

**UCD Summer 2024 Bioinformatics Workshop**  
**DRAFT timetable: Monday 24 June – Friday 5 July**

GCC – Gavin Conant, North Carolina State University

RG – Rafael Guerrero, North Carolina State University

Day	Lecturer	Time	Topic
Monday 24 <sup>th</sup>	GCC	9-9:45	Intro, connection to VCL
		10-12	DNA sequencing, FASTQ files and sequencing errors
		1:30-4:30	Finish script, Assembly (Annotation)
Tuesday 25 <sup>th</sup>	GCC	9-10:30	Homology, sequence alignment, BLAST
		10:30-12	Orthologs, paralogs, gene duplication, measures of selective constraint
		1:30-4:30	Phylogenetics, tree-thinking
Wednesday 26 <sup>th</sup>	GCC	9-10:30	Biological networks
		10:30-12:00	Databases
		1:30-2:30	Modeling metabolism
		2:30-4:30	Flux-balance analysis
Thursday 27 <sup>th</sup>	GCC	9-10:30	Metagenomics
		10:30-12	Multiple test corrections
		1:30-3:00	Computing, scripts, packages, compilers
		3:00-4:30	Parallel computing
Friday 28 <sup>th</sup>	GCC	9:30-12	Topics arising/Catchup OR Protein structure prediction
	GCC	1:30-4:30	GCC: Genetic drift in python

Monday 1 <sup>st</sup>	RG	9:00-12:00	Populations: Read mapping, variant calling
		1:30-4:30	Demography: SFS, PSMC
Tuesday 2 <sup>nd</sup>	RG	9:00-12:00	R
		1:30-4:30	R
Wednesday 3 <sup>rd</sup>	RG	9:00-12:00	GWAS: Basics, imputation
		1:30-4:30	GWAS (contd): Genomic inflation, plots
Thursday 4 <sup>th</sup>	RG	9:00-12:00	RNA-Seq: Mapping, quantification
		1:30-4:30	RNA-Seq: exploratory data analysis, differential gene expression
Friday 5 <sup>th</sup>	RG	9:00-12:00	Q&A, data troubleshooting, principles of data visualization
		Afternoon	EXAM (two hours)