



Module PMRF-ISSS78/II/2025

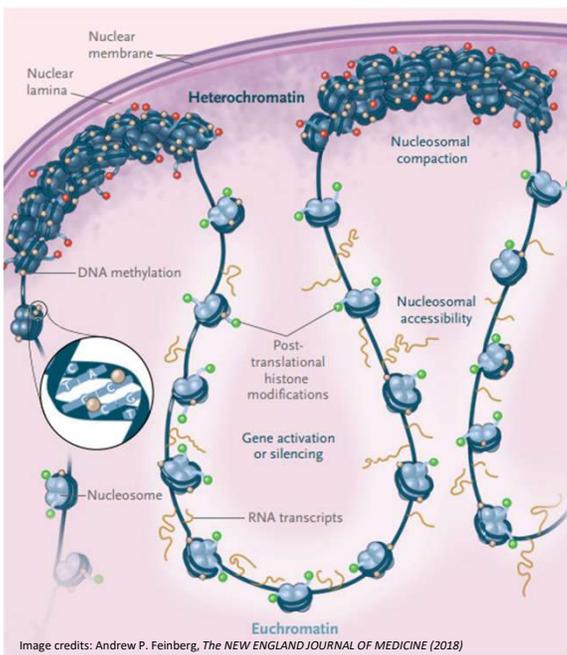
Genes, genome and the epigenome

Name of the PMRF student

Ankita Bhattacharyya

Required background of the students taught

Basic biology, Biotechnology,
Microbiology, Bioinformatics



Details of the content of the module

- Gene structure, function and regulation
- Mutations, polymorphisms and functional genomics
- Introduction to sequencing methods – Sanger v/s NGS
- Unravelling the genome, exome and transcriptome
- Analysis of high throughput sequencing data – key steps and commonly used *in silico* tools
- NGS in cancer genomics – Identifying therapeutic targets and disease drivers
- Introduction to epigenetics – key concepts
- Understanding DNA methylation and Histone modifications
- Mapping DNA methylation to decode the genome
- Decoding DNA-protein interactions using high throughput methods - Introduction to ChIP-sequencing
- Introduction to chromatin accessibility profiling – ATAC-seq, HiC etc
- Genomic and epigenomic biomarkers in clinical diagnostics and prognostics
- Integrating multi-omics: a comprehensive overview

Schedule of the module

Course duration: 21st October – 30th March (tentatively); Live lectures every **Tuesday (6-8PM)**, discussion and problem-solving sessions may be held on weekends (will be communicated over email to registered participants)

Meeting link : Will be shared later

Contact email ID: iss.s.forum@gmail.com

Registration link:

<https://forms.gle/sx7Sjf4eYvf3HHa49>

