

40. Genetic Screening Core

1 unit, Ralph Garippa, November 20, 2025

Introduction: What does the Gene Editing & Screening Core Facility do at MSKCC?

Types of CRISPR/RNAi *Pooled* screens

Full genome vs focused sgRNA libraries

CRISPR-KO, CRISPR-A, CRISPR-I screens

Readouts: FACS, live/dead, enrichment/depletion, metastasis

Types of biology to assess: proliferation, survival, synthetic lethal, radiation sensitivity, drug resistance

Creating a Functional Genomics screen: Assay development, stable cell lines vs primary cells, 2D suspension cells, 2D adherent cells, 3D organoids, virus production, infection, transduction, gDNA isolation, Hiseq and data analysis tools

Types of CRISPR/RNAi *Arrayed* screens

High content fluorescent imaging phenotypes

Advantages/disadvantages of CRISPR-Cas9 vs RNAi techniques

Case studies of Functional Genomics screens at MSKCC/WCM and beyond.