ADVANCED HUMAN GENETICS HG236A - Fall 2015

Mondays and Wednesdays 1:00-2.00 pm, and Fridays 1:00-3:00 pm, Gonda 5303 (5th floor conference room)

- The course will consist of I) three weeks of basic genetics concepts and analytic approaches as currently applied, followed by II) seven weeks of lectures on 'cutting edge' concepts and their appropriate analytic approaches. Each week (M-W) will begin with lectures by an expert in the area on principles supporting the approach, followed by student discussions of manuscripts that apply the concepts presented that week (Fri 1-2 pm). For the first five weeks, Arthur Ko will give illustrations of computational examples from each of those areas (Fri 2-3 pm). In the next five weeks, Eric Sobel will present family-based analyses using the Mendel software developed at UCLA (Fri 2-3 pm).

-   **There will be no final exam or paper.** Students will instead be evaluated throughout the course based on (a) their active participation in class discussions and (b) homework assignments. To get full credit for (b), students must submit their work either on paper or by email, by the following Friday at noon.

Syllabus:

Dates	Topic	Instructor/Comp Instructor
September 25	Introduction to genetics and genomics	Rita Cantor and Paivi Pajukanta/Arthur Ko
Sept 28, 30, Oct 2	Disease gene identification: Genome-wide association	Rita Cantor and Paivi Pajukanta/Arthur Ko
October 5, 7, 9	ASHG week: no class	
October 12, 14, 16	Disease gene identification: Sequencing genomes	Rita Cantor and Paivi Pajukanta/Arthur Ko
October 19, 21, 23	Population genomics: Out of Africa to ethnic differences in disease prevalence	Bogdan Pasaniuc/Arthur Ko
October 26, 28, 30	eQTL and beyond: Genetics of molecular traits	Leonid Kruglyak/Arthur Ko
November 2,4,6	Building transcriptome networks to reveal disease etiologies	Dan Geschwind/Eric Sobel
November 9, 11, 13	Epigenomics: Effect of methylation in development and gene regulation	Matteo Pellegrini/Eric Sobel
November 16, 18, 20	Innovative genomics: Emerging technologies	Sri Kosuri/Eric Sobel
November 23, 25	Functional genomics: When and how to use CRISPR-Cas9 (Thanksgiving week)	Karen Reue
Nov 30, Dec 2, 4	Medical informatics: From big data to personalized medicine	Alex Bui/Eric Sobel
Dec 7, 9, 11	Genetic Architecture of Complex Traits: Applied Genomics	Roel Ophoff/Eric Sobel

Course Directors:
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