exploiting node mobility, routing under realistic mobility models, distributed consensus algorithms in wireless networks, the application of tools from statistical mechanics to problems in communications and physics-based signal processing.

System platforms, deployment and data management

New system platforms for wireless sensor networks (WSN) remain an important focus of our research. We successfully demonstrated a radio prototype for low-power impulse UWB communication, for a wide range of applications requiring high-density deployments and ranging capabilities. A deployment-support network (DSN) strictly separating the parts that are dependent and independent of the target architecture has been developed, resulting in a target-independent toolkit that is easy to install and use. The SensorScope system is now routinely deployed with environmental scientists for fine-grained monitoring of environmental phenomena. With SwissQM, we have developed a virtual machine for sensor networks that facilitates the development of applications by migrating data processing tasks into the sensor nodes. For efficiently publishing and processing sensor data, we have built Global Sensor Network (GSN), a middleware platform connecting sensor networks to the Internet in a plug-and-play style.

Applications

Our fundamental results and system platforms are demonstrated and evaluated in applications for environmental monitoring and engineering. The Swiss Experiment is a new joint initiative with the CCES center of the ETH domain and Microsoft Research. The goal of this initiative is to provide environmental scientists with next-generation e-science platforms, supporting data acquisition based on wireless sensor networks and featuring Web-based tools for data analysis and collaborative research. In Swiss Experiment, MICS technology is being used for monitoring a variety of environmental phenomena like watersheds, snow cover and permafrost.

Other current applications of MICS WSN developments are in fire detection, building energy optimization and odor source location using mobile robots.

Further information see www.mics.org

Members of the Advisory Board

Badoux Jean-Claude, Prof. em.	Former President, EPFL, CH
Baechtold Werner, Prof. em.	ETH Zürich, CH
Caccia Fulvio, Dr.	President, asut, CH
Macht Helmut	Siemens Building Technologies, CH
Reberez Martine, Prof.	University of Neuchâtel, WSL, EPFL, CH

Members of the Scientific Board

Chevillat Pierre, Dr.	IBM Zurich Research Laboratory, CH
Feldmann Anja, Prof.	TU Munich, DE
Franklin Michael, Prof.	UC Berkeley, US
Kumar P.R., Prof.	University of Illinois, Urbana-Champaign, US
Kurose Jim, Prof.	University of Massachusetts, US
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 5	Year 6	Year 7	Year 8	Total	%
SNSF funding	3 800 000	3 800 000	3 800 000	3 800 000	15 200 000	36
Self-funding from home institution[1]	3 527 120	3 949 763	2 662 360	2 462 226	12 601 469	30
Self-funding from project participants	2 830 164	3 741 902	3 584 312	1 736 490	11 892 868	29
Third-party funding[2]	700 007	420 780	692 477	150 000	1 963 264	5
Total	10 857 291	11 912 445	10 739 149	8 148 716	41 657 601	100

Personnel[3]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	US	FR	AT	IN	
Management	4.67	14	56	11	44	14	1	0	4	1	1	7
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	97	18	19	79	81	29	12	5	4	4	3	40
Postdoctoral students	30	5	17	25	83	5	4	0	3	2	0	16
Research associates	18	3	17	15	83	11	2	1	0	0	0	4
Senior researchers[5]	55	6	11	49	89	21	12	7	1	4	1	11
Other staff	33	3	9	30	91	11	1	2	1	0	6	12
Total	237.67	49	19	209	81	91	32	15	13	11	11	90

[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

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

Deputy Director
Danthine Jean-Pierre, Prof.
phone: + 41 (0)21 692 34 85
Jean-Pierre.Danthine@unil.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
Gibson Rajna, Prof.

International Scientific Council
Loubergé Henri, Prof.

Communication
Eckart Jaeger, Mr.

Address
NCCR FINRISK
Plattenstrasse 14
8032 Zurich

phone: + 41 (0)44 634 29 69
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 and evolutionary finance
Head: Hens T.

Macro risks, systemic risks and international finance
H: Imbs J.

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

Equilibrium asset pricing
H: Dumas B.

Module "Corporate Finance"
Coordinator: Degeorge F.

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

Dynamic corporate finance and financial innovation
H: Morellec E.

Module "Risk Management"
Coordinator: Mancini L.

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

Interest rate and volatility risk
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.

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
Dumas Bernard, Prof.	Ecole des HEC, Université de Lausanne
Gibson 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
Mancini Loriano, Prof.	Institut für schweizerisches Bankwesen, Universität Zürich
Morellec Erwan, Prof.	Chair in Corporate Finance, 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
Foellmer Hans, Prof.	Humboldt Universität, Berlin, DE
Gourieroux Christian, Prof.	University of Toronto, CA and CREST, Paris, FR
Pagano Marco, Prof.	University of Napoli, IT
Stulz René, Prof.	Ohio State University, Colombus, US
Uppal Raman, Prof.	London Business School, GB

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 the second phase (2005-09) 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 and statistical tools that are necessary to provide meaningful answers to the above cited research questions?

Achievements

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

Research

Within seven 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 500 working papers and 300 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 and Lausanne, Lugano, Sankt Gallen as well as in 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 both the Universities of Zurich and Lausanne have recently 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 5	Year 6	Year 7	Year 8	Total	%
SNSF funding	3 000 000	3 000 000	2 500 000	2 500 000	11 000 000	48
Self-funding from home institution[1]	663 428	604 394	865 000	1 728 614	3 861 436	17
Self-funding from project participants	1 344 000	1 654 052	1 849 500	1 709 590	6 557 142	28
Third-party funding	295 804	437 409	450 500	420 000	1 603 713	7
Total	5 303 232	5 695 855	5 665 000	6 358 204	23 022 291	100

Personnel[2]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	IT	FR	BE	RU	
Management	2.78	5	42	7	58	3	2	1	2	1	0	3
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	72	17	24	55	76	13	12	10	2	1	5	34
Postdoctoral students	16	8	50	8	50	2	5	4	2	0	0	4
Research associates	3	0	0	3	100	0	2	0	0	0	0	1
Senior researchers[4]	57	6	11	51	89	14	7	10	11	6	1	13
Other staff	6	4	67	2	33	5	0	0	0	0	0	1
Total	156.78	40	24	126	76	37	28	25	17	8	6	56

[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

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

The power of images: image politics
Heads: Boehm G., Vischer Th.

