

# **Guide**2014

National Centres of Competence in Research



# Content

## National Centres of Competence in Research (NCCRs)

Goals and Implementation	5
The NCCRs at a glance	6/7
• NCCR Affective Sciences – Emotion in Individual Behaviour and Social Processes	9
• NCCR Chemical Biology – Visualisation and Control of Biological Processes Using Chemistry	12
• NCCR Democracy – Challenges to Democracy in the 21 <sup>st</sup> Century	15
• NCCR Iconic Criticism – The Power and Meaning of Images	18
• NCCR International Trade Regulation – From Fragmentation to Coherence	21
• NCCR Kidney.CH – Kidney Control of Homeostasis	24
• NCCR LIVES – Overcoming vulnerability: life course perspectives	27
• NCCR Mediality – Historical Perspectives	31
• NCCR MUST – Molecular Ultrafast Sciences and Technology	34
• NCCR QSIT – Quantum Science and Technology	37
• NCCR Robotics – Intelligent Robots for Improving the Quality of Life	40
• NCCR SYNAPSY – The synaptic bases of mental diseases	43
• NCCR TransCure – From transport physiology to identification of therapeutic targets	47
Overview of terminated NCCRs: 1 <sup>st</sup> Call (2001 - 2013)	53



# National Centres of Competence in Research (NCCRs)

In the year 2001 the Swiss National Science Foundation launched the National Centres of Competence in Research (NCCR). The main goal of the NCCRs is the promotion of scientific excellence in areas of major strategic importance for the future of Swiss research, economy and society. NCCRs are located at 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 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 institutions – and third parties.

Since 1999 four NCCR calls have been published (see table on next page). The SNSF assesses the submitted NCCR proposals in a two-stage procedure (pre-proposals, full proposals). The scientific evaluation is executed by international reviewers. The structural aspects are assessed by Division IV of the Research Council. Based on these findings the Research Council selects a shortlist of the most promising proposals and submits it to the competent Federal Department where the finals selection is made based on science policy criteria.

In December 2013 eight new NCCRs of the 4<sup>th</sup> series have been approved by the Federal Councillor Johann Schneider-Ammann. They will start their activities in 2014:

- **Center for Bio-Inspired Stimuli-Responsive Materials** (Weder Christoph, University of Fribourg)
- **Digital Fabrication – Advanced Building Processes in Architecture** (Kohler Matthias Daniel, ETHZ)
- **Materials' Revolution: Computational Design and Discovery of Novel Materials** (Marzari Nicola, EPFL)
- **Molecular Systems Engineering** (Meier Wolfgang, University of Basel / ETHZ)
- **On the Move: The Migration-Mobility Nexus** (D'Amato Gianni, University of Neuchâtel)
- **PlanetS** (Benz Willy, University of Bern / University of Geneva)
- **RNA & Disease: Understanding the Role of RNA Biology in Disease Mechanisms** (Mühlemann Oliver, University of Bern / ETHZ)
- **The Mathematics of Physics (SwissMAP)** (Smirnov Stanislav, University of Geneva / ETHZ)

# The NCCRs at a glance

## Overview of NCCR Calls

	Submitted pre-proposals	Submitted full proposals	Approved projects	Years of operation
1 <sup>st</sup> Call (1999)*	82	34	14	2001-2013
2 <sup>nd</sup> Call (2003)	44	17	6	2005-2017
3 <sup>rd</sup> Call (2008)	54	28	8	2010-2022
4 <sup>th</sup> Call (2011)	63	23	8	2014-2026

\* The NCCRs of the 1<sup>st</sup> Call are terminated. For more information see page 53.

## 2<sup>nd</sup> Call of NCCRs

Short Name	NCCR-Director	Home Institution	Web Address
Affective Sciences	Prof. Sander David	University of Geneva	<a href="http://www.affective-sciences.org">www.affective-sciences.org</a>
Democracy	Prof. Kübler Daniel	University of Zurich	<a href="http://www.nccr-democracy.uzh.ch">www.nccr-democracy.uzh.ch</a>
Iconic Criticism	Prof. Ubl Ralph	University of Basel	<a href="http://www.eikones.ch">www.eikones.ch</a>
Mediality	Prof. Kiening Christian	University of Zurich	<a href="http://www.mediality.ch">www.mediality.ch</a>
SESAM*	Prof. Margraf Jürgen	University of Basel	<a href="http://www.sesamswiss.ch">www.sesamswiss.ch</a>
Trade Regulation	Prof. Elsig Manfred	University of Berne	<a href="http://www.nccr-trade.org">www.nccr-trade.org</a>

\* Terminated in 2010

## 3<sup>rd</sup> Call of NCCRs

Short Name	NCCR-Director	Home Institution	Web Address
Chemical Biology	Prof. Riezman Howard	University of Geneva, EPF Lausanne	<a href="http://www.nccr-chembio.ch">www.nccr-chembio.ch</a>
Kidney.CH	Prof. Verrey François	University of Zurich	<a href="http://www.nccr-kidney.ch">www.nccr-kidney.ch</a>
LIVES	Prof. Spini Dario	University of Lausanne, University of Geneva	<a href="http://www.lives-nccr.ch">www.lives-nccr.ch</a>
MUST	Prof. Keller Ursula	ETH Zurich, University of Berne	<a href="http://www.nccr-must.ch">www.nccr-must.ch</a>
QSIT	Prof. Ensslin Klaus	ETH Zurich, University of Basel	<a href="http://www.nccr-qsit.ethz.ch">www.nccr-qsit.ethz.ch</a>
Robotics	Prof. Floreano Dario	EPF Lausanne	<a href="http://www.nccr-robotics.ch">www.nccr-robotics.ch</a>
SYNAPSY	Prof. Magistretti Pierre	EPF Lausanne, Universities of Lausanne and Geneva	<a href="http://www.nccr-synapsy.ch">www.nccr-synapsy.ch</a>
TransCure	Prof. Hediger Matthias A.	University of Berne	<a href="http://www.transcure.org">www.transcure.org</a>

## Output in 2005-2013

(2<sup>nd</sup> and 3<sup>rd</sup> Call of NCCRs)

Type	2005 - 2013
Scientific papers	6115
Presentations at congresses and fairs	6578
Patents/licences	24
Start up companies <sup>1</sup>	6
Prototypes, demonstrators, processes	16
Cooperations with private sector	55
CTI projects <sup>2</sup>	8 <sup>3</sup>

<sup>1</sup> Built up or encouraged by the NCCRs

<sup>2</sup> CTI: Innovation Promotion Agency of the Swiss Government funding cooperation projects with industry

<sup>3</sup> The total amount of the 8 projects is about CHF 5.9 Mio.

## Total of funds 2<sup>nd</sup> Call

Funding source (CHF)	Phase 1	Phase 2	2013	2014	2015	2016	Total Phase 3	%
SNSF funding	40 300 000	41 790 000	8 248 000	7 746 000	6 661 000	5 611 000	28 266 000	38
Self-funding from Home institution <sup>1</sup>	12 440 810	19 163 626	4 231 924	4 162 138	4 048 562	4 061 682	16 504 306	22
Self-funding from project participants	22 471 911	29 664 229	6 621 029	6 686 193	6 611 351	6 555 350	26 473 923	36
Third-party funding	3 908 090	5 895 190	750 980	750 980	678 928	678 928	2 859 816	4
<b>Total</b>	<b>79 120 811</b>	<b>96 513 045</b>	<b>19 851 933</b>	<b>19 345 311</b>	<b>17 999 841</b>	<b>16 906 960</b>	<b>74 104 045</b>	<b>100</b>

<sup>1</sup> Personnel costs, equipment and consumables, not included infrastructure and basic equipment

## Total of funds 3<sup>rd</sup> Call

Funding source (CHF)	2010	2011	2012	2013	Total Phase 1	%
SNSF funding	26 400 000	32 715 000	33 548 100	31 955 000	124 618 100	43
Self-funding from Home institutions <sup>1</sup>	15 322 782	17 183 004	20 186 239	16 590 771	69 282 796	24
Self-funding from project participants	22 448 719	20 766 700	25 666 364	22 208 859	91 090 642	32
Third-party funding <sup>2</sup>	933 509	863 916	973 792	392 208	3 163 425	1
<b>Total</b>	<b>65 105 010</b>	<b>71 528 620</b>	<b>80 374 495</b>	<b>71 146 838</b>	<b>288 154 963</b>	<b>100</b>

<sup>1</sup> Personnel costs, equipment and consumables, not included infrastructure and basic equipment

<sup>2</sup> Not included is CTI funding

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

(2<sup>nd</sup> and 3<sup>rd</sup> Call of NCCRs)

Personnel	Total of Persons	Female	%	Male	%	Swiss	Other Nations
Management	53 <sup>1</sup>	80	57	60	43	83	69
Master students	1	1	100	0	0	0	1
Doctoral students	438	206	47	231	53	169	284
Postdoctoral students	313	121	39	191	61	43	275
Research associates	92	45	49	47	51	46	47
Senior researchers <sup>2</sup>	462	107	23	355	77	227	257
Other staff	209	126	61	82	39	127	84
<b>Total</b>	<b>1568</b>	<b>686</b>	<b>42</b>	<b>966</b>	<b>58</b>	<b>695</b>	<b>1017</b>

<sup>1</sup> Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training

<sup>2</sup> Including leaders of the individual projects and other organisational units of the NCCRs





# Affective Sciences: Emotion in Individual Behaviour and Social Processes

## NCCR Affective Sciences

This interdisciplinary NCCR investigates a phenomenon playing a central role in human behaviour, decision-making and social interaction: emotion. In order to study emotion and other affective phenomena, we adopt the perspectives offered by different disciplines such as psychology, neuroscience, philosophy, literature, history, sociology, and economics. Three major research topics are addressed during the third phase: 1) how emotions are elicited 2) how emotions are regulated, and 3) what the role of emotion is in social interactions. In addition to basic research, special emphasis is placed on the “applied affective sciences” with transfer partners in the areas of health, work and organizations, economics, and the arts. The NCCR is also committed to training the new generations of “affective scientists”, for instance through our International Summer School in Affective Sciences.

### Research

#### Work Package Appraisal / Values / Norms

Sander D.

#### Affective relevance: nature, determinants and effects

Sander D.

#### Emotion, attention and value

Deonna J., Teroni F.

#### Contempt in literature (Affective dynamics and aesthetic emotions)

Lombardo P.

#### The translation of the emotions: from Greece to Rome

Nelis D.

#### Work Package Individual differences / Dispositions

Schmid Mast M.

#### Training self and emotion regulation: Neurobiological foundations and behavioral consequences

Fehr E.

#### Emotions at work and their relationship to well-being and performance

Tschan F., Elfering A., Semmer N.

### Research Foci

#### Affective computing / Emotion, video games, and virtual reality

#### The nature and consequences of gender differences

#### Emotion in language and culture / Moral emotions

#### Applied affective sciences / Development of methods

#### Transfer projects (strong Swiss franc package)

#### Emotions - An interactive exhibition

Grandjean D., Dufour Chr. (Museum d'Histoire Naturelle de Neuchâtel)

#### Measuring emotional intelligence in the workplace: Development of a new test

Mortillaro M., Simonet S. (Nantys AG)

#### Combining brain stimulation with fMRI

Ruff Chr., Fehr E., Scheidegger M. (Philips AG Healthcare Switzerland)

#### Applying affective sciences to virtual reality

Sander D., Margot Chr. (Firmenich SA)

#### Power and emotion recognition accuracy

Schmid Mast M., Sander D.

#### Influence of emotional relevance and sleep on learning and future decision making

Schwartz S.

#### Interests in the making

Clement F.

#### Work Package Systems / Dynamics

Vuilleumier P.

#### Computational modeling of appraisal theory of emotion

Scherer K.R.

#### From elicitation to emotional response: Neural mechanisms of patterning and system synchronization

Grandjean D.

#### Brain networks of emotions and their influence on cognitive processes

Vuilleumier P.

#### Emotional future thinking

Van der Linden M., D'Argembeau A.

#### Adaptive emotion awareness tools for computer-mediated interactions (EATMINT)

Betrancourt M., Pun T.

### Home Institution

University of Geneva

### Start of the NCCR

September 1, 2005

### NCCR Management

#### Director

Sander David, Prof.  
David.Sander@unige.ch

#### Deputy Directors

Lombardo Patrizia, Prof.  
Patrizia.Lombardo@unige.ch

Vuilleumier Patrik, Prof.  
Patrik.Vuilleumier@unige.ch

#### Administrative Manager

Sauge Daniela, Mrs.  
Daniela.Sauge@unige.ch

#### Education and Training

Soriano Cristina, Dr.  
cristina.soriano@unige.ch

#### Advancement of Women

Schmid Mast Marianne, Prof.  
marianne.schmid@unine.ch

Sander David, Prof.

Sauge Daniela, Mrs.

#### Computer and Internet Resources / Methods

Grandjean Didier, Prof.  
Didier.Grandjean@unige.ch

Kapusova Dajana, Mrs.  
Dajana.Kapusova@unige.ch

Federau Eric, Mr.  
Eric.Federau@unige.ch

Communication Officer  
Varone Carole, Mrs.  
Carole.Varone@unige.ch

Knowledge and Technology Transfer  
Varone Carole, Mrs.

Interdisciplinarity  
Deonna Julien, Prof.  
Julien.Deonna@unige.ch

Applied Research  
Mortillaro Marcello, Dr.  
Marcello.Mortillaro@unige.ch

### Address

NCCR Affective Sciences  
Campus Biotech  
Uni Dufour Rue Général Dufour 24  
1211 Genève 4  
+41 22 379 98 01

### Web Address

[www.affective-sciences.org](http://www.affective-sciences.org)

## Affective Sciences: Emotion in Individual Behaviour and Social Processes NCCR Affective Sciences

### Key collaborations with third parties

#### Research Institutions

- Brain Research Unit, Low Temperature Laboratory, Aalto University, FI
- Department of Classics, University of Chicago, US
- Department of Classics, University of Edinburgh, GB
- Department of Comparative Literature, University of Bergen, NO
- Department of Music, University of Jyväskylä, FI
- Department of Philosophy, University of Montreal, CA
- Department of Psychology, University of Wisconsin, US
- Department of Philosophy, University of Manchester, GB
- School of Psychology, Cardiff University, GB
- Service de Neurologie, Université de Rennes, FR

#### Economy / Others

- Firmenich
- GfK Nürnberg e.V.
- Nantys, Bern
- Fondation Montreux Jazz 2
- Grand Théâtre de Genève
- Haute Ecole de Musique de Genève
- Muséum d'histoire naturelle de Neuchâtel
- Musée de l'Elysée, Lausanne
- Musée d'Histoire des Sciences, Genève pour les Nuits de la Science
- Swissnex San Francisco et Swissnex Boston

### Heads of Research Groups

Betrancourt Mireille, Prof.  
Clement Fabrice, Prof.  
D'Argembeau Arnaud, Prof.  
Deonna Julien, Prof.  
Elfering Achim, Prof.  
Fehr Ernst, Prof.  
Grandjean Didier, Prof.

Lombardo Patrizia, Prof.  
Nelis Damien, Prof.  
Pun Thierry, Prof.  
Sander David, Prof.

Schwartz Sophie, Dr.  
Scherer Klaus, Prof.

Schmid Mast Marianne, Prof.

Semmer Norbert, Prof.  
Teroni Fabrice, Dr.  
Tschan Franziska, Prof.

van der Linden Martial, Prof.

Vuilleumier Patrik, Prof.

TECFA-FPSE, Université de Genève  
Centre de sciences cognitives, Université de Neuchâtel  
Psychopathologie cognitive, Université de Liège  
Faculté des Lettres, Université de Genève  
Institut für Psychologie, Universität Bern  
Institut für Empirische Wirtschaftsforschung, Universität Zürich  
CISA et Faculté de Psychologie et des Sciences de l' Education, Université de Genève  
Faculté des Lettres, Université de Genève  
Faculté des Lettres, Université de Genève  
Faculté des Sciences, Université de Genève  
CISA et Faculté de Psychologie et des Sciences de l'Education, Université de Genève  
Faculté de Médecine, Centre Médical Universitaire, Genève  
CISA et Faculté de Psychologie et des Sciences de l'Education, Université de Genève  
Institut de Psychologie du Travail et des Organisations, Université de Neuchâtel  
Institut für Psychologie, Universität Bern  
Institut für Philosophie, Universität Bern  
Institut de Psychologie du Travail et des Organisations, Université de Neuchâtel  
Faculté de Psychologie et des Sciences de l'Education, Université de Genève  
Faculté de Médecine, Centre Médical Universitaire, Genève

### Participating Institutions

Universität Bern (3 groups) | Université de Genève (13 groups) | Université de Neuchâtel (4 groups)  
Universität Zürich (1 group) | Université de Liège (1 group)

### Members of the Advisory Board

Manstead Tony, Prof.  
Robinson Jenefer, Prof.

School of Psychology, Cardiff University, GB  
Department of Philosophy, University of Cincinnati, US

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

#### Members of the Review Panel

Butera Fabrizio, Prof. (Chair)  
Burghartz Susanna, Prof.  
Clark Margaret, Prof.  
Clore Gerald L., Prof.  
De Sousa Ronald B., Prof. (em.)  
Konstan David, Prof.  
Phelps Elizabeth A., Prof.  
Reusser Kurt, Prof.  
Ricci Bitti Pio Enrico, Prof.  
Thoits Peggy A., Prof.

Swiss National Science Foundation, Berne, CH  
Swiss National Science Foundation, Berne, CH  
Department of Psychology, Yale University, US  
Department of Psychology, University of Virginia, US  
Department of Philosophy, University of Toronto, CA  
Department of Classics, New York University, US  
Department of Psychology, New York University, US  
Swiss National Science Foundation, Berne, CH  
Dipartimento di Psicologia, Università di Bologna, IT  
Department of Sociology, Indiana University, US

#### NCCR Office SNSF

Griessen Thomas

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

## Funding

Funding source (CHF)	Year 9	Year 10	Year 11	Year 12	Total	%
SNSF funding	1 900 000	1 900 000	1 700 000	1 500 000	7 000 000	28
Self-funding from home institution <sup>1</sup>	732 018	965 026	1 044 027	1 044 025	3 785 096	15
Self-funding from project participants	3 682 475	3 682 475	3 597 475	3 597 475	14 559 900	57
Third-party funding	0	0	0	0	0	0
<b>Total</b>	<b>6 314 493</b>	<b>6 547 501</b>	<b>6 341 502</b>	<b>6 141 500</b>	<b>25 344 996</b>	<b>100</b>

<sup>1</sup> Personnel costs, equipment and consumables, not included infrastructure and basic equipment

## Employment

Personnel <sup>2</sup>	Total of Persons	Female	%	Male	%	Most Represented Nations						Other Nations
						CH	FR	DE	IT	BE	GB	
Management	4.9 <sup>3</sup>	9	69	4	31	6	2	2	1	0	0	2
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	54	39	72	15	28	23	8	4	3	1	3	13
Postdoctoral students	50	26	52	24	48	7	10	9	7	2	1	15
Research associates	0	0	0	0	0	0	0	0	0	0	0	0
Senior researchers <sup>4</sup>	50	21	42	29	58	20	9	9	6	4	1	3
Other staff	41	22	54	19	46	24	8	2	0	1	0	6
<b>Total</b>	<b>199.9</b>	<b>117</b>	<b>56</b>	<b>91</b>	<b>44</b>	<b>80</b>	<b>37</b>	<b>26</b>	<b>17</b>	<b>8</b>	<b>5</b>	<b>39</b>

<sup>2</sup> Persons involved in the NCCR in the last reporting period (12 months)

<sup>3</sup> Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training

<sup>4</sup> Including leaders of the individual projects and other organisational units of the NCCR

## Output

Type of output <sup>5</sup>	Total
Publications > 659 Peer-reviewed   9 Not peer-reviewed   314 Anthology articles   35 Books   7 Reports	1024
Presentations at congresses >	1190
Cooperation > 13 Programmes   166 Research institutions   9 Private sector   12 Other	200
Transfer activities > 0 Patents   0 Licenses   0 Start-ups <sup>6</sup>   0 Prototypes/processes   0 CTI-projects <sup>7</sup>	0

<sup>5</sup> This table displays the major indicators in knowledge and technology transfer. The output data of NCCRs differ considerably according to disciplinary cultures.

<sup>6</sup> Start-up companies that have been built up or were considerably supported by NCCRs.

<sup>7</sup> Projects funded by the Commission for Technology and Innovation (CTI) that have been initiated by members of NCCRs and are thematically linked to NCCR projects.

## Communication

Newsletter: [www.affective-sciences.org/newsletter](http://www.affective-sciences.org/newsletter) (appears twice a year: 17 previous issues).

Leaflet: [www.affective-sciences.org/content/centre-nccr-affective-sciences](http://www.affective-sciences.org/content/centre-nccr-affective-sciences)

Media coverage: [www.affective-sciences.org/media-coverage](http://www.affective-sciences.org/media-coverage)

Twitter account: NCCRAffectiveScience

# Visualisation and Control of Biological Processes Using Chemistry

## NCCR Chemical Biology

### Home Institutions

University of Geneva,  
EPF Lausanne

### Start of the NCCR

December 1, 2010

### NCCR Management

#### Director

Riezman Howard, Prof.  
howard.riezman@unige.ch

#### Co-Director

Johnsson Kai, Prof.  
kai.johnsson@epfl.ch

#### Chief Operations Officer

Caroline Loutre, Dr.  
caroline.loutre@unige.ch

#### Financial Administrator

Schnüriger Jean-Claude, Mr.  
jean-claude.schnuriger@unige.ch

#### Knowledge and Technology Transfer

Susi Sturzenegger Varvayanis  
susan.sturzenegger@unige.ch

#### Advancement of Young Researchers and Women

Gotta Monica, Prof.  
monica.gotta@unige.ch

#### Graduate Education

Robbie Loewith  
robbie.loewith@unige.ch

#### Communication

Caroline Loutre, Dr.

