Doktorandenausbildung am Bernstein Center Freiburg

Janina Kirsch

IPID-Konferenz, 13. & 14.10.2011

Bernstein Center Freiburg

ALBERT-LUDWIGS-UNIVERSITÄT FREIBURG

UNIVERSITÄTS KLINIKUM FREIBURG

multichannel systems

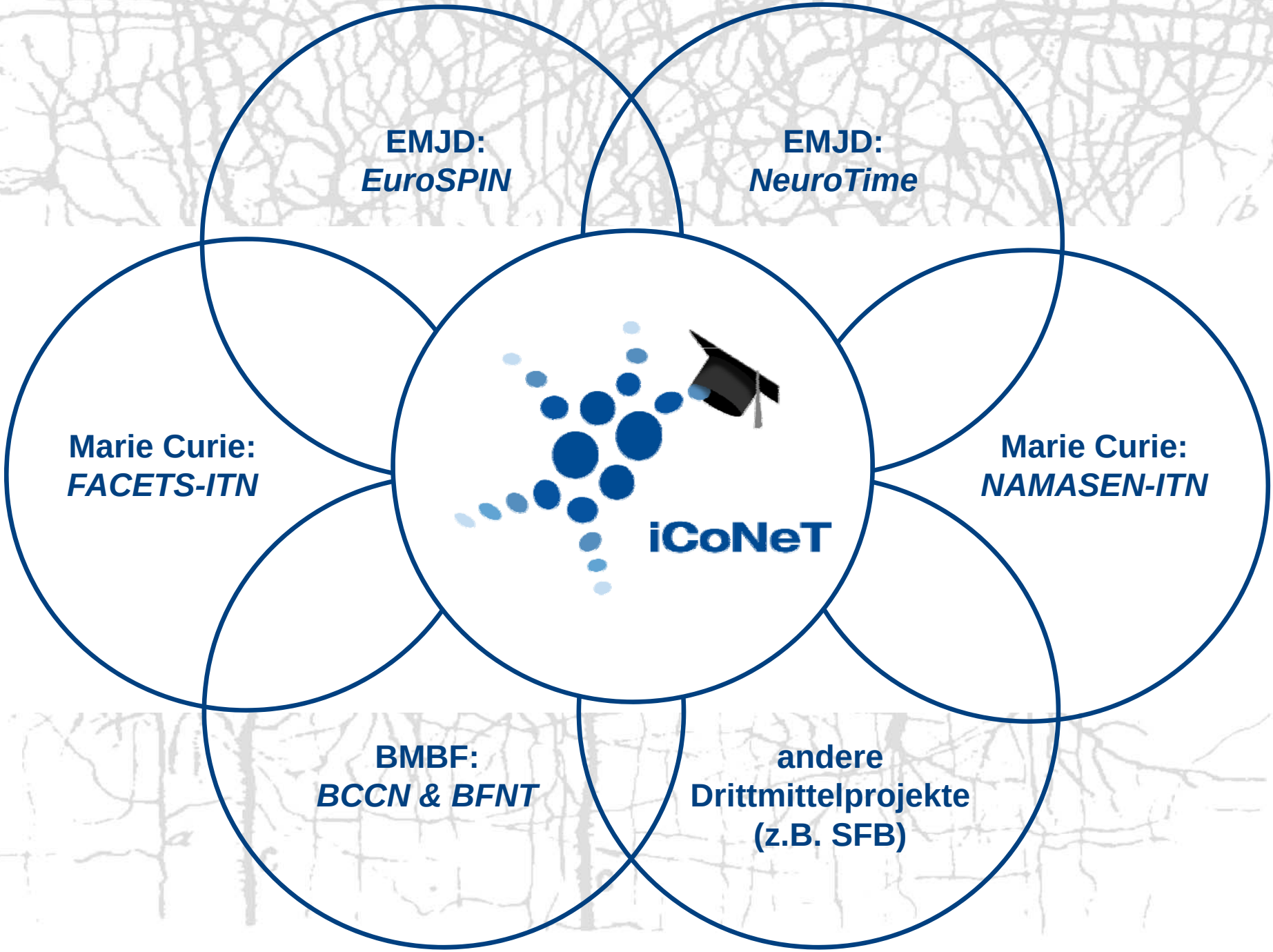
HRI

Bundesministerium für Bildung und Forschung

Teaching & Training Aktivitäten

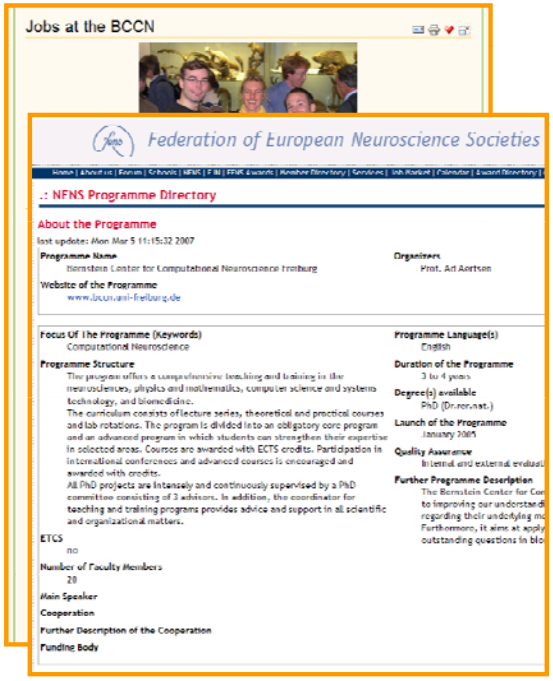
Computational Neuroscience
& Neurotechnology
braucht eine neue Generation
multidisziplinärer Wissenschaftler!

Wie werden die Doktoranden finanziert?



Wie man die hellsten Köpfe bekommt: Rekrutierung über mehrere Kanäle

Internet, Mailinglisten, Graduiertenportale



Printmedien, Wiss. Zeitschriften

ALBERT-LUDWIGS-
UNIVERSITÄT FREIBURG

PhD Positions in Computational Neuroscience (BAT IIa/2)

The Bernstein Center for Computational Neuroscience Freiburg invites applications for PhD positions in Computational Neuroscience. Successful candidates will participate in the international PhD program that the Center is currently establishing. The program offers cutting edge research projects in interdisciplinary teams, together with comprehensive and individually tailored teaching and training.