Image, architecture and word
H: Beyer A.

Time in the image
H: Boehm G., Brandstetter G.

The image of writing
H: Loprieno A.

The literary text as iconic criticism
H: Simon R.

The epistemic image – Visualization in science, technology and humanities
H: Hagner M., Renner M., Vetter T.

Graduate School „Image and Time“

01.01.09 - 31.12.11
Supervisors: Boehm G. / Schwarte L.

Heads of Individual Research Projects

Beyer Andreas, Prof.	Department of the History of Art, University of Basel
Boehm, Gottfried, Prof.	Department of the History of Art, University of Basel
Brandstetter Gabriele, Prof.	Institut für Theaterwissenschaften, Freie Universität Berlin
Hagner Michael, Prof.	Chair for Science Studies, ETH Zürich
Loprieno Antonio, Prof.	Institute of Egyptology, University of Basel
Renner Michael, Prof.	Department Visual Communication, University of Art and Design, Basel, FHNW
Simon Ralf, Prof.	Institute of German Studies, University of Basel
Vetter Thomas, Prof.	Computer Science Department, University of 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
Bernold Thomas, Dr.
phone: + 41 (0)61 267 18 02

Education and Training
Schwarte Ludger, Dr., Ass.-Prof.

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

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 1	Year 2	Year 3	Year 4	Total	%
SNSF funding	1 775 000	1 775 000	1 775 000	1 775 000	7 100 000	40
Self-funding from home institution[1]	641 699	1 023 214	1 153 147	2 506 941	5 325 001	30
Self-funding from project participants	1 030 368	1 138 448	708 290	1 643 337	4 520 443	26
Third-party funding	190 859	347 616	178 388	0	716 863	4
Total	3 637 926	4 284 278	3 814 825	5 925 278	17 662 307	100

Personnel[2]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	IT	AT	US	AR	
Management	4.35	4	50	4	50	4	3	1	0	0	1	1
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	30	19	63	11	37	9	16	4	2	0	0	2
Postdoctoral students	12	3	25	9	75	2	9	2	0	0	0	1
Research associates	0	0	0	0	0	0	0	0	0	0	0	0
Senior researchers[4]	13	2	15	11	85	3	9	1	0	2	0	0
Other staff	6	3	50	3	50	6	1	0	0	0	0	0
Total	65.35	31	45	38	55	24	38	8	2	2	1	4

[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
Jäger Ludwig, Prof.	Lehrstuhl für Deutsche Philologie, RWTH Aachen, DE
Krämer Sybille, Prof.	Institut für Philosophie, Freie Universität Berlin, DE
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
Kaufmann Christine, Prof.
christine.breining@rwi.uzh.ch

Sauvé Pierre, Mr.
pisauve@hotmail.com

Ziegler Andreas, Prof.
andreas.ziegler@unil.ch

Scientific Coordinator

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

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

Administrative Assistant
Kövesdi Olivia, Ms.
olivia.koevesdi@wti.org

IT Administrator
Steiger Christian, Mr.
christian.steiger@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
N.N.

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

Research Cluster A Constitutional Topics
Coordinator:
Kaufmann C.
Alternate: Ziegler A.

Constitutionalism and multilayered governance
Head: Peters A., Armingeon K.
Alternate Leader: Elsig M.

Decision-making in the WTO and in other international organizations
H: Dupont C., Ziegler A.
AL: Elsig M.

Special and differential treatment, variable geometry and regionalism
H: Baldwin R.
AL: Carpenter T.

The role of human rights in trade regulation
H: Kaufmann C.
AL: Gehne K.

Research Cluster B Unresolved Regulatory Issues
Coordinator: Baldwin R.
Alternate: Graber C.

Regulation sustainable agriculture in WTO law and policy
H: Lehman B.
AL: Aerni P.

Energy in WTO law and policy
H: Cottier T.
AL: Nartova O.

The WTO and the legal protection of cultural diversity in a digital networked environment
H: Graber C.
AL: Burri M.

Developing trade rules for services: Prudential standards, trade remedies, competition and migration
H: Sauvé P.
AL: Panizzon M.

Genetic engineering in international trade regulation and policy: Intellectual property, technical regulation and the impact of human rights
H: Cottier T.
AL: Biber-Klemm S.

Research Cluster C Establishing Regulatory Linkages in International Trade, Investment and Finance
Coordinator: Baltensperger E.
Alternate: Gugler P.

International trade and finance
H: Baltensperger E.
AL: Herger N.

Multilateral rules on trade and investment
H: Gugler P.
AL: Chaisse J.

Trade in primary commodities: Financial sustainability and market structures
H: Nissanke M.
AL: Ferrarini B.

Platforms, Programmes etc.

Annual NCCR conference

Biannual IP workshops and symposia

Topics

WTO rules increasingly impinge upon areas of law and policy including environmental protection, agricultural and regional policies, labour standards, human rights and culture. The purpose of NCCR Trade Regulation is to develop innovative, concrete policy recommendations that reflect a better balance between economic and other regulatory objectives, taking into consideration insights from the disciplines of law, economics and political science. Substainability will be a key criterion for all proposals. The project is premised on the idea that academia is going to have an increasingly important role to play in conceptualizing the regulatory debates of the future, and, in particular, elucidating the value-related choices enjeux. Such thinking has to take place outside of the political arena as it cannot be based on short-term rationales.

