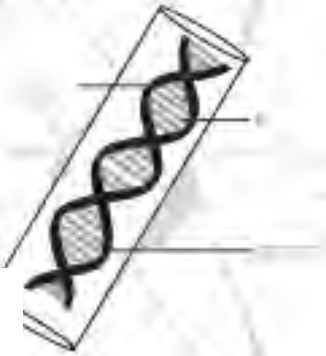
CANADA SCIENCE AND TECHNOLOGY MUSEUM

MUSÉE DES SCIENCES ET DE LA TECHNOLOGIE DU CANADA

Students Explore Biotechnology

May 5 and 6, 2010
At the Canada Science and Technology Museum

The perfect opportunity for your students to explore potential careers in biotechnology-related fields and to supplement their science curricula! Please complete and return the enclosed registration form by **May 3, 2010**



REGISTER EARLY
TO AVOID DISAPPOINTMENT

For more information and to make a reservation:
TELEPHONE **613 991-3053** / FAX **613 993-7923**

Veuillez téléphoner au (613) 991-3053 pour recevoir ce document en français.

Canada

Students Explore Biotechnology at the Canada Science and Technology Museum May 5 & 6, 2010

Biotechnology Lecture Series

Choose one, two, or three lectures per day!
The perfect opportunity for your students to explore potential careers in biotechnology-related fields and to supplement their science curricula!

Tour the Museum and take part in our "Biotrail" Challenge

While at the Museum, take the opportunity to explore our exhibits and revisit your favorite Museum artifacts. Get your copy of our "Biotrail" Challenge at the Information Desk. It is a questionnaire leading you throughout the Museum where you must collect answers to biotechnology related questions.

This year's series includes:

- **Panel Discussion - Harry Atkins, M.D.,** Ottawa Health Research Institute, and a patient with Multiple Sclerosis: "Stem Cell Based Treatment Helping Patients Now"
- **Maria Derosa, Ph.D.,** Assistant Professor of Chemistry and Biochemistry, Carleton University: **"**Building Nanotechnology from Nature's Toolkit"
- **Zubin Master, Ph.D.,** Sprott Centre for Stem Cell Research: "Bioethical Issues of Assisted Reproduction, Cloning and Stem Cell Research"
- **Bettina Bareiss, MSc.,** University of Ottawa Eye Institute: "Regenerating Organs: Artificial Corneas for HSV patients"
- **Barbara Vanderhyden, Ph.D.,** University of Ottawa, Ottawa Hospital Research Institute: **"**Playing with Eggs and Sperm: Wisdom or Folly"
- **Marianne Stanford, Ph.D.,** Ottawa Health Research Institute: "Using Viruses to Kill Cancer Cells"
- **Owen Rowland, Ph.D.,** Carleton University and students from Carleton University: "Green biotechnology: Harnessing plant biomass for biofuels and biomaterials"
- **Leigh Anne Swayne, Ph.D.,** HSF Centre for Stroke Recovery, University of Ottawa: "Neurodegeneration and Regeneration in the Human Brain"
- **Ron Fourney, Ph.D.,** Central Forensic Laboratory, Royal Canadian Mounted Police: "Forensic Science - Past and Present"
- **David Boudreau,** Direction des brevets, Office de la propriété intellectuelle du Canada, Industrie Canada : « Les brevets : quels avantages peuvent ils vous offrir »
- **Marie-Claude Léveillé, Ph.D.,** Centre de fertilité de L'Hôpital d'Ottawa: « La biotechnologie dans les pouponnières : la fertilisation in-vitro »
- **Chantal Frégeau, Ph.D.,** Gendarmerie Royale du Canada, Banque nationale de données génétiques : « De la double hélice à la GRC : évolution des techniques de typage d'ADN pour l'identification humaine au fil des ans »

SPACE IS LIMITED!
Register now to attend with your students
phone: 613 991-3053 or fax: 613 993-7923

CANADA SCIENCE AND TECHNOLOGY MUSEUM
Canada

Biotechnology Lecture Series
Presentations on May 5th

Les présentations sont décrites dans la langue qu'elles seront offertes.
All presentations are described in the language of their delivery.

