Magical materials
By Hubert Filser

Honeycombs, crosses, bridges: Strands of DNA can be programmed to fold into such shapes spontaneously. LMU physicist Tim Liedl exploits this property to build 3D nanostructures for a variety of applications. For the complete article, see www.en.lmu.de/news/insightlmu/2015/04_01.pdf

From LMU to China – and vice versa
by Constanze Drewlo
LMU’s international network already spans the globe, but further opportunities abound in China, and the LMU-China Academic Network is dedicated to extending LMU’s contacts with Chinese universities.
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The first doctor in Katunje – a small Nepalese village
by David Lohmann
LMU medical student Sagar Dhital’s greatest wish is to see that his Nepalese village which, he says, “helped me to become what I am today,” gets a new hospital. His dedication to his roots and his studies has won him a Deutschlandstipendium.
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A ride on the LMU timeline
by Clemens Grosse
The story of LMU bears the imprint of the many upheavals and new beginnings that have marked European history since the Renaissance. Explore the ups and downs of LMU’s past at www.lmu.de/history-of-LMU
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Con molto espressione: “Holieh-dulio …”
by Anja Burkel
A yodeler needs a good voice, large lungs and lots of enthusiasm, says Dr. Max Hadersbeck, a computer linguist at LMU. Cultural evenings at his Institute often see him turning up in Lederhosen and yodeling with a will.
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More news on LMU Munich at www.en.lmu.de/news
From LMU to China – and vice versa
by Constanze Drewlo

LMU’s international network already spans the globe, but further opportunities abound in China, and the LMU-China Academic Network is dedicated to extending LMU’s contacts with Chinese universities.

Studying law in China is, above all, a matter of attending lectures – lots of lectures. At LMU, on the other hand, law students are confronted early on with real legal cases. So for Wei Tian (27), who began his doctoral thesis at Renmin University in Beijing, this emphasis on practice provided an entirely new perspective on his chosen subject. He has now been enrolled in the CSC Scholarship Program at LMU for the past 2 years. “Here, in contrast to the approach in China, one learns how to handle real cases of the sort that turn up in everyday practice – and that is a good way to prepare students for their future careers as lawyers or judges,” says Wei, who is writing a thesis on the separation of powers, under the supervision of Professor Stefan Korioth at the Chair of Public Law.

“China is a growing market”

Wei is only one of many Chinese students and researchers who are benefiting from the exchange programs that have been set up between LMU and Chinese universities. Several active research collaborations and programs for junior academics are in operation. The CSC Scholarship Program, for instance, enables Chinese doctoral candidates to complete all or part of their doctoral studies at LMU. In addition, more than 500 students from China come to Munich each year to study at LMU. Indeed, Chinese students now constitute the largest non-European contingent at the University. And LMU plans to extend its existing web of contacts with Chinese institutions, with the help of the LMU-China Academic Network (LMU-ChAN), which has taken on the task of promoting further cooperations with a select set of China’s leading universities.

“China is a growing market – for teaching, science and scholarship, as well as much else. The Network not only stimulates exchange and interaction in the areas of research and tuition, it also provides a framework for institutional cooperation between LMU and Chinese universities,” says LMU Vice-President for International Affairs, Professor Hans van Ess, who is himself a prominent sinologist and has first-hand knowledge of the country. China’s economy is still growing at a considerable rate, but Chinese universities are also developing at a rapid pace and, meanwhile, the best of them can stand comparison with the leading international schools. Moreover, both sides are keen to intensify contacts, as LMU is an attractive destination for Chinese students and researchers.

The LMU-China Academic Network is currently engaged in further extending collaborations between LMU and an array of China’s leading universities, in particular Peking University in Beijing, Fudan University in Shanghai and Zhejiang University in Hangzhou. But Renmin University in Beijing, Tongji University and Jiao Tong University in Shanghai are also among LMU’s exchange partners.

One striking example of the various joint projects that have been initiated so far is the LMU-Tongji Biomedical Junior Research Group Project, in which scientists led by LMU’s Dr. Stylianos Michalakis and Professor Martin Biel are working with colleagues in Shanghai in a search for new therapeutic agents for the treatment of certain hereditary diseases and specific types of tumors. They also hope to make it possible for more LMU researchers to carry out projects in Chinese laboratories. “So far, most of the traffic has come from China to Germany. But we now want to help LMU researchers who wish to do research in China,” Professor Biel explains.