Heads of Individual Research Projects and Subprojects

Aerni Philipp, Dr.	c/o World Trade Institute, Bern
Armingeon Klaus, Prof.	Institut für Politikwissenschaft, Universität Bern
Baldwin Richard, Prof.	Graduate Institute of International Studies, Genève
Baltensperger Ernst, Prof.	Volkswirtschaftliches Institut, Universität Bern
Biber-Klemm Susette, Dr.	c/o World Trade Institute, Bern
Burri Mira, Dr.	c/o World Trade Institute, Bern
Carpenter Theresa, Dr.	Graduate Institute of International Studies, Genève
Cottier Thomas, Prof.	c/o World Trade Institute, Bern
Chaisse Julien, Dr.	c/o World Trade Institute, Bern
Dupont Cédric, Prof.	Graduate Institute of International Studies, Genève
Elsig Manfred, Dr.	c/o World Trade Institute, Bern
Ferrarini Benno, Dr.	c/o World Trade Institute, Bern
Gehne Katja, Dr.	c/o World Trade Institute, Bern
Graber Christoph, Prof.	Rechtswirtschaftliche Fakultät, Universität Luzern
Gugler Philippe, Prof.	Département d'Economie Politique, Université de Fribourg
Herger Nils, Dr.	Volkswirtschaftliches Institut, Universität Bern
Kaufmann Christine, Prof.	Rechtswissenschaftliches Institut, Universität Zürich
Lehmann Bernard, Prof.	Institut für Agrarwissenschaft, ETH Zürich
Nartova Olga, Mrs.	c/o World Trade Institute, Bern
Nissanke Machiko, Prof.	SOAS, University of London, GB
Panizzon Marion, Dr.	c/o World Trade Institute, Bern
Peters Anne, Prof.	Juristische Fakultät, Universität Basel
Sauvé Pierre, Mr.	c/o World Trade Institute, Bern
Ziegler Andreas, Prof.	Droit International Public Centre, Université de Lausanne

Members of the 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.	University of Berne, CH
Ostry Sylvia, Prof.	University of Toronto, CA

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

Achievements

Until fairly recently, international trade regulation has been undertaken as a specialised 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

Research during our first phase essentially followed the projects and plans set out in the research agenda adopted at the outset of our project. Published output has been considerable; it is expected to grow further in the remaining months until September 2009. Research efforts in all IPs were dedicated to improve coherence within trade regulation and in relation to other policy areas. Main efforts and accomplishments include: Contributions to the development of a theory of multilayered governance, addressing "compensatory constitutionalism" as well as the allocation of powers between international institutions; Conceptual insights concerning the WTO Secretariat's role as a "political agent", or actor in the trade policy making and enforcement processes; The "multilateralisation of regionalism"; conceptualization of a tool for human rights impact assessments of trade-related rules and policies; Innovative, inter-disciplinary policy recommendations concerning regulatory changes required in the WTO's Agriculture Agreement to promote (a) sustainable agriculture (b) food security, and 3) innovation and entrepreneurship; Path-breaking work relating to the identification of problems concerning climate change and trade regulation; Contributions to the development of regulatory models for coherent media regulation on a global level reflecting the effects of new digital technologies upon cultural diversity; Leadership in the development of a comprehensive and coherent new policy concept on "migration partnerships", a mechanism that emphasises shared responsibility between host and source countries of migrants, and is likely to lead to a paradigm shift in the management of migration policy; Contributions to shape an appropriate international framework for biotechnology regulation and distinguishing the process of risk assessment from risk management; Inter-disciplinary insights relating to the impact of the Euro on trade, and; Proposals for financial mechanisms to deal with commodity price fluctuations. Efforts have started to produce a comprehensive report, integrating our key results along with insights for coherence from our research in a volume to be produced by the end of phase 1.

Knowledge transfer and communications

Our research has now progressed to the point where we are actively seeking to establish better lines of communication between our researchers and the NCCR's various stakeholders, especially, but not exclusively, the public. A key priority for the remainder of the first phase of our funding will be with the so-called "vulgarisation" of our results, along with development of a more structured approach to our management of our knowledge transfer and communications functions.

Restructuring of the World Trade Institute and the NCCR

Within the framework of the NCCR, the University of Bern has committed itself to complete and sustainable integration of the World Trade Institute Foundation into the structures of the University of Bern. The WTI will be an interdisciplinary institute of the University of Bern with a national and international outreach in teaching and research, similar to the Oeschger Institut, founded within the framework of NCCR Climate in 2007.

Education and training

The NCCR is currently providing funding for 21 doctoral students, based both in Bern and across its network; it has received outstanding reviews for its work in training the "next generation" from members of its Review Panel. Anticipating the integration of the NCCR and the WTI into UNIBE structures, the NCCR has continued to strengthen its institutional linkages with the educational programmes of the WTI. Several of the NCCR's Alternate Leaders now serve as teachers on the latter's inter-disciplinary Masters faculty, in the summer academy and in the relevant UNIBE faculties. Thanks, in particular, to the University's commitment to funding three assistant professorships - we are planning to introduce doctoral programs in Trade Economics and International Political Economy (IR), working in conjunction with the relevant UNIBE faculties. This will complement the existing PhD program in International Economic Law offered by the Institut für Europa-und Wirtschaftsvölkerrecht, enabling the WTI to become a proper interdisciplinary graduate school specialised in international trade regulation. We expect to be in a position to do this early in the first two years of the second phase.