### Address

NCCR Chemical Biology  
University of Geneva  
146 Sciences II, 30 quai Ernest  
Ansermet  
1211 Genève 4  
+41 (0)22 379 6407

### Web Address

[www.nccr-chembio.ch](http://www.nccr-chembio.ch)

The mission of the NCCR Chemical Biology is to use chemistry tools to obtain a better understanding of life at the molecular level. Until now, few technologies could characterise in detail the countless biochemical activities that constitute a living cell. In the NCCR chemists, biochemists, physicists and cell biologists develop innovative techniques based on small molecules and proteins to obtain new information about cellular processes and control them in *italics*. The new tools will be applicable to various biological phenomena like visualising the activity of selected proteins during cell division and investigating how membranes control the activity of proteins in them. The NCCR is also engaged in establishing a platform for chemical screening aimed at developing a new generation of molecules with biological effects.

### Research

#### Deep Diversity for Chemical Interference – Generate & discover small molecules interfering with biological processes

Gademann K., Dubikovskaya, E., Dyson P., Reymond J.-L., Heinis C., Turcatti G., Johnsson K., Lacour J., Riezman H., Zhu J., Waser J., Winssinger N.

#### Whole cell assays to chemically target specific pathways

Loewith R., Dyson P., Gotta M., Riezman H., Turcatti G., Gademann K.

#### Chemical Biology of Membranes: Localization and Endocytosis – Novel compounds affecting lipid metabolism

Gruenberg J., van der Goot G., Manley S., Reymond J.-L., Johnsson K., Gademann K., Riezman H.

### Platform

#### ACCESS – Academic Chemical Screening for Switzerland

Johnsson K., Gademann K., Gönczy P., Gruenberg J., Lacour J., Reymond J.-L., Riezman H., Turcatti G., Zhu J.

#### Transfer project (strong Swiss franc package)

Determining the intracellular concentration of therapeutic peptides with sub-cellular resolution  
Johnsson K., Vorherr Th. (Novartis)

#### New tools for quantitative information on signaling pathways and localisation of active signaling molecules

Gönczy P., Johnsson K., Heinis C., Reymond J.-L., Riezman H.

#### Chemical Biology of Notch Signaling - Quantitative information on the Notch signaling pathway

Radtke F., Reymond J.-L., González-Gaitán M., Heinis C., Johnsson K., Turcatti G., Zhu J.

#### Biophysics of Cell Division – Using physics & chemical biology to understand asymmetric division in model organisms

González-Gaitán M., Vogel H., Manley S., Riezman H., Roux A., Johnsson K.

#### Chemical Biology of Membranes: Dynamic Fluorescent Probes and Cellular Uptake

Matile S., Riezman H., Zumbuehl A., Roux A., Manley S., van der Goot G., Johnsson K., Lacour J.

## Heads of Research Groups

Dubikovskaya Elena, Prof.  
Dyson Paul, Prof.  
Gademann Karl, Prof.  
Gönczy Pierre, Prof.

Gonzalez-Gaitan Marcos, Prof.

Gotta Monica, Prof.  
Gruenberg Jean, Prof.  
Heinis Christian, Prof.  
Johnsson Kai, Prof.  
Lacour Jérôme, Prof.  
Loewith Robbie, Prof.  
Manley Suliana, Prof.  
Matile Stefan, Prof.  
Radtke Freddy, Prof.  
Reymond Jean-Louis, Prof.  
Riezman Howard, Prof.  
Roux Aurélien, Prof.  
Turcatti Gerardo, Dr.  
van der Goot Gisou, Prof.  
Vogel Horst, Prof.  
Waser Jérôme, Prof.  
Winssinger Nicolas, Prof.  
Zhu Jieping, Prof.  
Zumbuehl Andreas, Prof.

Institut des sciences et ingénierie chimiques, EPF Lausanne  
Institut des sciences et ingénierie chimiques, EPF Lausanne  
Departement Chemie, Universität Basel  
Institut suisse de recherche expérimentale sur le cancer, ISREC, EPF Lausanne  
Département de biochimie, Université de Genève  
Faculté de médecine, Université de Genève  
Département de biochimie, Université de Genève  
Institut des sciences et ingénierie chimiques, EPF Lausanne  
Institut des sciences et ingénierie chimiques, EPF Lausanne  
Département de chimie organique, Université de Genève  
Département de biologie moléculaire, Université de Genève  
l'Institut de physique des systèmes biologiques, EPF Lausanne  
Département de chimie organique, Université de Genève  
Section des sciences de la vie, EPF Lausanne  
Departement für Chemie und Biochemie, Universität Bern  
Département de biochimie, Université de Genève  
Département de biochimie, Université de Genève  
Faculté des sciences de la vie, EPF Lausanne  
Section des sciences de la vie, EPF Lausanne  
Institut des sciences et ingénierie chimiques, EPF Lausanne  
Institut des sciences et ingénierie chimiques, EPF Lausanne  
Département de chimie organique, Université de Genève  
Institut des sciences et ingénierie chimiques, EPF Lausanne  
Département de chimie, Université Fribourg

## Participating Institutions

Universität Basel (1 group) | Universität Bern (1 group) | Université de Fribourg (1 group)  
Université de Genève (9 groups) | EPF Lausanne (12 groups)

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

### Members of the Review Panel

Dehio Christoph, Prof. (Chair)  
Cullis Pieter, Prof.  
Ellenberg Jan, Dr.  
Fischli Walter, Dr.  
Fromm Katharina, Prof.  
Hall Michael, Prof.  
Kirchhausen Thomas, Prof.  
Muir Tom W., Prof.  
Pfeffer Suzanne, Prof.  
Schultz Carsten, Prof.  
Trauner Dirk, Prof.

Swiss National Science Foundation, Berne, CH  
Department of Biochemistry, Life Science Center, Vancouver, CA  
EMBL Heidelberg, DE  
Academia Relations, Actelion Pharmaceuticals Ltd, Allschwil, CH  
Swiss National Science Foundation, Berne, CH  
Swiss National Science Foundation, Berne, CH  
Harvard Medical School, Boston, US  
Department of Chemistry, Princeton, US  
Stanford University School of Medicine, US  
EMBL Heidelberg, DE  
Department of Chemistry, University of Munich, DE

### NCCR Office SNSF

Christ Urs, Dr.

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

## Key collaborations with third parties

### Research Institutions

- Center for Medical Biotechnology, Universität Duisburg-Essen, Essen, DE
- Department of Chemistry, University of California, Irvine, US
- Division of Pediatric Oncology, University Children's hospital Zürich, Zürich, CH
- Institute of Biochemistry, ETHZ, Zurich, CH
- SIB (Swiss Institute of Bioinformatics), CH
- SystemsX
- Telethon Institute of Genetics and Medicine, Bern, CH

### Economy / Others

- Inflammalps SA, Monthey, CH
- Lycée Tech SA, Lausanne, CH
- Novartis Stiftung, Basel, CH
- Novartis Boston & Novartis Basel, CH

# Visualisation and Control of Biological Processes Using Chemistry

## NCCR Chemical Biology

### Funding

Funding source (CHF)	Year 1	Year 2	Year 3	Year 4	Total	%
SNSF funding <sup>1</sup>	2 660 000	4 180 000	3 450 000	3 230 000	13 520 000	50
Self-funding from home institution <sup>2</sup>	500 000	600 000	950 000	1 100 000	3 150 000	12
Self-funding from EPF Lausanne	750 000	2 250 000	1 750 000	1 250 000	6 000 000	22
Self-funding from project participants	974 348	1 039 903	961 048	1 578 750	4 554 049	17
Third-party funding <sup>3</sup>	0	0	0	0	0	0
<b>Total</b>	<b>4 884 348</b>	<b>8 069 903</b>	<b>7 111 048</b>	<b>7 158 750</b>	<b>27 224 049</b>	<b>100</b>

<sup>1</sup> Included funding of transfer projects (strong Swiss franc package)

<sup>2</sup> Personnel costs, equipment and consumables, not included infrastructure and basic equipment

<sup>3</sup> Not included is CTI funding. Since the start of the NCCR 2 projects have been funded by CTI at a total amount of 682'000 CHF (cf. table Output).

### Employment

Personnel <sup>4</sup>	Total of Persons	Most Represented Nations										
		Female	%	Male	%	CH	FR	DE	IT	ES	CA	Other Nations
Management	3.0 <sup>5</sup>	4	57	3	43	2	3	1	1	0	0	1
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	39	14	36	25	64	10	2	5	6	3	0	13
Postdoctoral students	39	18	46	21	54	3	7	5	4	2	3	15
Research associates	14	4	29	10	71	5	5	2	0	1	1	0
Senior researchers <sup>6</sup>	26	5	19	21	81	9	3	5	1	1	1	7
Other staff	14	10	71	4	29	7	4	0	1	0	0	2
<b>Total</b>	<b>135.0</b>	<b>55</b>	<b>40</b>	<b>84</b>	<b>60</b>	<b>36</b>	<b>24</b>	<b>18</b>	<b>13</b>	<b>7</b>	<b>5</b>	<b>38</b>

<sup>4</sup> Persons involved in the NCCR in the last reporting period (12 months)

<sup>5</sup> Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training

<sup>6</sup> Including leaders of the individual projects and other organisational units of the NCCR

### Output

Type of output <sup>7</sup>	Total
Publications > 123 Peer-reviewed   12 Not peer-reviewed   4 Anthology articles   2 Books   0 Reports	141
Presentations at congresses >	194
Cooperation > 4 Programmes   9 Research institutions   11 Private sector   1 Other	25
Transfer activities > 6 Patents   1 License   1 Start-ups <sup>8</sup>   0 Prototypes/processes   2 CTI-projects <sup>9</sup>	10

<sup>7</sup> This table displays the major indicators in knowledge and technology transfer. The output data of NCCRs differ considerably according to disciplinary cultures.

<sup>8</sup> Start-up companies that have been built up or were considerably supported by NCCRs.

<sup>9</sup> Projects funded by the Commission for Technology and Innovation (CTI) that have been initiated by members of NCCRs and are thematically linked to NCCR projects.

### Communication

«Chimiscope» une plateforme attrayante et pédagogique de découverte du monde des molécules: [www.chimiscope.ch](http://www.chimiscope.ch)

Leaflet "NCCR Chemical Biology" (d/f/e)

Researcher Guidebook, A Guide for Successful Institutional- Industrial Collaborations: [www.nccr-chembio.ch/outreach-education/](http://www.nccr-chembio.ch/outreach-education/)

# Challenges to Democracy in the 21<sup>st</sup> Century

## NCCR Democracy

Despite all its shortcomings, democracy is the form of government best suited to managing the way in which we live together. Democracy can certainly be improved. For this reason, and due to new developments, we continuously need to reflect upon, and re-negotiate the rules of democracy. The NCCR Democracy examines two current trends which are fundamentally transforming democracy: globalization and the growing role of the media in politics. NCCR researchers have been working together on over 50 projects in order to understand which challenges and new opportunities these two trends entail for democracy. The NCCR focuses on two topics: First, the democratic quality of intergovernmental, supra- and subnational bodies, which increasingly take up decision-making authority at the detriment of elected national authorities. Second, the growing populism in European democracies.

### Research

#### **Module “Varieties of democratic governance beyond the state: institutions, communication, and perceptions”**

Lavenex S., Kübler D.

#### **Political behavior and attitudes in times of new regionalism and mediatization**

Kübler D., Marcinkowski F.

#### **Internationalization and representative democracy**

Cheneval F., Schimmelfennig F.

#### **Democratic quality and legitimacy in international environmental governance**

Bernaer T., Koubi V.

#### **Democratic governance in and through transgovernmental networks**

Buess M., Freyburg T., Lavenex S.

#### **The democratic accountability of transnational private governance**

Gilardi F., Maggetti M., Papadopoulos Y.

#### **Type II governance in public communication: computer based media content analysis**

Schneider G., Wüest B.

#### **Deliberation, legitimacy and epistemic quality in multilevel governance systems**

Bächtiger A., Steenbergen M.

#### **Module “The appeal of populist ideas and messages”**

Esser F., Wirth W.

#### **Populism and the news media – a comparative and multi-issue approach**

Esser F.

#### **A look into the black box – how populist communication strategies affect citizens’ attitudes**

Schemer C., Wirth W.

#### **Populist strategies in current election campaigns**

Bernhard L., Kriesi H., Steenbergen M.

#### **Populism and national political cultures**

Caramani D.

#### **Democracy Barometer – established democracies in times of crises, and processes of democratization**

Bochsler D., Merkel W.

### **Transfer project (strong Swiss franc package)**

#### **Visual Reader “Democracy: An Ongoing Challenge”**

Kriesi H., Müller L. (Lars Müller Publishers)

### **Home Institution**

University of Zurich

### **Start of the NCCR**

October 1, 2005

### **NCCR Management**

#### *Director*

Kübler Daniel, Prof.  
+ 41 (0)44 634 38 86  
daniel.kuebler@ipz.uzh.ch

#### *Deputy Director*

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

#### *Managing Director*

Rosteck Yvonne  
+ 41 (0)44 634 52 02  
rosteck@nccr-democracy.uzh.ch

#### *Administration*

Cavegn Barbara  
cavegn@nccr-democracy.uzh.ch

#### *Communication*

Rosteck Yvonne

#### *Knowledge and*

#### *Technology Transfer*

Esser Frank, Prof.

#### *Education and Training*

Gilardi Fabrizio, Prof.

#### *Advancement of Women*

N.N.

### **Address**

NCCR Democracy  
University of Zurich  
Affolternstrasse 56  
8050 Zürich

+ 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](http://www.nccr-democracy.uzh.ch)

# Challenges to Democracy in the 21<sup>st</sup> Century

## NCCR Democracy

### Key collaborations with third parties

#### Academia

- Centre de compétences suisse en sciences sociales - FORS, Université de Lausanne, CH
- Graduate School, Chinese Academy of Social Sciences, Beijing, CN
- Institut für Kommunikationswissenschaft, Westfälische Wilhelms-Universität Münster, DE
- Institut für Sozialwissenschaften, Humboldt-Universität zu Berlin, DE
- Institute for European Integration Research, Austrian Academy of Science, Vienna, AT
- Institute of Communication Studies, Leeds University, GB
- Institute of Mass Communication and Media Research, Free University Berlin, DE
- Institute of Political Science, University of Munich, DE
- Laboratoire Communication et politique, Centre National de la Recherche Scientifique, Paris, FR
- Political Science Department, University of Mannheim, DE
- Political Science Department, University of Oslo, NO
- Politics and International Studies, Open University, Milton Keynes, GB
- Zentrum für Sozialpolitik, Universität Bremen, DE

#### Economy / Others

- Bertelsmann Transformation Index, Bertelsmann Stiftung, Gütersloh, DE
- Politools, Bern, CH

### Heads of Research Groups

Bächtiger André, Prof.  
Bernhard Laurent, Dr.  
Bernauer Thomas, Prof.  
Bochsler, Daniel, Prof.  
Buess Michael  
Caramani Daniele, Prof.  
Cheneval Francis Prof.  
Esser Frank, Prof.

Freyburg Tina, Prof.  
Gilardi Fabrizio, Prof.  
Koubi Vally, Prof.  
Kriesi Hanspeter, Prof.  
Kübler Daniel, Prof.  
Lavenex Sandra, Prof.  
Maggetti Martino, Dr.  
Marcinkowski Frank, Prof.  
Merkel Wolfgang, Prof.  
Papadopoulos Ioannis, Prof.  
Schemer Christian, Dr.

Schimmelfennig Frank, Prof.  
Schneider Gerold, Dr.  
Steenbergen Marco, Prof.  
Wirth Werner, Prof.

Wüest Bruno  
Ziegler Béatrice, Prof.

Seminar für Politikwissenschaft, Universität Luzern  
Institut für Politikwissenschaft, Universität Zürich  
Center for Comparative and International Studies (CIS), ETH Zürich  
Zentrum für Demokratie Aarau (ZDA), Universität Zürich  
Seminar für Politikwissenschaft, Universität Luzern  
Institute of Political Science, University of St. Gallen  
Philosophisches Seminar, Universität Zürich  
Institut für Publizistikwissenschaft und Medienforschung, Universität Zürich  
Department of Politics and International Studies, University of Warwick  
Institut für Politikwissenschaft, Universität Zürich  
Volkswirtschaftliches Institut, Universität Bern  
European University Institute (EUI), Florence  
Zentrum für Demokratie Aarau ZDA, Universität Zürich  
Seminar für Politikwissenschaft, Universität Luzern  
Institut für Politikwissenschaft, Universität Zürich  
Institut für Kommunikationswissenschaft, Universität Münster  
Wissenschaftszentrum Berlin für Sozialforschung  
Institut d'Etudes Politiques et Internationales, Université de Lausanne  
Institut für Publizistikwissenschaft und Medienforschung (IPMZ), Universität Zürich  
Center for Comparative and International Studies (CIS), ETH Zürich  
Institut für Computerlinguistik, Universität Zürich  
Institut für Politikwissenschaft (IPZ), Universität Zürich  
Institut für Publizistikwissenschaft und Medienforschung (IPMZ), Universität Zürich  
Institut für Politikwissenschaft, Universität Zürich  
Zentrum für Demokratie Aarau ZDA, Fachhochschule Nordwestschweiz

### Participating Institutions

Universität Luzern (2 groups) | Université de Lausanne (1 group) | Universität St. Gallen (1 group)  
Universität Zürich (8 groups) | ETH Zürich (2 groups) | Zentrum für Demokratie Aarau (2 groups)  
Fachhochschule Nordwestschweiz (1 group) | European University Institute Florence (1 group)  
Westfälische Wilhelms-Universität Münster (1 group) | Wissenschaftszentrum Berlin für Sozialforschung WZB (1 group)

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

#### Members of the Review Panel

Varone Frédéric, Prof. (Chair)  
Benz Arthur, Prof.  
Butera Fabrizio, Prof.  
Entman Robert, Prof.

Mazzoleni Gianpietro, Prof.  
Skelcher Chris, Prof.

Walgrave Stefaan, Prof.  
Widmer Eric, Prof.

#### NCCR Office SNSF

Griessen Thomas

Swiss National Science Foundation, Berne, CH  
Institut für Politikwissenschaft, Technische Universität Darmstadt, DE  
Swiss National Science Foundation, Berne, CH  
School of Media and Public Affairs,  
The George Washington University, Washington, US  
Department of Social and Political Studies, University of Milan, IT  
Institute of Local Government Studies, School of Government and Society, University of Birmingham, GB  
Department of Political Science, University Antwerpen, BE  
Swiss National Science Foundation, Berne, CH

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



## Funding

Funding source (CHF)	Year 9	Year 10	Year 11	Year 12	Total	%
SNSF funding	1 350 000	1 300 000	1 300 000	1 300 000	5 250 000	51
Self-funding from home institution <sup>1</sup>	666 634	684 840	574 263	574 263	2 500 000	24
Self-funding from project participants	563 554	578 718	581 876	582 875	2 307 023	22
Third-party funding	57 016	57 016	58 928	58 928	231 888	2
<b>Total</b>	<b>2 637 204</b>	<b>2 620 574</b>	<b>2 515 067</b>	<b>2 516 066</b>	<b>10 288 911</b>	<b>100</b>

<sup>1</sup> Personnel costs, equipment and consumables, not included infrastructure and basic equipment

## Employment

Personnel <sup>2</sup>	Total of Persons	Most Represented Nations										Other Nations
		Female	%	Male	%	CH	DE	FR	GR	AT	BE	
Management	3.6 <sup>3</sup>	4	33	8	67	5	7	0	1	0	0	0
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	25	14	56	11	44	15	7	0	0	0	0	4
Postdoctoral students	6	2	33	4	67	3	2	1	0	0	0	1
Research associates	10	2	20	8	80	5	4	0	0	1	0	0
Senior researchers <sup>4</sup>	35	7	20	28	80	18	13	1	2	0	1	5
Other staff	12	7	58	5	42	5	6	0	0	0	0	1
<b>Total</b>	<b>91.6</b>	<b>36</b>	<b>36</b>	<b>64</b>	<b>64</b>	<b>51</b>	<b>39</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>11</b>

<sup>2</sup> Persons involved in the NCCR in the last reporting period (12 months)

<sup>3</sup> Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training

<sup>4</sup> Including leaders of the individual projects and other organisational units of the NCCR

## Output

Type of output <sup>5</sup>	Total
Publications > 183 Peer-reviewed   40 Not peer-reviewed   155 Anthology articles   38 Books   50 Reports	466
Presentations at congresses >	655
Cooperation > 5 Programmes   19 Research institutions   2 Private sector   2 Other	28
Transfer activities > 0 Patents   0 Licenses   0 Start-ups <sup>6</sup>   0 Prototypes/processes   0 CTI-projects <sup>7</sup>	0

<sup>5</sup> This table displays the major indicators in knowledge and technology transfer. The output data of NCCRs differ considerably according to disciplinary cultures.

<sup>6</sup> Start-up companies that have been built up or were considerably supported by NCCRs.

<sup>7</sup> Projects funded by the Commission for Technology and Innovation (CTI) that have been initiated by members of NCCRs and are thematically linked to NCCR projects.

## Communication

Newsletter: [www.nccr-democracy.uzh.ch/news\\_events/Newsletter](http://www.nccr-democracy.uzh.ch/news_events/Newsletter) (11 issues)

Facebook: [www.facebook.com/nccrdemocracy](https://www.facebook.com/nccrdemocracy)

Visual Reader: <http://www.demokratiebuch.com/>

# The Power and Meaning of Images

## NCCR Iconic Criticism

### Home Institution

University of Basel

### Start of the NCCR

October 1, 2005

### NCCR Management

#### Director

Ubl Ralph, Prof.

#### Deputy Director

Klammer Markus, Prof.

+41 (0)61 206 63 88

#### Managing Director

Budelacci Orlando, Dr.

+ 41 (0)61 267 18 05

#### Administrative Manager

Dunkel Helen, Mrs.

+ 41 (0)61 267 18 03

#### Administrative Assistant

Daria Kolacka, Dr.

+ 41 (0)61 267 18 10

#### Communications

Freiberger Heike, Dr.

+ 41 (0)61 267 18 10

#### Advancement of Women

Freiberger Heike, Dr.

