



## Promotion of Young Scientists



## Biomedical research at Ulm University Medicine – Open Access for High School pupils

Every year in spring, Ulm University Medicine opens its doors to high school pupils in their final two years interested in the natural sciences and medicine in order to offer a detailed preview of their biomedical research fields. The major goal is to explain and make more popular the fascinating world of biomedical research and to attract pupils to opt for courses in the Life Sciences at Ulm University. Small groups of pupils visit our laboratories and perform such experiments as the DNA isolation of their own cells, restriction enzyme analyses, gel electrophoresis experiments, cell culture and microscopic analyses, and immunological assays, to name but a few. More than 23 institutes and departments of Ulm University Medicine participate in these pupil days. In addition to experience in the laboratory, we also give to pupils an overview of courses of studies in the Life Sciences at Ulm University and provide a platform to discuss the career opportunities and prospects associated with degrees in these areas.

This successful event started in February 2005 and since that time the number of pupils has steadily increased from 500 in the first year to 850 in 2010. The participating high schools are located in an area which extends from Stuttgart in the north to Memmingen in the south.



## Promotion of Young Scientists

The promotion of young scientists is one of the most important tasks of the Medical Faculty and the University Medical Center. We offer a variety of compatible programs on different educational levels as described below in order to support and actively encourage our junior researchers.

## Training of PhD Students

### International Graduate School in Molecular Medicine Ulm

Speaker: Prof. Dr. Michael Kühl, Institute of Biochemistry and Molecular Biology; [www.uni-ulm.de/mm](http://www.uni-ulm.de/mm)

In February 2006, Ulm University founded the International Graduate School in Molecular Medicine Ulm with the intention of providing high-quality postgraduate training. The Graduate School has been supported by the Excellence Initiative of the German federal and state governments since 2007. The goal of the Graduate School is to introduce doctoral candidates at Ulm University conducting research in the field of biomedicine into a structured postgraduate program. Today, (as of August 2010) the Graduate School supervises around 100 natural science and 30 medical doctoral candidates. The Graduate School is directed by a board which in turn is advised by an international and scientific advisory committee. There are two structured training programs on offer: the *International PhD Program in Molecular Medicine* for doctoral candidates in the natural sciences and the program *Experimental Medicine* for doctoral candidates in medicine.



## The International PhD Program in Molecular Medicine

Speaker: Prof. Dr. Michael Kühn, Institute of Biochemistry and Molecular Biology; [www.uni-ulm.de/mm](http://www.uni-ulm.de/mm)

This English language postgraduate course offers a three-year structured doctorate. The course was accredited in March 2009. The admission regulations stipulate clear criteria for selection: above-average degrees (MSc, state exam); proof of proficiency in English; a presentation before members of the faculty; and individual interviews with supervisors and members of the examination board (PhD committee). During their postgraduate course, doctoral candidates are monitored by a *Thesis Advisory Committee* consisting of three supervisors. Each student's coursework is calculated and accredited according to the *European Credit Transfer and Accumulation System* (ECTS). After having successfully defended their thesis, graduates opt to receive either the international academic title of PhD or the German academic title Dr. rer. nat. The academic title of PhD can be extended in line with the subject area of the doctorate (e.g. PhD in *Neurosciences*). The course is also open to graduates of Human Medicine. The opportunity for graduates in this field to obtain the academic title of Dr. rer. nat. or PhD is a unique feature of the Medical Faculty and the Graduate School at Ulm University. This aspect will continue to make Ulm more attractive in the future and to strengthen its importance on an international level.

## Experimental Medicine

Speaker: Prof. Dr. Thomas Wirth, Institute of Physiological Chemistry;  
[www.uni-ulm.de/einrichtungen/mm/expmedizin.html](http://www.uni-ulm.de/einrichtungen/mm/expmedizin.html)

In 2005, in order to combat deficiencies in the supervision and quality of medical theses, the Medical Faculty implemented the structured training program Experimental Medicine, which was subsequently adopted by the Graduate School in 2009. The requirement for entry is an above-average intermediate examination (part one of the national medical licensing exam). Doctoral candidates must interrupt their studies in medicine for nine months in order to concentrate fully on their experimental work. The Medical Faculty supports this program with 25 stipends yearly (€500 per month over 10 months). Doctoral candidates submit reports on their research work in the program's seminars in addition to giving presentations of up-to-date scientific literature in a Journal Club.



