

# Genomics

## *A new course from*

### ***Biochemistry, Human Genetics, and Computational Bioscience***

HMGP 7620 and CPBS 7792 and BMGN 7620

This course will introduce graduate students (and interested postdocs and faculty) to the field of genomics. An optional computer workshop will provide students with the minimal skills necessary to access databases, download and manipulate large datasets, and to visualize and interpret results.

**Course Directors:** David Pollock, Mark Johnston, and Jim Sikela,

**Computational Section Director:** Jason de Koning & **Assistant Director:** JianBin Wang

#### **Lectures will include:**

- Overview of Genomics and the History of Life (Johnston, Pollock)
- Genome Mapping and Sequencing (Johnston)
- Genome Annotation and Assembly (Pollock)
- Human Genome (Sikela)
- Human Genome Evolution and Structural Variation (Sikela)
- Comparative Vertebrate Genomes (Pollock)
- Sequence Search and Databases (Hunter)
- Transposable Elements (Martin)
- Genome Architecture, Segmental Duplications, and Rearrangement (Shaikh)
- Transcriptomics (Geraci, Phang)
- Transcription Factor Binding (Kechris)
- Proteomics (Hansen)
- RNA Genomics (Davis)
- Genome Evolution and Phylogenomics (Pollock)
- Human Genome Polymorphism and Association Studies (Spritz)
- Pharmacogenomics (Taylor)
- Metagenomics (Harris)
- Epigenomics (Schwartz)
- Immunogenomics (Janoff)
- Epidemiology and Viral Genomics (Guest)
- Functional Genomics (Johnston, Hesselberth)
- Social Impacts (Pollock, Hunter)

#### **Workshop will include:**

- Unix and Perl Programming Basics
- Database Extraction
- Managing High-Throughput Data
- Genome Browsers
- Data Analysis with R (intro and advanced)
- Transcript and Proteomics Analysis
- Visualization with R and Bioconductor
- Phylogenomic Inference and Analysis
- Population Genetics and Variation
- Immunogenomics workshop
- Functional Inference from Coding Data

#### **Location and time**

**Lectures:** Tuesdays and Thursdays 1:00-2:15, RC-1 North Tower, Room 6107

**Computational Workshop:** Wednesday 1-3, Ed II North, Room 2201AB

See [www.EvolutionaryGenomics.com/GenomicsCourse.html](http://www.EvolutionaryGenomics.com/GenomicsCourse.html)

Enroll by sending a message to [Deanne.Sylvester@ucdenver.edu](mailto:Deanne.Sylvester@ucdenver.edu)

(all interested in the lectures are welcome; enrollment in the workshop is limited)

Please contact [David.Pollock@ucdenver.edu](mailto:David.Pollock@ucdenver.edu) for more information