




50th Anniversary EMBO Members Meeting 2014

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New research centre for stroke, dementia and neurodegenerative diseases

Opportunities to link disease-oriented basic science with clinical research

As individuals get older, many people report a decline of cognitive skills. The number of people with dementia is estimated to increase to more than 80 million by 2040. In Europe, more than 5 million people suffer from dementia disorders. Like dementia, stroke ranks among the ten most frequent diseases worldwide and the most pressing health problems in ageing societies (WHO World Health Report 2002). To further strengthen and concentrate the research on dementia and stroke in Munich, Germany, two leading institutions in these fields were recently combined under one roof: the Institute for Stroke and Dementia Research (ISD) and the Munich site of the German Center for Neurodegenerative Diseases (DZNE).

The idea behind the move is to tightly link disease-oriented basic science with clinical research in an attempt to develop new diagnostic and therapeutic options for neurodegenerative diseases.

Both institutes differ considerably in their scientific approach. At the ISD, the basic idea is to integrate patient care with clinical and basic research to change medicine. The institute, headed by Martin Dichgans, is designed as a novel type of research facility bridging the traditional barriers between academic medicine and basic science. Patient care involves prevention, diagnosis and treatment of stroke and cognitive decline. Outpatient services at ISD are provided by board certified neurologists and psychiatrists,

The new research building opens up exciting opportunities for interdisciplinary research strategies ranging from biophysics to patient oriented research. While in the past the research teams of the DZNE were based in many different locations on the Munich university campus, they are now able to work hand in hand with their colleagues at the ISD, which is situated next

neuropsychologists, social workers, and specially trained staff. In ISD's Memory Clinic, patients and individuals at risk receive comprehensive diagnostic workup and counselling.

The scientists at the DZNE study neurodegenerative diseases such as Alzheimer's disease, frontotemporal dementia (FTD), amyotrophic lateral sclerosis (ALS) and Parkinson's disease. They investigate their causes and novel approaches to prevention and therapy, including new healthcare strategies. DZNE research ranges from the study of molecular processes in simple organisms and brain cells to human clinical trials, population studies and healthcare research.

EMBO Member Christian Haass, a renowned researcher who studies dementia, has been appointed as speaker of the DZNE. Haass and his colleagues are interested in the cellular and genetic mechanisms linked to different neurodegenerative diseases. "In our laboratories, we focus for example on the cellular mechanisms of neurodegeneration. We believe that protein deposition and clearance of amyloidogenic peptides is mediated by common general mechanisms."

Munich is one of nine DZNE sites located all over Germany. The DZNE closely cooperates with the two Munich universities, their clinics and with other research institutions in the region. The Biochemistry Department of the Medical Faculty of the Ludwig Maximilian University, which is also headed by Haass, also moved into the new research building.

Stem cell highlights for high schoolers

Courses for 12–14 year olds on the essential concepts, applications and ethics of stem cell biology

Researchers are often enthusiastic about outreach to high-school students but lack the time to prepare lessons or implement them in a school setting. EMBO Member Ian Chambers from the University of Edinburgh developed a popular series of lessons for 12–14 year olds that has been widely used in schools and other training events throughout Europe and beyond. The three lessons focused on the essential concepts, applications for regenerative medicine and the ethical implications of developing stem cell treatments. They are available online at www.eurostemcell.org in five different languages.

Chambers teamed up with Emma Kemp, a science communicator for EuroStemCell, to develop this tool. "Our motivation was to reach those who would not choose science as their career," says Chambers. "Engaging these students is essential to enhance the general level of scientific literacy in society." Their experience and the



learning process were eventually described in the January 2015 issue of the journal *EMBO reports*. (<http://embor.embopress.org/content/16/1/7>)

The article offers guidance and advice for all scientists interested in developing similar educational modules. The authors list critical points such as paying attention to the curriculum and setting clear learning objectives, using a modular format for flexibility and ease of translation and building a relationship with the teachers. At the end of the three-year learning process, the lessons had been delivered to approximately 700 students by six researchers. 300 print kits of the first lesson have been distributed to educators and scientists all over Europe and more than 250 European science teachers attended professional

development workshops using these lessons as an example. The Guardian rated them as a "top resource" and made them available on its website. (<http://tinyurl.com/139uavv>)

It all started with an email: The idea to develop creative and fun lessons for school children was triggered by the head teacher of Chambers' old high school, The Derby School in Edinburgh. She found out that the professor's interest in science was sparked off during an open day visit at the local university at the age of 13. So she invited him to give a talk about stem cell science at his old school. Developing full-fledged educational modules and rolling them out to hundreds of students and science teachers across Europe were natural next steps.

