

15th International Biotechnology Symposium in Korea

The 15th *International Biotechnology Symposium (IBS) and Exhibition* will be held on 16-21 September 2012 in Daegu, Korea. The *IBS*, which is organized every four years on a different continent, is recognized as the premier international conference in the rapidly growing field of biotechnology.

The mission of the *IBS* is to promote *Research and Development* in basic and applied biotechnology. The theme of this year's symposium is *Innovative Biotechnology for a Green World and Beyond*. Nine sessions covering all aspects of biotechnology will be arranged, including: *Pharmaceutical Biotechnology, Medical Biotechnology, Agricultural and Food Biotechnology, Bioenergy and Biorefinery, Environmental Biotechnology, Applied Microbiology, Process Biotechnology, Biosensors and Nanobiotechnology, and Biosafety, Bioeconomy, Biopolicy, Bioeducation and Bioethics*. *IBS 2012* aims to provide a unique opportunity for discussion on how biotechnology can contribute to global sustainability in the 21st century. The program will feature contributions from both established and young scientists and engineers, and will provide a platform for representatives from all over the world. Participants may also take advantage of a technical exhibition that will be held in conjunction with the symposium.

Among the invited plenary speakers are distinguished scientists: Nobel Prize winner Prof. Aaron Ciechanover, Prof. Stanley Cohen of Stanford University (Stanford, CA), Prof. Sung Wan Kim, who will give a lecture on designed polymeric systems for gene delivery, and Prof. Gregory Stephanopoulos of Massachusetts Institute of Technology (Cambridge, MA).

The organizers hope to bring together scientists, engineers, business leaders and government officials to foster and enhance collaborative contacts, and to enable the exchange of information in many interdisciplinary areas of modern biotechnology.

The scientific program of the conference, information on abstract submission and registration deadlines

are available on the *IBS 2012* official website: www.ibs2012.org.

BIO-Europe 2012 partnering event

Hamburg, Germany will host the 18th annual *BIO-Europe 2012* partnering event on 12-14 November 2012. This is the largest partnering conference in Europe and the investment and collaboration opportunities developed during previous *BIO-Europe* conferences have produced many highly successful business partnerships. This year's *BIO-Europe* partnering event is expected to attract more than 3000 industry attendees from over 40 countries, representing close to 1800 companies for three days of high-level networking.

In addition to productive partnering, *BIO-Europe* offers high-level workshops, panels, company presentations, and a lively exhibition. Parallel panel discussions will focus on topics such as fostering the early partnership between the pharmaceutical industry and academia, applications of nanomedicine and the rapid evolution of personalized oncology.

The company presentation tracks will provide a forum for innovative start-ups, established biotechnology companies, and large and mid-sized pharmaceutical companies to present information on products, partnering opportunities and corporate strategy.

BIO-Europe is organized by the EBD Group, a leading partnering firm for the global biotechnology industry, in alliance with the Biotechnology Industry Organization (BIO).

For detailed information about partnering opportunities, exhibitions and sessions held during *BIO-Europe 2012*, visit the event's website: www.ebdgroup.com/bioeurope/index.php.

Breakthrough of the Year 2011 chosen by *Science* magazine

Each year *Science's* editors select one scientific breakthrough of the year. This time *Science* has chosen the discovery that antiretroviral drugs reduce the risk of

heterosexual transmission of HIV, which may have profound implications for the future treatment of AIDS. This finding may influence the strategies used by health advocates and policymakers to battle the disease.

HIV/AIDS researchers have long debated whether antiretroviral drugs (ARVs) administered to HIV-infected people might have a double benefit and cut transmission rates. This issue has been elucidated by the results of the 052 clinical trial published in May 2011, which was conducted by the HIV Prevention Trials Network (HPTN). According to the HPTN report, ARVs reduced the risk of heterosexual HIV transmission by 96%.