10 h	10:00 a.m.
Regenerating Organs: Artificial Corneas for HSV patients • Bettina Bareiss, MSc. University of Ottawa Eye Institute The herpes simplex virus (HSV) which causes common cold sores can also infect the eye. In fact, it is the leading cause of infectious blindness in the developed world. Once the virus infects the cornea, it can stay inside nerve cells and can reactivate several times, destroying the cornea, and leading to vision loss or blindness. How can scientists fight back against corneal HSV and restore vision of these blind patients? In our lab, we are designing artificial corneas that can regenerate corneal cells and nerves in patients. Learn how we develop new artificial corneas compatible for HSV patients to prevent virus reactivation and restore the vision of these high risk patients.	**De la double hélice à la GRC : évolution des techniques de typage d'ADN pour l'identification humaine au fil des ans.** • Chantal Frégeau, Ph.D. Services nationaux et recherche, GRC. Tout comme les empreintes digitales, les empreintes génétiques utilisées à des fins d'identification humaine ont révolutionné les procédés d'enquête judiciaire. Les nouvelles stratégies de typage d'ADN permettent de réduire de façon significative le temps requis pour établir des liens entre criminels suspects et le matériel biologique retrouvé sur la scène d'un crime. Ces mêmes procédés facilitent l'identification de victimes de désastres majeurs. L'évolution rapide des techniques de typage d'ADN sera présentée ainsi que l'impact de ces virages technologiques sur le système judiciaire.
11 h 15	**11:15 a.m.**
Building Nanotechnology from Nature's Toolkit • Maria Derosa, Ph.D. Assistant Professor of Chemistry and Biochemistry, Carleton University DNA may be best known for carrying the genetic blueprint for all living things but recently it has become part of the construction materials in the exciting field of nanotechnology. Nanotechnology seeks to make and manipulate useful devices on an extremely small length scale (billionth of a meter). As Nature has been very successful working at this length scale, it makes sense to look to biological building blocks, like DNA, for use in nanotechnology. In this talk, we'll look at some of the latest advances in DNA nanotechnology for applications in electronics, sensors, and therapeutics.	**La biotechnologie dans les pouponnières : la fertilisation in-vitro** • Marie-Claude Léveillé, Ph.D. Centre de Fertilité d'Ottawa Le 25 juillet 1978 naissait Louise Brown, le premier bébé éprouvette du monde. L'existence de Louise a été rendu possible grâce à la fertilisation in-vitro. Cette technique fait partie d'une multitude d'options développés afin d'aider les gens ayant des problèmes de fertilité à avoir des enfants partageant leur bagage génétique. Après plus de 30 ans, les questions sur ces techniques continuent de créer un débat légal et éthique. Dr. Léveillé fera un survol de ces techniques, et explorera certaines problématiques éthiques reliées à ces techniques.
13 h	**1:00 p.m.**
Forensic Science - Past and Present • Ron Fourney, Ph.D. - Director, National Services and Research, Forensic Science and Identification Services Be sure not to miss Dr. Fourney's fascinating presentation on DNA typing research. In the same manner that conventional fingerprinting analysis changed the course of human identification more than 100 years ago, "DNA Typing" has revolutionized forensic science and our quest for human identification. Learn about the history of this technology from the past to the present and how it has played a key role in the administration of justice.	**"Les brevets : quels avantages peuvent ils vous offrir"** • David Boudreau. Direction des brevets, Office de la propriété intellectuelle du Canada, Industrie Canada Que vous soyez un inventeur, un chef d'entreprise, un étudiant ou un promoteur, les brevets peuvent vous être très utiles. Lorsque le brevet est exploité de façon stratégique, il peut vous permettre d'accroitre votre compétitivité et de récolter de nombreux avantages. Le brevets est particulièrement présent dans le domaine de la biotechnologie. Cette présentation vous permettra de comprendre ce qu'est un brevet et pourquoi il est important de bien comprendre son utilité dans le domaine des sciences et des technologies.