Personal relationships are vital

This sort of interaction is also very worthwhile, because networks play a crucial role in getting things done in China: “Good contacts, and above all good personal relationships, are extremely important, much more so than we are accustomed to at home,” says Dr. Agnes Kneitz, LMU’s Liaison Officer in Peking. She supplies her Chinese contacts with up-to-date information relating to research and teaching programs at LMU, and ensures that the relevant exchange agreements with Chinese universities are operating as intended. “It takes time and personal engagement to build up sustainable relationships, but students and researchers from both countries stand to benefit in equal measure from the LMU-China Academic Network,” she affirms.

Translation: Paul Hardy

www.en.lmu.de/about_lmu/international_net/lmu-chan
A ride on the LMU timeline

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These days, an application for travel costs from an LMU staff member who is going away on a business trip raises no eyebrows. The applicant doesn’t have to argue that the planned journey will markedly enhance the University’s reputation – she just fills out the appropriate form, has it endorsed by her boss and passes it on to the University’s Travel Office.

In 1519, theologian Dr. Johannes Eck had a much more difficult time convincing the Senate of the Hohe Schule in Ingolstadt to subsidize such a trip. The most effective argument that occurred to him was the claim that his excursion to Leipzig would further boost the honor and fame of his University. Eck was Professor of Theology in Ingolstadt, and a prominent opponent of the theses promulgated by Martin Luther – and the point of his trip was to debate, or rather refute, the would-be reformer’s theological views.

After some delay, the University Senate agreed to provide the requested subsidy, as did the Faculty of Theology. The payment is recorded in the Faculty’s accounts book: pro missio viii fl. ad disputationem lipsiam. So we know that Eck received the sum of eight guilders for the journey to the debate in Leipzig. The entry is only one of the many original documents and contemporary illustrations included in the new timeline depicting significant stages in the long history of LMU.

Turning points

The timeline highlights 38 important events and personalities, which together illustrate the course of LMU’s development from its foundation in 1472 up to its highly successful participation in the second round of the nationwide Excellence Initiative three years ago. These five centuries and more were marked by a turbulent succession of historical epochs, each with their own characteristic political, cultural and religious evolution. Counter-Reformation and Enlightenment, an uncompromising nationalism, the horrors of National Socialism – and the principled resistance of its courageous opponents: LMU’s history is a story of collapse and destruction followed by re-assertion, reconstruction and expansion into today’s institution which is acknowledged to be one of Germany’s finest universities. LMU’s Bavarian odyssey, which began in Ingolstadt in 1472, and took it to Landshut in 1826 before its translation to Munich in 1826, has indeed been a tempest-tossed journey.

The new timeline also includes summary texts, which place each of the selected turning points in its broader historical context. These include features on iconic University buildings, on the Age of Enlightenment, on the White Rose resistance movement during the Nazi era, and on the trajectory of student numbers over the course of LMU’s history. But like the plot of student numbers, our timeline can only be a snapshot and is itself a work in progress. For even the time spent writing this text is now – history.

Would you like to know more about the history of LMU? You can learn more from the richly illustrated volume “Ludwig-Maximilians-Universität – Past and Present”, which is available in the LMU-Shop (www.lmu-shop.de) for 19.80 euros.

We thank the Munich University Archive and Neumann & Kamp – Historische Projekte for their support for this project.
Experimental Vulcanology

Deconstructing disasters

By Angelika Jung-Hüttl

Dozens of volcanoes erupt every year. Donald Dingwell wants to know how eruptions occur and why they happen when they do – so he simulates them in the laboratory. For the complete article, see www.en.lmu.de/news/insightlmu/2015/04_02.pdf

