6th annual International Biomass Conference & Expo

The 6th International Biomass Conference & Expo will be held on 8-10 April 2013, in Minneapolis (Minnesota, USA). This annual event brings together researchers, technology developers and industry professionals from all sectors of the world's biomass utilization industry, and the bio-based power, thermal energy, fuel and chemical industries.

The conference is organized by BBI International (a company organizing bioenergy events and publishing trade magazines) and supported by *Biomass Magazine*. This event provides networking opportunities for suppliers of bioenergy and bio-based products, farmers growing energy crops, municipal leaders, technology providers, equipment manufacturers, project developers, investors and policy makers. The International Biomass Conference & Expo is the largest, and fastest-growing event of its kind. In 2013, nearly 1600 participants are expected to attend the Conference. In 2012, the event attracted nearly 1500 attendees and doubled the attendance of the inaugural show.

The 2013 International Biomass Conference & Expo program will include over 30 panels and more than 100 speakers, including 90 technical presentations on topics ranging from anaerobic digestion and gasification to pyrolysis and combined heat and power, all within the framework of five customized tracks: Pellets & Densified Biomass; Industrial & Commercial Thermal Energy; Biomass Power; Biogas & Landfill Gas; and Advanced Biofuels & Bio-based Chemicals.

More information about the conference can be accessed at www.biomassconference.com.

12th International Wheat Genetics Symposium

The 12th International Wheat Genetics Symposium (XII IWGS) will be held on 8-14 September 2013 in Yokohama, Japan. Wheat science has recently entered a new era because of the international wheat genome sequencing project carried out by the International Wheat Genome Sequencing Consortium (www.wheatgenome.org). It is anticipated that by the middle of the year 2013, an outline of the structure of the wheat genome will have been clarified and it is likely that molecular markers of wheat quality and yield will have been deciphered. XII IWGS will highlight the latest achievements in wheat research and their translational applications to wheat breeding.

International Wheat Genetics Symposia have a long history – they have been organized every five years since 1958. This event will provide an opportunity for international researchers to exchange information on their latest research in the field of wheat genetics, genomics, gene function, evolution, genetic resources and breeding for sustainable wheat production. XII IWGS also aims to stimulate discussion on wheat genetics, breeding and biodiversity in light of the worldwide food crisis and the impact of climate changes on the food chain. The conference is organized by Kihara Institute for Biological Research, Yokohama City University (Yokohama, Japan).

More information concerning the event will be available at www2.convention.co.jp/iwgs12/ index.html.

Antibodypedia

Nature Publishing Group and *Antibodypedia* AB have developed an open-access database of antibodies against human proteins. It was initially launched in September 2008 within the 6th framework of the EU Proteome Binders program. The project is part of the *Human Antibody Initiative.* The 7th version of the database, released in November 2012, featured many improvements in comparison with former versions. *Antibodypedia* aims to provide researchers with information on the effectiveness of specific antibodies in particular applications and to play an important role in encouraging best practice in antibody-based research. Currently, the database contains information on 520 000 antibodies from nearly 30 providers, with more than 125 000 data images and 32 000 published references regarding the applications of particular antibodies.

Antibodypedia contains information about publicly available antibodies generated by academic or commercial providers. The database is organized in a *gene-cen-*

VIEWS and NEWS section is prepared by Joanna Przybył

tric manner so that users have an overview of all antibodies available against a particular target.

Both antibody providers and independent users can submit their own validation and efficacy data for each antibody, along with protocols and application-related comments. Database development, including a range of model organisms, is also planned in the near future.

The database can be accessed free of charge at www.antibodypedia.com.

CNIO and *Nature* joint events

The Spanish National Cancer Research Centre (Centro Nacional de Investigaciones Oncológicas, CNIO) and *Nature* Publishing Group will jointly organize two distinct cancer research events in 2013.

First, on 27-29 May 2013, the Chromosome instability and aneuploidy in cancer: from mechanisms to therapeutics conference will be held within the framework of CNIO Frontiers Meetings. This event is organized by Ana Losada (CNIO), Robert Benezra (Memorial Sloan-Kettering Cancer Center, New York, USA), René Medema (the Netherlands Cancer Institute, Amsterdam, The Netherlands) and Marcos Malumbres (CNIO). Among the confirmed speakers are distinguished scientists from American and European institutions. Abstract submission deadline is scheduled for 30 March 2013.

Later in 2013, on 27-30 October, the *Nature* – CNIO Cancer Symposium entitled *Frontiers in Tumor Heterogeneity and Plasticity* will take place. Kornelia Polyak, a specialist in the field of the molecular basis of breast tumor evolution from the Dana-Farber Cancer Institute (Boston, Massachusetts, USA) and José Baselga, who is Head of the Hematology/Oncology Department at Massachusetts General Hospital Cancer Center (Boston, Massachusetts, USA) will be the keynote speakers at this conference. Both events will take place at CNIO in Madrid, Spain.