Further information see www.nccr-trade.ch

Statistical Input – Output Data

Funding source (CHF)	Year 1	Year 2	Year 3	Year 4	Total	%
SNSF funding	2 600 000	2 600 000	2 600 000	2 600 000	10 400 000	73
Self-funding from home institution[1]	267 074	265 617	270 000	277 309	1 080 000	8
Self-funding from project participants[2]	444 000	444 000	444 000	444 000	1 776 000	12
Third-party funding	252 557	111 641	163 066	472 736	1 000 000	7
Total	3 563 631	3 421 258	3 477 066	3 794 045	14 256 000	100

Personnel[2]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	US	GB	IT	CA	
Management	4.43	10	59	7	41	13	1	4	1	0	1	2
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	23	12	52	11	48	8	2	0	2	3	1	11
Postdoctoral students	4	2	50	2	50	1	1	0	1	0	0	2
Research associates	4	2	50	2	50	0	0	1	0	1	0	3
Senior researchers[4]	28	8	29	20	71	20	1	2	1	0	1	5
Other staff	7	3	43	4	57	1	3	0	1	0	0	2
Total	70.43	37	45	46	55	43	8	7	6	4	3	25

[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

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

Research Manager
Stercken Martina, PD Dr.
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
Naumann Barbara, Prof.

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

Institutionalization

Techniques and methods of medieval continental Germanic literacy
Head: Glaser E., Rübekeil L.

From spoken to written word: The scripting of the Germanic languages from a comparative perspective
H: Fischer A.

The transition from papyrus to paper as reflected in Arabic papyri and papers
H: Kaplony A.

Communication with images of glass, light, and color: The media character and significance of glass painting in Switzerland until the end of the Middle Ages
H: Kurmann-Schwarz B.

Interference

The staging of writing: Translation, vocality, and intentionality of writing in Scandinavian literature of the middle ages
H: Glauser J.

Texts and images – Education and conversation. Media circumstances and functional interferences
H: Lutz E. C.

Orality – visuality – writing / oralité – visualité – ecriture
H: Wetzel R.

Display

Complex medialities of the late middle ages: The example of vernacular religious plays
H: Kiening C.

Mediality of the pilgrimage: "Advertising" between magic imagining and calculated cult propaganda
H: Rendtel C., Wittmer-Butsch M.

Media display of relics in medieval Rome
H: Claussen P.C.

Violence and morality: Discourses, images, and media flux around 1500
H: Burghartz S.

Instrumentalization

The image of ruling power and its relationship to law in the transition from the middle ages to the early modern period
H: Thier A.

Media of order: Practices for handling legal records and changes in political culture (1200–1500)
H: Teuscher S.

Cartography of power
H: Stercken M.

Documentary sources and language elaboration in the late French middle ages
H: Gleßgen M.

Functions of Latin versification in the middle ages
H: Stotz P.

Transference

"Transference" as a basic concept of mediality (literature and visual culture)
H: Naumann B.

"Crossmapping" – Transference in philosophy, literature, and visual culture
H: Bronfen E.

Rhetoric of transference in the late 18th and early 19th centuries
H: Müller Nielaba D.

Transference of knowledge: Media-related and disciplinary constellations in Stifter and Musil
H: Wagner K.

A history of the representation of flesh in Western art
H: Stoichita V.

Heads of Individual Research Projects

Bronfen Elisabeth, Prof.	Englisches Seminar, Universität Zürich
Burghartz Susanna, Prof.	Historisches Seminar, Universität Basel
Claussen Cornelius, Prof.	Kunsthistorisches Seminar, Universität Zürich
Fischer Andreas, Prof.	Englisches Seminar, Universität Zürich
Glaser Elvira, Prof.	Deutsches Seminar, Universität Zürich
Glauser Jürg, Prof.	Deutsches Seminar, Universität Zürich
Glessgen Martin-Dietrich, Prof.	Romanisches Seminar, Universität Zürich
Kaplony Andreas, Prof.	Orientalisches Seminar, Universität Zürich
Kiening Christian, Prof.	Deutsches Seminar, Universität Zürich
Kurmann-Schwarz Brigitte, PD Dr.	Kunsthistorisches Seminar, Universität Zürich

Achievements

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

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
Rendtel Constanze, Dr.	Historisches Seminar, Universität Zürich
Rübekeil, Ludwig, PD Dr.	Deutsches Seminar, Universität Zürich
Stercken Martina, PD Dr.	Historisches Seminar, Universität Zürich
Stoichita Viktor, Prof.	Département d'Histoire de l'Art et Musicologie, Université de Fribourg
Stotz Peter, Prof.	Mittellateinisches Seminar, Universität Zürich
Teuscher Simon, Prof.	Historisches Seminar, Universität Basel
Thier Andreas, Prof.	Rechtswissenschaftliches Institut, Universität Zürich
Wagner Karl, Prof.	Deutsches Seminar, Universität Zürich
Wetzel René, Prof.	Département de Langue et Littérature Allemands, Université de Genève
Wittmer-Butsch Maria, Dr.	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
Veyrassat Béatrice, Prof.	Swiss National Science Foundation, Berne, CH
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

Mediality – Historical Perspectives
NCCR Mediality

- 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

Topics

Media both enable and influence communication. This can be clearly seen from modern communication technologies which have brought about a fundamental change in our societies. However, the phenomenon can also be observed in earlier eras which possess their own form of mediality. The National Centre of Competence in Research (NCCR) "Mediality. Historical perspectives" looks into the link between the forming of cultural meaning and media forms and how this has changed over the passage of time.

Its 20 individual projects are purposely not devoted primarily to the present day, its mass media and diverse media theories. The study instead looks mainly at the Middle Ages and the Early Modern Period, in other words the very era which saw the emergence of the conditions leading to modern mediality.

