

Biotechnology and bioengineering applications in medicine

Please join and contribute to the IDEA League's first summer school at the rapidly growing interface between Biotechnology, Bioengineering and Nanomedicine. The summer school will take place at Monte Verità, Ascona, Switzerland, on 17-22 September 2006. Topics of discussion will include nanopores & biohybrid devices, bioimaging, molecular & cellular biomechanics, biomaterials & tissue engineering, bioelectronics, gene therapy, systems biology, nanopathology, and biopharmaceutical manufacturing. International leaders will give the following keynote lectures:

- Stephen Badylak, U Pittsburgh: Biologic scaffolds for regenerative medicine/tissue engineering applications;
- Gang Bao, Georgia Tech: Nanostructured probes for gene expression detection in living cells;
- Lothar Elling, RWTH Aachen: Targeting of biomaterial surfaces and glycoproteins by glyco-engineering;
- Peter Fromherz, MPI Munich: Neuroelectronic interfacing - its nature and implementation;
- Daniel Mueller, TU Dresden: Imaging and manipulating cells and proteins at molecular resolution;
- Antonietta Gatti, U Modena: Nanopathology: a correlation between environmental pollution and disease;
- Anita Goel, Nanobiosym, Cambridge, MA: Precision control of nanomotors that read DNA at the single molecule level;
- Steve Quake, Stanford U: Nanosystems biology: biological large-scale integration;
- Mike Sheetz, Columbia U, New York: Mechanotransduction and nanomedicine;
- Wynne Schiffer, Brookhaven Nat. Lab.: In vivo PET imaging with labelled nanoparticles;
- Greg Stephanopoulos, MIT: Engineering cells by global transcriptional machinery engineering, (gTME);
- Samuel Wickline, Washington U, St.Louis: Nanoemulsions for multimodal molecular imaging and cell-targeted drug delivery;
- Samuel Stupp, Northwestern U, Evanston, IL: Nanoscience for regenerative medicine.

For more details see on the IDEA web site or <http://summerschool.idealeague.ch>. Deadline for abstracts is 30 June 2006. You are also welcome to register without giving a presentation; registration remains open until the event is fully booked.

Mathematics in engineering - a killer subject?

The suspicion that mathematics is a killer subject could not be confirmed by our workshop in April. Mathematics is undoubtedly an important selection criterion for students' entrance to university, but it does not dominate their study.

Teaching of mathematics to engineers is still a debatable question and we had long discussions on this, especially at our round-table discussion at the end. Mostly mathematicians teach mathematics to engineers, but a number of engineers find that mathematics is just a tool used by engineers and not a subject they study like a mathematician. However, it was also argued that teaching mathematics illustrates a particular way of thinking that should be transmitted.

The increasing gap between mathematics in secondary-school teaching and the university entrance is a common experience between the partners. We had a number of presentations how this mismatch is tackled at the IDEA partners. Computers could help but will not answer the problem. Presentations on computer use in the class room and interactive courseware were encouraging and stimulating.

In Switzerland, the decreasing mathematics background is less severe than in the other IDEA partner countries. This might be explained by the elite system used in schools: only about 20% go to high school ('gymnasium'). The quality of teachers is high and teachers are well paid. In the Netherlands, it seems that the situation might improve. After a number of rush changes in the last decades, there seems to be an increasing interest in this gap. This might be connected with a letter of the student unions to parliament pointing out the problem.

This workshop, organised by the quality management group on 25/26 April 2006 at Imperial College London, was perceived as a fruitful endeavour by all the participants. Our new partner ParisTech participated for the first time.

Grant scheme for research projects open

The IDEA League introduces a grant scheme for the promotion of student collaborations on research projects. These grants can be used on all student levels (bachelor, master, PhD). Students are encouraged to look for a project in

coordination with representative(s) of IDEA working groups.

The grant will be €1,000 for a minimum period of 3 months and will be awarded by the sending university. Each subject-specific group of one IDEA university can offer one place for each partner (normally 3 places; at present, ParisTech does not participate). For details see http://www.idealeague.org/research/res_grant.html.

Panel discussion 'reliable power – Europe's strength'

The Bibliothèque Solvay in Brussels provided a lovely setting for the IDEA League's panel discussion "Reliable Power - Europe's Strength" on 10 May 2006. The debate addressed the many problems concerning power supply that Europe is facing today, such as the fossil-fuel decline, and modern and innovative methods of electricity transmission.



The panel discussion was moderated by Prof. Rik de Doncker, RWTH Aachen (left). Panellists were (from left): Prof. Wil Kling, TU Delft, Prof. Armin Schnettler, RWTH Aachen, Dr. Urban Keussen, E.ON, Dr. Jorgo Chatzimarakis, European Parliament, Dr. Stefan Gewaltig, European Commission, Prof. George Kariniotakis, ParisTech, Prof. Klaus Fröhlich, ETH Zürich, Prof. Tim Green, Imperial College London.

"This discussion fits well into the debate that the European Commission (EC) wants to launch" the EC representative confirmed. The industrialist present was pleased that there is a European perspective looking beyond constraints of the national systems. There is a need to have clear rules for the integration of resources. Other

challenges are the replacement of the aged equipment, but keeping reliability and optimisation of the network in a liberal market. The audience became well engaged in the discussion with the panellists.

European Institute of Technology (EIT)

Following the EU Council's request, the EC has presented the next steps towards the creation of a European Institute of Technology by 2009-2010. The Commission has consulted with stakeholders in a number of meetings before issuing this new communication. The IDEA League was involved in these discussions. The Commission emphasises the fact that the institute will have a governing board with a light administrative structure and that the knowledge communities will be guaranteed maximum flexibility with regard to their own organisational structure. Knowledge communities will bring together teams of researchers or departments of universities, companies and research institutes to carry out research, education and innovation activities in inter-disciplinary strategic areas.

The latest Commission's communication has put forward new employment arrangements for the knowledge communities. These range from direct employment to temporary attachments and even dual affiliation. For details, see http://ec.europa.eu/education/policies/educ/eit/index_en.html. The Commission's formal proposal on EIT, including budget, should be published by the end of 2006.

Forthcoming events / meetings

IDEA sports event: 14-16 June in Delft.
Advisory and coordination committee: 21 June in Zürich.
White paper: 3 July in Paris.
Equality: 6-7 July in London.
Student councils: 7-9 July in London.
Life sciences: 10 July in Aachen.
Ethics: 17 July in Delft.
Communications: 21 July in London.
Quality management: 10 August in Aachen.
Mechanical engineering: 22 August in Delft.
Web: 14 September in Aachen.
IDEA summer school 'biotechnology and bioengineering applications in medicine' 17-22 September in Monte Verita, Ascona, Switzerland.
IDEA general assembly: 15-16 November in London.