Biotechnology Lecture Series
Presentations on May 6th

Les présentations sont décrites dans la langue qu'elles seront offertes.
All presentations are described in the language of their delivery.

10 h	10:00 a.m.
Stem Cell Based Treatment Helping Patients Now • Harry Atkins, M.D. – Ottawa Health Research Institute; A multiple Sclerosis Patient Join a physician and a person who received a stem cell therapy for a presentation and discussion on the promises offered by stem cell research, and making them into a reality. Dr. Harry Atkins, Ottawa Hospital physician and scientist, will describe some of the new ways that stem cells can be used to treat patients with different illnesses. A patient, who has had his Multiple Sclerosis treated with a novel stem cell therapy, will provide their perspective on stem cell science and hopes for the future. This presentation promises to open minds and spark the interest of anyone who is interested in this new and exciting frontier of medical research.	**Playing with Eggs and Sperm: Wisdom or Folly?** • Barbara Vanderhyden, Ph.D. - University of Ottawa, Ottawa Hospital Research Institute. On July 25, 1978 Louise Brown, the first baby to be conceived outside its mother's body, was born. The existence of Louise is possible because of a technique called in-vitro fertilization, one of a growing number of assisted reproductive technologies developed to help infertile people have children who are genetically their own. After more than 30 years, questions about these techniques continue to create ethical controversy, and are the subject of much legal and moral debate. Dr. Vanderhyden will provide an overview of these technologies, as well as explore some of the ethical issues associated with these techniques.
11 h 15	**11:15 a.m.**
Bioethical Issues of Assisted Reproduction, Cloning and Stem Cell Research • Zubin Master, Ph.D. – Sprott Centre for Stem Cell Research Bioethical issues surrounding reproduction, cloning, and stem cell research confront many scientists, bioethicists, policy-makers, and the public. Zubin Master, a bioethicist presents the main ethical issues related to assisted reproduction, reproductive and therapeutic cloning, and stem cell research and shows how they are interrelated. A significant time will be left at the end of Zubin Master's presentation to answer questions and allow for discussion.	**Green biotechnology: Harnessing plant biomass for biofuels and biomaterials** • Owen Rowland, Ph.D. – Carleton University; Plants are our greatest source of renewable resources providing food, medicines, industrial bioproducts, and biofuels. However, in the past 100 years or so, our society has become heavily dependent on non-renewable fossil fuels (e.g. oil and coal) as sources of energy and chemical feedstocks. This is not sustainable. The replacement of petroleum-based products with renewable agricultural-based products is one of the most urgent tasks that human society faces today. Plant biologists and biochemists are at the forefront of developing strategies to sustainably harness plant biomass to meet our energy and industrial needs. Dr. Rowland will discuss the opportunities and challenges in this fascinating and emerging area of biotechnology.
13 h	**1:00 p.m.**
Using Viruses to Kill Cancer Cells • Marianne Stanford, Ph.D. - Ottawa Health Research Institute Viruses to the rescue? We often have the misconception that viruses are only nasty little things that can make us sick. Join Marianne Stanford in an exploration of how viruses can be used to help fight cancer. One new anti-cancer strategy which holds promise is the use of self-replicating viral strains with the ability to specifically kill tumour, but not normal cells. These so-called "oncolytic viruses" are able to exploit tumour-specific genetic defects to gain a growth advantage. Learn about the types of genetic mutations that we now know exist in tumours, and how these viruses can be used to target and kill cancer cells.	**Neurodegeneration and Regeneration in the Human Brain** Leigh Anne Swayne, Ph.D. HSF Centre for Stroke Recovery, University of Ottawa The human adult brain is extremely vulnerable to injury given that the majority of its cells cannot regenerate. Current therapy is aimed at preventing brain cell death. Little can be done to replace lost or damaged brain cells in the weeks that follow a stroke or during the course of a progressive neurodegenerative disorder such as Alzheimer Disease. The recent discovery that the adult human brain contains rare stem and progenitor cells – cells capable of generating all the different functional cells of the brain – heralds a new era in neurodegenerative treatment. Research in the Bennett laboratory seeks to identify environmental factors that regulate activation, commitment, and survival of adult progenitor populations following injury.

