

Journal Colloquium – PCB 7922 (1 credits)

Single-Cell Genomics

COURSE DESCRIPTION:

Single-cell genomics is rapidly becoming a preferred alternative to traditional, bulk RNA sequencing transcriptome studies, including in plant species.

While methods for single-cell genomic data generation have improved, much remains to be resolved regarding the best approach for analyzing this data. Notably, the optimal methods for (1) integrating data from multiple sources and (2) identifying cellular lineages through pseudotime and trajectory inference analysis remain largely unknown.

This journal club will follow a non-traditional format. We will begin the semester by studying a review of methods of single-cell data integration, focusing on understanding the mathematical and statistical principles behind each method to determine their advantages and disadvantages. In the second half of the semester, we will switch topics to discuss methods of cellular lineage analysis (pseudotime and trajectory inference).

COURSE OBJECTIVES:

For your presentation, you will be expected to search the literature, study the topic of interest, and describe it to the class in an informal lecture format. In some cases, understanding a topic may require meeting with faculty specialized in the area. If the principles of a method remain unclear, we will consider staying on the topic until the details are understood by the group.

MEETING PERIODS AND ROOM: The organizational meeting will be held on Wednesday, January 11 at 3pm in the CGRC building (Rm. 320). Time and location of following meetings will be determined during the organizational meeting.

OFFICE HOURS: By appointment.

COURSE PREREQUISITE:

There are no prerequisites, but a general understanding of the single-cell genomics methods is desired.

INSTRUCTOR:

Dr. Matias Kirst
School of Forest, Fisheries and Geomatic Sciences
College of Agriculture and Life Sciences
Cancer & Genetics Research Complex, Rm. 320
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REFERENCES:

Reference articles will be selected during the semester.

GRADES: Students will be graded based on their participation in the article discussions, as well as the presentation of one or more articles of relevance during the semester.

ABSENCES AND MAKE-UP WORK: Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

STUDENTS REQUIRING ACCOMMODATIONS: Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center (<https://disability.ufl.edu/students/get-started/>). It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

ONLINE COURSE EVALUATION PROCESS: Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations (<https://gatorevals.aa.ufl.edu/>). Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students on the GatorEvals page.

ACADEMIC HONESTY: UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with an instructor in this class. (<https://sccr.dso.ufl.edu/process/student-conduct-code/>).

SOFTWARE USE: All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

STUDENT PRIVACY: There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see the Notification to Students of FERPA Rights (<https://registrar.ufl.edu/catalog0910/policies/regulationferpa.html>).

CAMPUS RESOURCES:

U MATTER, WE CARE: If you or a friend is in distress, please contact umatter@ufl.edu or 352-392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center: counseling.ufl.edu/cwc, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS): Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or police.ufl.edu.

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.