Indiana University – International Summer Undergraduate Research Program

(IU-ISURP)

Summer Research Experience 2017

Prospective Mentors

Faculty mentor	Field
Lingling Chen	Biochemistry
Silas Cook	Chemistry
David Daleke	Biochemistry
Amar Flood	Chemistry
Steven Tait	Chemistry
Claire Walczak	Biochemistry
Yan Yu	Chemistry

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Position Description

Professor's Name	**Lingling Chen**
Department	Molecular and Cellular Biochemistry
Lab website	http://www.indiana.edu/~mcbdept/faculty/chen.shtml
Position Description	Construct molecular clones to express proteins of biological importance. Express and purify the proteins, and characterize them using a variety of biochemical and biophysical techniques. Our lab's current focus is on pathogen-host interactions, and we study several pathogens' virulent proteins.
Desired Skills & Background	Basic biochemistry knowledge. Experience in protein lab is helpful.

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Position Description

Professor's Name	**Silas Cook**
Department	Chemistry
Lab website	http://www.indiana.edu/~cooklab/index.php
Position Description	The student will synthesize a series of small molecules to test as substrates for new catalysts developed in the group. Sensitive organic chemistry techniques will be used for setting up organic and organometallic reactions, working them up, and purifying and analyzing the desired products from the reactions.
Desired Skills & Background	A good knowledge of basic organic chemistry. Some experience in organic synthesis or organometallic chemistry will be invaluable.

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Position Description

Professor's Name	**David Daleke**
Department	Medical Sciences / Biochemistry and Molecular Biology
Lab website	http://mypages.iu.edu/~dldlab
Position Description	This project is a study of novel proteins that transport lipids across membrane bilayers. These proteins regulate the organization of lipids in biological membranes. The student will express, using the bacculovirus expression system, candidate aminophospholipid transporters and purify the proteins by affinity chromatography. Purified proteins will be reconstituted and lipid transport activity will be measured.
Desired Skills & Background	A good knowledge of basic biochemistry. Some experience in protein purification, enzymology, or membrane biology will be helpful.

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Position Description

Professor's Name	**Amar Flood**
Department	Chemistry
Lab website	http://www.indiana.edu/~floodweb/
Position Description	The summer project involves the preparation and study of cyanostar macrocycles and polymers for binding anions. See related paper: Nature Chemistry, 2013, 5, 704 The student will synthesize new receptors, and characterize their ability to bind different anions.
Desired Skills & Background	Good experience with synthetic organic chemistry. Some experience with NMR and UV-Vis spectroscopy would be useful.

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Position Description

Professor's Name	**Steven Tait**
Department	Chemistry
Lab website	http://tait.chem.indiana.edu
Position Description	Tailoring intermolecular contacts to design molecular self-assembly at surfaces: analysis by scanning probe microscopy
Desired Skills & Background	This project will involve the structural characterization of molecular self-assemblies at surfaces using high-resolution scanning probe microscopy. Students interested in this project should have successfully completed 1-2 years each of undergraduate chemistry coursework. They should have completed chemistry laboratory coursework that involves the preparation and handling of solutions. The students should have an interest in how molecular structure impacts the assembly and function of organic layers and films and have an interest in learning physical analysis methods to image surfaces with single-molecule resolution (see examples of research studies in the publication list on our website).

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Position Description

Professor's Name	**Claire Walczak**
Department	Medical Sciences / Biochemistry and Molecular Biology
Lab website	http://www.indiana.edu/~cewlab/index.html
Position Description	Understanding the molecular mechanisms governing accurate chromosome segregation
Desired Skills & Background	Courses in cell and molecular biology. Some laboratory experience.

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Position Description

Professor's Name	**Yan Yu**
Department	Chemistry
Lab website	http://www.indiana.edu/~yulab/
Position Description	Research for this student will be to design Janus particles and study how Janus particles interact with cells.
Desired Skills & Background	Particle fabrication and functionalization; fluorescence imaging.