Translational Epigenetics in Precision Medicine

October 18-21, 2025

Holiday Inn

Telavi, Georgia

Preliminary program:

DAY 1 **Basic Concepts of Epigenetics**		
10.45	Registration	
11.00-11.45	Opening remarks; Course overview; Self-introduction	Eka Kvaratskhelia Tinatin Tkemaladze Sofia Douzgou Houge
11.45-12.30	Epigenetic mechanisms: DNA methylation and demethylation; histone modifications and nucleosomes	Sebastian Alvarado, Queens College (CUNY), New York City, US
12.30-13.00	Coffee break	
13.00-13.45	DNA methylation episignatures fundamentals: from molecular profiles to AI biomarkers	Bekim Sadikovic, London Health Sciences Centre, ON, Canada
13.45-14.30	Mechanisms of chromatin remodeling, ATP-dependent chromatin remodeling, chromatin remodeling complexes	Sebastian Alvarado, Queens College (CUNY), New York City, US
14.30-15.30	Lunch break	
15.30-16.15	Genomic imprinting in mammals; Dosage compensation: X inactivation; Epigenetic regulation in stem cells and cell reprogramming	Maral Tajerian, Queens College (CUNY), New York City, US
16.15-17.00	Genome-wide methylation detection and episignature analysis using PacBio long-read sequencing	Christian Gilissen, The Radboud University Medical Center, Nijmegen, the Netherlands
17.00-17.30	Coffee break	
17.30-18.15	Epigenetic mechanisms: non coding RNAs: Small interfering RNAs, MicroRNAs	Eka Kvaratskhelia,Tbilisi State Medical University, Tbilisi, Georgia
19:00	Welcome Dinner	

DAY 2 **Cancer Epigenetics**		
09.00-09.45	Introduction to Cancer Epigenetics; Innovative epigenomic approaches in cancer diagnosis and treatment	Meir Shamay, The Azrieli Faculty of Medicine Bar-Ilan University, Israel
09.45-10.30	Genome-wide methylation profiling for diagnosis and prognosis in childhood leukemia	Jessica Nordlund Uppsala University, Uppsala, Sweden
10.30-11.00	Coffee break	
11.00-11.45	Epigenetics drug design; Epigenetic therapy: DNA methyltransferases inhibitors; Histone deacetylase inhibitors (HDACi)	Meir Shamay, The Azrieli Faculty of Medicine Bar-Ilan University, Israel
11.45-12.30	Epigenetic epidemiology: Epigenetics in EWAS and DOHaD	Karin Michels, UCLA Fielding School of Public Health, Los Angeles, California, US
12.30-13.30	Lunch break	
13.30-14.30	Statistical approaches in epigenetic studies	Inga Prokopenko, School of Biosciences, University of Surrey, Guildford, Surrey, UK
14.30	Q&A	
15.00-18.00	Going to Food and Wine tour	

DAY 3 **Epigenetics in rare Diseases**		
09.00-09.45	Genetics meets epigenetics in rare diseases; Mendelian diseases with epigenetic machinery: Disease Classification/Characterization	Siddharth Banka, Manchester University NHS, Manchester, UK
09.45-10.30	Clinical Case Discussion: Orchestrating genetics and epigenetics from a clinical perspective: lessons from Rubinstein-Taybi and Cornelia de Lange syndromes.	Tinatin Tkemaladze, Tbilisi State Medical University, Tbilisi, Georgia
10.30-11.00	Coffee break	
11.00-11.45	The epigenetics of dysmorphology: Overgrowth and growth restriction syndromes	Sofia Douzgou Houge, Haukeland University Hospital, Bergen, Norway
11.45-12.30	Clinical Case Discussion: Peculiarities of inheritance pattern of Angelman synrome	Tinatin Tkemaladze, Tbilisi State Medical University, Tbilisi, Georgia
12.30-13.30	Lunch break	
13.30-14.15	Workshop: Clinical applications of DNA methylation episignatures in rare diseases	Bekim Sadikovic, London Health Sciences Centre, UK
14.15-15.00	Peculiarities of inheritance pattern of Angelman synrome	Tinatin Tkemaladze, Tbilisi State Medical University, Tbilisi, Georgia
15.00-15.30	Coffee break	
15.30-16.15	Clinical Case Discussion	Selected abstract, course participant
16.15-17.00	Challenges and Future Perspectives: DNA methylation episignature for the intellectual developmental disorder	Will be announced
18.00	Gala Dinner	

DAY 4 **Environmental Epigenetics and Its Implication on common diseases**		
09.00-09.45	Genetics, epigenetics and environment; Environmental epigenomics and disease susceptibility; Aging and the epigenetic clock	Gunnar Douzgos Houge, University of Bergen, Norway
09.45-10.30	Epigenetic mechanisms of brain plasticity in the context of peripheral trauma	Maral Tajerian, Queens College (CUNY), New York City, US
10.30-11.00	Coffee break	
11.00-11.45	Epigenetic regulation in metabolic diseases; Dietary bioactives: the potential to modify the aberrant episignature	Will be announced
11.45-12.30	Epigenetics in complex diseases: Cardiovascular diseases	Nino Pirtskhelani, Tbilisi State Medical University, Tbilisi, Georgia
12.30-13.30	Lunch break	
13.30-14.15	Nutritional Epigenetics; Toxin Exposures and Epigenetic Effects	Will be announced
14.15-15.00	Translational Epigenetics: Animal model adoption for translational and basic research	Sebastian Alvarado, Queens College (CUNY), New York City, US
15.00-15.30	Coffee break	
15.30-16.30	Written test	
16.30-17.00	Closing remarks	