Applicants should hold a Master's degree or Diploma in Physics, Biology, Computer Science, Mathematics, Engineering or related disciplines. They should have a solid background in a field relevant for Computational Neuroscience and a strong interest in interdisciplinary approaches. For detailed information on the research projects, the PhD program and the application procedure, please consult www.bccn.uni-freiburg.de

Deadline for applications is March 15, 2005.

Please address all correspondence to:

Dr. Simone Cardoso de Oliveira
Bernstein Center for Computational Neuroscience Freiburg
Coordinator for Teaching and Training Programs
Albert-Ludwigs-University Freiburg
Institute of Biology III
Schaenzlestrasse 1
79104 Freiburg, Germany
phd.program@bccn.uni-freiburg.de

W65815R

Ausstellungen auf Konferenzen, Flyer

Persönliche Kontakte Öffentlichkeitsarbeit

Strikte Auslese ist der Schlüssel

Interdisziplinäres Auswahlkomittee bewertet:

- schriftliche Bewerbung (Online-Portal)
- Zeugnisse der Abschlüsse
- 2 Empfehlungsschreiben
- ausgewählte Kandidaten: strukturiertes Interview

Ergebnis:

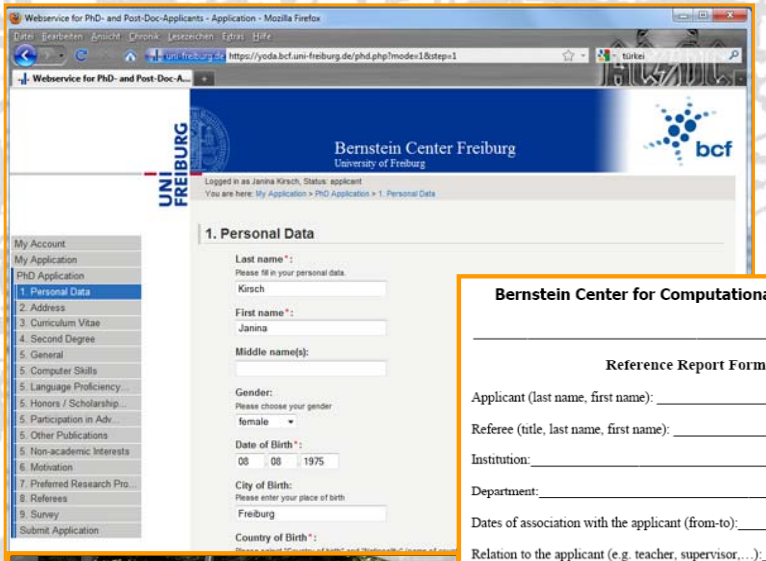
~ 512 Bewerber
307 Bewerbung vollständig