Application forms for these meetings and preliminary programs are available at www.cnio.es.

The first use of anti-cancer engineered T cell therapy in children

In December 2012 at the American Society of Hematology (ASH) annual meeting in Atlanta, USA, a group of scientists from the Children's Hospital of Philadelphia and the University of Pennsylvania presented updated results of a clinical trial involving engineered T cells against selected leukemia subtypes.

The researchers had already previously reported on CART19 (also referred to as CTL019) genetically modified cells expressing a chimeric antigen receptor (CAR) with intracellular activation and costimulatory domains. Infusion of these cells resulted in a 100 to 100 000-times increased *in vivo* proliferation and tumor lysis, followed by a durable anti-tumor activity and prolonged persistence in patients with B cell tumors. This discovery fostered the development of modified T cell treatment for B cell leukemias. Initial results from such a treatment approach in adult chronic lymphocytic leukemia (CLL) patients had already been described in August 2011. Carl H. June of the Perelman School of Medicine at the University of Pennsylvania initiated the research and subsequently joined forces with pediatric oncologist Stephan A. Grupp from the Children's Hospital of Philadelphia to conduct a clinical trial evaluating engineered T cell treatment in 12 patients with advanced leukemias, including, for the first time, two children. Their most recent data presented at the ASH meeting showed that nine of the patients responded to the treatment with CTL019 cells.

The treatment effects were especially striking in a 7-year-old girl with acute lymphoblastic leukemia (ALL). Her case was reported in the news worldwide shortly after the data were revealed to the public. Catchy headlines, such as *HIV Cures Leukemia in Girl*, occurred as breaking news on TV and in the Internet, although the researchers had only used HIV-1 derived lentivirus vectors to transfer CAR19 targeting the CD19 antigen present on the surface of the B cells into the patient's T cells. T cells were collected from the patient, then re-engineered in a lab in order to recognize and attach to a CAR19 protein. Such engineered T cells may be subsequently put back into the patient's circulation system where they disperse to find cancerous B cells.

CTL019 treatment in this pediatric patient not only destroyed leukemia cells, but also stimulated a highly activated immune response called a cytokine release syndrome (CRS). The girl became very ill and had to be admitted to the intensive care unit. However, Stephan A. Grupp and his team overcame these toxic side effects by using 2 immunomodulating drugs that reduced the over-

active immune response and rapidly relieved the child's treatment-related symptoms. These results were so effective that this approach is now being successfully incorporated into CTL019 treatment of adults as well. It is important to note that, while early results of this treatment are encouraging, it is still in a very early stage of testing and that not all children who qualify for the trial will produce the same result.

Sources

Press release of the Children's Hospital of Philadelphia, www.research.chop.edu/publications/press/?ID=715, December 9, 2012

Kalos M., Levine B.L., Macatee T.L., Kulikovskaya I., Suppa E., Jena B., Gill S.I., MBBS, Cooper L.J.N., MD, Grupp S.A., Porter D.L., June C.H. *Sustained Functional T Cell Persistence and B Cell Aplasia Following CD19-Targeting Adoptive T Cell Immunotherapy for Relapsed, Refractory CD19+ Malignacy*. Abstract # 756 presented on December 10, 2012 at the ASH annual meeting.

Grupp S.A., Porter D.L., Teachey D.T., Barrett D.M., Chew A., Suppa E., Levine B.L., Kalos M., June C.H. *CD19-Redirected Chimeric Antigen Receptor T (CART19) Cells Induce a Cytokine Release Syndrome (CRS) and Induction of Treatable Macrophage Activation Syndrome (MAS) That Can Be Managed by the IL-6 Antagonist Tocilizumab (toc)*. Abstract #2604 presented on December 9, 2012 at the ASH annual meeting.

The scientific world criticizes the study by Gilles-Eric Séralini et al. concerning health risks arising from genetically modified maize

In November 2012, a team of researchers led by Gilles-Eric Séralini from the University of Caen, France published their study concerning health risks to rats arising from genetically modified maize. They reported that rats fed for two years with Monsanto's glyphosate-resistant NK603 maize developed many more tumors and died earlier than control animals. These findings have been uncritically cited by some media, generating controversy among public opinion. However, this publication drew a lot of attention from scientists and regulatory authorities. Statements casting doubt on the study have been published by many organizations, including the European Federation of Biotechnology (EFB) (Barcelona, Spain), The European Food Safety Authority (EFSA) (Parma, Italy) and Germany's Federal Institute for Risk Assessment (BfR) (Berlin, Germany).

The EFSA press release of 4 October 2012 stated that the (...) *recent paper raising concerns about the potential toxicity of genetically modified (GM) maize NK603 and of a herbicide containing glyphosate is of insufficient scientific quality to be considered as valid for risk assessment. EFSA's initial review found that the design, reporting and analysis of the study, as outlined in the paper, are inadequate. To enable the fullest understanding of the study the Authority has invited authors Séralini et al. to share key additional information*. EFB have even suggested that the authors should retract their paper. Additionally, the Flanders Institute for Biotechnology (VIB) (Flanders, Belgium) released a detailed point by point analysis of the study, highlighting inaccuracy in study design, the breed of rats chosen for the study, interpretation of results and statistical analysis.

