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insightLMU

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Research

Bright lights, big business

By Hanno Charisius

Unlike sunlight, white light from most artificial sources is perceived as cold. Wolfgang Schnick's team at LMU Munich is creating chemicals that enable LEDs to deliver high-quality white light.

For the complete article, see www.en.lmu.de/news/insightlmu/2014/03_01.pdf



The newly developed phosphor enhances the quality of color rendition by white-emitting LEDs.

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Specialized medical education crisscrossing the Atlantic

by Elizabeth Willoughby

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The best of two worlds

by Kerstin Meierhöfer

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Transatlantic exchange programs in medicine are a rarity due to the different curricula and high cost of medical studies, yet where others have failed, LMU-UCCOM's has survived. Created in 1996, the agreement allows medical students to do some of their rotations at the partner institution. The two-month placement is for selected LMU students in their last year of Internal Medicine or Pediatrics, with an additional two months in another location such as Cornell or Edmonton. Cincinnati students can participate in an English-taught winter school, with topics such as Oncology and Neurology, seeing patients with a study buddy who acts as translator.

Prof. Kathy Wedig-Stevie, MD, so supportive of the program that she often accommodates students in her own home, is the program coordinator at UCCOM. "Although the practice of medicine is similar in developed countries," she says, "there are some differences that can be learned, such as how doctors operate in hospitals vs in private practices, the use of electronic records and how to manage students doing social work referrals. Additionally, German and American customs vary and it is extremely important to realize those cultural differences."

Prof. Genzel-Boroviczény, Head of the LMU Division of Neonatology at Downtown Medical Campus, supervises the program at LMU. Another key person committed to the success of the exchange, Dr. Genzel ensures that LMU

students are familiar with the US system before they leave. "Whereas in Germany even refugees are covered for basic healthcare, a significant portion of Americans, until 'Obamacare', has been under- or uninsured, which can result in late diagnoses and treatments, with more complications," she says. "Students must learn to see health and medicine in a global context."

A UCCOM experience

Ilona Baumann, now working in Dr. Genzel's neonatal division, studied under Dr. Wedig-Stevie in Cincinnati in 2012 as part of the exchange program. She learned the special care required for premature babies, including critical management therapy, nutrition schemes and drug doses adapted to their tiny bodies. She also gained experience in the care of former preterm children, often negatively affected by premature births, and designing treatment programs to foster neurological development. Forensic medicine, methods of case history, and intervention at a special unit caring for abused children was also part of her studies.

"At UCCOM residents rotate more frequently so they see each specialty several times in the different stages of their education," says Dr. Baumann. "The exchange was a great possibility to learn from another system." Feeling enriched by the experience, Dr. Baumann began what is now a monthly meet-up in Munich



The pediatric department at UC is ranked the third-best department of pediatrics at a medical school in the U.S. News & World Report survey of best graduate education programs.

to keep the connections going after one's exchange has ended. A recent Cincy-Stammtisch this year saw 90 people attend, including the Mayor of Cincinnati.

Set up as a mobility agreement rather than one-to-one exchange, in the last two years, 12 students have gone from LMU to UC, but only three from UCCOM have gone to LMU. Dr. Wedig-Stevie would like to see more UC students take advantage of the exchange between the two medical schools. She believes the American students thinking about international healthcare experience hesitate about going to Germany because they don't speak German.

"But most of the medical personnel in Munich speak English," she says, "and Dr. Genzel goes out of her way to find LMU students who can act as interpreters so that the UCCOM students have a good experience."

Dr. Baumann would also like to see more participation. "I hope that more people dare to take part in the exchange. They can't imagine the possibilities that come from it."

The best of two worlds

by Kerstin Meierhöfer

LMU doctoral student Sebastian Huber, together with his young family, spent six months in Canada finishing the dissertation he had begun to write at LMU. He had enrolled in the Jointly Delivered Doctoral Degree Program set up by LMU and the University of Alberta. This summer he became the first participant in the program to receive his doctoral degree.

Sebastian Huber (28) had already written 200 pages of his doctoral dissertation at LMU's Graduate School of Language and Literature by the time he set off for Edmonton in the Canadian province of Alberta, together with his partner and their two-year-old son in August 2013. The purpose of his stay in Edmonton was to complete his thesis in American Literature in the context of the cooperative doctoral program set up jointly by LMU and the University of Alberta. And what he found in Canada were "ideal working conditions for the final phase of doctoral study," as he puts it.