BIOTECHNOLOGY LECTURE SERIES

Registration Form - Wednesday, May 5th

School Name _____ School Address _____

City _____ Province _____ Postal Code _____

Phone Number ( ) _____ Fax Number ( ) _____

Teacher's Name _____ Grade _____ Number of Students ____

E-mail Address _____

Estimated Arrival Time _____ Estimated Departure Time _____

Please place a cross in the box next to the lectures you wish to attend and submit one form per attending class.

Each presentation is approximately 40 minutes in length plus 10 minutes for questions.
The presentation title (below) indicates in which official language it will be offered.
Please note that the Museum reserves the right to replace a guest-lecturer with a substitute.

10:00 a.m.

- o **Regenerating Organs: Artificial Corneas for HSV patients**
  Bettina Bareiss, MSc. – University of Ottawa Eye Institute

OR

- o **De la double hélice à la GRC : évolution des techniques de typage d'ADN pour l'identification humaine au fil des ans**.
  Chantal Frégeau, Ph.D. – Gendarmerie Royale du Canada, Banque nationale de données génétiques

11:15

- o **Building Nanotechnology from Nature's Toolkit**
  Maria Derosa, Ph.D. – Assistant Professor of Chemistry and Biochemistry, Carleton University

OR

- o **La biotechnologie dans les pouponnières: la fertilisation in-vitro**
  Marie-Claude Léveillé, Ph.D. – Centre de fertilité de L'Hôpital d'Ottawa

1:00 p.m.

- o **"Les brevets : quels avantages peuvent ils vous offrir"**
  David Boudreau – Direction des brevets, Office de la propriété intellectuelle du Canada, Industrie Canada

OR

- o **Forensic Science - Past and Present**
  Ron Fourney, Ph.D. – Research Scientist National DNA Data Bank, Forensic Laboratory Services, RCMP

Cost: $6 per student for the full day of activities

In order to speed your entry into the Museum, prepayment is preferred. Payment is due upon arrival.
Please make cheques payable to the Canada Science and Technology Museum.

PLEASE SEND YOUR REQUEST BY MAIL:
Canada Science and Technology Museum
Reservation Office
P.O. Box 9724, Station T
Ottawa, Ontario. K1G 5A3
Fax form to: (613) 993-7923

CANADA SCIENCE AND TECHNOLOGY MUSEUM Canada

BIOTECHNOLOGY LECTURE SERIES

Registration Form - Thursday, May 6th

School Name _____ School Address _____

City _____ Province _____ Postal Code _____

Phone Number ( ) _____ Fax Number ( ) _____

Teacher's Name _____ Grade _____ Number of Students ____

E-mail Address _____

Estimated Arrival Time _____ Estimated Departure Time _____

Please place a cross in the box next to the lectures you wish to attend and submit one form per attending class.

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o **Playing with Eggs and Sperm: Wisdom or Folly?**
Barbara Vanderhyden, Ph.D. – University of Ottawa, Ottawa Hospital Research Institute.

OR

o **Panel Discusion - Stem Cell Based Treatment Helping Patients Now**
Harry Atkins, M.D. – Ottawa Health Research Institute; and a Multiple Sclerosis patient

11:15 a.m.

o **Green biotechnology: Harnessing plant biomass for biofuels and biomaterials**
Owen Rowland, Ph.D. – Carleton University; students from Carleton University

OR

o **Bioethical Issues of Assisted Reproduction, Cloning and Stem Cell Research**
Zubin Master, Ph.D. – Sprott Centre for Stem Cell Research

1:00 p.m.

o **Neurodegeneration and Regeneration in the Human Brain**
Leigh Anne Swayne, Ph.D. – HSF Centre for Stroke Recovery, University of Ottawa

OR

o **Using Viruses to Kill Cancer Cells**
Marianne Stanford, Ph.D. – Ottawa Health Research Institute

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