

COMPBIO 293B Doctoral Seminar in Computational Biology

Instructor: Nir Yosef, niryosef@berkeley.edu, OH: Friday 09:00-10:00, Stanley 304a

GSI: Tal Ashuach, tal_ashuach@berkeley.edu, OH: TBD, Stanley 378A

Course Description: this one-year interactive seminar builds skills, knowledge and community in computational biology for first-year PhD and second year Designated Emphasis students, but open to anyone with an interest in computational biology. Topics covered this semester include methods in computational genomics, focusing on modern emerging technologies. In addition, we will cover experimental methodologies (e.g. next generation sequencing), general computational tools (e.g classification methods), critical review of current research, and develop important skills for success in the PhD such as how to better present your research. Faculty members from UCB and other institutes will participate.

Syllabus:

Week	Date	Subject	Instructors
1	1/17	Introduction Introduction to the class How to give a talk	Nir Yosef
2	1/24	Next Generation Sequencing How does a sequencer work? Sequencing output: fastq and QC	Zoe Steier Tal Ashuach
3	1/31	DNA Alignment HW1 (due 2/21)	Nir Yosef
4	2/07	No Class - CompBio recruitment	
5	2/14	RNA alignment	Nir Yosef
6	2/21	Group Presentations #1: experimental methods	Students
7	2/28	Single Cell Spotlight: Dr. Jimmie Ye Journal club #1: Human Cell Atlas	Jimmie Ye
8	3/07	Faculty Spotlight: Dr. Alex Marson Journal club #2: Discovery of stimulation-responsive immune enhancers with CRISPR activation	Alex Marson

9	3/14	Classification Methods Basic concepts in classification Classification workshop HW2 (due 4/4)	Nir Yosef Tal Ashuach
10	3/21	Faculty Spotlight: Jennifer Listgarten Journal Club #3: Prediction of off-target activities for the end-to-end design of CRISPR guide RNAs	Jennifer Listgarten
11	3/28	No Class - Spring break	
12	4/4	Dimensionality Reduction PCA & tSNE DR workshop HW3 (due 4/25)	Nir Yosef Tal Ashuach
13	4/11	Group Presentations #2	Students
14	4/18	Group Presentations #2	Students
15	4/25	Faculty Spotlight: Priya Moorjani Journal club #4: A Draft Sequence of the Neandertal Genome	Priya Moorjani