"My work greatly benefited from advice received from both sides"

This particular form of collaboration between the University of Alberta and LMU has been in operation for several years now, and enables doctoral students in the Faculties of Humanities and Social Sciences, as well as the Faculty of Mathematics, Informatics and Statistics, to spend up to a year at LMU's Canadian partner university. Doctoral students who are interested in taking part in the program should, in cooperation with their LMU supervisor, find a suitable thesis advisor at the University of Alberta before applying for acceptance. Thus Fellows from LMU who take part in the Jointly Delivered Doctoral Degree Program retain their supervisor in Munich and have a second mentor at the University of Alberta in Edmonton. The doctoral degree is awarded jointly by both universities.

"Professor Jerry Varsava was my advisor in the English Department at the University of Alberta, and his research focuses on Contemporary American Literature – so his input perfectly complemented that provided by Professor Klaus Benesch, my supervisor in Munich, who assisted me with the theoretical and structural side of things," Sebastian Huber explains. "In addition, it was Professor Varsava who initiated the program of cooperation at the Canadian end – so he was very well acquainted with the conditions and the context of the scheme."

In his dissertation, Sebastian analyzed novel concepts of events and subjects in the contemporary American novel. When he arrived in Edmonton, he had already finished the major part of his research, and wanted to concentrate on getting his thoughts down on paper. "At the University of Alberta, the atmosphere is conducive to concentration. Supervision is intensive, the campus layout is compact and distances are short, and although Edmonton is a relatively large city, life on campus is very focused," he says. "And it gets so cold in the winter that writing is the best way to pass the time," he adds, with a smile.

Complementation between campuses

During his stay, he and his family were accommodated in a house near the university campus, in an area where many international graduate students with children lived. This meant that his partner



– on maternity leave – quickly found friends. And because Sebastian didn't want to "spend whole days at my writing desk", he organized a research workshop with other graduate students in his department and from another university nearby. "In this way, I got to know some very committed people. It was wonderful to be received so heartily by the Canadians."

Indeed, two other Fellows who participated in the program found Edmonton so inviting that they decided to stay in the city. Just under 6 months after his return from Canada, Huber himself finished his dissertation at LMU – and became the first of the program's fellows to receive the joint doctoral degree. "Getting to know two different academic worlds at first hand is an experience I can warmly recommend," he says. He is now engaged on his next project. – His Canadian advisor has offered to help him find an American publisher for his thesis. "That would involve lots of extra work," Huber admits, "but it would also open up new opportunities for an international career."



Population Economics

Ways to prosperity

By Nikolaus Nützel

“Democracy promotes prosperity and equality – and vice versa.” The work of LMU economist Uwe Sunde explores the validity of this proposition, which is one of the pillars of Western society.

For the complete article, see www.en.lmu.de/news/insightlmu/2014/03_02.pdf



Biology

Escape from an evolutionary cul-de-sac

Passion flowers with long nectar tubes depend entirely on the sword-billed hummingbird *Ensifera ensifera* for pollination. However, as a new study by LMU researchers shows, the evolution of even such extreme specialization is by no means irreversible. Among the characteristic features of the flowers of the *Tacsonia* subgroup of the genus *Passiflora* are their extremely elongated nectar tubes. With its approximately 11-cm bill *Ensifera* is the only species of hummingbird that is capable of sampling the nectar at the bottom of the nectar tubes and pollinating the flower. “Such highly specialized adaptations need time to evolve, and this has led to the notion that they can’t be reversed”, says LMU’s Professor Susanne Renner. But evolution is not a one-way street: Renner and her colleagues were able to show that the dependency of *Tacsonia*

species on *Ensifera* for pollination has been lost several times. The scientists analyzed gene sequences from 43 *Tacsonia* species and reconstructed when, and from which ancestral forms, new species were derived. The results show that the first *Tacsonia* species with long nectar tubes appeared around 11 million years ago and there are strong hints that coevolution with *Ensifera* began very early. “However, within the past 2-4 million years some long-tubed *Tacsonia* species have given rise to new forms with much shorter nectar tubes, which are pollinated either by short-billed hummingbirds or by bats,” says Renner. The researchers believe that the switch was an indirect consequence of environmental change, probably as a result of the uplifting of the Andes. “Being totally dependent on a single pollinator is a potentially risky strategy,” says Renner. “Sometimes it is advantageous to break the highly specialized relationship with a single pollinator – and our study uncovers good examples of such evolutionary switches.”

