



Advanced Materials for Biomedical Applications in Human Health: Scientific, Technical, and Bioethical Issues

An IAS Masterclass with Professor Federico Rosei, 2009 Gledden Senior Visiting Fellow, UWA and Professor Eric M. Meslin, 2009 Institute of Advanced Studies, Professor-at-Large, UWA.

About this Masterclass

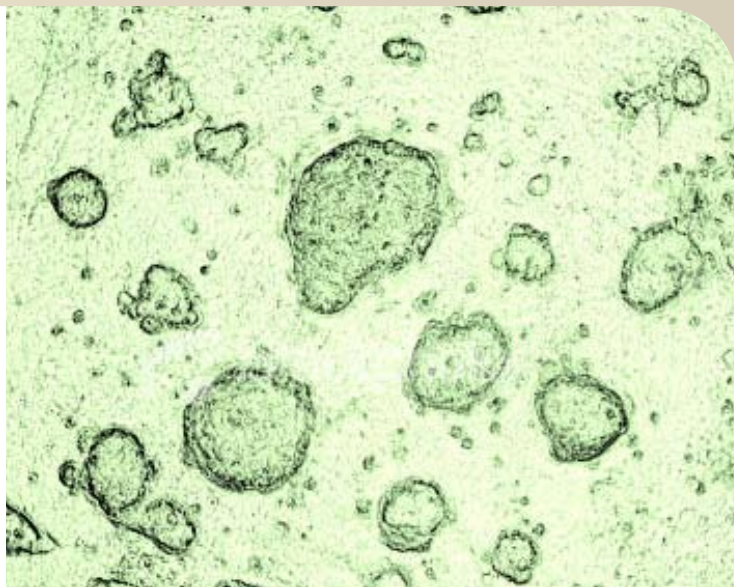
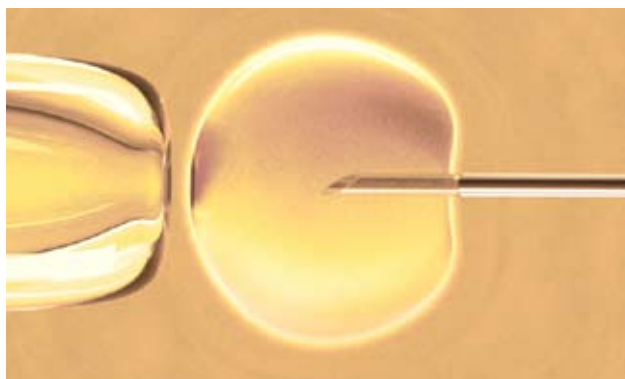
Advanced Materials are widely used for biomedical applications, yet great challenges lie ahead for harnessing the true potential of their functionality to improve human health.

Promising and growing areas of application include (but are not limited to) implantable biomaterials, tissue engineering and drug delivery. The human body is an intricate biochemical-biomechanical system, with an exceedingly precise hierarchical organization in which all components work together in harmony across a wide range of spatial dimensions (e.g. from proteins which are a few nanometers in size, to cells which can be several microns in size). Many fundamental biological processes take place at surfaces and interfaces and these typically occur on the microscale and more frequently on the nanoscale.

Current health-related research is actively following a biomimetic approach in learning how to create new biocompatible materials (i.e. materials that can be incorporated and accepted by the body, usually to replace a bodily function which is impaired due to age or disease) with suitable nanostructured features so as to optimize functionality. The ultimate aim is to reproduce and enhance the natural nanoscale elements present in the human body and to thereby develop new materials with improved biological activities.

In addition to the technical and scientific challenges, many bioethical and policy obstacles may need to be overcome to move from the bench to the bedside. None of the current ethics and policy paradigms – e.g., organ and tissue transplantation, research involving human subjects, collection and use of biological materials – easily accommodate or comprehensively apply to the case of research involving advanced materials. What would informed consent look like? What are the risks and benefits? What international standards exist? Nor do we have anything resembling public consensus on how to proceed.