162 Interviews

67 qualifizierte Wissenschaftler

24 Länder **5 Kontinente**

52% Ausländer **27% Frauen**



Bernstein Center for Computational Neuroscience Freiburg

Reference Report Form: Page 1 of 2

Applicant (last name, first name): _____

Referee (title, last name, first name): _____

Institution: _____

Department: _____

Dates of association with the applicant (from-to): _____

Relation to the applicant (e.g. teacher, supervisor,…): _____

Please rate the candidate in comparison to all other students. Please indicate your assessment by a cross in the table below:

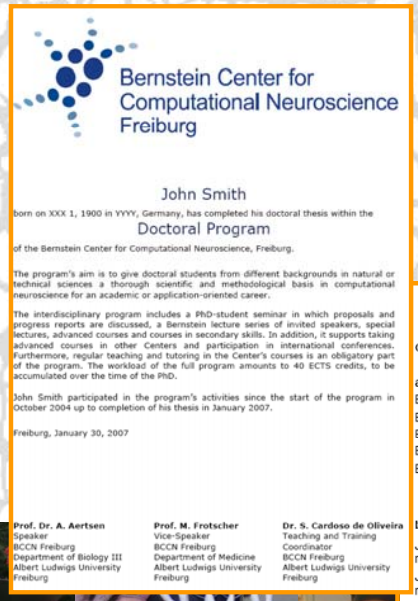
	Excellent (top 5 % of all students)	Very Good (top 10% of all students)	Good (top 30 % of all students)	Average	Poor	Unable to judge
Motivation/ Commitment						
General academic ability						
Neuroscience qualification						
Mathematical skills						
Programming skills						
Experimental skills						
Suitability for independent research						
English proficiency						
Aptitude to study and work in an international environment						
Ability to work in a research team						
Personality (Reliability, Responsibility)						
Overall assessment:						

Das Fundament von iCoNeT

Persönliche Betreuung durch den Koordinator

- alle Lehrveranstaltungen und Thesis auf englisch
- Individuell maßgeschneidertes Kursprogramm
- mündliche und schriftliche Progress Reports
- Evaluation aller Kurse
- 3-köpfiges Thesis Committee, regelmäßige Treffen
- PhD Zertificat & Transkript
- Doktorandensprecher
- Teaching & Training Committee

- 21 Arbeiten bisher abgeschlossen (7 summa cum laude)



Bernstein Center for Computational Neuroscience Freiburg

John Smith

born on XXX 1, 1900 in YYYY, Germany, has completed his doctoral thesis within the

Doctoral Program

of the Bernstein Center for Computational Neuroscience, Freiburg.

The program's aim is to give doctoral students from different backgrounds in natural or technical sciences a thorough scientific and methodological basis in computational neuroscience for an academic or application-oriented career.

The interdisciplinary program includes a PhD-student seminar in which proposals and progress reports are discussed, a Bernstein lecture series of invited speakers, special lectures, advanced courses and courses in secondary skills. In addition, it supports taking advanced courses in other Centers and participation in international conferences. Furthermore, regular teaching and tutoring in the Center's courses is an obligatory part of the program. The workload of the full program amounts to 40 ECTS credits, to be accumulated over the time of the PhD.

John Smith participated in the program's activities since the start of the program in October 2004 up to completion of his thesis in January 2007.

Freiburg, January 30, 2007

Prof. Dr. A. Aertsen	Prof. M. Frotscher	Dr. S. Cardoso de Oliveira
Speaker	Vice-Speaker	Teaching and Training Coordinator
BCCN Freiburg	BCCN Freiburg	BCCN Freiburg
Department of Biology III	Department of Medicine	Albert Ludwigs University Freiburg
Albert Ludwigs University Freiburg	Albert Ludwigs University Freiburg	

bccn freiburg

Official Transcript

for doctoral studies within the Bernstein Center for Computational Neuroscience, Freiburg, of

John Smith

born on XXX 1, 1900 in YYY, Germany

1. Doctoral Research Project:

Doctoral Thesis entitled:

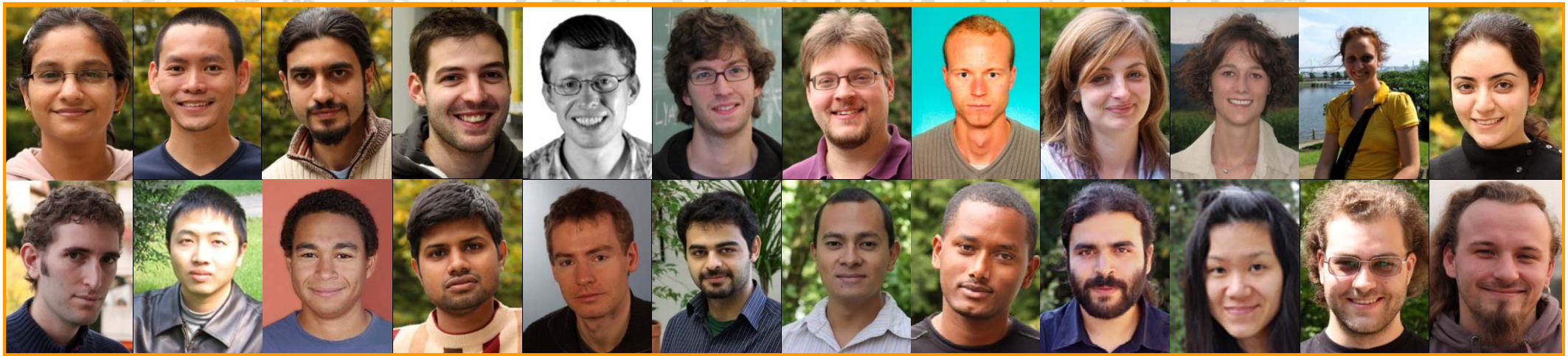
'Title'