#### Knowledge

and Technology Transfer

Budelacci Orlando, Dr.

+ 41 (0)61 267 18 05

#### Education and Training

Schubbach Arno, Prof.

+41 (0)61 267 18 61

### Address

eikones/NCCR Iconic Criticism

University of Basel

Rheinsprung 11

4051 Basel

+ 41 (0)61 267 18 10

fax: + 41 (0)61 267 18 11

bildkritik@unibas.ch

### Web Address

www.eikones.ch

Images ignite debates that are central to the way in which our society describes itself. “The ubiquity of images,” “the flood of digital images,” “spectacle,” “images wars,” but also positively connoted catchphrases such as “communicating through images,” “epistemic images” ensure discussion and are treated as key terms of our era. They reflect both the hopes as well as the fears that concern the futures of education, of knowledge, of literate culture, of the arts, and political and economic decision-making processes. The NCCR gathers ten disciplines in total, from among the Humanities and social sciences. It investigates iconic phenomena from such diverse areas as the arts, sciences, economics, city planning, philosophy, and the history of language and writing.

### Research

**Materiality and Semantics of Writing.  
Reduced and enhanced Iconicity,  
the Plasticity of Complex Writing Systems**

Behr W., Loprieno A.

**Revealing and Concealing.  
Methods of the Image in the Premodern Period**

Schellewald B.

**Form and Image in Modernity**

Ubl R., Klammer M.

**Visual Semantics and Visual Observation:  
Image and Form**

Bohn C.

**“Graduate School - Image as Artifact”**

Schubbach A.

**Augenarbeit - Visual Performance  
and Visual Design**

Hagner M.

**The Visuality of Baroque Opera.  
Historical Perspectives and Contemporary  
Performance Practice**

Gess N.

**Music - Gesture - Image**

Schmidt M.

**Module Cities on the Move:  
Images of the Urban in the Modern Era**

Ursprung Ph.

## Heads of Research Groups

Behr Wolfgang, Prof.  
Bohn Cornelia, Prof.  
Gess Nicolas, Prof.  
Hagner Michael, Prof.  
Klammer Markus, Prof.

Leeb Susanne, Prof.

Loprieno Antonio, Prof.  
Schellewald Barbara, Prof.  
Schmidt Matthias, Prof.  
Ubl Ralph, Prof.  
Ursprung Philip, Prof.

Asien-Orient-Institut, Universität Zürich  
Soziologisches Seminar, Universität Luzern  
Deutsches Seminar, Universität Basel  
Professur für Wissenschaftsforschung, ETH Zürich  
Schaulager-Professor für Kunsttheorie, Kunsthistorisches Seminar, Universität Basel  
Laurenz-Assistenzprofessur für zeitgenössische Kunst, Kunsthistorisches Seminar, Universität Basel  
Ägyptologie, Universität Basel  
Kunsthistorisches Seminar, Universität Basel  
Musikwissenschaftliches Seminar, Universität Basel  
Kunsthistorisches Seminar, Universität Basel  
Institut für Geschichte und Theorie der Architektur, ETH Zürich

## Participating Institutions

Universität Basel (7 groups) | Universität Luzern (1 group) | Universität Zürich (1 group)  
ETH Zürich (2 groups) | Schaulager Basel (2 groups)

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

### Members of the Review Panel

Varone Frédéric, Prof. (Chair)  
Cohn Danièle, Prof.  
Gamboni Dario, Prof.  
Giesen Bernhard, Prof.  
N.N.  
Jäger Ludwig, Prof.  
Lethen Helmut, Prof.  
te Heesen Anke, Prof.  
Vogel Juliane, Prof.  
Wolf Gerhard, Prof.

Swiss National Science Foundation, Berne, CH  
UFR de philosophie, Université Paris 1, FR  
Swiss National Science Foundation, Berne, CH  
Department of History and Sociology, University of Konstanz, DE  
Swiss National Science Foundation, Berne, CH  
Lehrstuhl für Deutsche Philologie, RWTH Aachen, DE  
Internationales Forschungszentrum Kulturwissenschaften, Wien, AT  
Institut für Geschichtswissenschaften, Humboldt-Universität zu Berlin, DE  
Fachbereich Literaturwissenschaft, Universität Konstanz, DE  
Kunsthistorisches Institut in Florenz, Max-Planck-Institut, DE

### NCCR Office SNSF

Bachmann Stefan, Dr.

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

## Key collaborations with third parties

### Academia

- Department of Art History, University of Chicago; US
- Department of Art History, Yale University, New Haven, US
- Department of German, Princeton University, US
- Department of German Studies, University of Chicago, US
- Exzellenzcluster «Bild, Wissen, Gestaltung. Ein interdisziplinäres Labor», Humboldt-University of Berlin, DE
- History of Art Department, UC Berkeley, US
- History of Art Department, University College London, UK
- ICAM Lüneburg, Institut für Kultur und Ästhetik Digitaler Medien, DE
- Institut für Kunstgeschichte, Universität Wien, AT
- International Doctoral Program MIMESIS, LMU München, DE
- Internationales Kolleg für Kulturtechnikforschung und Medienphilosophie, IKKM, Weimar, DE

## The Power and Meaning of Images NCCR Iconic Criticism

### Funding

Funding source (CHF)	Year 9	Year 10	Year 11	Year 12	Total	%
SNSF funding	1 610 000	1 270 000	1 185 000	1 185 000	5 250 000	28
Self-funding from home institution <sup>1</sup>	1 353 000	1 032 000	950 000	1 065 000	4 400 000	23
Self-funding from project participants	1 675 000	1 675 000	1 675 000	1 675 000	6 700 000	36
Third-party funding	620 000	620 000	620 000	620 000	2 480 000	13
<b>Total</b>	<b>5 258 000</b>	<b>4 597 000</b>	<b>4 430 000</b>	<b>4 545 000</b>	<b>18 830 000</b>	<b>100</b>

<sup>1</sup> Personnel costs, equipment and consumables, not included infrastructure and basic equipment

### Employment

Personnel <sup>2</sup>	Total of Persons	Most Represented Nations										
		Female	%	Male	%	CH	DE	IT	AT	AR	CA	Other Nations
Management	5.2 <sup>3</sup>	4	36	7	64	6	3	1	1	0	0	1
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	22	12	55	10	45	8	13	1	0	1	0	0
Postdoctoral students	16	8	50	8	50	1	9	0	3	0	1	3
Research associates	0	0	0	0	0	0	0	0	0	0	0	0
Senior researchers <sup>4</sup>	18	6	33	12	67	1	14	3	1	0	0	0
Other staff	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>61.2</b>	<b>30</b>	<b>45</b>	<b>37</b>	<b>55</b>	<b>16</b>	<b>39</b>	<b>5</b>	<b>5</b>	<b>1</b>	<b>1</b>	<b>4</b>

<sup>2</sup> Persons involved in the NCCR in the last reporting period (12 months)

<sup>3</sup> Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training

<sup>4</sup> Including leaders of the individual projects and other organisational units of the NCCR

### Output

Type of output <sup>5</sup>	Total
Publications > 124 Peer-reviewed   350 Not peer-reviewed   884 Anthology articles   243 Books   2 Reports	1603
Presentations at congresses >	1081
Cooperation > 12 Programmes   106 Research institutions   0 Private sector   5 Other	123
Transfer activities > 0 Patents   0 Licenses   0 Start-ups <sup>6</sup>   0 Prototypes/processes   0 CTI-projects <sup>7</sup>	0

<sup>5</sup> This table displays the major indicators in knowledge and technology transfer. The output data of NCCRs differ considerably according to disciplinary cultures.

<sup>6</sup> Start-up companies that have been built up or were considerably supported by NCCRs.

<sup>7</sup> Projects funded by the Commission for Technology and Innovation (CTI) that have been initiated by members of NCCRs and are thematically linked to NCCR projects.

### Communication

Electronic newsletter: [eikones.ch/nc/neues/newsletter.html](http://eikones.ch/nc/neues/newsletter.html)

Brochure "NFS Bildkritik – Macht und Bedeutung der Bilder 2012/2013": [eikones.ch/neues/aktuelles.html](http://eikones.ch/neues/aktuelles.html)

Online-Journal „Rheinsprung 11“: [rheinsprung11.unibas.ch](http://rheinsprung11.unibas.ch)

Book series „eikones“, Wilhelm Fink Verlag, München: [eikones.ch/publikationen/buchreihe.html](http://eikones.ch/publikationen/buchreihe.html)

# International Trade Regulation: From Fragmentation to Coherence

## NCCR Trade Regulation

NCCR Trade Regulation aims to clarify how the world trading system functions and to explore the drivers of fragmentation and coherence. Implications of the debt crisis, the ascendance of emerging economies and a proliferation of preferential trade agreements serve as the backdrop for this NCCR's third research phase. While multilateralism remains crucial to bringing about greater coherence among policy areas, fragmentation is increasing in a more complex regulatory environment. This NCCR aims to offer policy recommendations based on the disciplines of law, economics and political science through its six thematic research areas: trade governance; new preferentialism in trade; innovation and creativity in international trade; trade, development and migration; trade and climate change; and impact assessment in international trade regulation.

### Research

#### Work Package 1 Trade Governance

Bernauser, T.

**Cluster 1.1, Public Attitudes  
vis-à-vis International Trade Liberalization**  
Bernauser, T., Spilker, G.

#### Work Package 2 New Preferentialism in Trade

Elsig M.

**Cluster 2.1, Design of Trade Agreements**  
Dür A., Elsig, M.

**Cluster 2.2, Preferential Trade Agreements:  
Platforms of Innovation, Diffusion and Change**  
Elsig, M.

#### Work Package 3 Innovation and Creativity in International Trade

Cottier T.

**Cluster 3.1, Competitiveness, Intellectual  
Property and Governmental Procurement:  
Towards Graduation in Trade Regulation**  
Cottier, T.

**Cluster 3.2, Governing New Technologies**  
Burri M.

#### Work Package 4 Trade, Development and Migration

Panizzon M.

**Cluster 4.1, Migration Law, Policy and  
Economics in Regional Integration Contexts**  
Panizzon M., Lavanex, S.

#### Work Package 5 Trade and Climate Change

Cottier T.

**Cluster 5.1, Climate Governance and Trade**  
de Sépibus, J.

**Cluster 5.2, The Challenges of Mitigation  
and Adaptation**  
Francois, J.

**Cluster 5.3, Energy, Trade and Climate Change**  
Cottier, T.

#### Work Package 6 Impact Assessment in International Trade Regulation

Cadot O.

**Cluster 6.1, Trade Adjustment, Labour  
and Productivity**  
Brühlhart, M.

**Cluster 6.2, Impact Evaluation of Trade Policies**  
Shingal, A.

### Home Institution

University of Bern

### Start of the NCCR

September 1, 2005

### NCCR Management

#### Director

Elsig, Manfred, Prof.  
+41 31 631 54 95  
manfred.elsig@wti.org

#### Deputy Directors

Cottier, Thomas, Prof.  
+41 31 631 32 70  
thomas.cottier@wti.org

Francois, Joseph, Prof.  
joseph.francois@wti.org

*Director of Communications &  
Scientific Coordination;  
Knowledge and Technology  
Transfer; Advancement of Women*

Kreis Christine, Mrs.  
+41 31 631 38 61  
christine.kreis@wti.org

*Communications Officer &  
Research Fellow*

Finger, Sascha, Mr.  
sascha.finger@wti.org

*Administration & HR*  
Joseph, Sandra, Mrs.  
sandra.joseph@wti.org

*Financial Coordinator*  
Wittwer, Verena, Mrs.  
+41 31 631 30 80  
verena.wittwer@wti.org

#### Science Editor

Kaplan Susan, Mrs.  
susan.kaplan@wti.org

*Education and Training*  
Lalani Shaheez, Dr.  
shaheez.lalani@wti.org

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

*Librarian*  
Stahl Wulfhard  
wulfhard.stahl@wti.org

### Address

NCCR Trade Regulation  
World Trade Institute  
Hallerstrasse 6  
3012 Bern

+ 41 (0)31 631 30 80  
fax: + 41 (0)31 631 36 30  
www.nccr-trade.org

## International Trade Regulation: From Fragmentation to Coherence NCCR Trade Regulation

### Key collaborations with third parties

#### Academia

- Berkman Center for Internet and Society, Harvard University, US
- Centre for Development and Environment, University of Bern, CH
- Institut für Europa- und Wirtschaftsvölkerrecht, University of Bern, CH
- Institute of International Economic Law, Georgetown University, US
- International Research Institute for Climate and Society, Columbia University, US
- Department of International Relations, London School of Economics, GB
- Oxford Institute for Energy Studies, University of Oxford, UK
- Department of Politics, Princeton University, US
- Department of Political Science and Sociology, Salzburg University, AT

#### Economy / Others

- Asian Development Bank
- Energy Charter Secretariat, Brussels, BE
- EURResearch, Bern, CH
- International Center for Trade and Sustainable Development, Geneva CH
- International Renewable Energy Agency (IRENA), Bonn, DE
- State Secretariat for Economic Affairs, Bern, CH
- Swiss Federal Institute of Intellectual Property, CH
- UNCTAD, Geneva, CH
- World Bank, Washington D.C., US
- World Trade Organization, Geneva, CH

### Heads of Research Groups

Bernauer Thomas, Prof.  
Brühlhart Marius, Prof.  
Burri Mira, Dr.  
Cadot Olivier, Prof.  
Cottier Thomas, Prof.  
de Sépibus Joëlle, Dr.  
Dür Andreas, Prof.  
Elsig Manfred, Prof.  
Francois Joseph, Prof.  
Lavenex Sandra, Prof.  
Panizzon Marion, Prof.  
Shingal Anirudh, Dr.  
Spilker Gabriele, Dr.

ETH Zürich, Zurich  
HEC, University of Lausanne, Lausanne  
c/o World Trade Institute, Bern  
HEC, University of Lausanne, Lausanne  
c/o World Trade Institute, Bern  
c/o World Trade Institute, Bern  
University of Salzburg  
c/o World Trade Institute, Bern  
c/o World Trade Institute, Bern  
Politikwissenschaftliches Seminar der Universität Luzern  
c/o World Trade Institute, Bern  
c/o World Trade Institute, Bern  
ETH Zürich, Zurich

### WTI / NCCR Members of the Advisory Board

Baltensperger Ernst, Prof. em.  
Drexl Josef, Prof.

Dupont Cédric, Prof.

Fink Carsten, Prof.  
Hillman Jennifer, Prof.  
Hoekman Bernard, Prof.  
Hufbauer Gary, Prof.  
Jackson John H., Prof. em.  
Marceau Gabrielle, Prof.

University of Bern and Study Center Gerzensee, CH  
Director Max-Planck-Institute for Intellectual Property, Competition and Tax Law, Munich, DE  
Graduate Institute of International and Development Studies (HEID), Geneva, CH  
World Intellectual Property Organization (WIPO), Geneva, CH  
Georgetown University, Washington DC, USA  
European University Institute, Florence, Italy  
Peterson Institute for International Economics, Washington DC, USA  
Georgetown University, Washington DC, USA  
World Trade Organization (WTO), Geneva, CH

### Participating Institutions

Universität Bern (6 groups) | Universität Luzern (1 group) | Université de Lausanne (2 groups)  
ETH Zürich (2 groups)

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

#### Members of the Review Panel

Foray Dominique, Prof. (Chair)  
Lang Andrew, Prof.  
Lomi Alessandro, Prof.  
Maskus Keith E., Prof.  
McGrew Anthony, Prof.  
Odell John S., Prof.  
Piermartini Roberta, Dr.  
Shaffer Gregory, Prof.  
Steger Debra, Prof.  
Tietje Christian, Prof.  
Van Overwalle Geertrui, Prof.

Swiss National Science Foundation, Bern, CH  
Law Department, London School of Economics, GB  
Swiss National Science Foundation, Bern, CH  
Department of Economics, University of Colorado, Boulder, US  
Dean of Humanities and Social Sciences, University of Strathclyde, GB  
School of International Relations, University of Southern California, US  
World Trade Organization, Genève, CH  
Law School, University of Minnesota, US  
Faculty of Law, University of Ottawa, CA  
Institut für Wirtschaftsrecht, Universität Halle Wittenberg, DE  
Centre for Intellectual Property Rights, Catholic University Leuven, BE

#### NCCR Office SNSF

Griessen Thomas

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

## Funding

Funding source (CHF)	Year 9	Year 10	Year 11	Year 12	Total	%
SNSF funding	2 300 000	2 100 000	1 300 000	866 000	6 566 000	69
Self-funding from home institution <sup>1</sup>	743 160	743 160	743 160	641 280	2 870 760	30
Self-funding from project participants	0	0	0	0	0	0
Third-party funding	73 964	73 964	0	0	147 928	2
<b>Total</b>	<b>3 117 124</b>	<b>2 917 124</b>	<b>2 043 160</b>	<b>1 507 280</b>	<b>9 584 688</b>	<b>100</b>

<sup>1</sup> Personnel costs, equipment and consumables, not included infrastructure and basic equipment

## Employment

Personnel <sup>2</sup>	Total of Persons	Most Represented Nations										Other Nations
		Female	%	Male	%	CH	DE	FR	GB	CA	IT	
Management	5.7 <sup>3</sup>	8	62	5	38	9	2	0	1	1	0	2
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	18	10	56	8	44	5	2	2	0	0	2	9
Postdoctoral students	5	4	80	1	20	0	1	0	0	0	1	3
Research associates	10	5	50	5	50	4	1	2	1	0	0	2
Senior researchers <sup>4</sup>	26	11	42	15	58	16	1	0	0	2	0	9
Other staff	11	5	45	6	55	4	1	1	2	0	0	4
<b>Total</b>	<b>75.7</b>	<b>43</b>	<b>52</b>	<b>40</b>	<b>48</b>	<b>38</b>	<b>8</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>29</b>

<sup>2</sup> Persons involved in the NCCR in the last reporting period (12 months)

<sup>3</sup> Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training

<sup>4</sup> Including leaders of the individual projects and other organisational units of the NCCR

## Output

Type of output <sup>5</sup>	Total
Publications > 227 Peer-reviewed   369 Not peer-reviewed   98 Anthology articles   122 Books   39 Reports	855
Presentations at congresses >	426
Cooperation > 3 Programmes   32 Research institutions   5 Private sector   19 Other	59
Transfer activities > 0 Patents   0 Licenses   0 Start-ups <sup>6</sup>   0 Prototypes/processes   0 CTI-projects <sup>7</sup>	0

<sup>5</sup> This table displays the major indicators in knowledge and technology transfer. The output data of NCCRs differ considerably according to disciplinary cultures.

<sup>6</sup> Start-up companies that have been built up or were considerably supported by NCCRs.

<sup>7</sup> Projects funded by the Commission for Technology and Innovation (CTI) that have been initiated by members of NCCRs and are thematically linked to NCCR projects.

## Communication

Brochures: World Trade Institute / NCCR Trade Regulation

Quarterly E-Newsletter

SECO / WTI Academic Cooperation Project Blog <http://wti-partners.org/>

DESTA Website [www.designoftradeagreements.org](http://www.designoftradeagreements.org)

Key Events

- World Trade Forum
- SNIS Conference
- 2014 Global SIEL Conference

# Kidney Control of Homeostasis

## NCCR Kidney.CH

### Home Institution

University of Zurich

### Start of NCCR

August 1, 2010

### NCCR Management

#### Director

Verrey François, Prof.  
+41 (0) 44 635 50 44  
verrey@access.uzh.ch

#### Deputy Director

Loffing Johannes, Prof.  
+41 (0) 44 635 53 20  
johannes.loffing@anatom.uzh.ch

#### Scientific Project Manager

Meier Matthias  
+41 (0) 44 635 59 68  
matthias.meier@nccr-kidney.ch

#### Management Assistant

Thomas Katharina  
+41 (0) 44 635 52 16  
katharina.thomas@nccr-kidney.ch

#### Communication

Meier Matthias  
Verrey François, Prof.

#### Knowledge & Technology Transfer

Meier Matthias

#### Education & Training

Uyen Huynh-Do, Prof.  
+41 (0) 31 632 31 41  
uyen.huynh-do@insel.ch  
Johannes Loffing, Prof.

#### Advancement of Women

Uyen Huynh-Do, Prof.  
Johannes Loffing, Prof.

### Address

NCCR-Kidney.CH  
University of Zurich  
Institute of Physiology  
Winterthurerstrasse 190  
8057 Zurich / Switzerland

+41 (0) 44 635 52 16  
fax: +41 (0) 44 635 68 14  
info@nccr-kidney.ch

### Web Address

www.nccr-kidney.ch

Keeping the inner body environment in a homeostatic balance is essential for proper body function and thus for healthy life. The NCCR Kidney.CH investigates the central role that kidneys play in controlling this vital equilibrium. It integrates leading Swiss specialist in experimental and clinical nephrology from all Swiss Medical Universities and corresponding hospitals. Chronic Kidney Disease (CKD) has increased dramatically in recent years leading worldwide to an estimated 850 000 deaths every year. Patients with CKD are further at high risk for other diseases such as hypertension, atherosclerosis and osteoporosis to name just a few. The goal of Kidney.CH is to advance knowledge in order to provide a scientific basis for the potential development of novel preventive, diagnostic and therapeutic approaches.

### Research

#### Module Oxygen

Wenger R.

#### Basic mechanism of renal oxygen sensing

Wenger R., Frew I.

#### Oxygen sensing in kidney development and disease

Cohen C., Hoogewijs D., Huynh-Do U., Moch H.

#### Module Acid & Minerals

Wagner C.

#### Sensors of phosphate by kidney, bone and intestine

Biber J., De Seigneux S., Krapf R., Seuwen K., Wagner C.

#### Stones and bones: Renal acid and mineral excretion and its crosstalk with bone

Wagner C., Bonny O., Fuster D.G., Pasch A.

#### The role of Uromodulin and the TAL in mineral, salt and uric acid handling

Devuyst O.

### Technology Platforms & Reference Centres

#### Imaging & Microscopy

Loffing J.

#### Rodent Transgenesis

Hummler E.

