Genome Institute
of Singapore
GIS

GIS CODON+

Genomic data science courses

The Genome Institute of Singapore (GIS) is the national flagship initiative for genomic sciences started in 2000 by A*STAR. GIS CODON+ courses will provide interactive hands-on training in genomics data science with a focus on solving real world challenges.

We are currently offering five courses. Each course begins with a 3-day intensive bootcamp using a problem-based approach, followed by a month long capstone project. Our projects use paired programming techniques (industry best practice) and our students are supported throughout by weekly mentoring sessions.

Calendar

	Programming Essentials	Bulk RNA-seq	Microbiome	Single-cell RNA-seq	Statistical modelling
Oct'25	27, 29, 31 Oct				
Nov'25		24, 26 Nov, 1 Dec Presentation: 7 Jan			
Dec'25					
Jan'26			12, 14, 16 Jan Presentation: 25 Feb		
Feb'26					
Mar'26				16, 18, 20 Mar Presentation: 29 Apr	
Apr'26					20, 22, 24 Apr Presentation: 3 Jun
May'26					
Jun'26					

Registration

REGISTER YOUR INTEREST:
https://bit.ly/CODON_2025

For further inquiries:
training@a-star.edu.sg

Genome Institute
of Singapore
GIS

COURSE DETAILS

Genomics data science with bulk RNA-seq

- Discover biologically meaningful genes and pathways.
- Design good experimental studies.
- Key topics include:
  quality control, differential gene expression,
  pathway/gene set enrichment, cell deconvolution

Genomics data science with single-cell RNA-seq

- Study design and quality control of large datasets.
- Perform differential gene expression within cell types.
- Key topics include:
  cell clustering, cell type annotation, data integration

Genomic data sciences with bulk RNA-seq course or equivalent knowledge is highly recommended.

Statistical modelling for genomics data science

- Uncover hidden relationships in genomics data.
- Automate routine tasks for research analytics.
- Key topics include:
  unsupervised machine learning, linear and logistic regression, model evaluation, introduction to advanced topics (survival models, machine learning)

Genomics data science with microbial research

- Identify microbial signatures of health, disease, and environment using statistical & machine learning methods.
- Key Topics include:
  taxonomic & functional profiling, diversity analyses, differential abundance, microbial networks, introduction to advanced topics (assemblies, MAGs, annotation)

Programming essentials for genomics data science

- Set up and optimise R programming environment
- Learn how to process and check for data quality
- Read in, check, prepare and explore data
- Generate high quality publication-ready visuals

Mandatory for participants without prior proficiency in R programming.

Instructors

GIS faculty including: *Dr. Adaikalavan Ramasamy, Dr. Gökçe Oğuz, Dr. Aarthi Ravikrishnan*

Tuition Fees

A*STAR Participants	$1,000 per course
Non-A*STAR Participants	$1,250 per course

Registration closes 2 weeks before the start date of each course.