2. Evaluation of Doctoral Thesis / Thesis Defense:

Doctoral Thesis (Dissertation, Grade see separate Diploma):

Doctoral Transcript for: John Smith

Curricular Activities	Semester	Credits
a. Lectures		
BCCN Lecture series (BCCN Seminar)	WS 04/05	1
BCCN Lecture series (BCCN Seminar)	SS 05	1
BCCN Lecture series (BCCN Seminar)	WS 05/06	1
BCCN Lecture series (BCCN Seminar)	SS 06	1
BCCN Lecture series (BCCN Seminar)	WS 06/07	1
b. Scientific Colloquia and Seminars		
Journal Club: Current Topics in the theoretical and experimental Neurosciences	WS 04/05	1
Journal Club: Current Topics in the theoretical and experimental Neurosciences	SS 05	1
Journal Club: Current Topics in the theoretical and experimental Neurosciences	WS 05/06	1
Journal Club: Current Topics in the theoretical and experimental Neurosciences	SS 06	1
Journal Club: Current Topics in the theoretical and experimental Neurosciences	WS 06/07	1



Unser Fokus: Maßgeschneidertes Kursprogramm

Ph.D. Program Computational Neuroscience - Complete Curriculum

Core Program

Lectures

Title	Faculty	ECTS
Computational Neuroscience I: Models of neurons and networks	Rotter et al.	3
Computational Neuroscience II: Data analysis	Rotter et al.	3
Neurobiology I: Membranes, Neurons & the Brain	Aertsen	2
Neurobiology II: Systems' Neurophysiology	Aertsen, Ball, Boucsein, Egert, Kirsch, Roux	2
Neurobiology III: Measurement and Models (with exercises)	Rotter	4
Neurobiology IV: Systems and Signals (with exercises)	Aertsen	3
From Mathematical Biology to System's Biology (with excercises)	Timmer	6
Biology for Engineers	Egert	2

Courses

Title	Faculty	ECTS
Measurement and Analysis of neuronal Activity - a technical Introduction	Boucsein, Egert	4
Neurophysiology in brain slices	Aertsen, Boucsein, Egert, Staiger	6
Non-invasive measurements and analysis in neurobiology	Ball, Mehring	4
Scientific Programming - an Introduction to Python / Scientific Python	Helias	4
The human brain: anatomy and function	Kirsch, N.N.	2
Secondary Skill Courses	external invited teachers	1

Seminars

Title	Faculty	ECTS
BCCN-PhD-Postdoc Seminar	external speakers, all students, Postdocs & PIs	1
Journal clubs	all students, Postdocs & PIs	1
Yearly retreat (hut seminar)	all students, Postdocs & PIs	n/a
Yearly national BCCN student Symposium	all students	n/a

Advanced Program

Lectures

Title	Faculty	ECTS
Neurophysiology (in german)	Jonas	2
Nonlinear Dynamics (with exercises)	Timmer	6
Time series analysis I (with exercises)	Timmer	6
Time series analysis II (with exercises)	Timmer	4
Numerical Methods (with exercises)	Timmer	6
Machine Learning (with tutorials)	Rietmiller	6
Bioinformatics (with exercises)	Backofen	6

Additionally: Other relevant lectures offered at the University of Freiburg or any other University may be recognized for credits after prior consultation with the Teaching & Training Coordinator.

Courses

Title	Faculty	ECTS
Data mining: The practice	Karwath	2

Additionally: Other relevant courses offered at the University of Freiburg or any other University may be recognized for credits after prior consultation with the Teaching & Training Coordinator. Especially encouraged is participation in International Advanced Courses or Summer Schools.

