GENOME SEQUENCING
Bioinformatics Bootcamp at Simons Institute

Instructor: Pavel Pevzner (e.mail: ppevzner@cs.ucsd.edu). If you have any questions about this class, feel free to send me an Email before the class starts.

Time: 4:30-5:30, Tuesday, January 19, Place: Simons Institute at Berkeley

Grading: Good news - there will be no grading for this class! Another good news - there will be prizes for the best-performing students in this class! The prizes will be given to students who solved all HWs and showed active participation in the class.

Flipped online class. This is a *flipped online* class. The lecture in this class will be made available online rather than presented in the classroom. The concept of the flipped online class assumes that the students watch lectures at home and do homeworks *before* the class starts. This allows the professor and students to interact during the class time when students may ask questions about the video lectures and engage into discussions covering various aspects of the class. We expect that *every* student will participate in the class by either asking questions about the course materials or by answering the questions posed by the instructor or other students in the class. We will run this flipped class similarly to how some bootcamps at Google are run to encourage your class participation: we doubt you will have time for texting and other unrelated activities in this class :-)

Automated homework testing. Solving HWs in this class is not required but recommended. This class provides an automated homework testing environment called *Stepic*, which is inspired by the *Rosalind* project (www.rosalind.info) aimed at learning bioinformatics through programming. All HWs in the class are programming assignments. You can use the programming language of your choice to solve the HWs.

Online intercative textbook and its printed companion: Online interactive textbook for this course is freely available at Coursera's "Genome Sequencing" course (go to Stepic) that you can enroll to (registration is required). Please go to the session that started on November 23, 2015 (dont worry about the deadlines specified for this session).

You can also use the printed companion of our interactive text: Phillip Compeau and Pavel Pevzner. *Bioinformatics Algorithms: An Active Learning Approach*. 2nd edition. Active Learning Publishers 2015.

You need the volume 1 of the 2nd edition of the book rather than the outdated (single volume) 1st edition. The first volume has an ant on the cover and the second volume has a monkey on the cover. Note that the text "2nd Edition, Vol.1" is the only difference between the covers for the 2nd and 1st edition for volume 1.

The book is available at bioinformaticsalgorithms.org or (more expensive option) amazon.com.

Online resources:

- A link to the lessons is available from the *Genome Sequencing* course at coursera.org (a part of *Bioinformatics Specialization*, a series of 7 courses).
- Our private youtube channel: http://www.youtube.com/user/bioinfalgorithms/
- The link for enrolling in the class on the Rosalind platform: http://rosalind.info/classes/enroll/c3bd9e44ad/

Class participation. In the flipped class, class participation is measured not only by the spontaneous questions that students ask in the class but rather by the questions that students prepare BEFORE the class. The students are expected to learn materials before the class and to prepare a question every time they experience a *learning breakdown*. One of the goals of this class is to teach students how to diagnose their own learning breakdowns and to resolve them by asking a well-formulated question related to the detected breakdown. To learn more about "learning breakdowns", see *P. Compeau and P. A. Pevzner. Life after MOOCs: online science education needs a new revolution. Communications of the ACM, 58 (10), 41-44 (2015)* or watch the video *From MOOCs to MAITs* on our private youtube channel.

Each student who experienced a learning breakdown is encouraged to file a well-formulated question related to his/her breakdowns by midnight on January 18, 2015 (you will be presenting your questions during the class). A survey link to enable asking the questions before the class starts is here: http://goo.gl/forms/Sd7N23frWj

A "well-defined question" means that your peers are able to understand the *specific* difficulty you are having and to help you to overcome the learning breakdown. For example, "I don't understand how this algorithm works. can you please explain it again?" is not a well-formulated question (because it does not describe your specific learning breakdown and does allow an instructor to diagnose what caused it).

Preparing for the class. Each student is encouraged to file a report by midnight on January 18, 2015.

Reviewing online teaching materials. Students can review the online teaching materials at their convenience but should be prepared to answer in-class questions about the materials and be ready for the Q&A session in class. By default, each student should either ask an in-class question or to answer a question posed by the instructor or other students.