In the Middle Ages and Early Modern Period writing was by no means a customary skill but was surrounded by an aura. There were no mass media at that time. Communication was a face to face interchange. However, wide-ranging changes also took place in these times. Communication networks developed, the use of paper increased, new types and combinations of texts and images emerged and the printing press broadened communication.

This development can be best observed where there is an interface between or transformation of media forms, where they become the subject of discussion and reflection. The aim of the NCCR "Mediality. Historical perspectives" is to plumb the historical dimensions of mediality, to provide an insight into the various forms, phenomena and processes, categories, models and metaphors in which communication appears. The objective is also to combine historical and systematic perspectives and to present the situation today in a more focused light.

Leading house is the Competence Centre for Medieval Studies at Zurich University. The Universities of Basel, Freiburg and Geneva are also participating in the project which encompasses historical and linguistic sciences, cultural and art sciences. It provides a broad network for experts on the Middle Ages as well as for media historians and offers a framework for concentrated and innovative training for young scientists.

Statistical Input – Output Data

Funding source (CHF)	Year 1	Year 2	Year 3	Year 4	Total	%
SNSF funding	1 425 000	1 425 000	1 425 000	1 425 000	5 700 000	66
Self-funding from home institution[1]	326 994	610 240	805 217	567 500	2 309 951	27
Self-funding from project participants[2]	124 450	69 751	67 501	67 501	329 203	4
Third-party funding	25 128	7 542	112 731	118 448	263 849	3
Total	1 901 572	2 112 533	2 410 449	2 178 449	8 603 003	100

Personnel[2]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	AT	IT	GB	LU	
Management	3.65	4	50	4	50	3	5	0	1	0	0	0
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	25	17	68	8	32	14	7	1	1	0	1	1
Postdoctoral students	9	5	56	4	44	4	4	0	0	1	0	1
Research associates	0	0	0	0	0	0	0	0	0	0	0	0
Senior researchers[4]	6	2	33	4	67	15	14	1	0	0	0	1
Other staff	5	4	80	1	20	5	0	0	0	0	0	0
Total	48.65	32	60	21	40	41	30	2	2	1	1	3

[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

Challenges to Democracy in the 21st Century
NCCR Democracy

Research

Module "Expanding Democratic Governance in the International Realm"
Leader: Cederman L.–E.

Democratizing global institutions: the WTO as an emerging polity
Head: Dupont C.

Promoting democracy in the EU and its near abroad
H: Lavenex S., Schimmelfennig F.

Democratizing divided societies in bad neighborhoods
H: Cederman L.-E.

From national to supra-national democracy in the European Union
H: Caramani D.

Legitimacy and democracy in multilateral integration
H: Cheneval F.

Module "Changing Relations between Input, Throughput, and Output in Public Governance"
Leader: Papadopoulos I.,

The impact of internationalization on Swiss policy processes in comparative perspective
H: Papadopoulos I.

Assessing the trend towards new regionalism in Swiss metropolitan areas
H: Kübler D.

Information on public performance – Creation, diffusion and utilization
H: Widmer T., Bonfadelli H.

Democratic structures and processes and the provision of public goods
H: Bernauer T., Koubi V.

Module "Changing Structures and Actors of Political Communication"
Leader: Donges P.

Democracy in the media society – Theoretical support and empirical validation of a societal term
H: Imhof K.

Mediatization and structural change within political actors and organizations
H: Jarren O., Donges P.

The dynamics of political institutions in mediated democracies: Political bargaining and the transformation of the public sphere
H: Marcinkowski F.

Explaining differences in political news a comparative analysis across four Western democracies and four decades
H: Esser F.

Module "Changing Processes and Strategies of Political Participation and Representation – Audience Democracy"
Leader: Siegert G.

The strategies of political actors: process and message
H: Kriesi H.

The strategies and processes of issue selection and construction
H: Siegert G.

The strategies and processes of attitude formation and public participation
H: Bonfadelli H., Wirth W.

Knowledge Transfer Module "The Quality of Democracy"
Leader: Ladner A.

Democracy barometer
H: Bühlmann M., Merkel W.

Civic education
H: Ziegler B., Ladner A.

Smart-voting as a tool for electronic campaigning
H: Ladner A., Trechsel A., Leuthold H.

Narrative Space
H: Wyss V.

Democratic processes and political behavior
H: Leuthold H.

Media and democracy monitor
H: Trappel J.

Programmes

Doctoral programme
Supervisor: Papadopoulos I.

Peer mentoring programme
Supervisor: Hug S., Siegert G.

Heads of Individual Research Projects

Bernauer Thomas, Prof.	Center for Comparative and International Studies (CIS), ETH Zürich
Bonfadelli Heinz, Prof.	SwissGIS / Institut für Publizistik- und Kommunikationswissenschaft, 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 Publizistik und Kommunikationswissenschaften, 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, a realistic assessment of the state of democracy today must acknowledge that democratic regimes are faced with serious challenges that threaten to undermine their legitimacy. Citizens in Western democracies are increasingly disillusioned with their political leaders and institutions. Beyond established liberal democracies, the process of democratization has proven to be more difficult than expected.

The NCCR Democracy wants to show why and explain what can be done about it. It examines two key challenges to democracy in the 21st century: On the one hand, nation-states are suffering from a severe loss of problem-solving capacity in the wake of globalization. On the other hand, the "mediatization of politics," i.e. the intrusion of the media into the political process, constitutes a serious threat to traditional models of representative democracy and profoundly alters the character of public debate. While both developments are real threats to the democratic process, they also represent opportunities for new forms of political participation and representation, as well as for political legitimation. The main goals of the NCCR Democracy are to propose designs for new political decision-making processes and to devise strategies to improve the quality of democracy. The NCCR is based on four basic research modules and a fifth applied research module charged with finding practical applications that implement the research results. The NCCR also provides an interdisciplinary doctoral program in its two core disciplines – political science and media and communication science.