Developmental Biology

Lethal legacies

Programmed cell death – or apoptosis – is a tightly regulated process that is universal among higher organisms and involves a precisely defined series of steps. In the end, the dying cell is engulfed and digested by neighboring cells. “It was already known that the cellular pathways that initiate and mediate engulfment are involved both in the killing and in the disposal of the dead cell. We have now discovered how this is done”, says Barbara Conradt, Professor of Cell and Developmental Biology. The researchers focused on the so-called NSM lineage in the Caenorhabditis elegans embryo. NSM mother cells divide asymmetricaly, giving rise to two daughter cells of unequal size, the smaller of which survives for only a very short time. “Up until now, it was believed that the apoptotic mechanism is activated only in the smaller daughter cell after the division,” says Conradt. “But we found that it is already activated – at least to a certain degree – in the mother cell. In this preprimed state, the apoptotic machinery produces a signal that activates the engulfment pathways in specific neighboring cells.” These adjacent cells then help the mother cell to concentrate the cell-death protein CED-3 in the portion of the cytoplasm destined for the smaller of the two daughter cells. CED-3 is known to function as a killer factor, which activates the apoptotic program. Thus, the mother cell already determines the apoptotic fate of the smaller daughter by asymmetric segregation of CED-3. Apoptosis plays a crucial role in health maintenance, and errors in the process can be deleterious for the whole organism. Hence, a better understanding of the mechanisms underlying apoptosis could in the future help to identify targets for the development of new therapeutics.

Cropland’s untapped potential

In order to keep pace with projected rates of population growth, global agricultural production will have to be increased by 70 to 100% over the next 35 years. Many research studies have concluded that this is a virtually impossible task. But a new study carried out by Professor Wolfram Mauser at LMU’s Department of Geography comes to a different conclusion. “The stock of agricultural land currently in use has the potential to feed this growing population, and even to exceed the projected demand for the year 2050,” says Mauser. Crucially, the new study takes into account two important factors that have been neglected so far. First, it considers the potential impact of increased cropping intensity, i.e. multiple harvests. Secondly, in collaboration with economists in Professor Gernot Klepper’s group based at the Kiel Institute for the Global Economy, the LMU team estimated the degree to which yields could be enhanced if profit-maximizing management practices, focusing on commercial production of crops for national and international markets, were adopted on a global scale. Multiple harvests could increase yields by 39% without expanding the cropland devoted to agriculture. Adoption of a commercially oriented approach to land usage, in which crops are cultivated on current cropland at locations where they yield the highest profits, could boost this result by a further 30%. The regions projected to have the greatest potential to benefit from such a step are Sub-Saharan Africa, Latin America, India and China. If, in addition, one assumes that optimal agricultural practices are implemented on a global scale, a further increase of 80% is feasible. This last estimate agrees with an earlier estimate by the UN Food and Agricultural Organization. Putting all of these factors together, global crop yields could be enhanced relative to current figures by close to 150%.
The first doctor in Katunje – a small Nepalese village
by David Lohmann

LMU medical student Sagar Dhital’s greatest wish is to see that his Nepalese village which, he says, “helped me to become what I am today,” gets a new hospital. His dedication to his roots and his studies has won him a Deutschlandstipendium.

Sagar Dhital grew up in a small village in Nepal. “I had to walk barefoot for four hours to school every day,” he says. His parents cannot even imagine the life he now leads in Munich. He phones his father every two weeks, “and he often asks me if I have enough firewood to boil my rice,” Sagar remarks. There is no internet in his village, no paved roads and no local health center. In Nepal, the maternal mortality rate is 170 per 1,000 live births, and the figure for infant mortality is 43 per 1,000 live births. Three of Sagar’s siblings are no longer alive. The country suffers from a dire shortage of trained doctors and other healthcare personnel.

Given such statistics, it is no surprise to learn that Sagar Dhital is the first academic in his family. And he studies hard because: “When I go home now, people always come to me looking for treatment.” Furthermore, Sagar’s home region suffered grievous damage during the earthquakes of April/May 2015. When he finishes his medical studies, he wants to do everything he can to ensure that a new hospital is built in the area, so that at least some of the hardships his former neighbors are still undergoing can be alleviated, and their lives improved.

To realize his dream of becoming a doctor, Sagar has devoted himself to learning throughout his life. He graduated from high school as best in his class, and studied at Kathmandu University, graduating with a first-class BSc. degree. In 2010 he began work as a graduate assistant at the University’s Medical Center. It would be a crucial turning-point in his life.