The HPTN 052 clinical trial enrolled 1763 couples in which, when the study started, one person was diagnosed with HIV infection. The infected partner was one who had not taken ARVs before and had between 350 and 550 CD4 cells per milliliter, which indicates that the person had some immune damage but had yet to develop AIDS (defined as fewer than 200 CD4s). The study randomly assigned half of the infected people to start ARVs immediately, while in respect of the other half treatment was delayed until CD4 counts dropped to below 250. The researchers planned to compare the groups until 2015. However, in April 2011 an independent monitoring board which periodically reviews the trial data recommended that the results of the study should be published as soon as possible. It was found that of the 28 people who had become infected with HIV that genetically matched the viruses in their long-term partners, only one was in the early treatment group. Furthermore, patients from this group experienced 41% fewer serious health problems associated with HIV. Consequently, the infected people in the delayed arm of the study were offered ARVs immediately.

The HPTN 052 success has raised hopes that such interventions may now end AIDS epidemics. However, ARVs are not a vaccine: people must take them for decades, which is inconvenient and costly. Many scientists claim that HPTN 052 is a *game changer* because of its near 100% efficacy.

Sources

- Cohen J. (2011) *Breakthrough of the Year. HIV Treatment as Prevention*. Science. Vol. 334 no. 6063 p. 1628. doi:10.1126/science.334.6063.1628
- Cohen M.S. et al. (2011) *Prevention of HIV-1 Infection with Early Antiretroviral Therapy*. N. Engl. J. Med. 365: 493-505.

European Biodiesel Conference 2012

Active Communications International (London, United Kingdom) invites participants to the *European Biodiesel 2012* summit which will take place on 13-14 June 2012 in Kraków, Poland. This leading annual event for the European biodiesel industry has previously been held in Brussels, Prague, Barcelona and Rotterdam and has attracted senior executives from all areas of the biodiesel industry, including agribusiness, feedstock traders and suppliers, transportation companies, biodiesel producers, oil refiners, financiers, automotive companies, technology providers and plant manufacturers. *European Biodiesel 2012* comprises a highly interactive two-day program focusing on successful development of the European biodiesel market. Conference attendees will also have a unique opportunity to attend a site visit to Lotos Czechowice-Dziedzice biodiesel plant.

Key topics included in the conference program are policies on biofuels in the European Union and their implementation at national level, biodiesel industry dynamics and cutting-edge scientific developments in the production of renewable diesel.

For further information about the program and registration visit the organizer's website: www.wplgroup.com/aci/conferences/eu-eaf5.asp

Innovative sialic acid synthesis method from crustaceans

Chitin is one of the most abundant, renewable organic polymers with an estimated annual biosynthesis of 10^9 to 10^{11} tonnes. For industrial applications chitin is extracted mainly from the shells of crabs and prawns. However, only a small portion of this resource is currently used in agricultural, industrial and medical applications.

The Gene Technology Group from Vienna University of Technology, led by Dr. Astrid Mach-Aigner, developed a new method of transforming chitin into sialic acid derivatives which are applied in the therapy of virus-born diseases. In particular, they are used as neuraminidase inhibitors to prevent further propagation of viruses. Currently, more than 50 derivatives of sialic acid are known to exist in nature. N-Acetylneuraminic acid (NeuNAc) or

NANA) is the most prevalent exponent of sialic acids and, since all biochemical pathways proceed via this substance, it is believed to serve as a precursor of all other sialic acid derivatives. Furthermore, NeuNAc is currently believed to be a promising aspirant in antagonizing bird flu and is worth around 2000 Euros per gram on the pharmaceutical market.

Dr. Mach-Aigner's group has recently presented a new method of NeuNAc synthesis based on a genetically engineered *Trichoderma* strain which synthesizes NeuNAc under standard fermentation conditions using chitin as a substrate. The innovative strategy of the Gene Technology Group introduces a multi-step enzyme cascade into a filamentous fungus as a heterologous host. The fungus *Trichoderma reesei* is frequently prevalent in soil, meadows and trees. It is known to transform chitin into monomer amino sugars. In order to get the fungus to produce the desired chemical product, bacterial genes have been introduced into its genome. Modified *Trichoderma reesei* may be cultivated in bio-reactors and they produce the precious NeuNAc from chitin. The process has been patented by Vienna University of Technology and in the near future will be used for cheap and eco-friendly production of pharmaceuticals on an industrial scale.

