

Leibniz – DAAD – Fellowships 2006

Fellowship No. 1

- Research Field:** Biomedical Research
- Specification:** Molecular Biology, Cell Biology, Biochemistry, Genetics, Animal models, Bioinformatics
- Leibniz Institute:** Leibniz Institute for Age Research – Fritz Lipmann Institute (FLI), Jena
- Aim:** Ph.D.
- Fellowships:** 2
- Department/Group:** applicable to all research groups (see <http://www.fli-leibniz.de/>)
- Research Area:** The institute focusses predominantly on exploring the molecular mechanisms of age-associated diseases and of the process of ageing. Current topics range from basic research on cellular and organismic senescence (stem cells, genomic stability, signal transduction, genetics, bioinformatics, structural biology) to pathomechanisms of specific diseases associated with ageing (neurodegeneration, protein-folding diseases, cancer, immunology, organ dysfunction).
- Specific Requirements:** Solid background in one of the areas described above.
Excellent communication skills.
Good computer skills (PC or Mac).
- Earliest Start:** April 2006
- Duration :** 12 month periods, with the option of two extensions in case of successful work
- Language:** English or German
- Further Information:** <http://www.fli-leibniz.de/>

Leibniz – DAAD – Fellowships 2006

Fellowship No. 2



- Research Field:** Geophysics
- Specification:** Applied Geophysics
- Leibniz Institute:** Leibniz Institute for Applied Geosciences (GGA Institute), Hannover
- Aim:** Ph. D.
- Fellowships:** 1
- Research Area:** Integrated application of geophysical techniques to problems of groundwater research, e.g. hydrogeophysics, and/or development/optimization of geophysical instrumentation
- Specific Requirements:** The candidate should have a profound knowledge in Applied Geophysics and should preferably dispose of fundamental background knowledge in handling geophysical instruments, interpretation of geophysical data and use of geophysical PC software.
- Earliest Start:** May 2006
- Duration:** 36 months (year-to-year basis)
- Language:** English plus basic knowledge of German
- Further Information:** www.gga-hannover.de

Leibniz – DAAD – Fellowships 2006

Fellowship No. 3



- Research Field:** Microbiology, Biotechnology, Molecular Biology
- Specification:** Physiology of natural product synthesis in streptomycetes using different fermentation profiles
- Leibniz Institute:** Leibniz Institute for Natural Product Research and Infection Biology e.v. - Hans Knöll Institute
- Aim:** Ph. D. Research
- Fellowship:** 1
- Department:** Pilot Plant for Natural Products
- Research Area:** The genes for the synthesis of natural products in streptomycetes are localized in specific gene clusters. The regulation depends mainly on their environmental conditions e.g. availability of different nutritional sources and competing microorganisms. In this respect the natural environment differs strongly from the conditions in biotechnological fermentation processes, which can lead to a partial silencing of interesting gene clusters. The project is directed to the development of feeding profiles to investigate specific physiological conditions for the induction of different gene clusters including technologies for the on-line monitoring of fermentation processes.
- Specific Requirements:** The candidate should have a profound knowledge in microbiology and practical experience in molecular biological and biochemical technologies. Knowledge about the physiology of streptomycetes and their cultivation would be very welcome.
- Earliest Start:** April 2006
- Duration:** 36 months
- Language:** English or German (German language course is possible, 2 months)
- Further Information:** Dr. Uwe Horn, <http://www.hki-jena.de>

Leibniz – DAAD – Fellowships 2006

Fellowship No. 4



- Research Field:** Molecular Biology and/or Biochemistry
- Specification:** Cellular stress
- Leibniz Institute:** Leibniz Institute for Natural Product Research and Infection Biology, HKI, Jena
- Aim:** Ph. D. student
- Fellowships:** 1
- Department/Group:** Cell- and Molecular Biology
- Research Area:** Research in the Department of Cell and Molecular Biology is devoted to the study of cellular stress situations, which arise naturally by a variety of different means, e.g. fungal infection. We have chosen human cells to serve as a model system for the analysis of stress-related host-response reactions. To that end we have set out to adopt and/or develop highly advanced micro- and nanosystems, which allow the simultaneous handling of thousands of samples within sets of different biomolecules under nearly identical experimental conditions. At present we are focussing on the following areas of technology: Chip/Array-Technologies, Parallel Rapid PCR, Protein/protein-interaction technologies.
- Specific Requirements:** The candidate should have a profound knowledge in Molecular Biology and/or Biochemistry. He should preferably dispose of fundamental background knowledge in transcriptomics and/or proteomics and/or interactomics.
- Earliest Start:** As soon as possible
- Duration :** 36 months
- Language:** English or German (German language course is possible, 2 months)
- Further Information:** <http://www.hki-jena.de>