Dupont Cédric, Prof.	Institut Universitaire de Hautes Etudes Internationales, Genève
Esser Frank, Prof.	SwissGIS / Institut für Publizistik- und Kommunikationswissenschaft, Universität Zürich
Imhof Kurt, Prof.	SwissGIS / Institut für Publizistik- und Kommunikationswissenschaft, Universität Zürich
Jarren Otfried, Prof.	SwissGIS / Institut für Publizistik- und Kommunikationswissenschaft, Universität Zürich
Koubi Vally, Prof.	Volkswirtschaftliches Institut, Universität Bern
Kriesi Hanspeter, Prof.	CIS / Institut für Politikwissenschaft, Universität Zürich
Kübler Daniel, Prof.	Institut Sozialplanung und Stadtentwicklung, Fachhochschule Nordwestschweiz
Ladner Andreas, Prof.	IDHEAP, Universität Lausanne
Lavenex Sandra, Prof.	Politikwissenschaftliches Seminar, Universität Luzern
Leuthold Heiri, Dr.	Geographisches Institut, Universität Zürich
Marcinkowski Frank, Prof.	Institut für Kommunikationswissenschaft, Universität Münster
Merkel Wolfgang, Prof.	Wissenschaftszentrum Berlin für Sozialforschung
Papadopoulos Ioannis, Prof.	Institut d'Etudes Politiques et Internationales, Université de Lausanne
Schimmelfennig Frank, Prof.	Center for Comparative and International Studies (CIS), ETH Zürich
Siegert Gabriele, Prof.	SwissGIS / Institut für Publizistik- und Kommunikationswissenschaft, Universität Zürich
Trappel Josef, Dr.	SwissGIS / Institut für Publizistik- und Kommunikationswissenschaften, Universität Zürich
Trechsel Alexander, Prof.	European University Institute, Florence
Widmer Thomas, PD Dr.	CIS / Institut für Politikwissenschaft, Universität Zürich
Wirth Werner, Prof.	SwissGIS / Institut für Publizistik- und Kommunikationswissenschaft, Universität Zürich
Wyss Vinzenz, Prof.	Zürcher Hochschule Winterthur
Ziegler Béatrice, Prof.	Pädagogische Hochschule der Fachhochschule Aargau Nordwestschweiz

Achievements

Multi-disciplinary research

The five research modules have so far produced a common position paper and a first synthesis of research results as well as publications 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. The NCCR's final research results will show how the two challenges of globalization and mediatization jeopardize or reinforce democracy. They will help to clarify how the two challenges have an effect on governance in established democracies. They will also elucidate the effects of efforts to democratize non-democratic regions and international institutions and show the conditions for successful and peaceful democratization processes. We will also gain insight into how the media influence the political process as well as the consequences thereof.

Knowledge transfer

The projects in the Knowledge Transfer module each develop a tool – either for democracy research or for the transfer of research results to the public. Some of these tools are already made accessible (such as Politikzyklus, Smartvote) and/or (Democracy barometer) have been presented to the public at the occasion of public events. Three individual research projects have already been completed: The results of the first project serve now as a decision-making aid for policy-makers to elaborate strategies for the development of Swiss metropolitan areas. The second project identified the risks and potentials of on-line voting assistance tools such as Smartvote from a legal perspective. The third project developed an e-learning course on the Swiss political system for students at Swiss universities. Regarding public relations, the NCCR has organized several meetings with journalists to acquaint them with the NCCR's research, has regularly published a newsletter, and has organized events for a broader public or particular target groups.

Education and training

The NCCR Democracy provides an interdisciplinary doctoral program. The goal of the program is 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. The NCCR presently supports the training of 21 NCCR and five external Ph.D. students. The curriculum covers research methods as well as subject-specific and general skills, including professionalization activities such as teaching, conference presentations, scientific writing and publishing strategies. A future goal is also to promote the post-doctoral researchers. The current creation of an NCCR assistant professorship at the University of Zurich is one first step towards this.

The core of our efforts to promote female researchers is the peer mentoring program. The peer group Stepping Stone consisting of 14 female doctoral students and post-docs aims to advance the careers of its members in academia and beyond. It organizes activities designed to develop skills vital to building up successful careers and to create formal and informal networks with peers and senior colleagues from outside the group. The peer mentoring 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.

Structural effects

The NCCR Democracy initiated the Center for Democracy Aarau (Zentrum für Demokratie 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 1	Year 2	Year 3	Year 4	Total	%
SNSF funding	1 775 000	1 775 000	1 775 000	1 775 000	7 100 000	46
Self-funding from home institution[1]	745 207	759 333	1 064 889	880 570	3 449 999	22
Self-funding from project participants	890 799	1 038 659	1 101 463	984 919	4 015 840	26
Third-party funding	71 992	260 624	431 587	132 534	896 737	6
Total	3 482 998	3 833 616	4 372 939	3 773 023	15 462 576	100

Personnel[2]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	GR	SE	FR	AT	
Management	4.37	6	32	13	68	7	10	2	2	0	0	0
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	30	16	53	14	47	18	10	0	0	1	0	3
Postdoctoral students	5	2	40	3	60	1	3	0	0	0	1	0
Research associates	19	7	37	12	63	9	9	0	0	0	0	2
Senior researchers[4]	46	4	9	42	91	31	10	3	1	1	1	4
Other staff	59	33	56	26	44	53	4	0	0	0	0	2
Total	163.37	68	38	110	62	119	46	5	3	2	2	11

[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

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: Mueller-Spahn F.
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., Müller-Spahn F., 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.

