4th International Conference on

Advances in Biotechnology and Bioscience

November 15-17, 2018 | Berlin, Germany

Keynote Forum

Day 1

Betty Lee, J Biotechnol Biomater 2018, Volume 8
DOI: 10.4172/2155-952X-C6-102

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Betty Lee

Bureau of Industry and Security, USA

The role of export controls in regulating biotechnology

Biotechnology has the ability to improve health with pharmaceuticals, improve agricultural crops, improve the environment with new biofuels by reducing greenhouse gas emissions and improve crop insect resistance. Biotechnology is dual use technology because it can be used for legitimate manufacturing of pharmaceuticals and used for production of bioweapons. Civilian uses would include manufacturing of medicines and industrial chemicals. The same equipment and technology could also be used to manufacture chemical or biological weapons. Therefore, biotechnology poses a challenge because of its dual nature. To prevent misuse of biotechnology, many countries use export control or strategic trade to promote non-proliferation and as a deterrent to illicit use by terrorists. This is a means of controlling technology, manufacturing or processing equipment, chemicals and biological agents that may be used to manufacture chemical weapons or bioweapons. Export control is one of many tools to promote non-proliferation among countries and to prevent misuse of controlled technology, equipment, chemicals or biological agents. Many countries are members of multilateral regimes such as the Wassenaar Arrangement, Missile Technology Control Regime, Nuclear Suppliers Group and the Australia Group. In the case of biotechnology, the Australia Group maintains a list of controlled technology, software and commodities related to biotechnology and chemical processing. The US government regulates the transfer of controlled commodities and technology, identical to the Australia Group List. This talk will explain the particulars of the control list and how each country deters the illicit transfer of important equipment and technology to make weapons of mass destruction (WMD).

Biography

Betty Lee has completed her PhD at Dartmouth Medical School, USA; MS in Clinical Chemistry at the University of Windsor, Canada and MS in Biochemistry at LSU Medical Center, USA. She has completed her Postdoctoral training at the National Institutes of Health, USA. She currently works as a Licensing Officer with the US government. She educates industries and academia about the export administration regulations (EAR) and participates in outreach. In addition, she has participated in the policy review of the executive order entitled, "Optimizing the security of biological select agents and toxins in the United States", signed by American President, Obama on July 2nd, 2010.

betty.lee@bis.doc.gov

Małgorzata Łochyńska, J Biotechnol Biomater 2018, Volume 8
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Malgorzata Lochynska

Institute of Natural Fibres and Medicinal Plants, Poland

New perspectives in sericulture

Numerous new applications of the mulberry silkworm (*Bombyx mori* L.) and the white mulberry (*Morus alba* L.) significantly increase the value of sericulture. Due to the bioactive substances contained in the leaves and silk, farmers are increasingly interested in the production of leaves as herbal raw material and silk cocoons. Additionally, products and by-products obtained from sericulture may be used in agriculture, medicine and industry. Beyond the commonly known sericulture attributes, silk proteins-fibroin and sericin-and almost 300 hemolymph are uncommon bioactive. The aim of this lecture is to present fascinating insect and its host and all possibilities to use them in human life.

Biography

Małgorzata Łochyńska has completed his PhD at the age of 26 years from Adam Mickiewicz University in Poznan. She is head of Department of Silkworms Breeding and Mulberry Cultivation INF&MP in Poznan. She has published more than 70 papers in international journals and attended in 93 research conferences.

malgorzata.lochynska@iwnirz.pl

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Day 2

Riny Yolandha Parapat, J Biotechnol Biomater 2018, Volume 8
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Riny Yolandha Parapat
Technical University of Berlin, Germany

Synthesis of highly active Pt nanoparticles with grape seeds (*Vitis vinifera*), mangosteen skin (*Garcinia mangostana*) and clove (*Syzygium aromaticum*) as the reducing agents