Leibniz – DAAD – Fellowships 2006

Fellowship No. 5



Leibniz-Institut
für Festkörper- und
Werkstoffforschung
Dresden

- Research Field:** Theoretical Solid State Physics
- Specification:** Electronic structure of complex materials
- Leibniz Institute:** Leibniz Institute for Solid State and Materials Research Dresden e.V. (IFW)
- Aim:** Ph.D.
- Fellowships:** 1
- Department/Group:** Institute for Theoretical Solid State Physics in the IFW Dresden
- Research Area:** Density functional based computations of structural energies, lattice modes, magnetic polarization energies, magnetic resonance parameters, spectra, ... Construction and investigation of tight-binding models for multicomponent compounds. The actual task will be agreed upon in account of the applicants interests.
- Specific Requirements:** Good background in Theoretical Solid State Physics (on a MSc level). Good skill in the use of computers, some experience with programming. However, the emphasis is on skill in Physics.
- Earliest Start:** May 2006
- Duration :** 24 months with the option of extension by 12 months in case of successful work
- Language:** Good command of English, German is welcome but not mandatory
- Further Information:** www.ifw-dresden.de/agtheo

Leibniz – DAAD – Fellowships 2006

Fellowship No. 6



- Research Field:** Chemistry, Nano-Sciences
- Specification:** Synthesis and characterisation of nano-composites / nano-surfaces
- Leibniz Institute:** Leibniz-Institut für Neue Materialien gem. GmbH
- Aim:** Ph. D.
- Fellowships:** 1
- Department/Group:**
- Research Area:** The application of chemical methods to nano scaled pure ceramic phases or to composite phases which can be either from the polymer/ceramic or Ceramic/metallic area. The phases have to be synthesized and changed in such a way by chemical methods that they meet requirements for applications. The characterisation of the compounds is of utmost importance.
- Specific Requirements:** The candidate should have a profound knowledge of either basic chemistry or of material sciences. The candidate should be able to work within a group and should have some back-ground in analytical tools especially in the field of nano-dimensions.
- Place:** Saarbrücken
- Earliest Start:** May 2006
- Language:** English or German (German language course is possible)
- Further Information:** www.inm-gmbh.de

Leibniz – DAAD – Fellowships 2006

Fellowship No. 7

INP
Greifswald



- Research Field:** Plasma Physics and Plasma Technology
- Specification:** Study of phenomena in molecular plasmas by optical diagnostic techniques, transfer to industrial applications
- Leibniz Institute:** Institute of Low-Temperature Plasma Physics Greifswald (INP)
- Aim:** Postdoc
- Fellowships:** 1
- Department/Group:** Plasma Diagnostics
- Research Area:** Development and application of state-of-the-art optical diagnostic techniques (e.g. Infrared Absorption, Cavity Ring Down)
Plasma parameters measurements: concentration of molecular species and temperatures
Control of industrial plasma processes
- Specific Requirements:** PhD in Physics or Chemistry. Good skills in spectroscopy, electronics and in the use of computers, experience with project management. Interested to guide small research groups.
- Earliest Start:** September 2005
- Duration :** 1-3 years
- Language:** Good in English, German is welcome but not mandatory
- Further Information:** www.inp-greifswald.de

Leibniz – DAAD – Fellowships 2006

Fellowship No. 8



- Research Field:** Plasma Physics
- Specification:** Kinetics of Transient Molecules in Plasmas
- Leibniz Institute:** Institute of Low-Temperature Plasma Physics Greifswald (INP)
- Aim:** Ph.D.
- Fellowships:** 1
- Department/Group:** Plasma Diagnostics
- Research Area:** Investigation of molecular phenomena in non-equilibrium plasmas by optical diagnostic techniques
Plasma parameters measurements: concentration of molecular species and temperatures
Basic spectroscopy: line strengths, transition dipole moments, rotational constants
The actual task will be agreed upon in account of the applicants interests.
- Specific Requirements:** Good background in Physics (on a MSc level). Good skills in electronics and in the use of computers, some experience with programming.
- Earliest Start:** September 2005
- Duration :** 1-3 years
- Language:** Good in English, German is welcome but not mandatory
- Further Information:** www.inp-greifswald.de

