

BIO D25 Genomics 2015 Syllabus

Instructor: Dan Riggs

Office: SY224

Email: riggs@utsc.utoronto.ca

Office Hours: Monday 11AM-noon; Thursday 1-2PM

Class: Wednesdays 3-5PM

Textbook: there is no text for the course; I will occasionally refer to figures from the book by Gibson and Muse "A Primer of Genome Science" which is on 3hr reserve at library. I will post some primary literature articles on Blackboard for you to read.

Exams/Assignments

Quiz: Jan 21 on lectures 1-2= 5%

Midterm Exam: in class on Wed. Feb 11th 30%

Bioinformatics assignment: Distributed Feb 4th, Due Feb 25th 5%

Research Project: Due March 11 (20%)

Final Exam: TBA by registrar (40%)

Date	Lecture #	Topics
Jan 7	1	Intro/genome projects/review of molecular biology methods
Jan 14	2	Review of molecular biology methods
Jan 21	3	DNA sequencing technologies; sequence databases
Jan 28	4	Bioinformatics/databases/search algorithms
Feb 4	5	Sequence variation/SNPs/LD/association mapping/genome wide association studies
Feb 11	6	Midterm Exam (in class)
Feb 18	NO CLASS	READING WEEK
Feb 25	7	Transcriptome/microarrays/Q-PCR Bioinformatics assignment due
Mar 4	8	Applications of arrays; functional genomics
Mar 11	9	Chromatin and genomic technologies (ChIP, ChiP on Chip, epigenetics)
Mar 18	10	Transcriptomics/alternative splicing/RNA seq
Mar 25	11	Coverage of research topics
Apr 1	12	Coverage of research topics

Research project: I will assign research projects to you individually. I think you will find them interesting and a chance to expand your genomics education. I suggest that you employ a search engine such as the Web of Knowledge to identify papers that are relevant. Your job is to produce a report, due March 11th, which satisfies the questions posed for your topic. Generally you will have to introduce the question and background, describe the technology (Note: before the paper/presentations occur, I will have introduced quite a lot of technology so you can assume this is background knowledge but you will have to build on what we cover in class if needed), cite a few examples, and perhaps talk about the future prospects/promises of this research area. What I want are two things. The first is a written report, no more than 5000 words, which also includes some figures that you can borrow from some of the literature papers you find. Second, I want you to produce 4 powerpoint slides. Each slide should have your name at the bottom. The first two slides will focus on the introductory/technology aspects (you cannot include everything here, so be choosy, but remember you are trying to produce a comprehensible story in four slides). The last two slides relate to success stories and perhaps future

prospects. After you submit these, I'll assemble them and distribute. During the last two weeks of class we will discuss them. My plan is that I'll introduce the topic (using slides 1/2), and I will ask you to talk about the contents of slides 3/4, for about 5 minutes or so.