Sources

Press release of Vienna University of Technology, 13.02. 2012, www.tuwien.ac.at/en/news/news_detail/article/7402/
Vienna University of Technology, Institute of Chemical Engineering website, www.vt.tuwien.ac.at/biotechnology_and_microbiology/gene_technology/mach_aigner_lab/introducing_a_neunac_synthesis_pathway_into_trichoderma/EN/

Introduction of nanopore sequencing technology

Oxford Nanopore Technologies Ltd (Oxford, United Kingdom) have presented, for the first time, DNA sequence data using nanopore-based technology designed to deliver ultra long read length. This novel nanopore strand sequencing technique is based on high performance electronic devices called GridION and MinION. Oxford Nanopore's GridION system consists of scalable instruments (nodes) used with consumable cartridges containing array chips for multi-nanopore sensing. Oxford Nanopore also offers a miniaturized system called

MinION - a disposable DNA sequencing device the size of a USB memory stick. Nanopore sequencing technology delivers real-time sequencing data via 2000 individual nanopores (processing cores, including 8000 nanopores, are expected to become available in 2013). Additionally, GridION nodes may be clustered in a similar way to computing devices, allowing users to increase the number of nanopore experiments being conducted at the same time. The company claims that a 20-node installation using an 8000 nanopore configuration would be expected to deliver a complete human genome in 15 minutes.

The novel method of DNA sequencing uses an array of proprietary protein nanopores embedded in a polymer membrane. Each nanopore simultaneously performs sequencing of multiple DNA strands consecutively aspirated from the solution. Individual strands are passed through the nanopore by a processive enzyme and the base calling is performed by identifying characteristic electronic signals. DNA and the enzyme are mixed in a solution, engaged with the nanopore for sequencing and once the strand has been completed a new strand is loaded into the nanopore for sequencing. According to the manufacturer's press release, no sample amplification is required and any sample preparation method resulting in double stranded DNA (dsDNA) in solution is compatible with the system. Interestingly, dsDNA can be sensed by the nanopores even directly from a blood specimen. Further information is available on the Company's website www.nanoporetech.com

Source

Oxford Nanopore Technologies Ltd. Press release, 17.02. 2012, www.nanoporetech.com/news/press-releases/view/39

New York Genome Center

Based on the initiative established in 2010 by New York City Mayor Michael Bloomberg, in November 2011 the New York Genome Center (NYGC) launched a unique collaboration program involving 11 leading medical and research institutions. The NYGC is an independent, nonprofit consortium of top academic medical centers, research universities, and commercial organizations and aims to upgrade biomedical research. Equipped with the latest molecular scanning technologies, the NYGC will

enable the most prestigious research institutions in the greater New York region to share data and resources on an unprecedented scale, helping to accelerate new discoveries, diagnostics, and treatments for human diseases. The NYGC will establish one of the largest bioinformatics and genomics facilities in North America. The Center will begin operations in the spring of 2012.

The Institutional Founding Members of NYGC include Cold Spring Harbor Laboratory, Columbia University, Cornell University/Weill Cornell Medical College, The Jackson Laboratory, Memorial Sloan-Kettering Cancer Center, Mount Sinai Medical Center, New York – Presbyterian Hospital, New York University/NYU School of Medicine, North Shore-LIJ Health System, The Rockefeller University and Stony Brook University.

Through this collaboration, scientists and physicians from the member institutions will share diverse clinical and genomic data on an unprecedented scale, in order to discover the molecular basis of numerous diseases, identify and validate new biomarkers, and accelerate development of novel diagnostics and targeted therapeutics to improve clinical care. NYGC experts will be able to sequence full human genomes and provide a complete clinical interpretation of the results. Besides clinical diagnostic and research work, NYGC services will support investigator research projects, collaborative work with academic institutions and industrial contract work.

More information about this newly launched consortium is available on the NYGC website: <http://www.nygenome.org>