Summer Schools

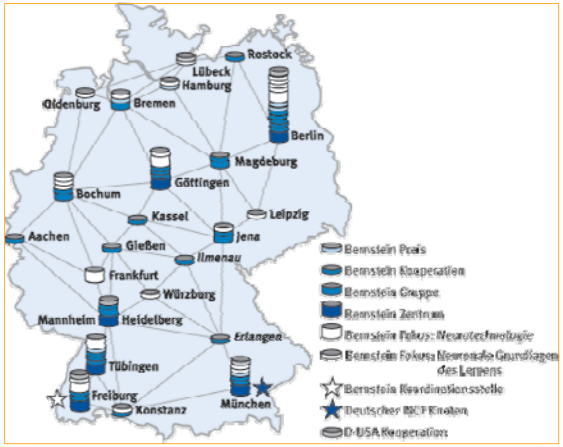
Title	Faculty	ECTS
Neuroschool	FIAS (Frankfurt Institute for Advanced Studies)	2 per week
Methods in Computational Neuroscience	Marine Biological Laboratory, Woodshole, MA, US	2 per week
Neuroinformatics Summer School	Marine Biological Laboratory, Woodshole, MA, US	2 per week
Advanced Course in Computational Neuroscience	Bernstein Center for Computational Neuroscience, Freiburg	2 per week
Okinawa Computational Neuroscience Course	Okinawa, Japan	2 per week
Ottawa Summer School in Computational Neuroscience	Ottawa, Canada	2 per week
European Synapse Summer School	Bordeaux, France	2 per week
RIKEN BSI Summer School	RIKEN Brain Science Institute, Hirosawa, Wako-Shi, Japan	2 per week
Fall Course on Computational Neuroscience	BCCN Göttingen, Germany	2 per week
Other workshops and summer schools from NENS-Schools		

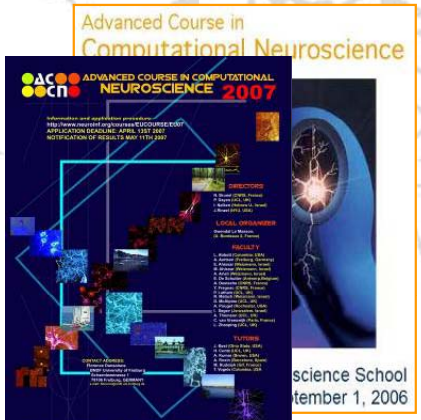
Seminars

Title	Faculty	ECTS
Advanced seminar: neuro- and behavioral physiology	Ball, Mehring, Nawrot	2
Advanced seminar: brain and cognition	Aertsen, Boucsein, Egert, Rotter	2
Advanced seminar: Language and the Brain	Aertsen, Dittmann, Raible, Sippel	2
Advanced seminar: Vision - from Eye to Cognition	Bach, Heinrich, Kornmeier, Moret, Aertsen	2
Advanced seminar: Neurogenetics	Fischbach	2
Advanced seminar: Analysis and Models in Complex Systems	Berg, Busch, Schelter, Timmer	2
Neurowissenschaftliches Kolloquium	Jonas, Frotscher	1

Additionally: any Other relevant seminar offered at the University of Freiburg or any other University may be recognized for credits after prior consultation with the Teaching & Training Coordinator.

Networking – National & International





Austauschvereinbarungen mit Schwesterinstitutionen

- the Graduate Program in Computational Neurobiology at UCSD - the University of California, San Diego, USA (http://neurograd.ucsd.edu)

- the Interdisciplinary Center for Neural Computation (ICNC) at the Hebrew University, Jerusalem, Israel (http://icnc.huji.ac.il)

- the Gonda Brain Research Center (Gonda BRC) at Bar-Ilan University, Ramat-Gan, Israel (www.biu.ac.il/interdis/gondabrain/index_eng.html)

- the Neuroinformatics Doctoral Training Centre (NDTC) at the University of Edinburgh, UK (www.anc.inf.ed.ac.uk/neuroinformatics)

- the Interdisciplinary Program in Neurophysiology (IPN), Department of Physiology, Faculty of Medicine, and Network Biology Research Laboratories, Technion, Haifa, Israel http://nbr.technion.ac.il/

- the Gatsby Computational Neuroscience Unit at University College London (UCL), UK (www.gatsby.ucl.ac.uk)

- the Riken Brain Science Institute in Wako City, Japan (http://www.brain.riken.jp/index.html)

- the Computational Biology Group (CBG), Department of Mathematical Sciences and Technology, Norwegian University of Life Sciences, Ås, Norway (http://bebi.umb.no/)

NENS - Network of European Neuroscience Schools

Bernstein Seminar und Gastwissenschaftler-Program

Bernstein Seminar

Bernstein Seminar 2010

2011
2010
2009
2008
2007
2006
2005

Marlene Bartos (Cellular and Systemic Neurophysiology, Institute for Physiology I, University of Freiburg, Germany)
"Distance-dependent perisomatic inhibition: a new mechanism underlying network synchronization" / Tuesday, December 14, 2010, 17:15 h
Read More...