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

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

NCCR Administrative CEO
Angst René, Mr.
rene.angst@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
Dave Girish, Mr.
girish.dave@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

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.

	Forschungslabor, Universitätsspital Basel
Hellhammer Dirk, Prof.	Institut für Psychologie, Universität Basel
Hertwig Ralph, Prof.	Institut für Psychologie, Universität Basel
Holzgreve Wolfgang, Prof.	Frauenklinik, Universitätsspital Basel
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
Müller-Spahn Franz, Prof.	Psychiatrische Universitätsklinik Basel
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.	Novartis Pharma AG, Basel
Schächinger Hartmut, Prof.	Institut für Psychologie, Universität Basel
Schneider Silvia, Prof.	Institut für Psychologie, Universität Basel
Seifritz Erich, Prof.	Psychiatrische Privatklinik, Sanatorium Kilchberg
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.	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

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.

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 100 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, 38 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. Two summer schools have successfully been realized so far. 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 2 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 1	Year 2	Year 3	Year 4	Total	%
SNSF funding	2 480 000	2 480 000	2 600 000	2 640 000	10 200 000	55
Self-funding from home institution[1]	164 349	449 272	657 582	1 037 801	2 309 004	12
Self-funding from project participants	809 197	900 156	768 056	728 683	3 206 092	17
Third-party funding	157 574	209 922	1 757 345	725 160	2 850 001	15
Total	3 611 120	4 039 350	5 782 983	5 131 644	18 565 097	100

Personnel[2]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	FR	AU	AT	CA	
Management	7.48	6	35	11	65	5	4	2	1	0	2	4
Master students	32	23	72	9	28	23	7	0	1	0	0	2
Doctoral students	33	31	94	2	6	17	10	0	0	0	0	6
Postdoctoral students	3	2	67	1	33	0	2	0	1	0	0	0
Research associates	11	6	55	5	45	6	3	0	0	0	0	3
Senior researchers[4]	28	4	14	24	86	11	17	0	0	1	0	1
Other staff	37	24	65	13	35	21	7	2	1	1	0	5
Total	151.48	96	60	65	40	83	50	4	4	2	2	21

[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

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

Area "Emotion Elicitation and Perception"

Appraisal and motivational processes in the elicitation of emotion
Heads: Scherer K.R., Gendolla G.

Response patterning
H: Scherer K.R., Kaiser S.

Neural architecture of emotion perception and affect-related cognition
H: Vuilleumier P., Landis T.

Area "Emotion Regulation"

Individual and social regulation of emotions in the family
H: Perrez M., Reicherts M.

Work and emotions: issues of stress and social interactions and their relationship to well-being, health, and productivity
H: Semmer N.K., Tschan F.

Emotion regulation, impulsivity, and executive functions
H: van der Linden M.

Area "Social Functions of Emotion"

Emotional foundations of norm compliance and norm enforcement
H: Fehr E.

Emotions, values, and norms
H: Mulligan K.

The importance of emotions in social and legal regulation
H: Flückiger A., Roth R.

Myths and rites as cultural expression of emotion
H: Borgeaud P.

Research Foci

Empathy and prosocial behaviour in the lifespan
H: Labouvie-Vief G., Singer T.

Antisocial and impulsive behaviour
H: Van der Linden M., Eliez S.

Self-reflexive emotions
H: Mulligan K., Gendolla G.

Language and culture
H: Borgeaud P., Scherer K.R.

Aesthetic emotions
H: Lombardo P., Scherer K.R.

Appraisal processes in decision making
H: Fehr E., Wranik T.

The Nature and Consequences of Gender Differences
H: Kaiser S., Schmid Mast M.

Methodological Development
H: Renaud O.

Programmes

Graduate School

Post-Doc Program

Workshops

Colloquium

Summer/Autumn Academies

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 Directors
van der Linden Martial, Prof.
phone: + 41 (0)22 379 93 41
Martial.VanDerLinden@unige.ch

Mulligan Kevin, Prof.
phone: + 41 (0)22 379 70 51
Kevin.Mulligan@unige.ch

Scientific Coordinator
Sander David, Dr.
phone: + 41 (0)22 379 92 12
David.Sander@unige.ch

Executive Scientific Officer
Achard Pablo, Dr.
phone: +41 (0)22 379 98 18
Pablo.Achard@unige.ch

Administrative Manager
Sauge Daniela, Mrs.
phone: + 41 (0)22 379 98 04
Daniela.Sauge@unige.ch

Administrative Assistant
Souchard Audrey, Ms.
phone: + 41 (0)22 379 98 01
Audrey.Souchard@unige.ch

Education and Training
Achard Pablo, Dr.

Advancement of Women
Sauge Daniela, Mrs.
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

Computer and Internet Resources / Methods
Grandjean Didier, Dr.
phone: + 41 (0)22 379 92 13
Didier.Grandjean@unige.ch

Kapusova Dajana, Mrs.
phone: + 41 (0)22 379 98 19
Dajana.Kapusova@unige.ch

Communications Officers
Achard Pablo, Dr.
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
- Presentation Swiss Houses
- 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

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
- Dept. of Psychology, Stanford University, Palo Alto, US

Topics

As part of the ongoing "affective revolution" in many different fields of study, this interdisciplinary research centre investigates of human emotion from various research viewpoints and on several levels of analysis. Many disciplines are represented in this NCCR: psychology, neuroscience, sociology, philosophy,law, comparative anthropology, psychiatry, and economy.