#### Rodent Phenotyping

Wagner C.

#### Clinical Study Group

Krapf R.

### Programmes

#### International Fellowship Program on Integrative Kidney Physiology and Pathophysiology (IKPP)

Huynh-Do U.

#### E-Learning Cours in Basics in Nephrology

Rossier B.

#### Module Nutrients & Metabolism

Verrey F.

#### Control of nutrient and drug bioavailability by the kidney

Verrey F., Kullak-Ublick G.A., Odermatt A.

#### Regulation of energy metabolism by the kidney

Montani J.P., Konrad D., Odermatt A.

#### Module Salt & Water

Féraille E., Ernandez T.

#### Renal mechanisms of oedema formation

Vogt B., Burnier M., Hummler E., Martin P.Y.

#### Trophic effects of sodium on the kidney and cardiovascular system

Féraille E., Ernandez T.

#### Integrative control of potassium homeostasis

Loffing J., Forssmann W.G., Staub O.



## Heads of Research Groups

Biber Jürg, PhD  
Bonny Olivier, MD, PhD  
Burnier Michel, MD  
Cohen Clemens, MD  
Devuyt Olivier, MD, PhD  
De Seigneux Sophie, MD  
Ernandez Thomas, MD  
Féraille Eric, MD, PhD  
Forssmann Wolf-Georg, MD  
Frew Ian, PhD  
Fuster Daniel, MD, PhD  
Hasler Udo, PhD  
Hoogewijs David, PhD  
Hummler Edith, PhD  
Huynh-Do Uyen, MD  
Konrad Daniel, MD  
Krapf Reto, MD  
Pasch Andreas, MD  
Vogt Bruno, MD  
Kullak-Ublick Gerd A., MD

Loffing Johannes, MD  
Martin Pierre-Yves, MD  
Moch Holger, MD  
Montani Jean-Pierre, MD  
Odermatt Alex, PhD  
Seuwer Klaus, PhD  
Staub Olivier, PhD  
Verrey François, MD  
Wagner Carsten, MD  
Wenger Roland, PhD

## Participating Institutions

Universität Basel (Pharmazentrum) (1 group) | Université de Fribourg (1 group) | Université de Genève (4 groups)  
Université de Lausanne (4 groups) | Universität Zürich (9 groups) | Hôpitaux Universitaires de Genève (HUG) (1 group)  
Universitätsspital Bern (4 groups) | Universitätsspital Zürich (3 groups) | Klinik St. Anna Luzern (1 group)  
Medizinische Hochschule Hannover (1 group) | Institute for Biomedical Research Novartis, Basel (1 group)

## Scientific Advisors

Murer Heini, Prof. (Emeritus)  
Rossier Bernard, Prof. (Emeritus)  
Sigrist Adrian

Universität Zürich, CH  
Université de Lausanne, CH  
Universität Zürich, Bern und Basel, CH

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

### Members of the Review Panel

Steiger Jürg, Prof. (Chair)  
Alpern Robert, Prof.  
Daniel Hannelore, Prof.  
Eckardt Kai Uwe, Prof.  
Hottiger Michael O., Prof.  
Kurtz Armin, Prof.  
McDonough Alicia, Prof.  
Moe Orson W., Prof.  
Pearce David, Prof.  
Seckl Jonathan, Prof.

Swiss National Science Foundation, Berne, CH  
Yale School of Medicine, New Haven, US  
ZIEL- Abteilung Biochemie, Technische Universität München, DE  
Nephrologie und Hypertensiologie, Universitätsklinikum Erlangen, DE  
Swiss National Science Foundation, Berne, CH  
Institut für Physiologie, Universität Regensburg, DE  
Keck School of Medicine of USC, Los Angeles, US  
Medical Center at Dallas, University of Texas Southwestern, US  
Cellular and Molecular Pharmacology, University of California, US  
Center Cardiovascular Science, The Queens Medical Research  
Institute, Edinburgh, UK  
Swiss National Science Foundation, Berne, CH

### NCCR Office SNSF

Griessen Thomas

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

## Key collaborations with third parties

### Academia

- Department of Physiology and Pharmacology, University of Salamanca, ES
- Dept. of Physiology, University College London, GB
- Division of Osteoporosis, University of Berne, CH
- Human Genetics Unit, Medical Research Council, Edinburgh, GB
- Institute of molecular bioscience, University of Tokyo, JP
- Institute of Physiology, Universität Tuebingen, DE
- Institute of Veterinary Physiology, University of Zurich, CH
- Internal Medicine, National Center of Integrative Biomedical Informatics, Ann Arbor, US
- Internal medicine, CHUV - Centre Hospitalier Universitaire Vaudois, Lausanne, CH
- Mineral metabolism clinic, Ut Southwestern Medical Centre, Dallas, TX, US
- NHLBI, Framingham Heart Study, US
- Oncology - Medical Imaging, University Hospital Zurich, CH

### Economy / Others

- Inpsphero AG, Zurich, CH
- Novartis, Basel, CH

## Funding

Funding source (CHF)	Year 1	Year 2	Year 3	Year 4	Total	%
SNSF funding	3 135 000	4 465 000	4 465 000	4 465 000	16 530 000	64
Self-funding from home institution <sup>1</sup>	70 831	160 979	1 626 977	1 090 000	2 948 787	11
Self-funding from project participants	1 135 125	1 330 025	1 356 884	2 230 500	6 052 534	24
Third-party funding <sup>2</sup>	146 955	0	0	0	146 955	1
<b>Total</b>	<b>4 487 911</b>	<b>5 956 004</b>	<b>7 448 861</b>	<b>7 785 500</b>	<b>25 678 276</b>	<b>100</b>

<sup>1</sup> Personnel costs, equipment and consumables, not included infrastructure and basic equipment

<sup>2</sup> Not included is CTI funding. Since the start of the NCCR 1 project has been funded by CTI at a total amount of 200'000 CHF (cf. table Output).

## Employment

Personnel <sup>3</sup>	Total of Persons	Most Represented Nations										Other Nations
		Female	%	Male	%	CH	DE	FR	IN	IT	CN	
Management	3.7 <sup>4</sup>	5	50	5	50	4	2	1	1	1	0	1
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	15	7	47	8	53	4	2	1	1	3	1	3
Postdoctoral students	25	13	52	12	48	4	4	2	2	0	2	11
Research associates	4	3	75	1	25	1	1	0	1	0	0	1
Senior researchers <sup>5</sup>	35	4	11	31	89	22	7	2	0	0	0	4
Other staff	8	7	88	1	13	6	1	1	0	0	0	0
<b>Total</b>	<b>90.7</b>	<b>39</b>	<b>40</b>	<b>58</b>	<b>60</b>	<b>41</b>	<b>17</b>	<b>7</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>20</b>

<sup>3</sup> Persons involved in the NCCR in the last reporting period (12 months)

<sup>4</sup> Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training

<sup>5</sup> Including leaders of the individual projects and other organisational units of the NCCR

## Output

Type of output <sup>6</sup>	Total
Publications > 36 Peer-reviewed   3 Not peer-reviewed   0 Anthology articles   4 Books   0 Reports	43
Presentations at congresses >	56
Cooperation > 1 Programme   33 Research institutions   6 Private sector   0 Other	40
Transfer activities > 0 Patents   0 Licenses   0 Start-ups <sup>7</sup>   0 Prototypes/processes   1 CTI-project <sup>8</sup>	1

<sup>6</sup> This table displays the major indicators in knowledge and technology transfer. The output data of NCCRs differ considerably according to disciplinary cultures.

<sup>7</sup> Start-up companies that have been built up or were considerably supported by NCCRs.

<sup>8</sup> Projects funded by the Commission for Technology and Innovation (CTI) that have been initiated by members of NCCRs and are thematically linked to NCCR projects.

## Communication

Newsletter: [www.nccr-kidney.ch/index.php?nav=60&scx=0&scy=0](http://www.nccr-kidney.ch/index.php?nav=60&scx=0&scy=0)

Short Profile and Image Brochure: [www.nccr-kidney.ch/index.php?nav=55&scx=0&scy=0](http://www.nccr-kidney.ch/index.php?nav=55&scx=0&scy=0)

Press releases: [www.nccr-kidney.ch/index.php?nav=48&scx=0&scy=0](http://www.nccr-kidney.ch/index.php?nav=48&scx=0&scy=0)

# Overcoming vulnerability: life course perspectives

## NCCR LIVES

The NCCR LIVES conducts longitudinal studies and develops theories to understand the life-long processes that lead to the many forms of vulnerability in adult life. We analyse factors and processes that make individuals differentially vulnerable to sources of stress, the life-long consequences of these factors and processes. Moreover we analyse resources and actions undertaken by individuals or by their environment to compensate or overcome vulnerability. Life trajectories of the overall population confronted with the “new social risks” (growing instability of personal relations, labour market uncertainty, etc.) and of population groups particularly at risk (e.g. people with low economic resources, or facing health problems) are scrutinized in a comparative, longitudinal, and interdisciplinary perspective. Our results will provide stimulus for action on the level of social policy.

### Research

#### **Dynamics of vulnerability:**

**Cumulative disadvantages, critical events, and socio-psychosocial resources**

Spini D., Bernardi L., Bühlmann F., Joye D.

**From youth to adulthood: Second-generation immigrants' incorporation into Swiss society**

Bolzman C., Bernardi L.

**Economic inequalities: Pathways out of vulnerabilities**

Lalive R., Bonoli G., Müller T., Oesch D., Pellizzari M., Ramirez J.

**Overcoming vulnerability to unemployment: Possibilities and limits of so-called “active” social policies**

Bonvin J.-M., Bickel J.-F., Bühlmann F., Tabin J.-P.

**Vulnerability at the interface of professional and family life: Gender and occupational differentials**

Le Feuvre N., Bernardi L., Bühlmann F., David T., Davoine E., Fassa Recrosio F

**Professional trajectories: Impact of individual characteristics and resources, and cultural background**

Rossier J., Freund A., Krings F., Ruch W., Wiese B.

**Critical events and family configurations**

Widmer E., Bernardi L., Modak M., Sauvain Dugerdil C.

**Facing critical events in early adulthood: A normative approach to vulnerability and life-course regulation**

Staerklé C., Clémence A., Spini D.

**Health trajectories and life transitions: A life-course approach to health vulnerability**

Burton-Jeangros C., Ritschard G.

**Women facing cancer: Impact of social support**

Favez N., Bodenmann G., Delaloye J.-F.

**Vulnerability and growth: Developmental dynamics of the loss of an intimate partner in the second half of life**

Perrig-Chiello P., Höpflinger F., Spini D.

**Behind the democratization of old age: Inequalities within progress**

Oris M., Bickel J.-F., Bolzman C., Cavalli S., Desrichard O., Joye D., Ludwig C., Perrig-Chiello P., Spini D., Widmer E.

**Measuring Life sequences and the Disorder of Lives**

Ritschard G., Berchtold A., Ghisletta P.

**Life transition in context: Toward an integrated methodological framework for studying the impact of critical events**

Joye D., Farago P., Roberts C.

### Home Institutions

University of Lausanne,  
University of Geneva

### Start of NCCR

January 1, 2011

### NCCR Management

#### *Director*

Spini Dario, Prof.  
+41 (0)21 692 38 44  
dario.spini@unil.ch

#### *Co-Director (UNIGE)*

*Deputy Director*  
Oris Michel, Prof.  
+41 (0)22 37 93786  
michel.oris@unige.ch

#### *Deputy Director*

Bernardi Laura, Prof.  
+41 (0)21 692 38 46  
laura.bernardi@unil.ch

#### *NCCR Scientific Officer*

Fasel Hunziker Rachel  
+41 (0)21 692 38 52  
scientific@lives-nccr.ch

#### *Administrator*

Marcacci Tatiana  
+41 (0)21 692 38 38  
admin@lives-nccr.ch

#### *Doctoral Program Officer*

Fagot Delphine, PhD  
+41 (0)22 379 92 26  
doctoral@lives-nccr.ch

#### *Advancement of young researchers and women*

Demont Floriane, PhD  
+41 (0)22 379 89 24  
equality@lives-nccr.ch

Le Feuvre Nicky, Prof.  
+41 (0)21 692 32 13  
nicky.lefeuvre@unil.ch

#### *Communication Officer*

Marendaz Colle Emmanuelle  
+41 (0)21 692 38 83  
communication@lives-nccr.ch

#### *Data manager*

Luisier Victorin  
+41 (0)21 692 38 29  
data@lives-nccr.ch

#### *Knowledge and Technology*

*Transfer*  
Maeder Pasqual, PhD  
ktt@lives-nccr.ch

### Address

NCCR LIVES  
University of Lausanne  
Bâtiment Géopolis  
1015 Lausanne

+41(0) 21 692 38 71  
Fax: +41 (0) 21 692 32 35  
contact@lives-nccr.ch

### Web Address

<http://www.lives-nccr.ch>

## Key collaborations with third parties

### Academia

- Ageing and Living Conditions Programme (ALC), Umeå University, SE
- Population Europe – Network of Europe's leading demographic research centres
- Center for Healthy Ageing Research, Oregon State University, Corvallis, US
- Center for Research on Inequalities and the Life Course, Yale University, New Haven, US
- Center on Ageing and the Life Course, Purdue University, West Lafayette, US
- Centre for Analysis of Social Exclusion, London School of Economics and Political Science, GB
- Centre for Population, Aging and Health, University of Western Ontario, London, CA
- Department of Sociology, Case Western Reserve University, Cleveland, US
- Department of Sociology, University of Western Ontario, London, CA
- Forum suisse pour l'étude des migrations et de la population, Université de Neuchâtel, CH
- Hallie Ford Center for Healthy Children and Families, Oregon State University, Corvallis, US
- International Centre for Lifecourse Studies in Society and Health, University College London, GB
- Mobilité, logement et entourage, Institut national d'études démographiques, Paris, FR

### Economy / Others

- Association Suisse de Politique Sociale, Berne, CH
- Bureau fédéral de l'égalité entre femmes et hommes, Berne; Bureaux de l'égalité de l'Université de Lausanne et de l'Université de Genève, CH
- Département de la santé et de l'action sociale du Canton de Vaud, Lausanne
- Départements des affaires régionales, de l'économie et de la santé du Canton de Genève, CH
- Office fédéral de la statistique, Neuchâtel, CH
- Pro Senectute Schweiz, Wallis und Basel, CH
- Staatssekretariat für Wirtschaft, Bern, CH

## Heads of Research Groups

Berchtold André, Prof.

Bernardi Laura, Prof.

Bickel Jean-François, Prof.

Bodenmann Guy, Prof.

Bolzmann Claudio, Prof.

Bonoli Giuliano, Prof.

Bonvin Jean-Michel, Prof.

Bühlmann Felix, Prof.

Burton-Jeangros Claudine, Prof.

Cavalli Stefano, Prof.,

Clémence Alain, Prof.

David Thomas, Prof.

Davoine Eric, Prof.

Delaloye François, Prof.

Desrichard Olivier, Prof.

Farago Peter, Prof.

Fassa Recrosio Farinaz, Prof.

Favez Nicolas, Prof.

Freund Alexandra, Prof.

Ghisletta Paolo, Prof.

Höpflinger François, Prof.

Joye Dominique, Prof.

Krings, Franciska, Prof.

Lalive Rafael, Prof.

Le Feuvre Nicky, Prof.

Ludwig Catherine, Prof.

Modak Marianne, Prof.

Müller Tobias, Prof.

Oesch Daniel, Prof.

Oris Michel, Prof.

Pellizzari Michele, Prof.

Perrig-Chiello Pasqualina, Prof.

Ramirez José, Prof.

Ritschard Gilbert, Prof.

Roberts Caroline, Prof.

Rossier Jérôme, Prof.

Ruch Willibald, Prof.

Sauvain Dugerdil Claudine, Prof.

Spini Dario, Prof.

Stærklé Christian, Prof.

Tabin Jean-Pierre, Prof.

Widmer Eric, Prof.

Wiese Bettina, Prof.

Centre de recherche sur les parcours de vie et les inégalités, Université de Lausanne

Centre de recherche sur les parcours de vie et les inégalités, Université de Lausanne

Haute école de travail social de Fribourg, HES-SO

Psychologisches Institut, Universität Zürich

Haute école de travail social de Genève, HES-SO

Institut de Hautes Études en Administration Publique, Université de Lausanne

Haute école de travail social et de la santé de Lausanne, HES-SO

Centre de recherche sur les parcours de vie et les inégalités, Université de Lausanne

Institut d'études démographiques et du parcours de vie, Université de Genève

Dipartimento sanità, Scuola Universitaria Professionale della Svizzera Italiana, Manno

Laboratoire de psychologie sociale, Université de Lausanne

Centre de recherche interdisciplinaire sur l'international, Université de Lausanne

Chaire Ressources Humaines et Organisation, Université de Fribourg

Faculté de biologie et médecine, CHUV / Université de Lausanne

Section de psychologie, Université de Genève

Centre de compétences suisse en sciences sociales, Lausanne

Laboratoire des sciences de l'éducation, Université de Lausanne

Section de psychologie, Université de Genève

Section de psychologie, Université de Genève

Soziologisches Institut, Universität Zürich

Centre de recherche sur les parcours de vie et les inégalités, Université de Lausanne

Département de comportement organisationnel, Université de Lausanne

Département d'économétrie et d'économie politique, Université de Lausanne

Laboratoire de sociologie, Université de Lausanne

Haute école de santé de Genève, HES-SO

Haute école de travail social et de la santé de Lausanne, HES-SO

Département des Sciences Économiques, Université de Genève

Centre de recherche sur les parcours de vie et les inégalités, Université de Lausanne

Centre interfacultaire de gérontologie et d'études des vulnérabilités, Université de Genève

Département des Sciences Économiques, Université de Genève

Institut für Psychologie, Universität Bern

Haute École de gestion de Genève, HES-SO

Institut d'études démographiques et du parcours de vie, Université de Genève

Département des Sciences Économiques, Université de Genève

Institut für Psychologie, Universität Bern

Haute École de gestion de Genève, HES-SO

Institut d'études démographiques et du parcours de vie, Université de Genève

Centre de recherche sur les parcours de vie et les inégalités, Université de Lausanne

Laboratoire de psychologie du développement, conseil et Intervention, Université de Lausanne

Psychologisches Institut, Universität Zürich

Institut d'études démographiques et du parcours de vie, Université de Genève

Centre de recherche sur les parcours de vie et les inégalités, Université de Lausanne

Laboratoire de psychologie sociale, Université de Lausanne

Haute école de travail social et de la santé de Lausanne, HES-SO

Institut d'études démographiques et du parcours de vie, Université de Genève

Institut für Psychologie, Rheinisch-Westfälische Technische Hochschule Aachen

## Participating Institutions

Universität Bern (1 group) | Université de Fribourg (1 group) | Université de Lausanne (14 groups)  
Université de Genève (10 groups) | Universität Zürich (3 groups) | Centre hospitalier universitaire vaudois (CHUV) (1 group) | Centre de compétence suisse en sciences sociales (FORS) (1 groups) | Haute Ecole spécialisée de Suisse occidentale (HES-SO) (6 groups) | RWTH Aachen (1 group) | Scuola Universitaria Professionale della Svizzera Italiana (1 group)

## Members of the Advisory Board

Prof. Billari Francesco	University of Oxford, UK
Prof. hon. Lalive d'Épinay Christian	University of Geneva, CH
Prof. de Ribaupierre Anik	University of Geneva, CH
Prof. Kohli Martin	European University Institute, Florence, IT
Prof. hon. Levy René	University of Lausanne, CH
Prof. Lindenberger Ulman	MPI, Berlin, DE
Prof. Marshall Victor	University of North Carolina, US
Prof. McMullin Julie	University of Western Ontario, CA
Prof. Settersten Richard	Oregon State University, US
Prof. Thompson Elizabeth	Stockholm University, SE and University of Wisconsin, US

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

### Members of the Review Panel

Grob Alexander, Prof. (Chair)	Swiss National Science Foundation, Berne, CH
Bollen Kenneth A., Prof.	Department of Sociology, University of North Carolina, US
Budowski Monica, Prof.	Swiss National Science Foundation, Berne, CH
Chenu Alain, Prof.	Directeur de l'Observatoire sociologique du changement, Paris, FR
Heckhausen Jutta, Prof.	Department of Psychology and Social Behavior, University of California, Irvine, US
Héran François, Prof.	INED - Institut national d'études démographiques, Paris, FR
Huinink Johannes, Prof.	EMPAS - Institut für angewandte und empirische Soziologie Universität, Bremen, DE
Schoon Ingrid, Prof.	Department of Quantitative Social Science, Institute of Education, University of London, GB
Varone Frédéric, Prof.	Swiss National Science Foundation, Berne, CH
Willekens Frans, Prof.	Mol-Wezel (emeritus Netherlands Interdisciplinary Demographic Institute NIDI), BE

### NCCR Office SNSF

Griessen Thomas	Schweiz. Nationalfonds, Wildhainweg 3, 3001 Bern + 41 (0)31 308 23 51, fax: + 41 (0)31 305 29 71 thomas.griessen@snf.ch
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## Overcoming vulnerability: life course perspectives NCCR LIVES

### Funding

Funding source (CHF)	Year 1	Year 2	Year 3	Year 4	Total	%
SNSF funding <sup>1</sup>	2 470 000	3 610 000	4 473 100	3 990 000	14 543 100	44
Self-funding from home institution <sup>2</sup>	712 500	912 500	1 216 500	1 216 500	4 058 000	12
Self-funding from University of Geneva	451 000	458 000	569 000	669 000	2 147 000	6
Self-funding from project participants	3 709 377	3 528 630	3 189 799	1 928 000	12 355 806	37
Third-party funding	105 770	84 150	29 249	19 558	238 727	1
<b>Total</b>	<b>7 448 647</b>	<b>8 593 280</b>	<b>9 477 648</b>	<b>7 823 058</b>	<b>33 342 633</b>	<b>100</b>

<sup>1</sup> Included funding for one "mobility grant"

<sup>2</sup> Personnel costs, equipment and consumables, not included infrastructure and basic equipment

### Employment

Personnel <sup>3</sup>	Total of Persons	Most Represented Nations										
		Female	%	Male	%	CH	FR	DE	IT	ES	PT	Other Nations
Management	6.4 <sup>4</sup>	14	82	3	18	13	1	0	0	1	0	2
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	58	40	69	18	31	33	5	5	3	1	3	10
Postdoctoral students	13	7	54	6	46	4	2	0	2	0	0	5
Research associates	22	11	50	11	50	17	1	3	0	1	0	1
Senior researchers <sup>5</sup>	37	13	35	24	65	29	2	0	1	1	0	5
Other staff	15	8	53	7	47	11	0	0	1	1	0	2
<b>Total</b>	<b>151.4</b>	<b>93</b>	<b>57</b>	<b>69</b>	<b>43</b>	<b>107</b>	<b>11</b>	<b>8</b>	<b>7</b>	<b>5</b>	<b>3</b>	<b>25</b>

<sup>3</sup> Persons involved in the NCCR in the last reporting period (12 months)

<sup>4</sup> Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training

<sup>5</sup> Including leaders of the individual projects and other organisational units of the NCCR

### Output

Type of output <sup>6</sup>	Total
Publications > 61 Peer-reviewed   27 Not peer-reviewed   57 Anthology articles   21 Books   8 Reports	174
Presentations at congresses >	311
Cooperation > 1 Programme   25 Research institutions   0 Private sector   19 Other	45
Transfer activities > 0 Patents   0 Licenses   0 Start-ups <sup>7</sup>   0 Prototypes/processes   0 CTI-projects <sup>8</sup>	0

<sup>6</sup> This table displays the major indicators in knowledge and technology transfer. The output data of NCCRs differ considerably according to disciplinary cultures.

