

Emerging Techniques in Protein and Genetic Engineering

Oncology 675-002

July 26-30, 2021

This course will have four unique components. To successfully complete this course, students will need to submit pre-work assignments and evaluations in a timely fashion and engage with asynchronous course materials. We will meet face to face the week of July 26-30, 2021 and will make efficient use of our time by completing laboratory activities, including analyses as well as other relevant activities.

The four components of the course are:

- 1. Pre-work**—Asynchronous material will be posted to the course Canvas site at least one week prior to July 26. You may watch lectures and complete quizzes, worksheets, and other evaluation materials beginning July 19. Please note that some items will have deadlines associated with the in-person content.
- 2. Evaluation** – Evaluation of your engagement and learning will include quizzes, worksheets, data analyses, and in person attendance and contributions to class. As noted above, some items will be bound to deadlines associated with our in-person modules.
- 3. In-person** – Several hours per day have been designated for in-person attendance the week of July 26-30, 2021. Please review the schedule and plan to be on the Promega campus during that time.
- 4. Office hours/Individual Consultations** – These can be scheduled as needed throughout the week of July 26-30, 2021; suggested times have been designated on the schedule.

Tentative Schedule:

Date	Time	Module	Instructor
Monday, July 26			
Asynchronous Pre-work and Evaluation Materials <i>Please check Canvas for recordings and evaluation materials, which must be completed prior to attending in person on each designated day.</i>			
		<i>Lecture</i> Assessing cell health: The cellular consequences of HDAC inhibition	Andrew Niles
		<i>Lecture</i> Studying protein degradation	Elizabeth Caine
Additional Assignments:	TBD		
In-person Schedule <i>These speakers, activities, discussion sessions, laboratory sessions, and data analyses that will take place at the BTC Institute.</i>			
	9:00a – 9:30a	Welcome and Introductions	Amy Prevost, Erica Golueke
	9:30a – 10:30a	<i>Lecture:</i> Using cells as reagents.	Terry Riss
	10:30a – 1:30p	<i>Laboratory:</i> HDAC laboratory – Set up experiments; HDAC selective assays - HDAC2 and HDAC1a, test HDAC inhibitor potencies.	Andrew Niles, Erica Golueke

		<i>Dose cells for cell health assessment.</i>	
	1:30 – 2:30p	<i>Laboratory: Create CRISPR pools for studying protein degradation</i>	Erica Golueke
Asynchronous Pre-work and Evaluation Materials <i>Please check Canvas for recordings and evaluation materials, plus additional pre-work which must be completed prior to attending in person on each designated day.</i>			
Tuesday, July 27			
		<i>Lecture: Epigenetics overview; DNA modifiers, histone protein modifiers and opportunities and approaches for modulating epigenetic targets.</i>	Thomas Kirkland
Additional Assignments:	TBD		
In-person Schedule <i>These speakers, activities, discussion sessions, laboratory sessions, and data analyses that will take place at the BTC Institute.</i>			
	9:00a – 10:30a	<i>Lecture: CRISPR/Cas-9 design and implementation.</i>	Michael Slater
	10:30a -11:30a	<i>Laboratory: Transfer CRISPR pools to 96-well plate.</i>	Erica Golueke, Mike Slater
	11:30p – 1:00p	<i>Lecture: CRISPR: Knock-Out Editing.</i>	Michael Collingwood
	1:00p – 2:30p	<i>Lecture: CRISPR: Knock-In Editing.</i>	Michael Slater
Asynchronous Pre-work and Evaluation Materials <i>Please check Canvas for recordings and evaluation materials, plus additional pre-work which must be completed prior to attending in person on each designated day.</i>			
Wednesday, July 28			
		<i>Lecture: HDAC biology, isoenzymes and methods for measuring activity</i>	Thomas Kirkland
		<i>Lecture: PROTACs for drug discovery</i>	Kristin Riching
Additional Assignments:	TBD		
In-person Schedule <i>These speakers, activities, discussion sessions, laboratory sessions, and data analyses that will take place at the BTC Institute.</i>			
	9:00a – 10:00a	<i>Lecture Genome editing: History, ethics, disease modeling and drug discovery.</i>	Thomas Machleidt
	10:00a – 10:30a	<i>Laboratory: CRISPR lab - add Endurazine compound (2.5-hour incubation)</i>	Erica Golueke

	10:30a – 1:00p	<i>Laboratory:</i> Cell health assessment	Andrew Niles, Erica Golueke
	1:00p -1:30p	<i>Laboratory:</i> PROTAC serial dilution, add to plate and start kinetic read for PROTACs during incubation	Erica Golueke
	1:30p – 2:30p	<i>Discussion:</i> Cell health data discussion	Andrew Niles, Erica Golueke
Asynchronous Pre-work and Evaluation Materials <i>Please check Canvas for recordings and evaluation materials, plus additional pre-work which must be completed prior to attending in person on each designated day.</i>			
Thursday, July 29			
		<i>Lecture:</i> Lumit for SARS-CoV-2	Melanie Dart, Becky Godat
		<i>Lecture:</i> MSI screening for cancer and prognostic use.	Jeff Bacher
Additional Assignments:	TBD		
In-person Schedule <i>These speakers, activities, discussion sessions, laboratory sessions, and data analyses that will take place at the BTC Institute.</i>			
	9:00a – 10: 00a	<i>Discussion:</i> PROTAC data analysis	Kristin Riching, Elizabeth Caine
	10:00a – 11:00a	<i>Discussion:</i> Revisiting CRISPR/Cas-9 Any remaining questions/thoughts/etc.	Michael Slater
	11:00a – 12:30p	<i>Lecture:</i> Immunoaffinity and bead-based capture of proteins.	Richard Burgess
	12:30p – 1:00p	<i>Lecture:</i> Detecting post translational modifications	Hicham Zegzouti
	1:00p – 2:30p	<i>Laboratory:</i> Lumit for Antibody Detection	Becky Godat, Erica Golueke
Asynchronous Pre-work and Evaluation Materials <i>Please check Canvas for recordings and evaluation materials, plus additional pre-work which must be completed prior to attending in person on each designated day.</i>			
Friday, July 30			
		NO ASYNCHRONOUS WORK	
Additional Assignments:	TBD		
In-person Schedule <i>These speakers, activities, discussion sessions, laboratory sessions, and data analyses that will take place at the BTC Institute.</i>			
	9:00a – 10:00a	<i>Lecture:</i>	Chris Hosfield

		Mass spectrometry for characterizing biologics.	
	10:00a – 11:00a	<i>Lecture:</i> Antibodies for immunotherapy	Jamison Grailer
	11:00a – 1:00p	<i>Lecture and Lab Demonstration</i> ADCC reporter assays for testing biologics including multiple assay targets, how reporter assays work and experimental data.	Denise Garvin
	1:00p – 2:00p	<i>Guest Lecture:</i> IP and Patent Law	David Casimir
	2:00p – 3:00p	<i>Final Questions and Closing Remarks</i> <i>COVID permitting outdoor reception</i>	Amy Prevost, Erica Golueke