Research issues being addressed by the NCCR fall into three major areas:

1) Emotion elicitation and response patterning (the role of brain structures, individual predispositions, cognitive appraisal, and situational factors; patterning of emotional responses and action tendencies; communication of emotion);

2) Emotion regulation (control of bodily reactions and feelings by social norms and interpersonal expectations; ability to cope with emotions to avoid stress and burnout; loss of control as a risk factor for affective disorders such as pathological anxiety and depression);

3) Emotion in social processes (affective processes in family, workplace, and society as a whole; the role of social norms and values in shaping the nature of the emotional response and its control; 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
Flückiger Alexandre, Prof.	Faculté de Droit/Cetel, Université de Genève
Gendolla Guido, Prof.	Faculté de Psychologie et des Sciences de l'Éducation (FPSE), Université de Genève
Kaiser Susanne, Prof.	FPSE, Université de Genève
Labouvie Vief Gisela, Prof.	FPSE, Université de Genève
Landis Theodor, Prof.	Département des Neurosciences Cliniques et Dermatologie, Hôpitaux Universitaires de Genève
Mulligan Kevin, Prof.	Faculté des Lettres/Département de Philosophie, Université de Genève
Perrez Meinrad, Prof.	Departement für Psychologie, Universität Freiburg
Reicherts Michael, Prof.	Departement für Psychologie, Universität Freiburg
Roth Robert, Prof.	Faculté de Droit, 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
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

Research

The ten research projects conducted within the NCCR Affective Sciences have demonstrated a high level of productivity in research and publication activities. The individual projects, often in collaboration with each other, have made major contributions to the state of the art in the Affective Sciences, with the results published in major international journals and books. Some of the major highlights are: the experimental confirmation of cumulative-sequential processing of external stimuli; the creation of a reference corpus and data bank of emotional expressions; the assessment of the role of social context and personality on our brain's response to other people's emotions; the demonstration that ambulatory assessment is a very efficient and promising method to investigate emotion regulation in families; the confirmation that social stressors at work impact on the body mass index over time; the experimental confirmation that lack of perseverance is related to interference in working memory and urgency to response inhibition; the demonstration that intranasal administration of the neuropeptide Oxytocin, which plays a central role in social approach behaviour in nonhuman mammals, causes a substantial increase in trust in humans; the conceptual analysis of the nature of shame and guilt, which led to the description of fundamental distinctions between these two emotions; the analysis of the emotional issues related to individual attitudes towards organ donation; the comparison of the emotional aspects of myths and rites in different ancient and classical cultures.

One of the outstanding successes has been the performance of the interdisciplinary NCCR's Research Foci: Aesthetic emotions, Anti-social and impulsive behavior, Appraisal and decision-making, Empathy, Language and culture, Gender, and Self-reflexive emotions. In addition to a large number of pluridisciplinary international workshops and symposia, several collaborative research projects between scientists from different fields have been designed and/or are currently being conducted. The Transversal Module "Methods" has produced several important toolboxes to be shared within the NCCR. The NCCR is also a leading partner in the establishment of the new Brain and Behavior Laboratory which combines, in a single facility, top notch brain imaging and psychophysiological recording equipment with virtual reality tools used to elicit emotions.

The number of associate members of the NCCR appointed by the Steering Board has increased to 29. These associate members are academics and professionals from inside and outside Switzerland who contribute to the work of our projects and research foci.

Research expertise of several 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 currently has 26 students registered. The postdoctoral program has been successfully launched. In the past years, the Education and training program has been involved in the organization of many thematic and/or methodological meetings with invited speakers from home and abroad. It also offers grants to participate in conferences or to visit external laboratories. In 2009, the NCCR will launch the first International Summer School in Affective Sciences. In order to support 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 committed to transferring scientific knowledge of human emotion gained from research to the wider society. Successful associated projects are being conducted with Firmenich, a world leader in fragrance research and production, the Swiss Household Panel, and an international association of telephone helpline organizations. Contacts with further external partners are currently evolving towards research contracts.

During the past years, researchers participated in several major events aimed at the general public, in cooperation with the University of Geneva. The NCCR also organized popular-science events for the university community. It has responded to numerous requests from TV, radio, and print media for information on our research by providing experts for interviews and by writing popular-science articles on topics ranging from the role of emotion in soccer games during the Eurofoot 2008 to love and its neural bases. The NCCR has also an ambitious program of collaboration with local museums with several exhibitions planned around the topic of emotions. Its large website continues to draw an international audience from both the academic community and the general public. Finally, the NCCR publishes a quarterly newsletter widely distributed both inside and outside the NCCR.

Further information see www.affective-sciences.org

- 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 1	Year 2	Year 3	Year 4	Total	%
SNSF funding	2 400 000	2 600 000	2 500 000	2 500 000	10 000 000	44
Self-funding from home institution[1]	338 139	472 751	670 325	768 786	2 250 001	10
Self-funding from project participants	1 627 637	2 571 660	2 733 388	2 728 950	9 661 635	43
Third-party funding	92 004	232 121	174 950	213 900	712 975	3
Total	4 457 780	5 876 532	6 078 663	6 211 636	22 624 611	100

Personnel[2]	Total of Persons	Female	%	Male	%	CH	Most Represented Nations					Other Nations
							DE	FR	IT	BE	US	
Management	5.05	8	57	6	43	6	2	3	0	1	0	4
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	45	24	53	21	47	23	7	8	4	1	2	3
Postdoctoral students	36	16	44	20	56	11	8	6	3	1	2	6
Research associates	8	4	50	4	50	6	2	1	0	0	0	0
Senior researchers[4]	45	14	31	31	69	26	18	1	2	3	2	6
Other staff	23	18	78	5	22	19	2	2	0	0	0	0
Total	162.05	84	49	87	51	91	39	21	9	6	6	19

[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