Scientific Meeting of the Graduate School in the Wiblingen Monastery



### **Research Training Group 1041: Molecular Diabetology and Endocrinology in Medicine**

Speaker: Prof. Dr. Bernhard O. Böhm, Department for Internal Medicine I; [www.uni-ulm.de/grk1041](http://www.uni-ulm.de/grk1041)

The German Research Foundation set up the Research Training Group of Molecular Diabetology and Endocrinology in Medicine at Ulm University on July 1, 2004. This is now run under the direction of the International Graduate School in Molecular Medicine Ulm.

The aim of the multi-faculty research training program is to convey theoretical and practical knowledge in the field of molecular diabetology and endocrinology both for students of human medicine and qualified natural scientists. The research training program provides an outstanding platform for advanced training in clinical-experimental medicine with the main emphasis on endocrinology, diabetology and metabolic diseases. This includes a research project carried out under the guidance of a senior scientist.

The research projects carried out in the research training group 1041 include highly relevant problems in the fields of diabetology and endocrinology:

- Chronic hyperglycemia and its vascular complications
- Diabetes as an autoimmune disease
- Fat cell biology and low-grade inflammation

### Further Graduate School Activities

The Graduate School also offers a broad spectrum of *key competence* events (biosafety, good scientific practice, bioethics, project management, patent law, writing scientific texts etc.) and mentoring programs (e.g. M4M, see [www.uni-ulm.de/einrichtungen/zawiw/m4m.html](http://www.uni-ulm.de/einrichtungen/zawiw/m4m.html)). These are open to students from both programs as well as to members of the postgraduate program GRK 1041 *Molecular Diabetology and Endocrinology in Medicine* funded by the German Research Foundation as well as to members of the EU-funded Marie-Curie Research Training Network (*ApopTrain – Cell death: from basic principles to therapeutic application*). Extracurricular activities, such as mobility programs, retreats, interaction with industry together with an international office and a career and social center which, among other things, covers the childcare costs of doctoral candidates, complete the portfolio. One further key area is establishing and developing international contacts. For this reason, the Graduate School has been running a *Summer School in Molecular Medicine* every year since 2007 with regularly changing topics at one of ten leading Chinese universities: the Huazhong University of Science and Technology (HUST) in Wuhan. Following an external review by the DAAD in 2007, the *Summer School* series was granted support and now continues with the help of funds provided by the Excellence Initiative. This means of recruitment has proven to be very successful and several doctoral candidates with Chinese postgraduate scholarships are now engaged in research in the laboratories of the Medical Faculty. Furthermore, joint summer schools, workshops and symposia are being held jointly with the *Graduate School* of the Biocenter Oulu in Finland (e.g. a workshop in mouse genetics took place in 2009). At present, a joint bilateral postgraduate program has been set up with the University of Padua in Italy (double doctorate) where the first doctoral candidates began the program at the start of 2010. A close partnership with the University of North Carolina at Chapel Hill, USA, has also been developed. In 2009 joint retreats took place in Switzerland and in Asheville, North Carolina. In the winter semester of 2009/2010, the first joint doctoral candidates began their research work with the support of the Graduate School.





### **EU Marie Curie Research Training Network ApopTrain; Cell Death: from basic principles to therapeutic application**

Speaker: Prof. Dr. Simone Fulda, Department of Pediatrics and Adolescent Medicine; [www.apoptrain.eu](http://www.apoptrain.eu)

Disturbances in apoptosis programs have been demonstrated in numerous diseases. For example, reduced apoptosis can lead to tumorigenesis and resistance to therapy. The aim of the Marie-Curie Research Training Network *ApopTrain* is to gain new insights into the regulation of cell death processes and to translate these into the development of new and more effective cancer therapies. The research network combines the interdisciplinary expertise of a total of 15 collaborators from 9 European countries with the additional participation of industry. The translation of new findings from basic research into innovative tumor therapies and their marketing from bench to bedside is fostered by the interdisciplinary cooperation of academic institutions and industrial enterprises. The entire research project forms the basis for the training of 20 doctoral and postdoctoral students. Apart from the scientific work in individual research groups, the training concept includes network-wide training activities, such as summer schools and training in soft skills. This research training network thus aims to advance both the development of new diagnostic biomarkers and innovative therapeutic strategies in cancer treatment, and to promote the training of a new generation of scientists in this field in Europe.