The latest development of nanotechnology has been using bio-material as a reducing agent to synthesize nanoparticles. Bio-materials such as plants can reduce metal ions both on the surface and in the various organs of plants. Plants contain antioxidant compounds that can reduce metal ions. Here, grape seeds (*Vitis vinifera*), mangosteen skin (*Garcinia mangostana*) and clove (*Syzygium aromaticum*) were used as reductant. These biomaterials are classified as weak reductants. Grape seed contains the main antioxidant, oligomeric proanthocyanidins (OPC) of ~78% which plays a main role as a reducing agent, whereas mangosteen skin contains xanthone (~84%) and clove contains eugenol (~85%) as the main antioxidant. We synthesized Pt nanoparticles by using the bio-materials mentioned above via microemulsion method. The results from characterization with transmission electron microscopy show that metal nanoparticles with different shapes were produced. By combining the thermo-destabilization of microemulsion technique and the use of the bio-reductants, we are able to produce a highly active supported Pt nanocatalyst. The results show that the activity of the produced Pt nanodendrites is much higher than those which were prepared with the harmful chemical (hydrazine). This superior activity is due to the anisotropic structure of the produced Pt nanodendrites. In a challenging reaction such as hydrogenation of levulinic acid, which is normally carried out at high temperature (~240°C) and high pressure (~100 bar), the produced Pt nanodendrites are able to reach 98% of GVL (biofuel) selectivity at 94% conversion at a mild reaction condition (1.3 bar and 70°C).

Biography

Riny Yolandha Patapat has completed her PhD at Technical University of Berlin (TU-Berlin). Currently, she is pursuing her Postdoctoral Research at TU-Berlin. She is also a Lecturer at Itenas, Bandung. Her speciality is in the field of nanomaterial synthesis, catalysis in the greener way and biofuel production.

rinyyolandha@yahoo.de

Marietjie Botes, J Biotechnol Biomater 2018, Volume 8
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Marietjie Botes

Dyason Inc, Republic of South Africa

Material transfer agreements for human biological material: Successful sample and data sharing in the framework of European and South African privacy laws

Insurance companies in South Africa are increasingly developing insurance products which will enable patients to afford genetic testing for purposes of personalized medicine, specifically in the oncology fields. But because South Africa does not currently possess sufficient local capacity to sequence and/or test genetic samples, these services will have to be outsourced to laboratories in foreign countries. South Africa is also home to the San, an indigenous population with the oldest living genes on earth, which make this population highly sought after for GWAS and other genomic research. It is thus clear that South Africa scientists and medical practitioners will increasingly engage with their foreign counter parts by means of Material Transfer Agreements, as these are only two examples of areas where the cross border transfer of human biological material will be imminent. In July 2018 South Africa has adopted its first formal Material Transfer Agreement for Human Biological Materials in terms of its National Health Act 61 of 2003 which, amongst others, addresses issues such as benefit sharing, informed consent, publications and publicity. However, this agreement sorely lacks substance when it comes to the management of intellectual property, which often constitutes the lifeline of biotechnology companies. It also does not deal with material ownership, as opposed to possession, or privacy, further considering that genetic material and genetic sequences resulting there from cannot really be de-identified to comply with the recently enacted European GDPR and the South African Protection of Personal Information Act 4 of 2013. Further considering the vulnerability of both sick patients and an indigenous minority group, coupled with the sensitivity of the medical and population data that may be gathered from the genetic testing and/or sequencing of these persons, the value of Material Transfer Agreements (MTA) and the ethics and legal issues surrounding it is of critical importance to ensure a balance between the rights and protection of patients or research participants and easy access to biotechnological services, samples and data by scientists and medical practitioners to aid biomedical innovation.

Biography

Marietjie Botes is the Founder and Managing Director of Biolawgic, a private company focusing on the promotion of Bioethics and Director at Dyason Inc in Pretoria where she specializes in Health-tech, Fin-tech and Bio-tech Contracts, Biotechnology Law, Health Care and Life Sciences Law and Insurance Litigation. She is particularly interested in and passionate about genetic, genomic and stem cell research and has published numerous articles in both national and international journals on these topics.

marietjie@dyason.co.za

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