Lab Skills Bootcamp - May 11th - 15th 2015

Trani Life Sciences Building Rm 207 AM 9.30 am-12 noon PM 1 PM-4 PM
Instructor - Sarah Golding
TA's - TBA

Goal: To provide a snap shot of lab skills to help students overcome initial fears and hurdles often faced by students new to a laboratory setting

Day		Content	Time	Outcomes
All week		Transformation project		Following protocols, time management, labeling of samples, documentation of observations/procudures/results/errors, observation, data intepretation, use of controls, presentation of results
May 11th	**AM**	Responsible conduct of Research	2 h	Understanding of Laboratory ethical standards
	PM	Laboratory Safety	1h 30 min	Understanding of Laboratory Saftey standards
		Didactic: Explanation of transformation project	30 min	Over view of molecular cloning, use of molecular tools
		Lab Activity: Transform E.Coli with pGLO, streak plates	1 h	Handling of E.Coli, transformation, sterile technique
	H/W	Plagiarism in Science Bb module	15 min	

Day		Content	Time	Outcomes
May 12th	**AM**	Didactic: Lab arithmetic, Molar Solutions, Use of pipettes	45 min	Refreasher of Basic lab Math, Molar Solutions, w/v solutions,
		Lab Activity 1: Learning to use pipettes, Copper sulphate Dilutions,	1 h 15 min	Handling of Gilson pipettes and pipette aids, making dilutions
	PM	Lab Activity 2: Copper sulphate reading on spectrophotometer, triplicates, unknown, standard curve plotting, error bars,	1 h 30 min	Comprehension of standard curves, basic graphing, extrapolation of unknown, use of lab equipment, "blanking"
		Didactic: More Discussion of transformation project	45 min	Explanation of "Arabinose" turning on/off gene expression
		Lab Activity 3: Pick Bacterial Colonies, grow in broth o/n	45 min	Look at plates under UV light to see GFP expression
	H/W	Plot results in excel		

Day		Content	Time	Outcomes
May 13th	**AM**	Didactic: Cell Culture	45 min	Understanding basic concepts of Cell Culture
		Lab Activity 1: Learning to use pipette aids, some sterile liquid transfer, basic use of microscope	1 h 15 min	Handeling of plates, pipettes, pipette aids, focusing of microscope
	PM	Lab Activity 2: Cell counting, cell dilutions, more use of microscope, use of laminar flow hood	2 h	more liquid handling, microscope use, learning sterile technique in the flow hood
		Lab Activity 3: Spin down bacterial culture, freeze pellet, take some fore protein analysis	30 min	Look at media under UV light to show GFP
		How to use PudMed/web of science	30 min	primary vs secondary literature
	H/W	Online Lab safety modules		

Day		Content	Time	Outcomes
May 14th	**AM**	Didactic: Plasmid Isolation	30 min	Understanding basic concept of plasmid isolation, restriction digest
		Lab Activity 1: Plasmid Isolation, set up restriction digest, pour agarose gel	1 h 30 min	Following protocol, use of kits, loading and running of gels, more pipette use, volumes, dilutions, concept of digestion
	PM	Lab Activity 2: Run agarose gel, Demonstration of SDS-PAGE	2 h	Following protocol, use of kits, loading and running of gels, more pipette use, volumes, dilutions, concept of gel separation
		Didactic: Explanation of results how to label and generate a figure	1 h	Understanding of how to take raw data into a figure with labels for lab meetings
	H/W	Prep figure for "lab meeting presentation"		

Day		Content	Time	Outcomes
May 15th	**AM**	Didactic: Explanation of Antibodies and uses in research	1 h	Basic understanding of the use of anitbodies in molecular research
		HIV ELISA	1h	More dilutions, liquid handling
Lunch	**PM**	12-1.30pm Office of Research Sponsored Lunch Room 116 LFSC		
		"Lab Meeting" students present their data and discuss their experiment Room 154 LFSCB	2 h	Oral and visual presentation of results in "informal" lab meeting style. Discussing errors/mistakes/lessons learned
		Wrap- up!	30 min	
	H/W		15 min	Post-Bootcamp survey