Michael Okun (Department of Bioengineering, Imperial College London, UK)
"Vm dynamics and Vm-LFP correlation in the awake rat cortex " / Tuesday, October 19, 2010, 17:15 h
Read More...

Jan Schulz (Department of Physiology, University of Bern, Switzerland)
"Visual inputs to the striatum and their role in reinforcement learning" / Monday, September 27, 2010, 17:15 h
Read More...

Frank Ohl (Neuroprostheses, Leibniz Institute for Neurobiology, Center for Learning and Memor Research, Magdeburg, Germany)
"Micro- and mesoscopic aspects of cortical neurodynamics" / Thursday, June 17, 2010, 17:15 h
Read More...

Tim Gollisch (Independent Junior Research Group Visual coding, Max Planck Institute of Neuro Martinsried, Germany)
"Neural Code and Circuitry for Rapid Image Processing in the Retina" / Thursday, June 10, 2010, 17:15 h
Read More...

Tom Tetzlaff (Institute of Mathematical Sciences and Technology (IMT), Norwegian University of Life Sciences (UMB), Ås, Norway)
"Decorrelation of neural-network activity by inhibitory feedback" / Wednesday, June 9, 2010, 17:15 h
Read More...

Stilyan Kalitzin (Division Medical Physics and Technology, Epilepsy Institute of The Netherlands (SEIN) in Heemstede)
"Stimulation Based Paradigm for Assessment of Epileptogenic Potential" / Wednesday, June 2, 2010, 17:15 h
Read More...

Sven Schrader (HONDA Research Institute Europe GmbH, Offenbach, Germany)
"A columnar model of bottom-up and top-down processing in the neocortex" / Thursday, May 20, 2010, 17:15 h
Read More...

Martin Riedmiller (Machine Learning Lab, Department of Computer Science, Albert-Ludwigs University of Freiburg, Germany)
"Machine Learning Methods in Intelligent Software Systems" / Thursday, April 29, 2010, 17:15 h
Read More...

The Bernstein Center Freiburg

Bernstein Seminar

Eberhard E. Fetz

Department of Physiology & Biophysics
University of Washington
Seattle, WA, USA

APPLICATIONS OF IMPLANTABLE RECURRENT BRAIN-COMPUTER INTERFACES

Wednesda
17:15 h

Abstract:
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The Bernstein Center Freiburg

Bernstein Seminar

Carl van Vreeswijk

Neurophysics and Physiology of the Motor System
René Descartes University
CNRS, Paris, France

UNBALANCED NETWORKS

Friday, March 13th, 2009
14:00 h

Lecture Hall (ground floor)
BCCN building

Abstract:
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Host: P

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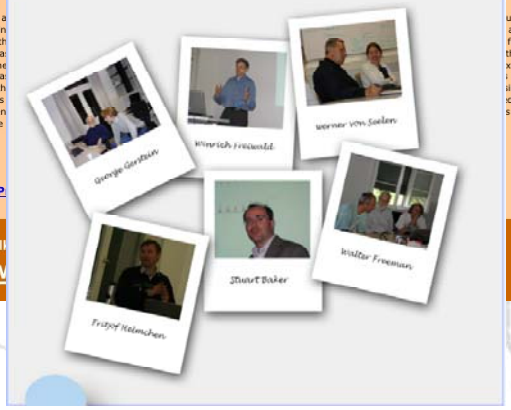
www

Visitors



Visiting Scientists

The BCF invites and supports international researchers in the area of computational neuroscience and neurotechnology for research stays. This is supported by formal agreements of cooperation closed with a number of international academic institutions and programs.

Ayal Levenstain
PhD student
Department of Neurobiology
Tel Aviv University, Israel

October - November 2010
► REPORT

Dr. George Gerstein
Emeritus Professor
Department of Neuroscience
University of Pennsylvania
215 Stemmler Hall
3450 Hamilton Walk
Philadelphia, PA 19104-6074, USA

April 1 - Mai 30, 2010
► REPORT

Dr. Amos Arieli
Department of Neurobiology
Weizmann Institute of Science
Rehovot, Israel

March - May 2009

Dr. Irina Brudaru

March 2009

Dr. Carl van Vreeswijk
Professor
Neurophysics and Physiology of the Motor System
René Descartes University
CNRS UMR 8119
45 rue des Saints Pères
75270 Paris Cedex 06
France

March 03-28, 2009

Dr. Gunnar Grah

April - June 2008

Dr. Thomas Trappenberg
Professor
Faculty of Computer Science
Dalhousie University
Halifax, Nova Scotia
Canada

