BioTech 55 – CRISPR, TALEN, ZFN

9:00am – 5:00 pm

Monday

9:00am – 12:00pm Room 162	Genome Editing Technology: Protocols and know how	Rafael Casellas; (NIH/NIAMS)
12:00pm – 1:00pm Room 162	**LUNCH**	
1:00pm – 1:05pm Room 162	Welcome	Matthew Coussens (Sigma)
1:05pm – 1:35pm Room 162	Introduction to Genome Editing Technologies	Casey Jowdy (Sigma)
1:35pm – 2:05pm Room 162	CRISPR/ Cas9 Design Considerations	Casey Jowdy (Sigma)
2:05pm – 2:35pm Room 162	Double-Strand Break (DSB) Repair	Stephanie Scherer (Sigma)
2:35pm – 2:45pm Room 162	**BREAK**	
2:45pm – 3:15pm Room 162	Nucleofection: Best Practices	Greg Alberts (Lonza)
3:15pm – 4:45pm Room 162	Lab Practical: Nucleofection	Katelyn Logan (Sigma)
4:45pm – 5:15pm Room 162	Gene Knockout using Targeted Nucleases	Stephanie Scherer (Sigma)

BioTech 55 – CRISPR, TALEN, ZFN

Tuesday

9:00am – 10:00am Room 162	CRISPR/Cas9-mediated genome editing in mouse zygotes and ES cells: An Overview	Lijin Dong (NIH/NEI)
10:00am – 11:15am Room 060	Lab Practical: CEL-1 Assay (Genomic DNA Purification and CEL-1 PCR setup)	Zi Teng Wang (Sigma)
11:15am – 12:00pm Room 060	Donor DNA Design: Gene Insertion and Tagging	Casey Jowdy (Sigma)
12:00pm – 1:00pm	**LUNCH**	
1:00pm – 2:30pm Room 162	Exercises for Choosing Target Sites	Zi Teng Wang (Sigma)
2:30pm – 2:45pm	**BREAK**	
2:45pm – 3:15pm Room 162	Lab Practical: Re-annealing step	Zi Teng Wang (Sigma)
3:15pm – 4:00pm Room 162	Integration Detection, Clonal Isolation, and Genotyping	Stephanie Scherer (Sigma)
4:00pm – 5:00pm Room 162	Lab Practical: CEL-1 Assay (Digestion)	Zi Teng Wang (Sigma)

BioTech 55 – CRISPR, TALEN, ZFN

Wednesday

9:30am - 11:00am Room 162	Editing the Genome of Human Pluripotent Stem Cells by Designer Nucleases and Homologous Recombination	Chengyu Liu (NIH/NHLBI)
11:00am -12:00pm Room 162	CRISPR/TAR YEAST	Mikhail Liskovykh (NCI)
12:00pm - 1:00pm	**LUNCH**	
1:00pm –1:30pm	Lab Practical: CEL-1 PCR Gel Loading	Zi Teng Wang (Sigma)
1:30pm – 2:00pm	CRISPR Paired Nickases and Synthetics	Jen Dulle (Sigma)
2:00pm – 2:15pm	**BREAK**	
2:15pm – 2:45pm	Lab Practical: Junction PCR Setup	Katelyn Logan (Sigma)
2:45pm – 3:15pm	Bioinformatics for Genome Editing Applications	Zi Teng Wang (Sigma)
3:15pm – 4:00pm	Targeted Nuclease Optimization	Stephanie Scherer (Sigma)
4:00pm – 4:15pm	**Break**	
4:15pm – 4:45pm	CRISPR-Lentiviral Screens	Casey Jowdy (Sigma)
4:45pm – 5:15pm	Epigenome Editing and Latest Applications	Casey Jowdy (Sigma)

BioTech 55 – CRISPR, TALEN, ZFN

Thursday

Time	Session	Speaker
9:00am - 10:30am Room 162	Development of efficient genome targeting for correction of chronic granulomatous disease in human iPS cells and hematopoietic stem cells	Colin Sweeney (NIH/NIAID)
10:30am-12:00pm Room 162	The Traditional and New methods for Creating Genetically Engineered Mice	Chengyu Liu (NIH/NHLBI)
12:00pm- 1:00pm	**LUNCH**	
1:00pm –1:30pm	Lab Practical: Junction PCR Gel Loading	Zi Teng Wang (Sigma)
1:30pm – 2:00pm	Practical Considerations of Engineering	Stephanie Scherer, (Sigma)
2:00pm – 2:45pm	Cell Line Engineering Case Studies	Stephanie Scherer, (Sigma)
2:45pm – 3:00pm	**BREAK**	
3:00pm – 4:00pm	Cell Line Engineering Q&A	All (Sigma)
4:00pm – 4:30pm	Experimental Results and Analysis	Zi Teng Wang (Sigma)
4:30pm – 4:45pm	Closeout	Matthew Coussens (Sigma)

BioTech 55 – CRISPR, TALEN, ZFN

Friday

9:30am – 10:45am Room 162	Targeted Mutagenesis in Zebrafish Using CRISPRCas9	Jason Sinclair (NIH/NHGRI)
10:45am -12:00pm Room 162	DNA Sequence Variations in iPSCs and Other Cell Lines – Spontaneous or Induced by Genome Editing	Paul Liu, M.D. (NIH/NHGRI)
12:00pm - 1:00pm	**Lunch**	
1:00pm – 4:00pm Room 162	(Hands-on/Laptop Required) A Bioinformatics Tool to Design Efficient sgRNAs	Daniel Chauss (NIH/NIAMS)