

LOGICAL REASONING IN HUMAN GENETICS III

This is an official announcement and invitation for applications for the third "Logical Reasoning in Human Genetics"-course, Helsinki, Finland January 11-15 2010. The course is meant primarily for graduate students and post-docs in human genetics. The course is organized by the Nordic Centre of Excellence in Disease Genetics (NCoEDG; <http://www.ncoedg.org>) and Helsinki Biomedical Graduate School (HBGS; <http://www.hbgs.helsinki.fi>).

This course is designed to examine the conceptual, empirical, and theoretical approaches to understanding the complex cause and effect relationships underlying human variation. Despite a century of quantitative research on evolutionary biology and genetics, our hypotheses about the phenogenetic (genotype + environment + culture → phenotype) relationships underlying human variation seem poorly focused and often based on unnecessarily naïve models. In this course we will review the basics of evolutionary biology, genetic epidemiology, gene mapping, and how to integrate these three disciplines to address questions of causality in human genetics. In the past decades billions of dollars have been spent on technological approaches to identifying causal variation related to diseases of major public health impact, and yet despite amazing advances in our ability to query the genome for answers, we seem virtually no closer to understanding the majority of the genetic factors contributing to public health. We will discuss why the underlying models have relied too heavily on reductionist models, and show how the empirical, theoretical and evolutionary approaches are converging to describe models that may not be readily amenable to public health advances through greater investments in technology. We view this as a positive advance in knowledge, not a negative outcome, as one has to embrace complexity on its own terms to develop approaches to dealing with nature as it really exists. It is hoped that through this course, students will develop critical thinking and logical reasoning skills to try and learn from what negative experimental results tell us about the architecture of disease and to question the assumptions underlying their experimental approaches to develop better study designs based on better hypotheses for future studies. The course is more about discussion, general concepts and maybe even philosophical questions rather than a "hands-on" course teaching how to analyze data or run computer programs. The reason experiments "fail" is usually because the question was poorly posed or the hypotheses being tested were incompletely thought out and justified, not because of technical or analytical errors.

Course Faculty:

Joseph D. Terwilliger, PhD, Associate Professor of Neuroscience (in Psychiatry, in Genetics and Development, and in the Columbia Genome Center), Columbia University, New York, USA; Finland Distinguished Professor, Helsinki University & FIMM

Kenneth Weiss, PhD, Evan Pugh Professor of Biological Anthropology and Genetics and Science, Technology, and Society, Department of Anthropology, Penn State University, USA

Patrik Magnusson, PhD, Senior Scientist, Department of Medical Epidemiology and Biostatistics, Karolinska Institutet, Stockholm, Sweden

Markus Perola, MD, PhD, Senior Research Scientist, Public Health Genomics, National Institute for Health and Welfare (THL) Adjunct Professor in Quantitative Genetics, University of Helsinki & FIMM

There will be also several guest lecturers who will be announced later.

More details about the course, the accommodation options and travel to Helsinki can be found from the course web site:

<http://www.helsinki.fi/~tsjuntun/LR2010/>

This website will be updated often so please keep logging on!

Where? Seminar room 1-2, p-floor, Biomedicum 1, Haartmaninkatu 8, Helsinki, Finland

When? Starting 9.30AM, Monday January 11, 2010 and ending late afternoon Friday January 15, 2010.

How to apply? We will be able to accept only about 50 students for the course and the students will be selected according their applications. Please send us 3 (three) documents: 1. A one-page CV. 2. One page description of your current research projects and what you hope to gain from attending the course. 3. One page recommendation from your current supervisor, and statement that they agree to sponsor the costs of your attendance at the course.

Please note that some of the students will be requested to give a short, 10 minute presentation at the course about their current project. The ones are selected from these applications and will be let know of the selection with the acceptance letter. All other students will be assigned a paper to read and be prepared to discuss.

Please send you application as electronic documents to the course teaching assistant Tero Hiekkalinna [tero.hiekkalinna \(at\) thl.fi](mailto:tero.hiekkalinna@thl.fi) no later than Monday December 7th, 2009.

What does it cost? Everyone is responsible for all own travel and accommodation costs. There is no course fee for individuals associated with NCoEDG and HBGS. If you are from such institute, please let us know in your application letter. For other academic applicants the course fee is 250€, details about the payment will be given at the time of application. For applicants from non-academic institutions, please contact [markus.perola \(at\) thl.fi](mailto:markus.perola@thl.fi) for details about the participation.