September 2007 - March 2008

Dr. Almut Schuez
Professor
MPI for Biological Cybernetics
Dept. Logothetis
Spemannstraße 38
72076 Tübingen

November 8-10, 2006

Dr. Hemai Parthasarathy
Managing Editor
PLoS Biology

September 18 - 23, 2006

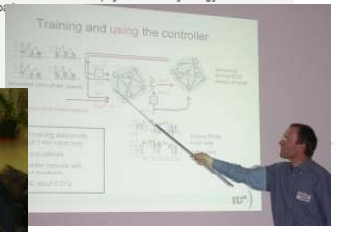
Dr. George Gerstein
Emeritus Professor
Department of Neuroscience
University of Pennsylvania
215 Stemmler Hall
3450 Hamilton Walk
Philadelphia, PA 19104-6074, USA

September 10 - December

Flavio Fröhlich
The Salk Institute for Biological Studies
10010 North Torrey Pines Rd
La Jolla
CA 92037
USA

June 18 - 23, 2003

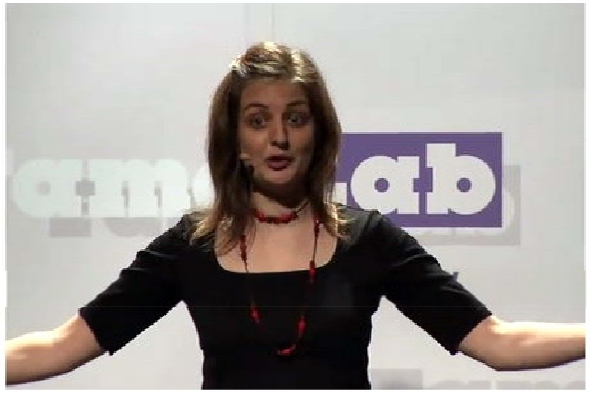
Dr. Carl van Vreeswijk
Professor
Neurophysics and Physiology of the



Preise für unsere Doktoranden

Freiburger Forscherin erfolgreich beim FameLab

Wissenschaft muss nicht trocken sein - das hat vor knapp drei Wochen Sarah Jarvis bewiesen. Die Freiburger Doktorandin des Bernstein Centers präsentierte beim FameLab ihr Forschungsthema und qualifizierte sich für das Deutschlandfinale im April.



Sarah Jarvis, Doktorandin am Bernstein Center der Universität Freiburg, hat es geschafft: Sie belegte beim Vorentscheid des FameLab am 25. Februar in Karlsruhe den **zweiten Platz** und hat sich somit für das Deutschlandfinale am 9. April in Bielefeld qualifiziert.

ELSEVIER

Journal of Neuroscience Methods
Top Cited Article 2008 - 2010

Awarded to:

Pistohl, T., Ball, T., Schulze-Bonhage, A., Aertsen, A., Mehring, C.

For the paper entitled:

"Prediction of arm movement trajectories from ECoG-recordings in humans"

This paper was published in:
Journal of Neuroscience Methods, Volume 167, Issue 1, 2008

Paul Carton
Publishing Director, Elsevier

Over the years, BCCN PhD students and alumni are eagerly sought as tutors in International Summer Schools CNS, e.g. ACCN, Okinawa.

Australian Neuroscience Society

Paxinos Watson Prize 2011

The award is for the most significant neuroscience paper published in the previous calendar year by a full member of the Australian Neuroscience Society

Jan Schulz, Peter Redgrave, Carsten Mehring, Ad Aertsen, Koreen Clements, Jeff R. Wickens and John Reynolds

Short-latency activation of striatal spiny neurons via subcortical visual pathways.
Journal of Neuroscience 29, 6336-6347 (2009)

This award has been made possible by a generous donation to the Society by Professor George Paxinos and Professor Charles Watson, commemorating the new edition of their important key reference text "The Rat Brain in Stereotaxic Coordinates" by Academic Press.