Geography

More land, fewer harvests

According to a simulation of the impact of climate change on agricultural production, carried out by researchers led by Professor Wolfram Mauser at LMU’s Department of Geography, some two-thirds of all land potentially suitable for agricultural use is already under cultivation. The study indicates that climate change will expand the supply of cropland in the high latitudes of the Northern hemisphere (Canada, Russia, China) over the next 100 years. However, in the absence of adaptation measures such as increased irrigation, the simulation projects a significant loss of suitable agricultural land in Mediterranean regions and in parts of Sub-Saharan Africa. Ecological factors such as climate, soil quality and water supply determine the suitability of land for agriculture. In the new study the LMU team focused on the probable impact of climate change on the supply of land suitable for the cultivation of the 16 major food and energy crops worldwide, including staples such as maize, rice, and wheat. The results show that, if one includes areas, such as the Nile Valley, which are already dependent on irrigation today, some 80 million km² of the Earth’s land surface is potentially suitable for agricultural use. This figure is equivalent to about half the total land surface of the Earth. However, approximately one-third of this land is currently designated as protected or consists of densely forested areas. If one assumes that these areas retain their status, this reduces the size of the pool of land suitable for agricultural use to some 54 million km² – and of this, 91% is already under cultivation. “In the context of current projections, which predict that the demand for food will double by the year 2050 as the result of population increase, our results are quite alarming,” says Dr. Florian Zabel, one of the authors of the study.



Learning Latin through German

by Elizabeth Willoughby

When studying at UNAM in Mexico, Vicente Flores Militello's Classical Studies professor often referred to German literature to provide his class with a broader view of the literary panorama. He would point out ancient Greek and Latin motives in Thomas Mann's *Death in Venice* and in Goethe's *Faust*. Intrigued by such a rich tradition in classical literature, Vincent decided on Germany as a pivotal place to do his Masters. Choosing Latin philology as his main subject and Greek philology and Spanish literature as his two subsidiaries, he set out to learn German to make it possible.

After beginner courses in Mexico, he moved to Munich and entered the *Deutschkurse bei der Universität München (DKfA)* language school at the second intermediate level (B1-2). For over 60 years, the DKfA has been holding courses in German as a foreign language in Munich including the infamous DSH exam, the test of German language ability for university admission.

Vicente has fond memories of his time at DKfA. He loved that he could cycle to school – not something one does in Mexico City – and Monday to Friday from April to October he learned German in mornings, lunched with his foreign classmates, complained about the rain and the extreme emphasis on grammar, and did homework in the library in the afternoons.

"The teachers were very nice, often joking," he says, "and we had many interesting discussions, which were part of each lesson. Three years later, I am still in contact with the friends I made there. When I think of those days, I see that I was very, very happy."

Then came the DSH exam – the one everyone panics about because it takes several hours and everyone knows someone who has failed it. "It is a very demanding exam," he says, "but the truth is, if you have done your homework and paid attention, the exam is doable." Last year, 4,600 students from around the world attended DKfA courses, the highest number of participants since its

founding in 1952. More than 1,000 of them applied for admission to the DSH exam.

In March 2012, Vicente began his Latin, Greek and Spanish studies at LMU in German. He had to get used to the professors' rapid speech,

and still needed to think sentences out in his head before saying them, but he says one's progress at university is faster and the comprehension level is better after only a few months. Then he was grateful for all the grammar training at DKfA. Without it the course would have been impossible, as would be writing in academic language.

Appreciation of culture

"When producing the 20-page essay at the end of the semester, you need to write it, not focus on which prepositions to use or how to construct the sentences," says Vicente. "In my final exam I had to translate a passage of the Aeneid from Latin into German. It was utterly difficult, with a lot of vocabulary and constructions you would normally never use as a foreign speaker, but I did it relatively well."