<sup>7</sup> Start-up companies that have been built up or were considerably supported by NCCRs.

<sup>8</sup> Projects funded by the Commission for Technology and Innovation (CTI) that have been initiated by members of NCCRs and are thematically linked to NCCR projects.

### Communication

Newsletters: [www.lives-nccr.ch/newsletters](http://www.lives-nccr.ch/newsletters) (4 issues)

Project Newsletters: printed in German and French (3 issues)

Corporate brochure (print)

# Mediality – Historical Perspectives

## NCCR Mediality

The NCCR focuses on the historicity of media and mediality. It investigates forms of communication, transfer, and perception before the era of mass-media dominance and modern teleologically and technologically oriented media discourses. The aim of the NCCR is a historical mediology, which particularly examines change in communication practices, new dynamics in medial forms, and reflection on the conditions of communication. In its third phase the limits of the medial are at the centre of the NCCR's interest. Moments will be systematically analysed in which the display and the apparent breakdown of mediation are mutually entangled. The main terms in this context will be *ostentation*, already used in the previous project phases to denote phenomena of accentuation and displaying, and *implosion*, indicating disintegration, the collapse of differences, and inner heterogeneity.

### Research

#### Module Ostentation

**Displaying the town.  
Medializations of Urban Space and Time**  
Stercken M.

**Writing Medium Architecture**  
von Arburg H.-G.

**The Art of Display**  
Stierli M., Weddigen T.

**Circulation, Appropriation,  
Redefinition - Colonial Photography in  
the Postcolonial Context**  
Krüger G.

**Atmospheres in Film and Cinema –  
Media Oscillations**  
Tröhler M.

**The Nervousness of Film (1895-1918):  
On the Dynamics of a Medial Peculiarity**  
Schweinitz J.

**Mediality of Visual and Poetological Vagueness**  
Naumann B., Stoichita V.

#### Module Implosion

**Transgressions and Implosions  
in Mythical Narrative**  
Glauser J.

**Medial ambiguities**  
Kiening C.

**Immediations of forms.  
Border cases of Christian aesthetics**  
Köbele S.

**Combinatorics as Medial Implosion**  
Kilcher A.

**Poetic play and medial transgression  
in seventeenth-century poetry**  
Schnyder M.

**Court of Justice secrets, Relation,  
and Verdict**  
Thier A.

**Precarious Things. Materiality and  
Literacy in the Historiography of the late  
Enlightenment and Historicism**  
Sandl M.

**Mediality as borderline experience**  
Schneider S.

#### Home Institution

University of Zurich

#### Start of the NCCR

October 1, 2005

#### NCCR Management

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

*Deputy Director*  
Tröhler M. Prof.  
+41 (0)44 634 35 22  
m.troehler@fiwi.uzh.ch

*Deputy Director (Coordination)*  
Stercken Martina, Prof.  
+ 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*  
Schnyder Mireille, Prof.  
mireille.schnyder@ds.uzh.ch

#### Address

NCCR Mediality  
University of Zurich  
Rämistr. 42  
8001 Zürich

+ 41 (0)44 634 51 19  
sekretariat@mediality.ch

#### Web Address

[www.mediality.ch](http://www.mediality.ch)

## Key collaborations with third parties

### Academia

- Arni Magnusson Institute for Icelandic Studies, University of Iceland, Reykjavík, IS
- Department of Art History, City University of New York (CUNY), US
- Department of German, Comparative Literature and Centre for Anglo-German Cultural Relations, London University, UK
- Department of Germanic Languages and Literatures, Harvard University, Cambridge, US
- Department of History, University of Mississippi, Oxford, US
- Department of Romance Languages and Literatures, Screen Arts and Cultures, University of Michigan, Ann Arbor, US
- Department of Social Anthropology, University of Cape Town, ZA
- Film Studies, Mel Hoppenheim School of Cinema, Concordia University Montréal, CA
- German Department, University of Toronto, CA
- Germanic Studies Department, University of Chicago, US
- Historisches Seminar, Universität Freiburg, CH
- Institute for Cultural Inquiry, Media and Performance Studies, Universität Utrecht, NL
- Institut für Afrikawissenschaften, Universität Wien, AT
- Institut für Klassische Philologie, Universität München, DE
- Institutt for lingvistiske og nordiske studier, Universitetet i Oslo, NO
- School of Geography, Queen's University Belfast, IE
- Seminar für Deutsche Philologie, Georg-August-Universität Göttingen, DE
- Seminar für Deutsche Philologie, Universität Mannheim, DE
- Systematische Theologie/ Religionsphilosophie, Universität Rostock, DE
- Wissenschaftsgeschichte der Geistes- und Sozialwissenschaften, Universität Konstanz, DE

## Heads of Research Groups

Glauser Jürg, Prof.

Kiening Christian, Prof.  
Kilcher Andreas, Prof.  
Krüger Gesine, Prof.  
Köbele Susanne, Prof.  
Naumann Barbara, Prof.  
Sandl Marcus, Prof.  
Schneider Sabine, Prof.  
Schnyder Mireille, Prof.  
Schweinitz Jörg, Prof.  
Stercken Martina, Prof.  
Stierli Martino, Prof.  
Stoichita Victor, Prof.  
Theisohn Philipp, Prof.  
Thier Andreas, Prof.  
Tröhler Margrit, Prof.  
Von Arburg Hans-Georg, Prof.  
Weddigen Tristan, Prof.

Deutsches Seminar, Universität Zürich/ Seminar für Nordistik, Universität Basel  
Deutsches Seminar, Universität Zürich  
Departement für Geistes-, Sozial- und Staatswissenschaften, ETH-Zürich  
Historisches Seminar, Universität Zürich  
Deutsches Seminar, Universität Zürich  
Deutsches Seminar, Universität Zürich  
Historisches Seminar, Universität Zürich  
Deutsches Seminar, Universität Zürich  
Deutsches Seminar, Universität Zürich  
Seminar für Filmwissenschaft, Universität Zürich  
Historisches Seminar, Universität Zürich  
Kunsthistorisches Institut, Universität Zürich  
Département d'Histoire de l'Art et Musicologie, Université Fribourg  
Deutsches Seminar, Universität Zürich  
Rechtswissenschaftliches Institut, Universität Zürich  
Seminar für Filmwissenschaft, Universität Zürich  
Faculté des lettres, Université de Lausanne  
Kunsthistorisches Institut, Universität Zürich

## Participating Institutions

Universität Basel (1 group) | Universität Zürich (15 groups) | Université de Fribourg (1 group)  
Université de Lausanne (1 group) | ETH Zürich (1 group)

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

### Members of the Review Panel

Burghartz Susanna, Prof. (Chair)  
Coleman Janet, Prof.  
Geary Patrick J., Prof.  
Grob Alexander, Prof.  
Kaes Anton, Prof.  
Kasten Ingrid, Prof.

Krüger Klaus, Prof.  
Ruhe Doris, Prof. em.  
Schulz Peter, Prof.  
Vosskamp Wilhelm, Prof.

Swiss National Science Foundation, Berne, CH  
Department of Government, London School of Economics, GB  
Institute for Advanced Study, School of Historical Studies, Princeton, US  
Swiss National Science Foundation, Berne, CH  
Department of Film & Media, University of California, US  
Institut für Deutsche und Niederländische Philologie, Freie Universität Berlin, DE  
Kunsthistorisches Institut, Freie Universität Berlin, DE  
Würzburg (vormals Universität Greifswald), DE  
Swiss National Science Foundation, Berne, CH  
Institut für deutsche Sprache und Literatur, Universität Köln, DE

### NCCR Office SNSF

Bachmann Stefan, Dr.

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



## Funding

Funding source (CHF)	Year 9	Year 10	Year 11	Year 12	Total	%
SNSF funding	1 088 000	1 176 000	1 176 000	760 000	4 200 000	42
Self-funding from home institution <sup>1</sup>	737 112	737 112	737 112	737 114	2 948 450	29
Self-funding from project participants	700 000	750 000	757 000	700 000	2 907 000	29
Third-party funding	0	0	0	0	0	0
<b>Total</b>	<b>2 525 112</b>	<b>2 663 112</b>	<b>2 670 112</b>	<b>2 197 114</b>	<b>10 055 450</b>	<b>100</b>

<sup>1</sup> Personnel costs, equipment and consumables, not included infrastructure and basic equipment

## Employment

Personnel <sup>2</sup>	Total of Persons	Most Represented Nations										Other Nations
		Female	%	Male	%	CH	DE	IT	AT	ES	FR	
Management	3.2 <sup>3</sup>	8	73	3	27	6	5	1	0	0	0	0
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	23	12	52	11	48	15	6	1	0	1	0	3
Postdoctoral students	4	1	25	3	75	0	3	0	0	0	0	1
Research associates	0	0	0	0	0	0	0	0	0	0	0	0
Senior researchers <sup>4</sup>	26	9	35	17	65	11	14	0	1	0	1	1
Other staff	4	2	50	2	50	4	0	0	0	0	0	0
<b>Total</b>	<b>60.2</b>	<b>32</b>	<b>47</b>	<b>36</b>	<b>53</b>	<b>36</b>	<b>28</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>5</b>

<sup>2</sup> Persons involved in the NCCR in the last reporting period (12 months)

<sup>3</sup> Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training

<sup>4</sup> Including leaders of the individual projects and other organisational units of the NCCR

## Output

Type of output <sup>5</sup>	Total
Publications > 215 Peer-reviewed   30 Not peer-reviewed   387 Anthology articles   104 Books   18 Reports	754
Presentations at congresses >	773
Cooperation > 0 Programmes   187 Research institutions   0 Private sector   0 Other	187
Transfer activities > 0 Patents   0 Licenses   0 Start-ups <sup>6</sup>   0 Prototypes/processes   0 CTI-projects <sup>7</sup>	0

<sup>5</sup> This table displays the major indicators in knowledge and technology transfer. The output data of NCCRs differ considerably according to disciplinary cultures.

<sup>6</sup> Start-up companies that have been built up or were considerably supported by NCCRs.

<sup>7</sup> Projects funded by the Commission for Technology and Innovation (CTI) that have been initiated by members of NCCRs and are thematically linked to NCCR projects.

## Communication

Newsletter: [www.mediality.ch/publikationen\\_newsletter.php](http://www.mediality.ch/publikationen_newsletter.php) (10 issues)

Book series "Medienwandel – Medienwechsel – Medienwissen", Chronos-Verlag, Zürich: [www.mediality.ch/publikationen\\_mw.php](http://www.mediality.ch/publikationen_mw.php)

# Molecular Ultrafast Science and Technology NCCR MUST

## Home Institutions

ETH Zurich, University of Bern

## Start of the NCCR

July 1, 2010

## NCCR Management

### Director

Keller Ursula, Prof.  
+41 (0) 44 633 21 46  
keller@phys.ethz.ch

### Co-Director (Uni BE)

Feurer Thomas, Prof.  
+41 (0) 31 631 89 13  
thomas.feurer@iap.unibe.ch

### Scientific Officer

van Beilen Jan, Dr.  
+41 (0) 44 633 29 90  
jan.vanbeilen@phys.ethz.ch

### Outreach Officer

Garry Anna, Dr.  
+41 (0) 44 633 37 20  
anna.garry@phys.ethz.ch

### Finances and administration

Sigrist Nadia, Ms.  
Hansen Daniela, Ms.  
+41 (0) 44 633 36 02  
nadia.sigrist@phys.ethz.ch  
daniela.hansen@phys.ethz.ch

### Knowledge and Technology Transfer

Abela Rafael, Dr.  
+41 (0) 56 310 32 71  
rafael.abela@psi.ch

### Education and Training

Wolf Jean-Pierre, Prof.  
+41 (0) 22 379 05 03  
jean-pierre.wolf@unige.ch

### Advancement of Women

Röthlisberger Ursula, Prof.  
+ 41 (0) 21 693 03 21  
ursula.roethlisberger@epfl.ch  
Garry Anna, Dr.

## Address

ETH Zürich  
NCCR - MUST  
IQE/ULP- HPT H3  
Auguste-Piccard-Hof 1  
8093 Zurich  
+41 (0) 44 633 29 90  
info@nccr-must.ch

## Web Address

[www.nccr-must.ch](http://www.nccr-must.ch)

The NCCR MUST develops new theoretical concepts and spectroscopic methodologies and applies them to unravel ultrafast dynamic processes in the micro-cosmos of molecules and solid state materials. The novel techniques encompass for example multi-dimensional spectroscopy, time-resolved electron diffraction, time-resolved X-ray absorption and diffraction, or attosecond VUV spectroscopy. They are fundamental for further developing our understanding of the dynamics of chemical reactions, the charge transport in molecules, the signal processing in bio-molecules, or the complex interplay of different sub-systems in strongly correlated solid state materials. A deeper understanding of matter at a microscopic level is also crucial for dealing with societal challenges such as the quest for alternative energy sources or the development of next generation materials.

## Research

**Application of Ultrafast Spectroscopic Techniques for Investigating Liquid Interfaces and Photoinduced Electron Transfer Reactions**  
Vauthey E.

**Charge Transfer Reactions at Molecular Interfaces**  
Girault H.

**Coherent Control in Complex Molecular Systems**  
Wolf J.-P.

**Dynamics of Light-Induced Interfacial Electron Transfer and Charge Transport in Molecular Materials**  
Moser J.-E.

**Electronic and Structural Dynamics of Chemical and Biological Systems**  
Chergui M.

**Femtosecond and Attosecond VUV-XUV Spectroscopy**  
Keller U.

**Femtosecond IR Spectroscopy Research**  
Hamm P.

**Intense THz Science and Spectroscopy**  
Feurer Th.

**Nonlinear Femtosecond Spectroscopy and Time Resolved Photo-Electron Spectroscopy**  
Gerber Th.

**Pilot Time-Resolved Experiments for the SwissFEL**  
Patterson B., Abela R.

**Quantitative Atomistic Simulations**  
Meuwly M.

**Simulations of Ultrafast Quantum Dynamics in Gas and Condensed Phase**  
Röthlisberger U.

**Theoretical Methods for Ultrafast Quantum Dynamics**  
Vanicek J.

**Ultrafast Dynamics on Surfaces**  
Hengsberger M., Osterwalder J.

**Ultrafast Structural Dynamics Observed with Femtosecond X-Rays**  
Beaud P.

## Transfer projects (strong Swiss franc package)

**Two-Pulse**  
Feurer Th., Krainer L. (OneFive GmbH)

**High-power THz generation in organic crystals based on conventional Ti:Sapphire laser technology**  
Hauri Chr., Abela R., Medrano C. (Rainbow Photonics AG)

## Heads of Research Groups

Abela Rafael, Dr.  
Beaud Paul, Dr.  
Chergui Majed, Prof.  
Feurer Thomas, Prof.  
Gerber Thomas, Dr.  
Girault Hubert, Prof.

Hamm Peter, Prof.  
Hengsberger Matthias, Dr.  
Keller Ursula, Prof.  
Meuwly Markus, Prof.  
Moser Jacques-E., Prof.  
Osterwalder Jürg, Prof.  
Patterson Bruce, Dr.  
Röthlisberger Ursula, Prof.

Vanicek Jiri, Prof.  
Vauthey Eric, Prof.  
Wolf Jean-Pierre, Prof.

Paul Scherrer Institut PSI, Villigen  
Paul Scherrer Institut PSI, Villigen  
Laboratory of Ultrafast Spectroscopy (LSU) EPF Lausanne  
Institut für Angewandte Physik, Universität Bern  
Paul Scherrer Institut PSI, Villigen  
Laboratoire d'Électrochimie Physique et Analytique (LEPA), EPF Lausanne  
Physikalisch-Chemisches Institut, Universität Zürich  
Physik-Institut, Universität Zürich  
Institut für Quantenelektronik, ETH Zurich  
Département Chemie, Universität Basel  
Institut des Sciences et Ingénierie Chimiques (ISIC), EPF Lausanne  
Physik-Institut, Universität Zürich  
Paul Scherrer Institut PSI, Villigen  
Laboratoire de Chimie et Biochimie Computationnelles (LCBC), EPF Lausanne  
Laboratoire de Chimie Physique Théorique (LPTC), EPF Lausanne  
Département de Chimie Physique, Université de Genève  
GAP-Biophotonics, Université de Genève

## Participating Institutions

Universität Basel (1 group) | Universität Bern (1 group) | Universität Zürich (2 groups)  
Université de Genève (2 groups) | EPF Lausanne (5 groups) | ETH Zürich (1 group)  
Paul Scherrer Institut PSI, Villigen (3 groups)

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

### Members of the Review Panel

Scheffold Frank, Prof (Chair)  
Chen Peter, Prof.  
de Vivie-Riedle Regina, Prof.  
Elsaesser Thomas, Prof.  
Falcone Roger W., Prof.  
Leutwyler Samuel, Prof.  
Mukamel Shaul, Prof.  
Parker Anthony W., Prof.

Sundström Villy, Prof  
Wolf Martin, Prof.

Swiss National Science Foundation, Bern, CH  
Swiss National Science Foundation, Bern, CH  
Department Chemie, Ludwig-Maximilians-Universität München, DE  
Max-Born-Institute, Berlin, DE  
Physics Department, University of California, Berkeley, US  
Swiss National Science Foundation, Bern, CH  
Department of Chemistry, University of California Irvine, US  
Rutherford Appleton Laboratory, Harwell Science and Innovation, Oxfordshire, UK  
Department of Chemical Physics, Lund University, SE  
Abteilung Physikalische Chemie, Fritz-Haber-Institut der MPG, Berlin, DE

### NCCR Office SNSF

Bachmann Stefan, Dr.

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

## Key collaborations with third parties

### Academia

- Institute of Physical Chemistry, Polish Academy of Sciences, Warsaw, PL
- Physikalisches Institut, University of Freiburg, DE
- Combustion Research Facility, Sandia National Laboratories, Livermore, US
- Center for Physical Sciences and Technology, Institute of Physics, Vilnius, LT
- Department of Chemistry, Princeton University, NY, US
- Department of Chemistry, University of California, Irvine, USA
- IFP MUST (FP7 COFUND)
- Institute of Applied Physics, KIT Karlsruhe, DE
- Stanford Linear Accelerator Center, Menlo Park CA, US
- Department of Physics, Imperial College London, UK
- Department of Chemistry, Massachusetts Institute of Technology, Cambridge, US
- Graduate School of Advanced Integration Science, University of Chiba, JP
- Laboratory of Photonics and Interfaces, EPFL, CH
- Max-Planck-Institut für Physik Komplexer Systeme, Dresden, DE

### Economy / Others

- Bystronic, Niederoenz, CH
- Novartis, Basel, CH
- OneFive, Zurich, CH
- Rainbow Photonics AG, Zurich, CH

## Funding

Funding source (CHF)	Year 1	Year 2	Year 3	Year 4	Total	%
SNSF funding <sup>1</sup>	5 510 000	3 990 000	4 395 000	3 895 000	17 790 000	45
Self-funding from home institution <sup>2</sup>	1 280 000	1 230 000	1 030 000	1 030 000	4 570 000	12
Self-funding from University of Bern	585 000	535 000	535 000	535 000	2 190 000	6
Self-funding from project participants	3 320 991	3 971 443	3 521 443	3 449 050	14 262 927	36
Third-party funding <sup>3</sup>	0	77 768	352 187	90 000	519 955	1
<b>Total</b>	<b>10 695 991</b>	<b>9 804 211</b>	<b>9 833 630</b>	<b>8 999 050</b>	<b>39 332 882</b>	<b>100</b>

<sup>1</sup> Included funding of transfer projects (strong Swiss franc package) and of one “120% support grant”

<sup>2</sup> Personnel costs, equipment and consumables, not included infrastructure and basic equipment

<sup>3</sup> Not included is CTI funding. Since the start of the NCCR 2 projects have been funded by CTI at a total amount of 2.3 million CHF (cf. table Output).