President

Sarah Dunlop

PLoS COMPUTATIONAL BIOLOGY

a peer-reviewed open-access journal published by the Public Library of Science

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View large image

About This Image

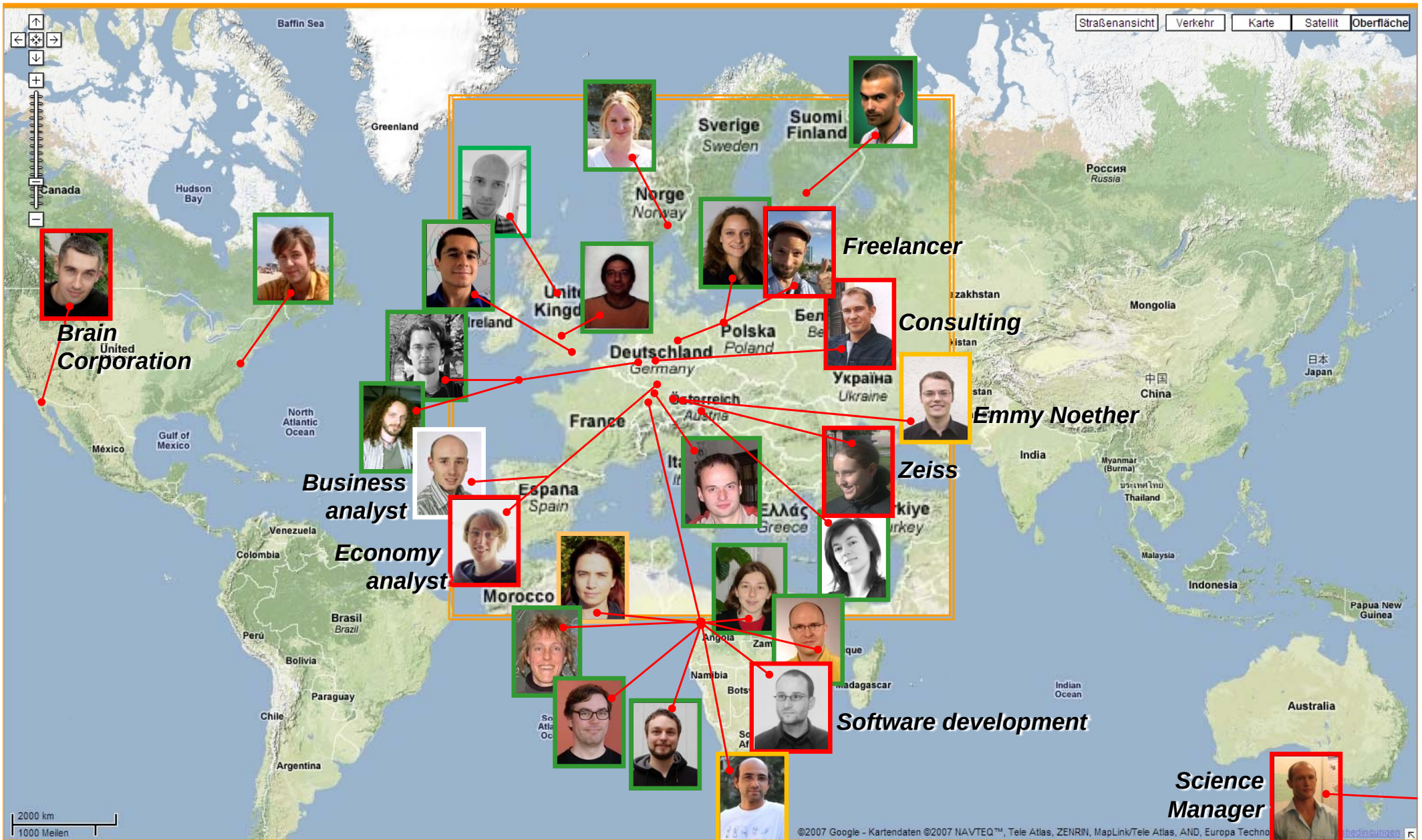
Fear (not)! Fear is a basic survival mechanism shaped during evolution to protect us from dangerous situations. We learn to fear threats, but also to forget them. However, forgetting fear is not mere unlearning, but is in fact masking of fear memories. In this computational study Vlachos et al. (doi:10.1371/journal.pcbi.1000038) propose a mechanism that explains how different neural populations in the basal amygdala may evoke or suppress fear responses depending on the particular environment in which fear-related stimuli appear.

Image Credit: Carlos Toledo and Gunnar Grah, Bernstein Center Freiburg, Germany

BCF PhD student receives stipend, participates in Google's „Summer of Code"

Yury Zaytsev sets out to improve development cycle of NEST simulator

Unsere Alumni



Herausforderungen

- Auch die Betreuer müssen die Strukturierungsmaßnahmen unterstützen und müssen entsprechend „erzogen“ werden.
- viele internationale Doktoranden: Besondere Unterstützung am Anfang (Unterstützung bei Visa, Welcome Pack)
- Stellenfinanzierung aus unterschiedlichen Quellen führt zur Ungleichbehandlung der Doktoranden
- Die verschiedenen Promotionsprogramme haben unterschiedliche Anforderungen
- geprüfte Dozenten für Soft-Skill-Kurse
- Das erste Jahr muss aus Projektmitteln finanziert werden: Stipendien?
- ....

Thank you for your attention!