Kathmandu University Hospital is located in Dhusuk, and has outreach centers in many parts of the country. This organizational structure enabled Sagar to provide care for poor people, and learn about their ailments and personal circumstances. “It was painful for me to realize that millions of people in rural areas of Nepal die prematurely simply because they lack access to hospitals and simple drugs like paracetamol,” he says.

Tales of LMU – and a journey to another world

In the course of his duties, Sagar Dhital came into contact with many medical students from Germany – including some from LMU. Their tales of their medical studies in Munich inspired him to a take a four-month course in German at the Goethe Center in Kathmandu. “That was the beginning of my rollercoaster ride, an adventure I was fully prepared to commence,” he recalls. And then, bidding farewell to the people of his village and with the little money his family managed to arrange, he flew to Germany, with the little money his parents could spare. “For me, Germany was another world. My first few months here were full of surprises, because the country was so much more developed than Nepal,” he recalls. After taking a 4-month preparatory course in Frankfurt, which ended with a language test, he came to Munich and enrolled as a medical student at LMU. “I am so glad to be able to study here, and my classmates are all very nice.” To finance his studies, he took a series of short-term jobs, working for a fast-food chain, then in a restaurant and, during his first semester he worked in a bar on weekends. In addition, he continues to work on his German. His day begins at 5 in the morning, but he has no difficulty getting up that early. His burning desire to assist his countrymen, to help improve their lives, alleviate their sufferings and see them smile is motivation enough. In spite of the hurdles posed by the language, he has passed all his university exams.

But now his diligence and application have paid off, for Sagar recently received a Deutschlandstipendium. The stipends go to students who have a distinguished academic record and have shown a commitment to community service, or have overcome daunting obstacles in order to study. That means he no longer has to work every weekend – and that he will have more time to learn in his second semester, he says. Of course, Sagar sent photos of the award ceremony home. “The villagers are delighted that someone like me was good enough to win a stipend,” he says with justified pride. And that makes him very happy, for it brings the realization of his dream that little bit closer.

Translation: Paul Hardy
Yodeling is best done in the mountains. “When I yodel in the Ammergau Alps,” says Dr. Max Hadersbeck, “and the echo ricochets off the high cliffs, it does the heart good.” But Hadersbeck yodels at every opportunity – in the hallway of his house at Starnberg Lake or on stage as a member of the Seeshaupt Singers, in a film studio or in his office at LMU’s Center for Information and Speech Processing (CIS). A hearty roulade can convey more about one’s emotional state than 50 spoken sentences, he asserts.

Hadersbeck grew up in Oberau near Garmisch-Partenkirchen, in the heart of the Bavarian Alps. Playing an instrument, Schuhplatteln, yodeling are all part of one’s cultural baggage there. He joined a Trachtenverein (whose members parade in traditional costumes) when he was 6, and a yodeling geography teacher later made a great impression on him.

Now Max Hadersbeck (59) is himself a passionate yodeler. All it takes is a well-developed voice and a healthy pair of lungs, he says. “Yodeling is difficult when you have a cold – it takes a lot out of the vocal cords and lungs. Producing the characteristic sound involves switching very gradually, over periods of 10 or 15 seconds, between chest and falsetto registers,” he explains. Like scat singers or litters, yodelers use sequences of nonsense syllables like He-i-di – ho-i-di, Tjo-tjo-di-rü or Huliyeh-ëi- djä-di – rü-a, though they also sing notated melodies. “The most important thing is that you put your heart into it.”

Some 30 years ago, Max Hadersbeck was a founder member of a group called Bairisch Diatonischer Jodelwahnsinn (Diatomic Bavarian Yodel Madness) that pioneered the idea of combining yodeling with other types of Bavarian folk music and even rock music. Nowadays Hadersbeck appears with the Seeshaupt Singers, who perform at traditional bavarian fairs. He yodels, sings and accompanies the traditional Bavarian folksong repertoire on the guitar and the Steirische Harmonika, a type of bisonoric diatonic button accordion. His other hobbies are also unmistakably Bavarian, and include climbing and Gstanzlsingen, an Austro-Bavarian form of satirical song.

In his Institute too, Hadersbeck is willing to yodel in public, in order to motivate the many foreign students at the CIS to preserve and present samples of their own musical traditions at the Institute’s regular cultural nights – Indonesian angklung music, for instance, or Russian songs and folkdances. “I encourage my students to work on their cultural profiles,” he says. “As one of the few native speakers of Bavarian in my Institute, I regard that as one of my pedagogical functions.”