## Employment

Personnel <sup>4</sup>	Total of Persons	Most Represented Nations										
		Female	%	Male	%	CH	DE	IT	FR	GB	RU	Other Nations
Management	4.8 <sup>5</sup>	6	55	5	45	8	2	0	0	1	0	1
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	42	11	27	30	73	5	13	1	2	0	6	14
Postdoctoral students	44	9	20	35	80	3	4	8	3	6	1	19
Research associates	1	1	100	0	0	1	0	0	0	0	0	0
Senior researchers <sup>6</sup>	34	3	9	31	91	19	6	1	2	0	0	6
Other staff	5	0	0	5	100	5	0	0	0	0	0	0
<b>Total</b>	<b>130.8</b>	<b>30</b>	<b>22</b>	<b>106</b>	<b>78</b>	<b>41</b>	<b>25</b>	<b>10</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>40</b>

<sup>4</sup> Persons involved in the NCCR in the last reporting period (12 months)

<sup>5</sup> Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training

<sup>6</sup> Including leaders of the individual projects and other organisational units of the NCCR

## Output

Type of output <sup>7</sup>	Total
Publications > 246 Peer-reviewed   9 Not peer-reviewed   4 Anthology articles   3 Books   2 Reports	264
Presentations at congresses >	359
Cooperation > 9 Programmes   75 Research institutions   5 Private sector   7 Other	96
Transfer activities > 1 Patent   0 Licenses   1 Start-up <sup>8</sup>   0 Prototypes/processes   2 CTI-projects <sup>9</sup>	4

<sup>7</sup> This table displays the major indicators in knowledge and technology transfer. The output data of NCCRs differ considerably according to disciplinary cultures.

<sup>8</sup> Start-up companies that have been built up or were considerably supported by NCCRs.

<sup>9</sup> Projects funded by the Commission for Technology and Innovation (CTI) that have been initiated by members of NCCRs and are thematically linked to NCCR projects.

## Communication

Collection of videos and movies on the MUST website: [www.nccr-must.ch/video\\_podcast\\_press/videos\\_movies.html](http://www.nccr-must.ch/video_podcast_press/videos_movies.html)

# Quantum Science and Technology

## NCCR QSIT

The NCCR “QSIT” is active in a field, which unites the key discoveries of the 20th century: quantum physics and information theory. In future, research in this field will strongly influence science and technology. Potential applications are primarily focused in the area of computer science and sensors. The NCCR “QSIT” takes a multi-disciplinary approach, combining concepts from physics, chemistry, engineering and computer sciences. Researchers from many Swiss universities and basic researchers from industry work together in the NCCR network. Their two common goals are to develop applications in the area of quantum computer science and to investigate new paradigms in physical basic research such as the order and states of material.

### Research

#### Section 1: Spectroscopy of single and few quantum systems

##### Quantum optomechanics

Bruder C., Degen C., Esslinger T., Kippenberg T., Maletinsky P., Poggio M., Treutlein P., Wallraff A.

##### Quantum Spintronics

Ihn T., Blatter J., Büttiker M., Ensslin K., Faist J., Fontcuberta i Morral A., Fuhrer A., Imamoglu A., Loss D., Morpurgo A., Salis G., Schönenberger C., Warburton R., Wegscheider W., Zumbühl D.

#### Section 2: Entanglement and strong correlation in few and many quantum systems

##### Atoms and molecules in lattices: New approaches to quantum simulation

Esslinger T., Blatter J., Bruder C., Home J., Merkt F., Troyer M., Willitsch S.

#### Transfer project (strong Swiss franc package)

##### Cryptographic Randomness Extractor (CREx)

Renner R., Gisin N., Troyer M., Stucki D. (ID Quantique IDQ)

### Heads of Research Groups

Blatter Johann, Prof.  
Bölcskei Helmut, Prof.  
Bruder Christoph, Prof.  
Büttiker Markus, Prof.  
Christandl Matthias, Prof.  
Degen Christian, Prof.  
Ensslin Klaus, Prof.  
Esslinger Tilman, Prof.  
Faist Jérôme, Prof.  
Fontcuberta i Morral Anna, Prof.  
Fuhrer Andreas, Dr.  
Gisin Nicolas, Prof.  
Home Jonathan, Prof.  
Ihn Thomas, Prof.  
Imamoglu Atac, Prof.  
Kippenberg Tobias, Prof.  
Loss Daniel, Prof.  
Maletinsky Patrick, Prof.  
Merkt Frédéric, Prof.

Institut für Theoretische Physik, ETH Zürich  
Institut für Kommunikationstechnik, ETH Zürich  
Departement Physik, Universität Basel  
Département de Physique Théorique, Université de Genève  
Institut für Theoretische Physik, ETH Zürich  
Laboratorium für Festkörperphysik, ETH Zürich  
Laboratorium für Festkörperphysik, ETH Zürich  
Institut für Quantenelektronik, ETH Zürich  
Institut für Quantenelektronik, ETH Zürich  
Institut des Matériaux, EPF Lausanne  
IBM Research Laboratory, Rüschlikon  
GAP-Quantique, Université de Genève  
Institut für Quantenelektronik, ETH Zürich  
Laboratorium für Festkörperphysik, ETH Zürich  
Institut für Quantenelektronik, ETH Zürich  
Laboratoire de photonique et mesures quantiques, EPF Lausanne  
Departement Physik, Universität Basel  
Departement Physik, Universität Basel  
Laboratorium für Physikalische Chemie, ETH Zürich

#### Fractional quantum Hall states for topological quantum information processing

Wegscheider W., Ensslin K., Ihn T., Imamoglu A., Loss D., Renner R., Troyer M., Zumbühl D.

#### Section 3: Hybrid quantum systems

##### Hybrid quantum systems using microwave frequency on-chip resonators as a coupling bus

Wallraff A., Degen C., Ensslin K., Ihn T., Imamoglu A., Loss D., Merkt F., Treutlein P., Wood V.

##### Quantum repeaters for quantum communications

Gisin N., Bölskei H., Christandl M., Renner R., Wolf S., Zbinden H.

### Home Institutions

ETH Zurich, University of Basel

### Start of the NCCR

January 1, 2011

### NCCR Management

#### Director

Ensslin Klaus, Prof.  
+41 (0) 44 633 22 09  
ensslin@phys.ethz.ch

#### Deputy Director

Esslinger Tilman, Prof.  
+41 (0) 44 633 23 40  
esslinger@phys.ethz.ch

#### Co-Director (Uni BS)

Warburton Richard, Prof.  
+41 (0) 61 267 35 60  
richard.warburton@unibas.ch

#### Coordinator

Blatter Ilona, Dr.  
+41 (0) 44 633 36 06  
ilona.blatter@phys.ethz.ch

#### Knowledge and Technology Transfer

Gisin Nicolas, Prof.  
+41 22 379 65 97  
Nicolas.Gisin@unige.ch  
Rössler Johanna, Dr.  
+41 44 633 23 00  
jroessler@phys.ethz.ch

#### Education and Training

Warburton Richard, Prof.  
+41 61 267 35 60  
richard.warburton@unibas.ch

#### Advancement of Women

Fontcuberta i Morral Anna, Prof.  
+41 21 693 73 94  
anna.fontcuberta-morral@epfl.ch  
Wood Vanessa, Prof.  
+41 44 632 66 54  
wood@iis.ee.ethz.ch

#### Communication

Esslinger Tilman, Prof.  
+41 44 633 23 40  
esslinger@phys.ethz.ch

#### Finances

Künzel Sandra  
+41 44 633 23 00  
kuenzels@phys.ethz.ch

### Address

ETH Zurich, NCCR QSIT  
Laboratory for Solid State Physics,  
HPF E 3 (K. Ensslin)  
or HPF E 17 (I. Blatter)  
Otto-Stern-Weg 1, 8093 Zurich  
+ 41 (0) 44 633 63 06  
fax: +41 (0) 44 633 11 46  
ilona.blatter@phys.ethz.ch

### Web Address

www.nccr-qsit.ethz.ch

## Key collaborations with third parties

### Academia

- DARPA programs ORCHID / QUEST
- Département de Physique, Université de Sherbrooke, Québec, CA
- Department of Applied Physics and Physico-Informatics, Keio University, Yokohama, JP
- Department of Physics, Budapest University of Technology and Economics, Budapest, HU
- ERA-Net CHIST-ERA (participation in projects CQC and DIQIP)
- EU-Marie Curie Actions: Initial Training Networks / Intra-European Fellowships
- EU-FET: Graphene flagship
- EU FET STREP: Nanodesigning of atomic and molecular quantum matter (Name-Quam)
- EU-FP 7-ICT: project SOLID
- Laboratoire de photonique quantique et moléculaire, Ecole Normale Supérieure, Cachan, Paris, FR
- Lehrstuhl für Angewandte Festkörperphysik, Ruhr-Universität Bochum, DE
- Physics Department, Harvard University, Cambridge, US
- Quantum Information Group, University of Leeds, GB
- Instituto de Física Fundamental, Consejo Superior de Investigaciones Científicas, Madrid, ES
- Institut für Theoretische Physik, Philipp Universität Innsbruck, AT
- Institute of NanoScience, Technische Universität Delft, NL
- Istituto di Fotonica e Nanotecnologia-CNR, IFN, CNR, Rom, IT
- Safety and Security Department, Austrian Institute of Technology, Vienna, AT

### Economy / Industry

- ID Quantique, Geneva, CH
- Station Q, Microsoft Research, Santa Barbara, US

Morpurgo Alberto, Prof.  
Poggio Martino, Prof.  
Renner Renato, Prof.  
Salis Gian, Dr.  
Schönenberger Christian, Prof.  
Treutlein Philipp, Prof.  
Troyer Matthias, Prof.  
Wallraff Andreas, Prof.  
Warburton Richard, Prof.  
Wegscheider Werner, Prof.  
Willitsch Stefan, Prof.  
Wolf Stefan, Prof.

Wood Vanessa, Prof.

Zbinden Hugo, Dr.  
Zumbühl Dominik, Prof.

### Associate members

Brunner, Nicolas, Prof.  
Huber, Sebastian, Prof.  
Novotny, Lukas, Prof.  
Savona, Vincenzo, Prof.  
Stefanov, André, Prof.

### Participating Institutions

Universität Basel (9 groups) | Universität Bern (1 group) | Université de Genève (5 groups)  
Università della Svizzera Italiana Lugano (1 group) | EPF Lausanne (3 groups) | ETH Zürich (17 groups)  
IBM Research Laboratory Rüschlikon (2 groups)

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

#### Members of the Review Panel

van der Marel Dirk, Prof. (Chair)  
Aspect Alain, Prof.  
Bauer Guenther, Prof.  
Brune Harald, Prof.  
Cirac Juan Ignacio, Prof.  
Giacobino Elisabeth, Prof.  
Glazman Leonid, Prof.  
Kouwenhoven Leo, Prof.  
Marcus Charles M., Prof.  
Scheer Elke, Prof.  
Scheffold Frank, Prof.  
Schön Gerd, Prof.

#### NCCR Office SNSF

Griessen Thomas

Département de Physique de la Matière Condensée, Université de Genève  
Departement Physik, Universität Basel  
Institut für Theoretische Physik, ETH Zürich  
IBM Research Laboratory, Rüschlikon  
Departement Physik, Universität Basel  
Departement Physik, Universität Basel  
Institut für Theoretische Physik, ETH Zürich  
Laboratorium für Festkörperphysik, ETH Zürich  
Departement Physik, Universität Basel  
Laboratorium für Festkörperphysik, ETH Zürich  
Departement Chemie, Universität Basel  
Facoltà di Lugano, Scienze informatiche, Università della Svizzera italiana  
Department für Elektrotechnik und Informationstechnologie, ETH Zürich  
GAP-Optique, Université de Genève  
Departement Physik, Universität Basel

Département de Physique Théorique, Université de Genève  
Institut für Theoretische Physik, ETH Zürich  
Department für Elektrotechnik und Informationstechnologie, ETH Zürich  
Institut de Physique Théorique, EPF Lausanne  
Institut für Angewandte Physik, Universität Bern

Swiss National Science Foundation, Berne, CH  
Laboratoire Charles Fabry, Institut d'Optique, Palaiseau, FR  
Institut für Halbleiter- und Festkörperphysik, Universität Linz, AT  
Swiss National Science Foundation, Berne, CH  
Max-Planck Institut für Quantenoptik, Garching, DE  
Laboratoire Kastler Brossel, Université Pierre et Marie Curie, Paris, FR  
Department of Physics, Yale University, New Haven, US  
Faculty of Applied Sciences, Delft University of Technology, NL  
Niels Bohr Institute (NBI), University of Copenhagen, DK  
Fachbereich Physik, Universität Konstanz, DE  
Swiss National Science Foundation, Berne, CH  
Institut für Theoretische Festkörperphysik, Karlsruher Institut für Technologie (KIT), DE

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

## Funding

Funding source (CHF)	Year 1	Year 2	Year 3	Year 4	Total	%
SNSF funding <sup>1</sup>	3 600 000	4 500 000	4 700 000	4 500 000	17 300 000	32
Self-funding from home institution <sup>2</sup>	4 005 000	3 505 000	3 505 000	2 505 000	13 520 000	25
Self-funding from University of Basel	1 255 000	1 255 000	1 255 000	1 255 000	5 020 000	9
Self-funding from project participants	5 000 417	1 630 833	6 647 000	4 868 350	18 146 600	34
Third-party funding <sup>3</sup>	0	0	5 050	51 400	56 450	0
<b>Total</b>	<b>13 860 417</b>	<b>10 890 833</b>	<b>16 112 050</b>	<b>13 179 750</b>	<b>54 043 050</b>	<b>100</b>

<sup>1</sup> Included funding of transfer projects (strong Swiss franc package)

<sup>2</sup> Personnel costs, equipment and consumables, not included infrastructure and basic equipment

<sup>3</sup> Not included is CTI funding. Since the start of the NCCR 1 project has been funded by CTI at a total amount of 204 145 CHF (cf. third table).

## Employment

Personnel <sup>4</sup>	Total of Persons	Most Represented Nations										Other Nations
		Female	%	Male	%	CH	DE	IT	FR	CN	GB	
Management	3.0 <sup>5</sup>	6	60	4	40	4	5	0	0	0	1	2
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	42	10	24	32	76	15	13	3	0	1	1	9
Postdoctoral students	28	4	14	24	86	1	8	1	6	4	2	7
Research associates	2	1	50	1	50	0	1	0	0	0	0	1
Senior researchers <sup>6</sup>	41	3	7	38	93	15	11	4	0	0	2	10
Other staff	8	1	13	7	88	4	3	0	0	0	0	1
<b>Total</b>	<b>124.0</b>	<b>25</b>	<b>19</b>	<b>106</b>	<b>81</b>	<b>39</b>	<b>41</b>	<b>8</b>	<b>6</b>	<b>5</b>	<b>6</b>	<b>30</b>

<sup>4</sup> Persons involved in the NCCR in the last reporting period (12 months)

<sup>5</sup> Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training

<sup>6</sup> Including leaders of the individual projects and other organisational units of the NCCR

## Output

Type of output <sup>7</sup>	Total
Publications > 343 Peer-reviewed   10 Not peer-reviewed   7 Anthology articles   4 Books   1 Report	365
Presentations at congresses >	882
Cooperation > 35 Programmes   29 Research institutions   0 Private sector   0 Other	64
Transfer activities > 2 Patents   2 Licenses   0 Start-ups <sup>8</sup>   0 Prototypes/processes   1 CTI-project <sup>9</sup>	5

<sup>7</sup> This table displays the major indicators in knowledge and technology transfer. The output data of NCCRs differ considerably according to disciplinary cultures.

<sup>8</sup> Start-up companies that have been built up or were considerably supported by NCCRs.

<sup>9</sup> Projects funded by the Commission for Technology and Innovation (CTI) that have been initiated by members of NCCRs and are thematically linked to NCCR projects.

## Communication

Video about the network: see [www.nccr-qsit.ethz.ch](http://www.nccr-qsit.ethz.ch) or directly at YouTube: [www.youtube.com/watch?v=u1JFAXhrBFw](https://www.youtube.com/watch?v=u1JFAXhrBFw)

Newsletter: [www.nccr-qsit.ethz.ch/news/newsletter](http://www.nccr-qsit.ethz.ch/news/newsletter) (appears twice a year, 6 issues published).

KTT initiative qstarter: [www.qstarter.ch](http://www.qstarter.ch)

# Intelligent Robots for Improving the Quality of Life

## NCCR Robotics

### Home Institution

EPF Lausanne

### Start of the NCCR

December 1, 2010

### NCCR Management

#### Director

Floreano Dario, Prof.  
+ 41 (0) 21 693 52 30  
dario.floreano@epfl.ch

#### Deputy Director

Pfeifer Rolf, Prof.  
+41 (0) 44 635 43 20  
pfeifer@ifi.uzh.ch

#### Managing Director

Butty Anne-Christine, PhD, MBA  
+41 21 693 10 16  
anne-christine.butty@epfl.ch

#### Knowledge and Technology Transfer

Robert Riener, Prof.  
+41 (0)44 632 66 79  
riener@mavt.ethz.ch

#### Technology Transfer Officer

N.N.  
Education and Training  
Aude Billard, Prof.

#### Advancement of Women

Moser Farnaz  
+41 (0)21 693 19 81  
farnaz.moser@epfl.ch

#### Media Officer

N.N.  
Communication  
Mayra Lirot

+41 (0)21 693 69 39  
mayra.lirot@epfl.ch

#### Administration Officer

Tania Gonin  
+41 (0)21 693 11 92  
Tania.gonin@epfl.ch

### Address

EPFL STI PRN-ROBOTICS  
ELG 231, Station 11  
CH-1015 Lausanne

+41 (0)21 693 69 39  
fax: +41 (0)21 693 58 59  
nccr-robotics@epfl.ch

### Web Address

www.nccr-robotics.ch

The NCCR Robotics encompasses a promising field of engineering which aims at developing new, human-oriented robotic technology. In the near future, intelligent robots will play an important role in improving quality of life. For example, “care robots” will help elderly people to stay in their familiar surroundings longer; “neuroprosthetic” and “exoprosthetic” robots will increase the mobility and autonomy of disabled persons; “educational robots” will support the training of a new generation of scientists and engineers; and “rescue robots” will cooperate with humans for disaster mitigation. In order to progress towards this vision, the NCCR “Robotics” is working towards developing fundamental insights in terms of technology, materials and control mechanisms.

### Research

#### Wearable Scenario

Micera S., Riener R.

#### Soft wearable exoskeleton

Paik J., Courtine G., Micera S.

#### Human centered robotic assistance using motion intention estimation

Riener R., Millán J.

#### Multi-modal haptic feedback for efficient human-machine interaction, sensory rehabilitation, and substitution

Bleuler H., Gassert R., Riener R.

#### Programming by demonstration of fine manipulation

Billard A., Gassert R.

#### Tactile skin for dexterous robotic manipulation

Lacour S., Billard A.

#### Brain-controlled robots and prosthetics

Millán J., Micera S., Pfeifer R.

#### Lower extremity prosthetics

Riener R., Billard A.

#### Assistive walking devices for the elderly

Bleuler H., Gassert R.

#### Variable impedance joints for assistive devices

Gassert R., Bleuler H., Riener R.

#### Implantable neuroprostheses

Courtine G., Lacour St., Micera S., Millán J., Paik J.

#### Towards autonomous in-hand manipulation with humanoid and prosthetic hands

Billard A., Micera S.

#### Active Environment Scenario

Mondada F., Dillenbourg P.

#### Symbiotic human-swarm interaction and cooperation

Gambardella L., Di Caro G., Martinoli A.

#### Evaluative Distributed Adaptation for Multi-Robot Systems

Martinoli A., D'Andrea R.

#### Interaction analysis

Dillenbourg P., Mondada F.

#### Robots for daily life in homes

Mondada F., Martinoli A., Scaramuzza D.

#### Robots for daily life in education

Mondada F., lida F.

#### Rescue Scenario

Ijspeert A., Buchli J.

#### Neuromorphic colour vision

Delbruck T., Scaramuzza D.

#### Sensory-motor tissues

Floreano D., Lacour St., Shea H., Paik J.

#### Passive dynamic locomotion

lida F., Pfeifer R., Siegwart R.

#### Learning locomotion

lida F., Buchli J., Ijspeert A., Siegwart R.

#### Adaptive morphology for multi-modal locomotion

Floreano D., Ijspeert A., Pfeifer R., Shea H.

#### Multirobot navigation of heterogeneous robot teams with on-board sensing

Scaramuzza D., Buchli J., Siegwart R.

#### Amphibious quadruped robot for multimodal locomotion

Ijspeert A., Buchli J.

#### GimBall: A resilient flying robot for semi-autonomous operation in cluttered Environments

Floreano D., Scaramuzza D.



## Heads of Research Groups

Billard Aude, Prof.  
Bleuler Hannes, Prof.  
Buchli Jonas, Prof.  
Courtine Grégoire, Prof.  
Delbruck Tobias, Prof.  
Di Caro Gianni, Dr.  
Dillenbourg Pierre, Prof.  
Floreano Dario, Prof.  
Gambardella Luca, Prof.  
Gassert Roger, Prof.  
Iida Fumiya, Prof.  
Ijspeert Auke, Prof.  
Lacour Stéphanie, Prof.  
Martinoli Alcherio, Prof.  
Micera Silvestro, Prof.  
Millán José, Prof.  
Mondada Francesco, Prof.  
Paik Jamie, Prof.  
Pfeifer Rolf, Prof.  
Riener Robert, Prof.  
Scaramuzza Davide, Prof.  
Shea Herbert, Prof.  
Siegwart Roland, Prof.