## Promotion of Early Scientific Independence of Young Scientists (Postdocs)

Alongside those projects mentioned above, the Medical Faculty also offers two programs to promote early scientific independence:

### Individual Grants Program

Through the *Individual Grants Program*, the Medical Faculty awards start-up funding on a yearly basis and in a competitive manner for approximately 20 research projects proposed by young physicians and natural scientists up to a maximum of €30,700 p.a.. After the initial funding over a period of two to three years these projects should be financed by external funding agencies.

### Rotation Positions (“Gerok positions”)

The aim of this funding is to allow young clinicians with doctorates the freedom to conduct research over a period of one to two years without any clinical duties. The five *Gerok positions* are also awarded yearly and competitively in a manner similar to those distributed through the *Individual Grants Program*. One condition for funding is the full-time release of employees for the project.





## Medical Continuing Education

### International Center for Advanced Studies in Health Sciences and Services (ICAS)

Speaker: Prof. em. Dr. Dr. h.c. mult. Theodor M. Fliedner; [www.icas.uni-ulm.de](http://www.icas.uni-ulm.de)

In many countries there is a great need to rectify the insufficient utilization of new diagnostic and therapeutic technologies. The International Center for Advanced Studies in Health Sciences and Services (ICAS) organizes courses especially intended for Medical managers (*Teaching the Teachers, Leadership Training*). This has been done in a similar way to the London Postgraduate Medical School of the Imperial College of London University, which was the original force behind the idea of ICAS. To date, course participants have come from Poland, the Baltic States, Hungary, Bulgaria, Romania, Ukraine, Belarus as well as from other EU countries and those from Arab nations. These courses are intended for individuals who, due to their prominent position in state ministries, public health departments, university hospitals and medical institutes in their home countries, will become leaders in their chosen field of speciality and therefore be considered as pioneers of these new technologies. The content of these advanced training courses has been structured by the institutes of the Medical Faculty and, wherever possible, in cooperation with the medical technology and pharmaceutical industries. A wide range of topics have been included, for example:

- Hematology/Oncology (stem cell transplantation)
- Gynecology (prenatal diagnostics, oocyte-cryopreservation)
- Microbiology (dealing with therapy-resistant germs)
- Laser use in dermatology and in urology
- New methods in dentistry

Other topics are also being planned for the future. These are all modern courses that have been designed to improve the quality of medical care, particularly in Eastern Europe, with the intention of establishing international networks working in cooperation by utilizing the knowledge acquired in the Faculty. On the recommendation of the State Medical Board of Registration, the advanced ICAS training courses so far presented have been accredited by the European Accreditation Council for Continuing Medical Education (EACCME) and therefore meet the European quality standards for continuing medical education.



### **Master Online Advanced Oncology: Study part-time – team-up internationally!**

Speaker: Dr. Manuela Bergmann; [www.masteroncology.de](http://www.masteroncology.de)

The Medical Faculty of Ulm University through its International Center for Advanced Studies in Health Sciences and Services (ICAS) is offering an international postgraduate study program in Advanced Oncology aimed at clinical oncologists and scientists involved in the field of oncology. Founded by internationally renowned experts and organizations with leading cooperating partners, the study program prepares participants to face the growing worldwide demand for harmonized health care of cancer patients. Successful completion of the program leads to the MSc degree and qualifies for leading positions in hospitals, cancer centers, academic organizations, the pharmaceutical and health care industries. The new and innovative curriculum includes such modules as interdisciplinary oncology, clinical research, advanced therapies and integrated concepts, management and business administration.

This international study program has the financial support of the *Master Online* Program of the Ministry for Science, Research and Art of the State of Baden-Württemberg. By taking into consideration time and location, the program's structure has been designed to allow a flexible approach to learning so that participants can successfully combine the demands of work, family and study.