

Genomics for Judges

November 14-15, 2013

University of Illinois at Urbana-Champaign

Institute for Genomic Biology

Seminar Agenda

Thursday, November 14, 2013

7:15 – 8:30 a.m.

Registration and Breakfast

612 IGB

8:30 – 8:45 a.m.

Welcome and Opening Remarks

Gene Robinson, Director, Institute for Genomic Biology
Bruce Smith, Dean, College of Law, University of Illinois
Hon. Heinz Rudolf, Illinois Judge & Discussion Facilitator

607 IGB

8:45 – 10:15 a.m.

How Genomics Solved the Nature vs. Nurture Dilemma

Gene Robinson, Director, Institute for Genomic Biology, Professor of Entomology, University of Illinois

In addition to many technical advances, the new science of genomics can boast several major conceptual breakthroughs. One of them involves the discovery that the genome is not just the blueprint for life, but can also be affected strongly by the environment. This lecture will explain this discovery and how Dr. Robinson used it to solve the “Nature vs. Nurture” dilemma. He will present a new paradigm for understanding “Nature vs. Nurture” and discuss how this impacts our understanding of the biological basis of behavior. The lecture also will provide useful background for this and other lectures, including information on: 1) what a genome is; and 2) the “holy trinity” of molecular biology: DNA, RNA, and Protein.

10:15 – 10:30 a.m.

Break

10:30 – 12:00 p.m.

DNA Analysis Laboratory: Up Close and Personal

Ripam Malhi, Associate Professor of Anthropology, and Member of IGB
Regenerative Biology and Tissue Engineering Research Theme, University of Illinois

Matthew Hudson, Associate Professor of Crop Sciences, and Member of IGB
Energy Biosciences Institute and Genomics of Neural and Behavioral Plasticity Research Theme, University of Illinois

Participants will get a chance to analyze their own DNA! Information and kits to be distributed over the summer.

Among many usages, variation in the human genome is employed as a tool to uniquely identify persons, recognize kinship among family members and find the geographic location of a person’s ancestors. In this exercise Dr. Malhi and Dr. Hudson will demonstrate, using your saliva sample, how to process and analyze genomic variation to infer your “deep ancestry” (deep ancestral lines that can go back millennia).

606 IGB

Genomics for Judges

Institute for Genomic Biology

Thursday, November 14, 2013, *continued*

12:15 – 1:45 p.m.	Lunch	612 IGB
1:45 – 3:15 p.m.	<i>Diamond v. Chakrabarty: Patenting Life</i> 444 U.S. 1028 (1980) <i>Ananda Chakrabarty</i> , Distinguished University Professor of Microbiology and Immunology, University of Illinois at Chicago There are two patent cases before the US Supreme Court involving genomics. One is the patent eligibility case of human genes and mutations that lead to susceptibility to breast and/or ovarian cancers in women (known as the <i>Myriad Genetics</i> case). <i>Ass'n for Molecular Pathology v. Myriad Genetics, Inc.</i> , 133 S.Ct. 694 (2012). The other is the patent eligibility of an herbicide resistance gene in soybean seeds for multiple growth cycles, known as the <i>Monsanto</i> case. <i>Bowman v. Monsanto Co.</i> , 133 S.Ct. 1236 (2013). The Supreme Court verdicts will likely come in late June of 2013 and the talk will analyze the scientific basis of the conflicts, the rulings and their aftermath.	607 IGB
3:15 – 3:30 p.m.	Break	
3:30 – 5:00 p.m.	Predicting Behavior from Genomic Information <i>Pilar Ossorio</i> , Associate Professor of Law and Bioethics, Co-Director of the Neurobiology and Law Program, University of Wisconsin-Madison, and Bioethics Scholar at the Morgridge Institute for Research The scientific literature and commercial genetic testing promotions are replete with claims that the presence of particular gene variants, or combinations of gene variants, can predict complex human traits, including behaviors, IQ, visible appearance, and common diseases. This presentation will describe research leading to genetic predictions of complex traits, and will provide a framework for assessing such predictions. It will then discuss whether and how genomic predictions might influence legal processes or outcomes.	
5:00 – 6:00 p.m.	Tour of the Institute for Genomic Biology and International Honeys Tasting Reception <i>Gene Robinson</i> , Director, Institute for Genomic Biology, Professor of Entomology, University of Illinois	IGB Café
7:00 – 8:30 p.m.	Keynote Presentation and Dinner <i>Gina Kolata</i> , Reporter for <i>The New York Times</i> Gina Kolata's focus at <i>The Times</i> is on science and medicine and her training is in science. She studied molecular biology on the graduate level at M.I.T. for a year and a half and earned a master degree in applied mathematics from the University of Maryland. Her work at <i>The Times</i> has led her to be a Pulitzer finalist twice — for investigative reporting in 2000 and for explanatory journalism in 2010.	I Hotel

Genomics for Judges

Institute for Genomic Biology

Friday, November 15, 2013

7:15 – 8:30 a.m.

Breakfast

612 IGB

8:45 – 10:15 a.m.

Forensic Investigation

607 IGB

Ripán Malhi, Associate Professor of Anthropology, and Member of IGB Regenerative Biology and Tissue Engineering Research Theme, University of Illinois

The criminal justice system continues to be transformed by recent developments in genomics. One specific area involves scientists working with decayed biological tissues that exhibit degraded DNA. The successful analysis of such DNA provides investigators a powerful device to help solve cases. However, degraded DNA can prevent accurate identification and is also marked by additional pitfalls that can hinder forensic investigation. This presentation explains the uses and limitations of degraded DNA analysis used by forensic investigators today. Dr. Malhi will also discuss new technologies and analyses in forensic genomics that hold promise to advance the criminal justice system in the near future.

10:15 – 10:30 a.m.

Break

10:30 – 11:45 a.m.

Admissibility of Scientific Evidence in the Courts

Jay Kesan, Professor of Law, and Theme Lead of IGB Business, Economics, and Law of Genomic Biology

The admissibility of scientific evidence is often the first and most familiar issue with respect to science and technology that judges have to confront. Being asked to pass on the whether the proffered evidence in a particular case amounts to “scientific knowledge” by satisfying the “reliability” and “fit” requirements can be a daunting task for anyone including scientists working within their own discipline. These issues take on a greater significance when dealing with DNA/genomic evidence. Yet Illinois state courts have been routinely asked to undertake such tasks. We will jointly explore the possibilities, challenges and opportunities for advancing justice by embracing the option of receiving such scientific evidence in the courtroom.

11:45 – 12:00 p.m.

Closing Remarks and Adjourn