Leibniz – DAAD – Fellowships 2006

Fellowship No. 9



- Research Field:** Plant genetics (Exploitation of genetic diversity and gene mapping)
- Specification:** Marker development for resistance genes
- Leibniz Institute:** Institute of Plant Genetics and Crop Plant Research (IPK),
Leibniz Institute, Gatersleben
- Aim:** Postdoctoral Research
- Fellowships:** 1
- Department/Group:** Cytogenetics/ Gene and Genome Mapping
- Research Area:** **Mapping of spot blotch resistance genes in wheat using microsatellite markers:**
The plant disease spot blotch in wheat (*Triticum aestivum*) caused by the fungal pathogen *Bipolaris sorokiniana* leads to extensive harvest losses. The aim of this work is the mapping of resistance genes against spot blotch with the help of microsatellite markers to identify specific probes for marker assisted breeding.
A total of five segregating mapping populations for spot blotch are available to the applicant. These were derived from crosses between resistant and susceptible wheat varieties.
With the help of “bulked segregant screening” genomic regions in wheat will be identified which contain resistance genes against *Bipolaris sorokiniana*. For this purpose, pools from resistant offspring and from susceptible offspring will be screened with microsatellite markers. After the resistance loci have been located they will be genetically mapped in the mapping populations and appropriate markers for further breeding purposes will be identified.
- Specific Requirements:** The candidate should have profound knowledge in plant genetics and experiences in the field of marker application.
- Earliest Start:** April 2006
- Duration :** 1 year
- Language:** English or German
- Further Information:** <http://www.ipk-gatersleben.de/en/02/04/03/>

Leibniz – DAAD – Fellowships 2006

Fellowship No. 10



- Research Field:** Biology, Evolution, Population Genetics
- Specification:** Genetic mapping of apomixis traits in St. John's wort (*Hypericum perforatum*)
- Leibniz Institute:** Institute of Plant Genetics and Crop Plant Research (IPK), Leibniz Institute, Gatersleben
- Aim:** Postdoctoral Research
- Fellowships:** 1
- Department/Group:** Cytogenetics/ Apomixis
- Research Area:** **Population genetics and evolution of wild apomictic taxa:**
The influence of interspecific hybridization, aneuploidy and polyploidy on apomixis expression in *Hypericum perforatum* is being studied in both wild populations and laboratory crosses. The research tasks include genetic marker (SNP, microsatellite) generation and scoring, followed by statistical analyses of genetic and phenotypic variability in crossing populations.
- Specific Requirements:** The candidate should have good knowledge in high throughput molecular biology methods, including DNA sample preparation, microsatellite amplification using the polymerase chain reaction (PCR), and DNA sequencing (PCR, cloning, sequence alignment and analysis). A large degree of data analysis is required, and thus strong computer knowledge is indispensable. The candidate should furthermore be experienced in population genetics and quantitative genetic analysis
- Earliest Start:** May 2006
- Duration :** 1 year
- Language:** English or German
- Further Information:** <http://www.ipk-gatersleben.de/en/02/04/05/>

