

Human Molecular Cellular Assays

MKU-RUSA Supported Skill Workshop

Apr 15-21, 2026



This MKU-RUSA Supported Skill workshop on Human Molecular Cellular Functional Assays provides comprehensive hands-on training in modern molecular cell biology, an array of cellular assays, and functional genomics using human cell lines. Participants will gain practical experience in cell culture, gene expression analysis, and genetic manipulation methods including transfection, gene silencing, and genome engineering. The program also covers cellular functional assays such as proliferation, apoptosis, cell cycle analysis, signaling pathways, and drug response studies. Advanced modules include flow cytometry, immunostaining, cell imaging, RNA-Seq, and metabolomics approaches for cellular profiling. Register Before **9th APR 2026**:

Registration Link: <https://forms.gle/rS2wakPaCTJEHn6s6>



Learning Targets:

- 1) Biosafety, Bioethics, Safe Cell Handling & GLP
- 2) Cell Line Revival, Culture, and Storage Methods
- 3) Analysis of gene expression in Human cells by RT-PCR
- 4) Analysis of gene expression in Human cells by qRT-PCR
- 5) Transient exogenous gene overexpression in human cells
- 6) Transient gene silencing in Human cells by liposome-mediated siRNA transfection
- 7) Stable gene expression in Human cells
- 8) Stable gene silencing by shRNA plasmid transfection
- 9) Genome Engineering & Editing Methods for Human Cells
- 10) Engineering the genome of human cell line to delete the gene of interest
- 11) Analysis of signaling pathway activity in Human cells
- 12) Analysis of Transcription Factor activity in human cells
- 13) Characterization of Promoters of Genes in Human cells
- 14) Impact of the modulation of gene expression on signaling pathway
- 15) Impact of gene expression in Human cell proliferation
- 16) Analysis of the anchorage-independent growth property of Human cells
- 17) Determination of the *in-vitro* toxicity of drugs in Human cells
- 18) Analysis of cellular apoptosis by different methods
- 19) Cell cycle phase analysis of Human cell lines by flow cytometer
- 20) Fluorescent staining of cellular organelles in Human cells
- 21) Analysis of sub-cellular localization of a protein by immunostaining
- 22) Investigation of the targets of Drugs in Human cells
- 23) Setting up drug screen assays in Human cells
- 24) Gene Expression Profiling & RNA-Seq in Human Cellular Experiments
- 25) Metabolome profiling in Human cells
- 26) Genomic Resources for Cellular Studies & Cellomics

Course Coordinator:

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