Progress in the area of advanced biomaterials therefore requires a multidisciplinary effort at the interface of biology, physics, chemistry, materials science, engineering, bioethics and policy.



This Masterclass will explore the scientific, technical and bioethical issues arising in this new area of science.

Masterclass Details

Date: Thursday 7 May 2009

Time: 10pm-4pm

Venue: Old Senate Room, UWA

Cost: Free, but Registration is essential to attend.

Register at: www.ias.uwa.edu.au/masterclass

Registration Closing Date: Thursday 30 April 2009

The IAS Masterclass provides an opportunity for postgraduate students to meet and discuss their research with a distinguished scholar who is visiting UWA.

Over a one-day period, participants will discuss their research interests or present short papers within the framework of the stated topic, which will then be opened for discussion by the group.

IAS Masterclasses are cross-disciplinary and submissions are welcome across all relevant disciplines. Interested postgraduate students and academics from Perth universities are invited to attend, as well as those working in relevant fields.

Enrollment is limited to no more than 20 participants to allow for a relaxed, informal atmosphere. Early registration is advised.



About Professor Federico Rosei



Dr. Federico Rosei received the Laurea degree and the Ph.D. degree in physics from the University of Rome 'La Sapienza' (Rome, Italy) in 1996 and 2001, respectively. He was a Postdoctoral Research Associate and Marie Curie Fellow at the Center for Atomic Scale Materials Physics, University of Aarhus, Denmark, from November 2000 to April 2002. He then joined the faculty at INRS—Énergie,

Matériaux et Télécommunications, University of Québec, Montréal, Canada, as Assistant Professor in May 2002. Two years later, he was promoted to Associate Professor, with tenure. He holds the Canada Research Chair in Nanostructured Organic and Inorganic Materials since 2003. He has coauthored about 80 articles in international journals, given over 80 invited, keynote, and plenary lectures at international conferences and more than 100 seminars and colloquia at Universities, Government and Industrial Laboratories in 32 countries on all the continents. He has co-authored the best-selling book *Survival Skills for Scientists*, published in 2006 by Imperial College Press. His research interests focus on fabricating, processing and characterizing inorganic, organic, and biocompatible nanomaterials. He is currently a visiting Gladden Fellow at the Center for Strategic Nanofabrication, The University of Western Australia.

Institute of Advanced Studies

The University of Western Australia
M021, 35 Stirling Highway, Crawley WA 6009

Tel +61 8 6488 1340
Fax +61 8 6488 1711

Email iasuwa@admin.uwa.edu.au

Web www.ias.wa.edu.au

About Professor Eric Meslin



Professor Eric Meslin came to Indiana University in July 2001 from the National Bioethics Advisory Commission (NBAC), where he had been Executive Director since 1998. NBAC was appointed by President Bill Clinton to advise the White House and the federal government on a range of bioethics issues including cloning, stem cell research, international clinical trials, and genetics studies.

A Canadian by birth, Dr. Meslin received his B.A. in Philosophy from York University, and both his M.A. and Ph.D. from the Bioethics Program in Philosophy at the Kennedy Institute of Ethics at Georgetown University. He has held academic positions at the University of Toronto and at the University of Oxford and is currently Visiting Professor-at-Large with the Institute of Advanced Studies at the University of Western Australia.

He has more than 80 publications on topics ranging from international health research to science policy, including *Belmont Revisited: Ethical Principles for Research with Human Subjects* co-edited with James F. Childress and Harold T. Shapiro.

He has been a consultant to the World Health Organization, the US Observer Mission to UNESCO, the Canadian Institutes of Health Research and sits on several boards and committees including the Stem Cell Oversight Committee of the Juvenile Diabetes Research Foundation, the Indiana Organ Procurement Organization, and the Board of Directors of Genome Canada. In 2008 he was appointed a Chevalier de L'Order Nationale du Mérite (Knight of the National Order of Merit) by the Republic of France.