Indiana University
Summer Research Program 2022
Position Description

Professor's Name	**Stephen C. Jacobson**
Department	Chemistry
Lab website	http://www.indiana.edu/~scjweb/
Position Description	Research projects are directed toward miniaturization of analytical instrumentation with an emphasis on the development of micro- and nanofluidic devices. Recently, efforts has been focused in the following areas: (1) fabrication of micro- and nanofluidic devices, (2) high-performance microfluidic separations, (3) resistive-pulse sensing, (4) virus assembly, (5) cancer screening, (6) bacterial development and aging, and (7) photolithographic mapping. Students in the summer research program can participate in any of these projects.
Desired Skills & Background	A background in chemistry, physics, engineering, or a related field is necessary. Experience in microfabrication, micro- and nanofluidics, optical spectroscopy, scanning electron microscopy, separations, or cell-based assays is not required.

Indiana University – International Summer Undergraduate Research Program

(IU-ISURP)

Summer Research Experience 2022

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.

Indiana University – International Summer Undergraduate Research Program

(IU-ISURP)

Summer Research Experience 2022

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 ("flippases") 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. A related, alternative project is to synthesize, using enzymatic methods, phospholipid analogs to test the substrate specificity of the purified flippases.
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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(IU-ISURP)

Summer Research Experience 2022

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.

Indiana University – International Summer Undergraduate Research Program (IU-ISURP)

Summer Research Experience 2022
Position Description

Professor's Name	**Sara Skrabalak**
Department	Chemistry
Lab website	http://www.indiana.edu/~skrablab/
Position Description	This project will involve the synthesis of metal nanostructures of defined size, shape, and composition by colloidal methods. In addition to synthesis, the student will be involved in characterizing the prepared materials by electron microscopy and evaluating their properties for applications in chemical sensing and electrocatalysis.
Desired Skills & Background	General chemistry. Advanced inorganic or physical chemistry preferred and/or materials or nanochemistry.

Indiana University – International Summer Undergraduate Research Program

(IU-ISURP)

Summer Research Experience 2022

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.