Core Concepts in Bioinformatics Spring 2022, Mon and Wed 9:30AM to 11.30AM (unless otherwise indicated below)						
Week	**Class Num**	**Date**	**Time**	**Topics**	**Lecturer**	**Room**
1	1	10/1 (Mon)	9.30am-11.30am	Overview of bioinformatics from a scientific and technical perspective; Introduction to / review of biological molecules (i.e. DNA, RNA, Proteins); pragmatics (what kinds of questions and analyses most bioinformatics scientist are working on; practical importance of next generation sequencing and programming. Bioinformatics careers.	Rozen and faculty	5C
2	2	12/1 (Wed)	9.30am-11.30am	Short read mapping, genome browser (IGV, Golden Helix)	Steve Rozen	5C
3	3	17/1 (Mon)	9.30am-11.30am	NGS variant calling as a case study in bioinformatics for low-level data analysis; genome organization at the sequence level, sequence searching and databases, sequence evolution	Steve Rozen	5C
4	4	19/1 (Wed)	9.30am-11.30am	Comparative genomics, mutation and protein connection, sequence database searching and BLAST	Steve Rozen	5C
5	5	24/1 (Mon)	9.30am-11.30am	Epigenomics and introduction to functional genomics	Steve Rozen	Amphitheatre
6	6	26/1 (Wed)	9.30am-11.30am	Scientifc writing and term paper assignment using PCA	Lisa Tucker-Kellogg	5C
8	8	7/2 (Mon)	9.30am-11.30am	Guest Lecture: Durian Genomics	Arbner Lim	Amphitheatre
9	9	9/2 (Wed)	9.30am-11.30am	GWAS, gene variants and association studies	Sujoy Ghosh	5C
10	10	14/2 (Mon)	9.30am-11.30am	Next generation sequencing and applications (besides DNA seq)	Sujoy Ghosh	5C
11	11	16/2 (Wed)	9.30am-11.30am	RNA Sequencing: overview of technologies, RNA-seq for quantitation, transcript identification and alternative splicing	Sujoy Ghosh	5C
Recess Week Sat, 19 Feb 2022 - Sun, 27 Feb 2022 1 week						
12	12	28/2 (Mon)	9.30am-11.30am	Review of Topics and Journal Club	Sujoy Ghosh	5C
13	13	2/3 (Wed)	9.30am-11.30am	Whole transcriptome analyses: differential gene expression and gene set enrichment analysis	Enrico Petretto	4D/zoom (tbc)
14	14	7/3 (Mon)	9.30am-11.30am	Gene network analysis	Enrico Petretto	7C/zoom (tbc)
15	15	9/3 (Wed)	9.30am-11.30am	Biological and protein-protein interaction networks	Enrico Petretto	5C
16	16	14/3 (Mon)	9.30am-11.30am	Review of Topics/Journal Club	Enrico Petretto	5C
17	17	16/3 (Wed)	9.30am-11.30am	Guest Lecture: Informatics in Precision Medicine and Precision Genomics	Lim Weng Khong	5C
18	18	21/3 (Mon)	9.30am-11.30am	Guest Lecture: Applications of Network Biology	Owen Rackham	Amphitheatre/zoom
19	19	23/3 (Wed)	9.30am-11.30am	Mass Spectrometry, Mass Spec Omics, and Proteomics	Lisa Tucker-Kellogg and Federico Torta	4D/zoom (tbc)
20	20	28/3 (Mon)	9.30am-11.30am	Protein structure and protein signaling networks	Lisa Tucker-Kellogg	Amphitheatre
21	21	30/3 (Wed)	9.30am-11.30am	Overview of computational modelling, including objectives, methods, and formalisms.	Lisa Tucker-Kellogg	Amphitheatre
22	22	4/4 (Mon)	9.30am-11.30am	High-dimensional datasets	Lisa Tucker-Kellogg	Amphitheatre
23	23	6/4 (Wed)	9.30am-11.30am	Guest Lecture: Virus Evolution	Gavin Smith	5C
24	24	11/4 (Mon)	9.30am-11.30am	Integrative analysis	Enrico Petretto	5C
25	25	13/4 (Wed)	9.30am-11.30am	*Topic to be confirmed	Jacques Behmoaras	5C
Recess Week Sat, 16 Apr 2022 - Fri, 22 Apr 2022 1 week						
27	27	25/4 (Mon)	9.00am-12.00pm	Exam	TBC	5C