A voice that carries well, and lots of air

His talent for yodeling has even brought Hadersbeck to the silver screen – in “Bavaria Vista Club”. Directed by Walter Steffen, the documentary follows the development of a range of Bavarian music traditions and their recent interactions with other cultural influences. Its climax is a live concert (in a beer-garden, of course) in which all the musicians featured in the film give of their best. Master of ceremonies is none other than Max Hadersbeck on the accordion, in traditional costume and yodeling to his heart’s content.

About yodeling

Instead of using set texts, yodelers sing improvised melodic phrases on nonsense syllables like ‘holaria’ or ‘hodelyeiidii’, while rapidly alternating between chest and falsetto registers. The basic style evolved as a means of communication in mountainous regions in prehistoric times, and is still found worldwide, not just in the German-speaking parts of the Alps. Neophytes can now learn the art in yodeling courses and even with the aid of dedicated apps.
Biomedical Center: A new center for cell science

With the opening of LMU’s Biomedical Center (BMC), one of the most ambitious research institutes built in Germany in recent years officially goes into service, providing laboratories for some 60 research groups and with a staff of 450. In recognition of its nationwide significance, construction of the Center was financed jointly by the Federal and Bavarian governments. The BMC is a central element in LMU’s strategy for the close integration of biomedical research and patient care. In terms of its core mission and its combination of preclinical, research-oriented and clinical departments, it bridges the divide between basic research and clinical application. In this sense, it fits perfectly into the matrix of research units that has grown up here over the years. The BMC also has five core facilities, which are at the disposal of all the Center’s researchers. In addition, the BMC has been designed to create optimal conditions for the presentation and effective communication of modern course content in the preclinical phase of medical education. The new building is located in Grosshadern, in the immediate vicinity of the LMU Medical Center, the Faculties of Chemistry and Pharmacy and the Gene Center, the Faculty of Biology, the Institute for Stroke and Dementia Research and the Max Planck Institutes for Biochemistry and Neurobiology. The Martinsried-Grosshadern area is already a highly regarded location for research in the life sciences – and the density of renowned institutions sited here is virtually unique in Germany. Moreover, its outstanding infrastructure makes it an ideal environment for first-rate interdisciplinary research.

MeCuM International boosts medics’ mobility

LMU’s Medical Curriculum München (MeCuM) International has been awarded the coveted COM2UNI (Committed to Uniqueness) Prize by the German Academic Exchange Service (DAAD). This accolade is awarded to university courses and study programs at German universities that offer students a high degree of international mobility by enabling them to acquire professional experience in diverse settings abroad. The award comes with 7,500 euros in prize money. MeCuM International provides medical students with a range of opportunities to gain experience abroad during the course of their training. The program makes it possible for students to gain experience as a clinical intern, or to spend part of the obligatory practical year at one or other of 60 partner universities around the world. The prize money will be spent on extending the range of opportunities MeCuM can offer, specifically for exchanges with US universities. In future LMU students will be able, in the context of the Global Health Learning Opportunities Program set up by the Association of American Medical Colleges, to take practical courses in Clinical Medicine and Public Health, as well as undertaking practical work in research.

www.med.uni-muenchen.de/mecum_international

Double Masters with Barcelona and Paris

LMU has recently established two new Master’s programs, each of which leads to two Master’s degrees. The Geschwister-Scholl Institute of Political Science (GSI) at LMU Munich and the Department of Political and Social Sciences at the Universitat Pompeu Fabra (UPF) in Barcelona have teamed up to offer a double Master’s program in Political Sciences. In the first year all students participating in the double degree program will follow the program at UPF (Master in Current Democracies: Nationalism, Federalism and Multiculturalism) and the second year of the program will take place at LMU Munich (Master in Political Science). Moreover, LMU has jointly conceived a new double Master’s program in German-French History in partnership with the Sorbonne in Paris. LMU hopes to stimulate German-French contacts and interactions in his field. The participating students learn about the different approaches to historical research employed in the two countries, extend their knowledge of the other language, and improve their professional qualifications and job prospects.