A new experience for him, he also had to use German language for normal conversations with his classmates, all from Germany this time, and for going out socially with his new university



Vicente and his friends in Munich's famous Olympic Park, which contains sport facilities, lakes, bicycle paths, concert venues, restaurants and a football stadium...

friends. However, they were supportive, as were his professors, and last March he finished his thesis and did his exams in German.

Now working on his doctoral degree in Classical Philology, Vicente feels at home in Munich, a clean, well-functioning city that he says has a lot to offer, such as great beer, incredible museums and classical concerts. It's also a good subject on which to practice his photography. "I was very happy the first year in Munich taking pictures of the buildings, parks and especially the seasons, the first time I'd seen snow – in Mexico the weather is not so variable."

Although he sometimes misses home, Vicente feels his opportunities are better in Germany. "Germans know that spreading knowledge in all areas is important. The investment made in schools cannot be compared to many other places. The libraries alone make an enormous difference. If everything goes according to plan, I'll be in Munich at least until I finish my PhD. What comes after that is still open."



LMU breaks into the Top 30

In the latest World University Ranking compiled and published by the Times Higher Education (THE), LMU has substantially improved its position relative to previous editions of the list. The University is now ranked 29th, breaking into the Top 30 for the first time. "We are delighted that LMU has become the first university in Germany to gain a place within the Top 30," says LMU President Professor Bernd Huber. "Moreover, this latest ranking documents a very considerable enhancement of Germany's reputation as an attractive location in which to carry out ground-breaking research. The fact that Germany is now ranked in third place overall, behind the USA and the UK, clearly demonstrates this improvement." Both the Shanghai Rankings (Academic Ranking of World Universities) and the QS World University Ranking published earlier this year provide supporting evidence for LMU's enhanced stature among its international competitors.

www.timeshighereducation.co.uk/world-university-rankings

Groundbreaking ceremony for the new Center for Pediatric Palliative Medicine

On 14 July, with the Bavarian Minister for Science Dr. Ludwig Spaenle in attendance, the first sod was turned on the site of the new Center for Pediatric Palliative Medicine on LMU's Grosshadern Campus. The Center, scheduled for completion in 2015, is the first of its kind at a German University Hospital. With its Hospice Without Walls (HOME) project and the creation of a Coordination Unit for Pediatric Palliative Medicine, Munich University Hospital has pioneered a new approach to home care for children who

are gravely ill, and the new Center will provide a unit devoted entirely to inpatient care for such children. The goal of these initiatives is to help maintain family cohesion in the face of extreme stress. The building of the Center is in no small part due to the unstinting support of its Society of Friends (*Förderverein Kinderpalliativzentrum München e. V.*). The Society's dedication to the creation of a unit for the care of gravely or terminally ill children and adolescents, with open access for their families and facilities for teaching and research, is at one with the efforts of the State Ministry for Health and Patient Care to provide a comprehensive system of palliative care for sick children in Bavaria.

LMU's Faculty of Veterinary Medicine celebrates its 100th birthday

It has been a long journey from its humble beginnings in the late 18th century – as a school for the practical training of animal doctors, which had nothing to do with academia – to its present status as a renowned research institution. But the decisive step along the route was taken when the Munich School of Veterinary Medicine achieved the status of LMU's sixth Faculty in October 1914. In the decades following the First World War, the new Faculty developed into a powerhouse which provided the best in animal healthcare for its patients and produced excellent research, while at the same time educating more than 1,500 professional veterinarians. The Faculty is dedicated to the cause of animal health, but its contributions to research have also had a very substantial impact on neighboring disciplines. Its primary focus is on the production of healthy-giving foods such as milk and meat, on the protection of animal welfare, but also on the protection of humans from transmissible animal pathogens. Of course, human health

also benefits from the availability of animal models of human disease.

For more on the history of LMU's Faculty of Veterinary Medicine, see:

www.en.lmu.de/news/spotlight/2014/articles/veterinary.html

Audimax redux

After a 9-month, top-to-bottom renovation, LMU's Audimax is putting its best foot forward to welcome new and returning students at the start of the new semester.

For more photos see:

www.en.lmu.de/news/newsarchiv/2014/audimax_sanierung.html



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