Institut de Microtechnique, EPF Lausanne  
Institut de Microtechnique, EPF Lausanne  
Agile and Dexterous Robotics Lab (ADRL), ETH Zürich  
Brain Mind Institute, EPF Lausanne  
Institut für Neuroinformatik, Universität Zürich  
Dalle Molle Institute for Artificial Intelligence, (IDSIA)  
CRAFT, EPF Lausanne  
Institut de Microtechnique, EPF Lausanne  
Dalle Molle Institute for Artificial Intelligence (IDSIA)  
Institut für Robotik und Intelligente Systeme, ETH Zürich  
Institut für Robotik und Intelligente Systeme, ETH Zürich  
Institut interfacultaire de Bioingénierie (STI), EPF Lausanne  
Laboratory for Soft Bioelectronic Interfaces (LSBI), EPF Lausanne  
Institut d'ingénierie de l'environnement, EPF Lausanne  
Neuroprosthetics Centre, EPF Lausanne  
Centre de Neuroprothèses, EPF Lausanne  
Institut de Microtechnique, EPF Lausanne  
Reconfigurable Robotics Laboratory (RRL), EPF Lausanne  
Institut für Informatik, Universität Zürich  
Institut für Robotik und Intelligente Systeme, ETH Zürich  
Artificial Intelligence Lab (AI lab), University of Zurich  
Institute de Microtechnique, EPF Lausanne  
Institut für Robotik und Intelligente Systeme, ETH Zürich

## Participating Institutions

Universität Zürich (3 groups), EPF Lausanne (13 groups), ETH Zürich (5 groups)  
Dalle Molle Institute for Artificial Intelligence IDSIA, Manno (1 group)

## Members of the Advisory Board

Brock Oliver, Prof. Technical University Berlin, DE  
Graimann Bernhard, Dr. Otto Bock Healthcare GmbH, DE  
Johnson Simon CTI-Start-up, CH  
Murphy Robert, Dr. Texas A&M University, USA  
Sandini Giulio, Prof. Italian Institute of Technology, IT  
Wood Robert, Prof. Harvard University, USA

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

### Members of the Review Panel

Rudolf von Rohr Philipp, Prof. (Chair) Swiss National Science Foundation, Berne, CH  
Dillmann Rüdiger, Prof. Institute for Anthropomatics- IAIM, Karlsruhe Institute of Technology (KIT), Karlsruhe, DE  
Eisenbrand Friedrich, Prof. Swiss National Science Foundation, Berne, CH  
Full Robert J., Prof. Department of Integrative Biology, University of California, Berkeley, US  
Hägele Martin, Dr. Fraunhofer- Institut für Produktionstechnik und Automatisierung IPA, Stuttgart, DE  
Harwin William, Prof. School of Systems Engineering, University of Reading, UK  
Parker Lynne E., Prof. Department of Electrical Engineering and Computer Science, The University of Tennessee, US  
Reinkensmeyer David J., Prof. Department of Mechanical and Aerospace Engineering, University of California Irvine, US  
Winfield Alan, Prof. Faculty of Environment and Technology, UWE Bristol, UK

### NCCR Office SNSF

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

## Key collaborations with third parties

### Academia

- ARTORG Center, Gerontechnology and Rehabilitation, University of Bern, CH
- Autonomous Motion Department, Max Planck Institute for Intelligent Systems, Tübingen, DE
- Brain-Body Dynamics Lab, University of Southern California, Los Angeles, US
- Center of BioMicrosystems, Korea Institute of Science and Technology KIST, Seoul, KR
- Curved Artificial Compound Eye, CURVACE (EU-FP7)
- Delft Biorobotics Lab, TU Delft; NL
- Dynamic legged systems Lab, Advanced Italian Institute of Technology, Genova, IT
- ECAL lab, École nationale supérieure de création industrielle (ENSCI), Paris, FR
- IDEA League (ETH Zurich, TU Delft, RWTH Aachen, ParisTech)
- NEUWalk (EU-FP7)
- Nicoletis Laboratory, Duke University, Durham, US
- Planning Optimization and Simulation for Robotics Lab, George Washington University, Washington DC, US
- Service de Gériatrie, Centre Hospitalier Universitaire Vaudois CHUV, Lausanne, CH
- Spinal Cord Injury Center, University Hospital Balgrist, Zürich, CH

### Economy / Other

- Association de la Suisse Romande et Italienne contre les Myopathies, ASRIM, Yverdon, CH
- Clinique romande de réadaptation CRR, Schweizerische Unfallversicherungsanstalt SUVA, Sion CH
- Hocoma AG, Volketswil, CH
- inilabs GmbH, Zurich, CH
- Mobsya Association, Lausanne, CH
- Zürcher Höhenklinik Wald, Wald, CH

# Intelligent Robots for Improving the Quality of Life

## NCCR Robotics

### Funding

Funding source (CHF)	Year 1	Year 2	Year 3	Year 4	Total	%
SNSF funding	2 375 000	3 705 000	3 705 000	3 515 000	13 300 000	44
Self-funding from home institution <sup>1</sup>	641 416	1 275 131	2 387 232	1 705 671	6 009 450	20
Self-funding from project participants	2 436 720	2 429 019	2 457 926	3 470 582	10 794 247	36
Third-party funding <sup>2</sup>	0	40 360	140 106	71 250	251 716	1
<b>Total</b>	<b>5 453 136</b>	<b>7 449 510</b>	<b>8 690 264</b>	<b>8 762 503</b>	<b>30 355 413</b>	<b>100</b>

<sup>1</sup> Personnel costs, equipment and consumables, not included infrastructure and basic equipment

<sup>2</sup> Not included is CTI funding. Since the start of the NCCR 2 projects have been funded by CTI at a total amount of 2.5 million CHF (cf. table Output).

### Employment

Personnel <sup>3</sup>	Total of Persons	Most Represented Nations										
		Female	%	Male	%	CH	IT	FR	US	DE	CN	Other Nations
Management	3.5 <sup>4</sup>	5	56	4	44	6	1	3	0	0	0	1
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	54	9	17	45	83	21	5	3	3	3	4	19
Postdoctoral students	19	2	11	16	89	3	1	1	2	2	0	9
Research associates	8	0	0	8	100	2	1	1	1	1	0	2
Senior researchers <sup>5</sup>	31	3	10	28	90	9	5	2	4	2	1	8
Other staff	31	19	63	11	37	21	0	1	1	2	1	5
<b>Total</b>	<b>146.5</b>	<b>38</b>	<b>25</b>	<b>112</b>	<b>75</b>	<b>62</b>	<b>13</b>	<b>11</b>	<b>11</b>	<b>10</b>	<b>6</b>	<b>44</b>

<sup>3</sup> Persons involved in the NCCR in the last reporting period (12 months)

<sup>4</sup> Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training

<sup>5</sup> Including leaders of the individual projects and other organisational units of the NCCR

### Output

Type of output <sup>6</sup>	Total
Publications > 184 Peer-reviewed   12 Not peer-reviewed   9 Anthology articles   8 Books   13 Reports	226
Presentations at congresses >	337
Cooperation > 8 Programmes   52 Research institutions   9 Private sector   9 Other	78
Transfer activities > 8 Patents   3 Licenses   4 Start-ups <sup>7</sup>   16 Prototypes/processes   2 CTI-projects <sup>8</sup>	33

<sup>6</sup> This table displays the major indicators in knowledge and technology transfer. The output data of NCCRs differ considerably according to disciplinary cultures.

<sup>7</sup> Start-up companies that have been built up or were considerably supported by NCCRs.

<sup>8</sup> Projects funded by the Commission for Technology and Innovation (CTI) that have been initiated by members of NCCRs and are thematically linked to NCCR projects.

### Communication

Brochure „Intelligent robots for improving the quality of life“:

[www.nccr-robotics.ch/files/content/sites/nccrrobotics\\_neutre/files/HomePage/depliant\\_gp\\_en.pdf](http://www.nccr-robotics.ch/files/content/sites/nccrrobotics_neutre/files/HomePage/depliant_gp_en.pdf)

NCCR Robotics video channel: accessible on the website [www.nccr-robotics.ch](http://www.nccr-robotics.ch)

Robotics Festival, EPF Lausanne

# The synaptic bases of mental diseases

## NCCR SYNAPSY

The aim of the NCCR “SYNAPSY” is to develop an ambitious translational programme linking neuroscience to psychiatry with the aim to uncover the pathogenetic neurobiological mechanisms underlying mental and cognitive disorders. This will be achieved by bringing together a group of internationally recognized basic neuroscientists active in cutting-edge research relevant to higher brain functions with research-oriented academic psychiatrists. In addition to the expected scientific outcomes, this NCCR will have an important clinical and societal impact: based on the understanding of the biological mechanisms underlying mental disorders, one can expect the development of novel preventive and therapeutic approaches which ultimately will improve the quality of life of patients. It will also contribute to the emergence of a new generation of clinical psychiatrists with a strong neuroscientific background.

### Research

#### Axis 1: Gene-mediated developmental psychiatric disorders

**Morpho-functional defects in 22q11 DS**  
Eliez S., Blanke O., Michel C.

**Genome sequencing in 22q11 and schizophrenic patients**  
Antonarakis S.

**Development and function of excitatory and inhibitory networks in a 22q11 mouse model**  
Caroni P., Carleton A., Muller D.

**Astrocyte function in the 22q11 mouse model**  
Bezzi P.

**Biomarkers of first episode psychosis**  
Conus P., Clarke S., Do K., Gruetter R., Murray M.

**Synaptic defects in mouse models of autism**  
Scheiffele P., Markram H., Schneggenburger R.

#### KTT projects

**GABA-B receptor subtypes as therapeutic targets for mental health disorders**  
Bettler B.

**Influence of genetic polymorphisms on body mass index and fat mass in patients with psychotropic treatments**  
Cardinaux J-R., Eap C.

**Endophenotypes of schizophrenia**  
Herzog M.

#### Axis 2: Stress and experience-dependent psychopathology

**Early-life stress cohort**  
Ansermet F., Schechter D.

**Rodent models of early-life stress**  
Sandi C., Dayer A.

**High risk mood disorders cohort**  
Preisig M., Aubry J-M., Marquet P.

**Glial plasticity**  
Magistretti P., Volterra A.

**Neuromodulatory circuits**  
Lüscher C., Holtmaat A., Lüthi A., Petersen C.

### Home Institutions

EPF Lausanne,  
University of Lausanne,  
University of Geneva

### Start of NCCR

October 1, 2010

### NCCR Management

*Director (EPFL, UNIL CHUV)*  
Magistretti Pierre, Prof.  
+41 (0) 21 693 95 02  
pierre.magistretti@epfl.ch

*Co-Director (Uni GE)*  
Muller Dominique, Prof.  
+41 (0) 22 379 54 34  
dominique.muller@unige.ch

*Manager*  
Roth Béatrice, Dr.  
+41 (0) 21 693 72 44  
beatrice.roth@epfl.ch

*Co-Manager*  
Grenningloh Gabriele, Dr.  
+41 (0) 21 693 96 08  
gabriele.grenningloh@epfl.ch

*Assistant manager*  
Gaëlle Rochat, Mrs.  
+41 (0) 21 693 03 32  
gaelle.rochat@epfl.ch

*Knowledge and Technology Transfer*  
Sylvain Lengacher, Dr.  
+41 (0) 21 693 16 64  
sylvain.lengacher@epfl.ch

*Education*  
Roth Béatrice, Dr.  
beatrice.roth@epfl.ch

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

*Accountant*  
Valérie le Dréau, Mrs.  
+41 (0) 21 693 61 78  
valerie.ledreau@epfl.ch

### Address

NCCR-SYNAPSY  
EPFL/SV/BMI  
Station 19  
1015 Lausanne

+41 (0) 21 693 03 32  
Fax : +41 (0) 21 693 18 97  
synapsy@epfl.ch

### Web Address

[www.nccr-synapsy.ch](http://www.nccr-synapsy.ch)

## Key collaborations with third parties

### Academia

- Clinic for affective disorders and general psychiatry, University Hospital Zurich, CH
- Department of Pharmacology, University of North Carolina School of Medicine, Chapel Hill, US
- Department of Psychiatry, University of Bremen, Bremen, DE
- Department of Psychiatry, Charité, Berlin, DE
- Department of Psychiatry, Tbilisi State Medical University, Tbilisi, GA
- EU-FP7 Eurospin Consortium
- EU-FP7 Marie Curie Actions - Initial Training Networks (ITN)
- Genetic Epidemiology Research Branch, National Institute of Mental Health, Bethesda, US
- Institut de la Vision, UPMC Université Paris 06, Paris, FR
- Institute of Immunology, Alexander Fleming Biomedical Sciences Research Center, Vari, GR
- Institute of Physiology, University of Saarland, Homburg, DE
- Medical Image Processing Lab, University of Geneva, CH
- Roche, Basel, CH
- Signal Processing Lab, EPFL, CH
- Wellcome Trust Centre for Neuroimaging, UCL, London, GB

### Economy /Others

- Life Science Communication AG, Küsnacht, CH
- Fondation de Préfargier, Marin-Epagnier, CH

## Heads of Research Groups

Ansermet François, Prof.

Antonarakis Stylianos, Prof.

Aubry Jean- Michel, Prof.

Bettler Bernhard, Prof.

Bezzi Paola, Dr.

Blanke Olaf, Prof.

Cardinaux Jean- René, Dr.

Carleton Alan, Prof.

Caroni Pico, Prof.

Clarke Stephanie, Prof.

Conus Philippe, Prof.

Dayer Alexandre, Prof.

Do Kim, Prof.

Draganski Bogdan, Prof.

Eap Chin, Prof.

Eliez Stephan, Prof.

Frackowiak Richard, Prof.

Gruetter Rolf, Prof.

Herzog Michael, Prof.

Holtmaat Anthony, Prof.

Lüscher Christian, Prof.

Lüthi Andreas, Prof.

Magistretti Pierre, Prof.

Markram Henry, Prof.

Marquet Pierre, Prof.

Michel Christoph, Prof.

Muller Dominique, Prof.

Murray Micah, Prof.

Petersen Carl, Prof.

Preisig Martin, Prof.

Sandi Carmen, Prof.

Schechter Daniel, Dr.

Scheiffele Peter, Prof.

Schneggenburger Ralf, Prof.

Volterra Andrea, Prof.

Service de Psychiatrie de l'Enfant et de l'Adolescent, Hôpitaux Universitaires de Genève  
Département de génétique médicale et de développement, Université de Genève et Hôpitaux Universitaires de Genève  
Service de psychiatrie générale, Programme Bipolaire, Hôpitaux Universitaires de Genève

Institut für Physiologie, Universität Basel

Faculté de biologie et de médecine, Université de Lausanne

Laboratoire de neurosciences cognitives, EPF Lausanne

Département de psychiatrie, Centre de Neurosciences Psychiatriques, Hôpital de Cery, Prilly

Département des Neurosciences Fondamentales, Université de Genève

Friedrich Miescher Institute for Biomedical Research, Universität Basel

Neuropsychologie et neuroréhabilitation, CHUV-UNIL, Lausanne

Service de Psychiatrie Générale, Clinique psychiatrique universitaire, CHUV

Département des Neurosciences Fondamentales, Université de Genève

Unité de recherche sur la schizophrénie CNP, CHUV, Lausanne

Département des neurosciences cliniques, CHUV-UNIL, Lausanne

Département de psychiatrie, Centre de Neurosciences Psychiatriques, Hôpital de Cery, Prilly

Office Médico-Pédagogique, Université de Genève

Département de Neurosciences cliniques, CHUV-UNIL, Lausanne

Laboratoire Leenaards-Jeantet d'imagerie fonctionnelle et métabolique, EPF Lausanne

Laboratoire de psychophysique, EPF Lausanne

Département des Neurosciences Fondamentales, Université de Genève

Département des Neurosciences Fondamentales, Université de Genève

Friedrich Miescher Institute for Biomedical Research, Universität Basel

Brain Mind Institute, EPF Lausanne

Centre de neurosciences psychiatriques, CHUV-UNIL, Lausanne

Blue Brain Project, EPF Lausanne

Neurosciences psychiatriques (PCN), UNIL, Prilly

Département des Neurosciences Fondamentales, Université de Genève

Département des Neurosciences Fondamentales, Université de Genève

Center for Biomedical Imaging, CHUV-UNIL, Lausanne

Laboratoire de traitement sensoriel, EPF Lausanne

Département de psychiatrie, CHUV-Université de Lausanne

Laboratoire de génétique comportementale, EPF Lausanne

Unité de Recherche, Service de Psychiatrie de l'Enfant et de l'Adolescent, Hôpitaux Universitaires de Genève

Neurobiologie, Biozentrum, Universität Basel

Laboratoire de mécanismes synaptiques, EPF Lausanne

Département de biologie cellulaire et de morphologie, Université de Lausanne

## Participating Institutions

Universität Basel / Friedrich-Miescher-Institut (4 groups) | Université de Genève (8 groups)

Université de Lausanne (2 groups) | EPF Lausanne (8 groups)

Centre hospitalier universitaire vaudois (CHUV) (10 groups) | Hôpitaux Universitaires de Genève (HUG) (3 groups)

## Scientific Advisory Board

Hen René, Prof.	Division of Integrative Neuroscience, Columbia University and College of Physicians & Surgeons, New York State Psychiatric Institute, New York, NY
Le Moal Michel, Prof.	Inserm, Université Victor Segalen, Bordeaux
Lyons-Ruth Karlen, Prof.	Director, Biobehavioral Family Studies Lab, Department of Psychiatry, Harvard Medical School, Cambridge, MA
Mayberg Helen S., Prof.	Department of Psychiatry, Emory University School of Medicine, Atlanta, GA
McGorry Patrick, Prof.	Centre for Youth Mental Health, The University of Melbourne, Parkville, VIC, Australia
Ries Merikangas Kathleen, Prof.	Genetic Epidemiology Research Branch, Intramural Research Program, NIMH, Bethesda
Robbins Trevor W., Director, Prof.	Behavioural and Clinical Neuroscience Institute, Head of Dept. of Expt. Psychology, University of Cambridge, UK

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

### Members of the Review Panel

Hottiger Michael, Prof. (Chair)	Swiss National Science Foundation, Berne, CH
Berrettini Wade, Prof.	School of Medicine, University Pennsylvania, US
Chelly Jamel, Prof.	Institut Cochin- Hôpital Cochin, Université Paris Descartes, FR
Coyle Joseph Thomas, Prof.	McLean Hospital Harvard Medical School Affiliate, US
Hensch Takao K., Prof.	Department Molecular and Cellular Biology, Harvard University, US
Joëls Marian, Prof.	Department of Neuroscience and Pharmacology, University Medical Center Utrecht, NL
Kettenmann Helmut, Prof.	Max Delbrück Center for Molecular Medicine (MDC), Berlin, DE
Koob George, Prof.	Department of Neuropharmacology, The Scripps Research Institute, La Jolla, US
Licinio Julio, Prof.	South Australian Health and Medical Research Institute, School of Medicine, Flinders University, AU
Malenka Robert C., Prof.	School of Medicine, Stanford University, US
Mansuy Isabelle, Prof.	Swiss National Science Foundation, Berne, CH
Zeilhofer Hanns Ulrich, Prof.	Swiss National Science Foundation, Berne, CH

### NCCR Office SNSF

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

## Funding

Funding source (CHF)	Year 1	Year 2	Year 3	Year 4	Total	%
SNSF funding	3 610 000	4 560 000	4 655 000	4 655 000	17 480 000	37
Self-funding from home institution <sup>1</sup>	2 375 000	3 225 000	3 225 000	2 225 000	11 050 000	24
Self-funding from University of Lausanne	370 000	500 000	600 000	650 000	2 120 000	5
Self-funding from University of Geneva	320 000	500 000	600 000	650 000	2 070 000	4
Self-funding from project participants	3 120 253	3 430 065	3 699 952	2 217 000	12 467 270	27
Third-party funding	599 300	579 894	372 200	140 000	1 691 394	4
<b>Total</b>	<b>10 394 553</b>	<b>12 794 959</b>	<b>13 152 152</b>	<b>10 537 000</b>	<b>46 878 664</b>	<b>100</b>

<sup>1</sup> Personnel costs, equipment and consumables, not included infrastructure and basic equipment

## Employment

Personnel <sup>2</sup>	Total of Persons	Most Represented Nations										
		Female	%	Male	%	CH	FR	DE	IT	GB	ES	Other Nations
Management	2.5 <sup>3</sup>	5	63	3	38	7	1	1	0	0	0	0
Master students	1	1	100	0	0	0	1	0	0	0	0	0
Doctoral students	20	17	85	3	15	6	1	0	4	2	2	6
Postdoctoral students	26	14	54	12	46	6	6	3	1	0	0	11
Research associates	20	18	90	2	10	10	2	0	2	0	2	4
Senior researchers <sup>4</sup>	74	18	24	56	76	40	9	6	6	4	2	11
Other staff	38	30	79	8	21	20	7	5	1	1	0	4
<b>Total</b>	<b>181.5</b>	<b>103</b>	<b>55</b>	<b>84</b>	<b>45</b>	<b>89</b>	<b>27</b>	<b>15</b>	<b>14</b>	<b>7</b>	<b>6</b>	<b>36</b>

<sup>2</sup> Persons involved in the NCCR in the last reporting period (12 months)

<sup>3</sup> Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training

<sup>4</sup> Including leaders of the individual projects and other organisational units of the NCCR

## Output

Type of output <sup>5</sup>	Total
Publications > 80 Peer-reviewed   13 Not peer-reviewed   14 Anthology articles   8 Books   0 Reports	115
Presentations at congresses >	248
Cooperation > 3 Programmes   14 Research institutions   2 Private sector   1 Other	20
Transfer activities > 1 Patent   0 Licenses   0 Start-ups <sup>6</sup>   0 Prototypes/processes   0 CTI-projects <sup>7</sup>	1

<sup>5</sup> This table displays the major indicators in knowledge and technology transfer. The output data of NCCRs differ considerably according to disciplinary cultures.

<sup>6</sup> Start-up companies that have been built up or were considerably supported by NCCRs.

<sup>7</sup> Projects funded by the Commission for Technology and Innovation (CTI) that have been initiated by members of NCCRs and are thematically linked to NCCR projects.

## Communication

Media & news: [www.nccr-synapsy.ch/medias](http://www.nccr-synapsy.ch/medias)

Presentation leaflet: <http://bit.ly/1bRUxgU>

Synapsy newsletters (3): <http://bit.ly/1dpAMQJ> | <http://bit.ly/1fv982x> | <http://bit.ly/1a0AHz3>

Group poster: <http://bit.ly/11cc6e>

# From transport physiology to identification of therapeutic targets

## NCCR TransCure

The NCCR TransCure focuses on the biology of medically important membrane transporters with the aim to understand and discover innovative therapeutic strategies for the treatment of major human diseases. These proteins play key roles in most physiological processes and their dysfunction contributes to the pathogenesis of major human diseases such as diabetes, hypertension, cardiovascular diseases, cancer, preeclampsia, osteoporosis and neurodegenerative diseases. Transporters represent promising, unexplored pharmaceutical opportunities and the NCCR aims at fostering high quality basic and applied science in this area of research. TransCure's premise is that integration of medicine, structural biology and chemistry is beneficial in accelerating the translational path from "gene to drug".