Leibniz – DAAD – Fellowships 2006

Fellowship No. 11



- Research Field:** Bioinformatics, Molecular Biological Databases
- Specification:** Development of Java wrappers for the integration of molecular biological databases
- Leibniz Institute:** Institute of Plant Genetics and Crop Plant Research (IPK), Leibniz Institute, Gatersleben
- Aim:** Postdoctoral Research
- Fellowships:** 1
- Department/Group:** Molecular Genetics/ Bioinformatics
- Research Area:** **Bioinformatics - SRS Adapter for DBOra:**
Life Sciences are among those sciences that strongly depend on computer science methods for the modelling, management and analysis of data. The integrative combination of data and computational methods towards knowledge deduction is one key issue in bioinformatics. Nowadays, most biological knowledge is organised and stored in databases. The individual databases must be understood as an interconnected union in order to comprehensively use the entire potential of this data. Following that line, database integration is the key for providing a holistic view on the entire biological knowledge by neutralising database distribution as well as incompatible interfaces and models. This topic is also central to bioinformatics research activities at the *Institute of Plant Genetics and Crop Plant Research (IPK) Gatersleben, Germany*. Accordingly, an open source data integration software, called BioDataSever (<http://biodatasever.sourceforge.net>), is developed in the Bioinformatics group. The goal is to develop and implement a database infrastructure for life science data in plant biotechnology by providing industry standard APIs and query languages like JDBC and SQL. Several research projects already use the BioDataServer to either exploratively browse through distributed databases or to import data into data warehouses. The proof of concept could be demonstrated in several biological and bioinformatics projects, whereas the focus is the application for functional genomics.
The theoretical concept of the BioDataServer is the abstraction from database interfaces and models. Thus, a relational, adapted algebra was introduced. Besides a basic set-oriented data structure, a minimal set of database operations has been defined. Both build the basis for the definition of integrated data schemas that in turn enable the automatic generation of query plans over life science databases. The term database

in our setting covers ASCII flat files, XML files and full-featured Database Management Systems (DBMS). An essential prerequisite for the application of this concept is the homogeneous access to those heterogeneous life science databases. The BioDataServer uses the concepts of subgoals and wrappers, which access each data source via a minimal set of query operations. The provision of these wrappers is currently achieved by a combined approach of manual and semi-automatic generation of adapters. Especially flat file-based data sources, which are the most prominent medium of data exchange, need to be parsed using grammars and eventually vocabulary. Several methods for the generation of flat file parsers exist in bioinformatics and computer science. For example, the very popular "Sequence Retrieval System" (SRS) comprises wrappers for about 150 databases. The application and use of such approaches for wrapping biological data sources is the goal of the proposed scholarship in the Bioinformatics group. It will be enormously profitable for the bioinformatics service as an important resource for biological research at the IPK. Bioinformatics applications of this approach are presented in various publications of the Bioinformatics group.

Specific Requirements: The project's goals require a Bioinformatics Postdoc with special experience in database concepts and technologies; Web-service techniques; biological databases; flat file parsing, grammars; JAVA, C++, Perl programming languages; UNIX operating systems

Earliest Start: April 2006

Duration : 1 year

Language: English or German

Further Information: <http://www.ipk-gatersleben.de/en/02/05/07/>

Leibniz – DAAD – Fellowships 2006

Fellowship No. 12



Ferdinand-Braun-Institut
für Höchstfrequenztechnik

- Research Field:** III/V compound semiconductor devices
- Specification:** (AlGa)N-based transistors and MMICs for microwave applications
- Leibniz Institute:** Ferdinand-Braun-Institut für Höchstfrequenztechnik (FBH)
- Aim:** Ph.D.
- Fellowships:** 1
- Department/Group:** Process Technology / Devices and Circuits
- Research Area:** Design, processing and characterization of nitride based transistors; realization of MMICs; DC and RF Characterization of active and passive devices.
- Specific Requirements:** Good background in Semiconductor Device Physics (on a MSc level) especially in electrical and / or RF devices. Experience in semiconductor processing and / or electrical device characterization (DC and / or RF).
- Earliest Start:** May 2006
- Duration :** 12 months with the option of extension by 12 - 24 months in case of successful work
- Language:** English or German (German language course is possible)
- Further Information:** http://www.fbh-berlin.de/english/about/about_4d.html

Leibniz – DAAD – Fellowships 2006

Fellowship No. 13



Ferdinand-Braun-Institut
für Höchstfrequenztechnik

- Research Field:** Crystal Growth
- Specification:** Epitaxial growth and characterization of AlGaIn layer structures
- Leibniz Institute:** Ferdinand-Braun-Institut (FBH)
- Aim:** Ph.D.
- Fellowships:** 1
- Department/Group:** Materials Technology
- Research Area:** Gas-phase epitaxial growth of GaN-based layers and crystals and characterization of their properties.
- Specific Requirements:** Good background in Solid State Physics and/or materials sciences (on a MSc level). Hands-on experience in crystal growth by MBE, MOVPE or HVPE and/or in semiconductor characterization (X-ray diffraction and/or optical characterization).
- Earliest Start:** May 2006
- Duration :** 12 months with the option of extension by 12 – 24 months in case of successful work
- Language:** English or German
- Further Information:** www.fbh-berlin.de/english/about/about_4c.html