Séralini et al. have already published *Answers to critics: Why there is a long term toxicity due to NK603 Roundup-tolerant genetically modified maize and to a Roundup herbicide*. It is noteworthy that when it comes to comments about the non-release of the raw data on which they based their analysis, they responded that (...) *due to the social impact and for full scientific understanding of the NK603 and R risks, we will release our raw data if the regulatory agencies that have taken industry data into account release the data pertinent for environmental and health risk assessments, in particular their longest toxicological tests on mammals, as we have indicated to EFSA*. Such reluctance on the part of Séralini and colleagues to publish their raw data serves only to cast more doubt on their study.

We encourage our readers to individually revise both the original paper and consecutive comments and analyses to develop their own point of view on this controversial issue:

Séralini G.E., Clair E., Mesnage R., Gress S., Defarge N., Malatesta M., Hennequin D., de Vendômois J.S. (2012) *Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize*. Food Chem Toxicol. Nov 50(11): 4221-4231. doi: 10.1016/j.fct.2012.08.005. Epub 2012 Sep 19.

Séralini G.E., Mesnage R., Defarge N., Gress S., Hennequin D., Clair E., Malatesta M., de Vendômois J.S. (2012) *Answers to critics: Why there is a long term toxicity due to NK603 Roundup-tolerant genetically modified maize and to a Roundup herbicide*. Food Chem Toxicol. 2012 Nov 9. pii: S0278-6915(12)00814-9. doi: 10.1016/j.fct. 2012.11.007.

A study of the University of Caen neither constitutes a reason for a re-evaluation of genetically modified NK603 maize or does it affect the renewal of the glyphosate approval – Press release of the Germany's Federal Institute for Risk Assessment (BfR), www.bfr.bund.de/en/press_

information/2012/29/a_study_of_the_university_of_caen_neither_constitutes_a_reason_for_a_re_evaluation_of_genetically_modified_nk603_maize_nor_does_it_affect_the_renewal_of_the_glyphosate_approval-131739.html, 1 October 2012.

EFSA publishes initial review on GM maize and herbicide study – Press release of the European Food Safety Authority, www.efsa.europa.eu/en/press/news/ 121004.htm, 4 October 2012.

A scientific analysis of the rat study conducted by Gilles-Eric Séralini et al. – publication of VIB, www.vib.be/en/news/Documents/20121008_EN_Analyse%20rattenstudie%20S%C3%A9ralini%20et%20al.pdf

EFB position on Séralini et al. (2012) publication on the reported toxicity of Roundup-tolerant genetically modified maize – publication of EFB, www.efb-central.org/index.php/Main/C2, 4 October 2012.

Whole genome sequencing of circulating DNA in cancer patients

The *Science Translational Medicine* issue released in November 2012 reported results of a study which aimed to develop a novel non-invasive approach to the detection of incipient, residual, and recurrent tumors. Researchers led by Victor E. Velculescu from the Ludwig Center for Cancer Genetics and Howard Hughes Medical Institute, Johns Hopkins Kimmel Cancer Center (Baltimore, Maryland, USA) worked on the direct identification of tumor-derived genetic alterations through the analysis of circulating cell-free DNA extracted from the plasma of 10 colorectal and breast cancer patients and 10 healthy individuals. Massively parallel sequencing identified chromosomal structural alterations, such as DNA copy number changes and rearrangements in all cancer patients, which were not present in the plasma DNA of healthy individuals. The detected alterations included amplification of well characterized cancer driver genes such as *ERBB2* and *CDK6*. The level of the circulating tumor DNA in cancer patients ranged from 1.4 to 47.9%.

It is widely recognized that chromosomal abnormalities are present in the vast majority of human cancers. Therefore, this approach represents a useful method for non-invasive detection which does not require tumor biopsies. Moreover, routine diagnostic techniques are often not sensitive enough to detect cancer in the early stage of development, and this could also be overcome by the application of a blood test based on the whole genome sequencing. Specialists conducting research in this field predict that next generation sequencing of the circulating tumor DNA might be introduced into clinical practice in about 5 to 10 years, as sequencing costs will decrease significantly.

Source

Leary R.J., Sausen M., Kinde I., Papadopoulos N., Carpten J.D., Craig D., O'Shaughnessy J., Kinzler K.W., Parmigiani G., Vogelstein B., Diaz L.A. Jr, Velculescu V.E. (2012) *Detection of chromosomal alterations in the circulation of cancer patients with whole-genome sequencing*. Sci. Transl. Med. Nov 28; 4(162): 162ra154. doi: 10.1126/scitranslmed.3004742.