### Research

#### Transporters as targets for cancer therapy (part A)

##### Glutamate transporters as therapeutic targets (part B)

Hediger M. A.

##### Function, pharmacology and pathophysiology of the TRPC1 channel

Niggli E.

##### Physiology, pharmacology and pathophysiology of the calcium-activated non-selective cation TRPM4 channel

Abriel H.

##### Structure, function and pharmacology of sodium / calcium exchangers (SLC8, SLC24)

Stahlberg H.

##### Novel sodium/hydrogen exchanger NHA2 – a quest for biological function

Fuster D.

##### Structure, function and pharmacology of anoctamin channels, metal ion and vesicular neurotransmitter transporters

Dutzler R.

##### In vivo cancer pharmacology

Charles R.-P.

##### Vesicular neurotransmitter transporters: glutamate and monoamines

Volterra A., Bezzi P.

##### Structure and molecular transport mechanisms of selected solute transporters

Fotiadis D.

##### Urate and glucose transporters

Thorens B.

#### Transporters in pathologies during pregnancy, part A

Surbek D., Baumann M.

#### Transporters in pathologies during pregnancy, part B

Albrecht C.

#### Ligand design for a diverse array of channels and transporters

Reymond J.-L.

#### Ligand development for the vesicular monoamine transporter VMAT2 and the putative endocannabinoid transporter

Altmann K.-H.

#### Development of selective fluorescence – and photoaffinity-labeled ligands for glutamate transporters and TRPV6

Lochner M.

#### Targeting and identification of the endocannabinoid transporter

Gertsch J.

#### Structural and mechanistic studies of lipid/drug transporters and their therapeutic relevance

Locher K.

#### In vitro interaction of drugs with canalicular lipid transporters

Stieger B.

#### Bone targeting

Hofstetter W.

#### ZIP8 and its role in arterial hypertension, hypercholinesterinemia, and cadmium intoxication

Vogt B.

### Home Institution

University of Bern

### Start of the NCCR

November 1, 2010

### NCCR Management

#### Director

Hediger Matthias A., Prof.  
+ 41(0)31 631 41 29  
matthias.hediger@ibmm.unibe.ch

#### Deputy Director

Reymond Jean-Louis, Prof.  
+41 (0)31 631 43 25  
jean-louis.reymond@ioc.unibe.ch

#### Scientific Officer

Weisstanner Martin, Dr.  
+41 (0)31 631 40 95  
martin.weisstanner@ibmm.unibe.ch

#### Finances

Knigge Salis Carsten, Dr.  
+41 (0)31 631 36 22  
carsten.kniggesalis@ibmm.unibe.ch

#### Communications

Reymond Martine, Chem. Eng.  
EPFL, MBA  
+41 (0)31 631 40 95  
martine.reymond@ibmm.unibe.ch

#### Knowledge and Technology Transfer

Reymond Martine, Chem. Eng.  
EPFL, MBA

#### Advancement of Women

Reymond Martine, Chem. Eng.  
EPFL, MBA

#### Education and Training

Niggli Ernst, Prof.  
+41 (0)31 631 87 30  
niggli@pyl.unibe.ch

### Address

NCCR TransCure  
Institute of Biochemistry  
and Molecular Medicine  
University of Bern  
Bühlstrasse 28, 3012 Bern

### Web Address

[www.transcure.org](http://www.transcure.org)

## From transport physiology to identification of therapeutic targets

### NCCR TransCure

### Key collaborations with third parties

#### Academia

- Cellular Neuroscience, Max Delbrück Center for Molecular Medicine, Berlin, DE
- Département de Pathologie, École polytechnique fédérale de Lausanne (EPFL), CH
- Department of Behavioral Sciences, University of Ariel, Ariel, IL
- Department of Biochemistry, University of Cambridge, Cambridge, GB
- Department of Neuroscience, Columbia University, New York, US
- Department of Structural Biology, Free University of Brussels, Brussels, BE
- Department of Surgery & Cancer, Imperial College, London, GB
- Hematology, St. Jude Children's Hospital, Memphis, US
- IFP TransCure, Marie Curie, European Commission/FP7
- Institut du Thorax, Université de Nantes, Nantes, FR
- Institute for Neurodegenerative Diseases, University of California (UCSF), San Francisco, US
- Institute for Research in Biomedicine, University of Barcelona, Barcelona, ES
- Institute of Human Development, University of Manchester, Manchester, GB
- Membrane Research Group, Hungarian Academy of Sciences, Budapest, HU
- Molecular Neurobiology, Massachusetts General Hospital (MGH), Boston, US
- Pharmacology, Universidad Guadalajara, Guadalajara, MX
- Pharmacology and Physiology, University of Medicine and Dentistry of New Jersey, Newark, US

#### Economy / Other

- ARDEA Biosciences, San Diego, US
- Dr. August Wolff GmbH, Bielefeld, DE
- MercaChem Inc., Nijmegen, NL

### Facilities

#### Screening and assay development facility

Hediger M. A.

#### Bioinformatics facility

Anderle P.

#### CardioMet Mouse Metabolic Evaluation Facility (MEF)

Thorens B.

#### Bone and mineral research facility

Hofstetter W.

#### Natural product libraries facility

Gertsch J.

#### Electron crystallography facility

Stahlberg H.

#### Computational biology and solute carrier (SLC) gene table resource

Hediger M. A.

### Heads of Research Groups

[Abriel Hugues, Prof.](#)

[Albrecht Christiane, Prof.](#)

[Altmann Karl-Heinz, Prof](#)

[Anderle Pascale, Dr.](#)

[Baumann Marc, Dr.](#)

[Bezzi Paola, Dr.](#)

[Charles Roch-Philippe, Prof.](#)

[Dutzler Raimund, Prof.](#)

[Fotiadis Dimitrios J., Prof.](#)

[Fuster Daniel G., Dr.](#)

[Gertsch Jürg, Prof.](#)

[Hediger Matthias, Prof.](#)

[Hofstetter Wilhelm, Prof.](#)

[Locher Kaspar, Prof.](#)

[Lochner Martin, Prof.](#)

[Niggli Ernst, Prof.](#)

[Reymond Jean-Louis, Prof.](#)

[Stahlberg Henning, Prof.](#)

[Stieger Bruno, Prof.](#)

[Surbek Daniel, Prof.](#)

[Thorens Bernard, Prof.](#)

[Vogt Bruno, Prof.](#)

[Volterra Andrea, Prof.](#)

[Département Klinische Forschung, Universität Bern](#)

[Institut für Biochemie und Molekulare Medizin, Universität Bern](#)

[Institut für Pharmazeutische Wissenschaften, ETH Zürich](#)

[Institut für Biochemie und Molekulare Medizin, Universität Bern](#)

[Abteilung für Frauenheilkunde, Universitätsspital Bern](#)

[Département de biologie cellulaire et de morphologie, Université de Lausanne](#)

[Institut für Biochemie und Molekulare Medizin, Universität Bern](#)

[Biochemisches Institut, Universität Zürich](#)

[Institut für Biochemie und Molekulare Medizin, Universität Bern](#)

[Institut für Biochemie und Molekulare Medizin, Universität Bern](#)

[Institut für Biochemie und Molekulare Medizin, Universität Bern](#)

[Institut für Biochemie und Molekulare Medizin, Universität Bern](#)

[Institut für Biochemie und Molekulare Medizin, Universität Bern](#)

[Département Klinische Forschung, Universität Bern](#)

[Institut für Molekulare Biologie und Biophysik, ETH Zürich](#)

[Institut für Chemie und Biochemie, Universität Bern](#)

[Institut für Physiologie, Universität Bern](#)

[Institut für Chemie und Biochemie, Universität Bern](#)

[Biozentrum, Universität Basel](#)

[Abteilung für Klinische Pharmakologie und Toxikologie, Universitätsspital Zürich](#)

[Universitätsspital Zürich](#)

[Abteilung für Frauenheilkunde, Universitätsspital Bern](#)

[Center for Integrative Genomics, Université de Lausanne](#)

[Universitätsklinik für Nephrologie, Hypertonie und klinische](#)

[Pharmakologie, Universitätsspital Bern](#)

[Département de biologie cellulaire et de morphologie, Université de Lausanne](#)

[Université de Lausanne](#)

### Participating Institutions

Universität Basel (1 group), Universität Bern (13 groups), Université de Lausanne (3 groups)

Universität Zürich (2 groups), ETH Zürich (2 groups)



## Members of the International Advisory Board

Aguet Michel, Prof. Swiss Institute for Experimental Cancer Research (ISREC), EPFL  
Burrier Robert, Dr. Stemina Biomarker Discovery, Madison, US  
Grütter Markus, Prof. Biochemisches Institut, Universität Zürich

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

### Members of the Review Panel

Fromm Katharina, Prof. (Chair) Swiss National Science Foundation, Berne, CH  
Abagyan Ruben, Prof. School of Pharmacy & Pharmaceutical, Sciences University of California, US  
Alper Seth L., Prof. Renal Division and Molecular and Vascular Medicine Unit, Beth Israel Deaconess, UK  
Beech David, J., Prof. Faculty of Biological Sciences, University of Leeds, UK  
Dehio Christoph, Prof. Swiss National Science Foundation, Berne, CH  
Dougherty Dennis A., Prof. Division of Chemistry and Chemical Engineering, California Institute of Technology, US  
Grzesiek Stephan, Prof. Swiss National Science Foundation, Berne, CH  
Schmitt Lutz, Prof. Institute of Biochemistry, Heinrich Heine University Düsseldorf, DE  
Stilz Hans- Ulrich, Dr. Chemical and Analytical Sciences, Sanofi-Aventis Deutschland GmbH, DE  
van Veen Hendrik, Prof. Department of Pharmacology, University of Cambridge, UK  
Wang Da- Neng, Prof. Skirball Institute of Biomolecular, New York University School of Medicine, US

### NCCR Office SNSF

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

## Funding

Funding source (CHF)	Year 1	Year 2	Year 3	Year 4	Total	%
SNSF funding	3 040 000	3 705 000	3 705 000	3 705 000	14 155 000	45
Self-funding from home institution <sup>1</sup>	2 007 035	776 394	936 530	709 600	4 429 559	14
Self-funding from project participants	2 751 488	3 406 782	3 832 312	2 466 627	12 457 209	40
Third-party funding	81 484	81 744	75 000	20 000	258 228	1
<b>Total</b>	<b>7 880 007</b>	<b>7 969 920</b>	<b>8 548 842</b>	<b>6 901 227</b>	<b>31 299 996</b>	<b>100</b>

<sup>1</sup> Personnel costs, equipment and consumables, not included infrastructure and basic equipment

## Employment

Personnel <sup>2</sup>	Total of Persons	Most Represented Nations										
		Female	%	Male	%	CH	DE	IT	FR	IN	AT	Other Nations
Management	3.7 <sup>3</sup>	2	25	6	75	7	1	0	0	0	0	0
Master students	0	0	0	0	0	0	0	0	0	0	0	0
Doctoral students	26	11	42	15	58	9	1	3	0	3	2	9
Postdoctoral students	38	13	34	25	66	8	4	5	5	2	0	15
Research associates	1	0	0	1	100	1	0	0	0	0	0	0
Senior researchers <sup>4</sup>	29	4	14	25	86	18	3	3	3	0	2	3
Other staff	22	15	68	7	32	16	3	1	0	0	0	3
<b>Total</b>	<b>119.7</b>	<b>45</b>	<b>36</b>	<b>79</b>	<b>64</b>	<b>59</b>	<b>12</b>	<b>12</b>	<b>8</b>	<b>5</b>	<b>4</b>	<b>30</b>

<sup>2</sup> Persons involved in the NCCR in the last reporting period (12 months)

<sup>3</sup> Full-time equivalent, including NCCR-Director and persons in charge of knowledge and technology transfer, and education and training

<sup>4</sup> Including leaders of the individual projects and other organisational units of the NCCR

## Output

Type of output <sup>5</sup>	Total
Publications > 75 Peer-reviewed   4 Not peer-reviewed   3 Anthology articles   0 Books   3 Reports	85
Presentations at congresses >	66
Cooperation > 2 Programmes   47 Research institutions   6 Private sector   0 Other	55
Transfer activities > 0 Patents   0 Licenses   0 Start-ups <sup>6</sup>   0 Prototypes/processes   0 CTI-projects <sup>7</sup>	0

<sup>5</sup> This table displays the major indicators in knowledge and technology transfer. The output data of NCCRs differ considerably according to disciplinary cultures.

<sup>6</sup> Start-up companies that have been built up or were considerably supported by NCCRs.

<sup>7</sup> Projects funded by the Commission for Technology and Innovation (CTI) that have been initiated by members of NCCRs and are thematically linked to NCCR projects.

## Communication

TransCure Translations Newsletter (2 issues): [www.transcure.ch/index.php?id=96&L=0](http://www.transcure.ch/index.php?id=96&L=0)

TransCure Network Brochures (e, g, f): [www.transcure.ch/index.php?id=124&L=0](http://www.transcure.ch/index.php?id=124&L=0)

Newspaper articles and press releases: [www.transcure.ch/index.php?id=6&L=0](http://www.transcure.ch/index.php?id=6&L=0)

BioMedical Transporters Conference Series: [www.bioparadigms.org](http://www.bioparadigms.org)

Genomic Transporter Database – SLC Series: [www.bioparadigms.org](http://www.bioparadigms.org)





# Overview of terminated NCCRs

## 1<sup>st</sup> Call (2001 - 2013)

The 1<sup>st</sup> call for submissions to set up NCCRs was published in January 1999. Priority was given to four areas of research: life sciences, social sciences and humanities, sustainable development and environment, information and communication technologies. The budget was also made available to projects involving promising topics from outside these priority areas. The SNSF assessed 82 pre-proposals and 34 full proposals. The SNSF presented 18 full pro-posals of outstanding merit to the Federal Department of Home Affairs, which made the final selection of 14 NCCRs in December 2000.

All 14 NCCRs that started in 2001 could be granted two extensions of four years each on the basis of encouraging interim evaluations. Hence, they concluded their work in 2013. The data below illustrate the various achievements of the NCCRs (statistic data as at: 11 December 2013). Further details can be found on the website of each NCCR and on the SNSF website [www.nccr.ch](http://www.nccr.ch).

### List of the 14 NCCRs

	NCCR-Director	Home Institution	Web Address
<b>Climate</b> – Climate Variability, Predictability and Climate Risks	Wanner H. (until 2007) Stocker Th.	University of Berne	<a href="http://www.nccr-climate.unibe.ch">www.nccr-climate.unibe.ch</a>
<b>CO-ME</b> – Computer Aided and Image Guided Medical Interventions	Székely G.	ETH Zurich	<a href="http://co-me.ch">co-me.ch</a>
<b>FINRISK</b> – Financial Valuation and Risk Management	Gibson R. (until 2009) Habib M.	University of Zurich	<a href="http://www.nccr-finrisk.ch">www.nccr-finrisk.ch</a>
<b>Genetics</b> – Frontiers in Genetics – Genes, Chromosomes and Development	Duboule D.	University of Geneva	<a href="http://frontiers-in-genetics.org">frontiers-in-genetics.org</a>
<b>IM2</b> – Interactive Multimodal Information Management	Boulevard H.	Idiap Martigny	<a href="http://www.im2.ch">www.im2.ch</a>
<b>MaNEP</b> – Materials with Novel Electronic Properties	Fischer Ø. (until 2013) Renner Ch.	University of Geneva	<a href="http://www.manep.ch">www.manep.ch</a>
<b>MICS</b> – Mobile Information and Communication Systems*	Vetterli M. (until 2004) Aberer K.	EPF Lausanne	<a href="http://www.mics.org">www.mics.org</a>
<b>Molecular Oncology</b> – From Basic Research to Therapeutic Approaches	Aguet M.	EPF Lausanne	<a href="http://www.nccr-oncology.ch">www.nccr-oncology.ch</a>
<b>Nanoscale Science</b> – Impact on Life Sciences, Sustainability, Information and Communication Technologies	Güntherodt H.-J. (until 2006) Schönenberger Ch.	University of Basel	<a href="http://www.nanoscience.ch">www.nanoscience.ch</a>
<b>Neuro</b> – Neural Plasticity and Repair	Möhler H. (until 2005) Schwab M.	University of Zurich	<a href="http://www.nccr-neuro.uzh.ch">www.nccr-neuro.uzh.ch</a>
<b>North-South</b> – Research Partnerships for Mitigating Syndromes of Global Change	Hurni H.	University of Berne	<a href="http://www.north-south.unibe.ch">www.north-south.unibe.ch</a>
<b>Plant Survival</b> – Plant Survival in Natural and Agricultural Ecosystems	Rahier M. (until 2008) Turlings T.	University of Neuchâtel	<a href="http://unine.ch/plantsurvival">unine.ch/plantsurvival</a>
<b>Quantum Photonics</b>	Ilegems M. (until 2005) Deveaud-Plédran B.	EPF Lausanne	<a href="http://nccr-qp.epfl.ch">nccr-qp.epfl.ch</a>
<b>Structural Biology</b> – Molecular Life Sciences: Three Dimensional Structure, Folding and Interactions	Grütter M.	University of Zurich	<a href="http://www.structuralbiology.uzh.ch">www.structuralbiology.uzh.ch</a>

## Overview of terminated NCCRs 1<sup>st</sup> Call (2001 - 2013)

### Funding 2001-2013

Funding source (CHF)	2001-2005	2005-2009	2009-2013	Total	%
Federal contribution	224 058 657	210 000 000	136 037 000**	570 095 657	31
Self-funding Home Institution*	81 908 102	88 606 476	96 676 420	267 190 998	15
Self-funding from project participants	225 257 080	275 835 465	265 229 642	766 322 187	42
Third-party funding	82 596 913	85 198 223	60 205 140	228 000 276	12
<b>Total</b>	<b>613 820 752</b>	<b>659 640 164</b>	<b>558 148 202</b>	<b>1 831 609 118</b>	<b>100</b>

\* including agreed self-funding from partner institution ETHZ (NCCR Neuro, Structural Biology) and University of Lausanne (NCCR Molecular Oncology)

\*\*including 10 Mio. CHF "economic stimulus" and 7.977 Mio. CHF "strong Swiss franc" package

### Knowledge and technology transfer – Output Data

Type of output	Total
Publications > 18 068 Peer-reviewed   2597 Not peer-reviewed   1102 Anthology articles   775 Books   1849 Reports	24 391
Presentations at congresses >	28 041
Cooperation > 609 Programmes   2578 Research institutions   776 Private sector   373 Other	4337
Transfer activities > 341 Patents   74 Licenses   79 Start-ups   581 Prototypes/processes   127 CTI-projects	1202

### Education and Training – Advancement of women

#### Figures of young researchers

Category	Total	Sex			Nationality				
		M	%	F	%	CH	%	Other	%
Doctoral students	3105	2168	70	937	30	1112	36	1993	64
Postdocs	1819	1328	73	491	27	389	21	1430	79

#### First employer after training

Category	Doctoral students (%)	Postdocs (%)
Academic sector	51.3	57.3
Private sector	13.3	14.1
Public sector	3.3	4.4
Other	2.6	2.3
Unknown	10.0	11.9
Training ongoing*	19.5	10.0
<b>Total</b>	<b>100.0</b>	<b>100.0</b>

\* Training not yet finished when the NCCR has ended

The 14 NCCRs also initiated a high number of local or inter-institutional doctoral schools, master courses, curriculae, summer schools, special courses for soft skills, etc. and many measures to support young female researchers.

## Impact on research structures

### Number of professorial positions

New assistant professorships	105
New full professorships	101
Replacement of existing professorships	36
<b>Total</b>	<b>242</b>

The 14 NCCRs also established around 27 technical platforms. In addition, they have led, or will lead, to the creation of 10 new research centers. These centers ensure that the research areas are firmly established at the home or partner institutions and contribute to the national and international visibility of the research. They are:

- Centre for astronomical, physical and mathematical sciences, University of Geneva, NCCR MaNEP, currently being established
- Center for Climate Systems Modeling (C2SM), ETH Zurich, [www.c2sm.ethz.ch](http://www.c2sm.ethz.ch), NCCR Climate
- Centre for Development and Environment (CDE), University of Berne, [www.cde.unibe.ch](http://www.cde.unibe.ch), NCCR North-South
- Centre of Excellence in Chemical Ecology, University of Neuchâtel, NCCR Plant Survival, launch is expected in 2014
- Institute of Genetics and Genomics of Geneva (iGE3), University of Geneva, [www.ige3.unige.ch](http://www.ige3.unige.ch), NCCR Genetics
- Oeschger Centre for Climate Change Research (OCCR), University of Berne, [www.oeschger.unibe.ch/index\\_de.html](http://www.oeschger.unibe.ch/index_de.html), NCCR Climate
- Swiss Cancer Center Lausanne (SCCL), University of Lausanne and ETH Lausanne, cf. news on <http://isrec.epfl.ch> NCCR Molecular Oncology, currently being established
- Swiss Finance Institute (SFI), private foundation, [www.swissfinanceinstitute.ch](http://www.swissfinanceinstitute.ch), NCCR FINRISK
- Swiss Nanoscience Institute (SNI), University of Basel, [www.nanoscience.ch/nccr](http://www.nanoscience.ch/nccr), NCCR Nanoscale Sciences
- Zurich Centre for Molecular Structure and Mechanism (ZCMSM), University of Zurich and ETH Zurich, NCCR Structural Biology, inauguration lies ahead

The NCCR brochure “Guide” is updated every year.  
It can be ordered at the Swiss National Science  
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**Publishing details**

Published and produced by  
Swiss National Science Foundation  
NCCR Office  
Wildhainweg 3  
CH-3001 Berne  
+41 (0)31 308 23 52  
nccr@snf.ch  
www.snf.ch

**Production**

Stefan Bachmann  
Urs Christ  
Thomas Griessen  
Anna-Zalea Zaugg

**Design, layout, typesetting**

Beat Schenk, Berne  
werbcreativ.ch

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