

Indiana University - Tsinghua University**Summer Research Experience 2020****Position Description**

Professor's Name	Soni Lacefield
Department	Biology Section of Genome, Cell, and Developmental Biology
Lab website	https://lacefieldlab.bio.indiana.edu/
Position Description	The Lacefield lab studies the processes of mitosis and meiosis, seeking to understand how chromosomes are properly partitioned to daughter cells and gametes. In humans, chromosome mis-segregation can cause trisomy conditions such as Down Syndrome and is a hallmark of cancer. We study these highly conserved processes in the model organism budding yeast. The project will be to determine how the spindle checkpoint regulates meiosis to ensure that chromosomes are properly attached to spindle microtubules before they segregate. The student will learn to grow and engineer budding yeast strains, and how to perform time-lapse microscopy.
Desired Skills & Background	A good knowledge of basic molecular biology and genetics are needed.

Indiana University - Tsinghua University**Summer Research Experience 2020**

Position Description

Professor's Name	Li Liang-Shi
Department	Chemistry
Lab website	https://li.lab.indiana.edu/index.html
Position Description	Our group in general is focused on developing well-defined carbon-based materials to tackle long-standing challenges in renewable energy, environment, and medicine. A summer project is available on synthesizing well-defined colloidal graphene quantum dots for photocatalytic reduction of nitrate, a toxic pollutant in the global water systems. Participating students will gain experience in organic synthesis and catalytic studies
Desired Skills & Background	

**Indiana University – International Summer Undergraduate Research Program
(IU-ISURP)****Summer Research Experience 2020****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 is necessary.

Indiana University – International Summer Undergraduate Research Program**(IU-ISURP)****Summer Research Experience 2020****Position Description**

Professor's Name	David Daleke
-------------------------	---------------------

Department	Medical Sciences / Biochemistry and Molecular Biology
Lab website	http://mypages.iu.edu/~dldlab
Position Description	<p>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.</p> <p>The student will express, using the baculovirus expression system, candidate aminophospholipid transporters and purify the proteins by affinity chromatography. Purified proteins will be reconstituted and lipid transport activity will be measured.</p> <p>A related, alternative project is to synthesize, using enzymatic methods, phospholipid analogs to test the substrate specificity of the purified flippases.</p>
Desired Skills & Background	A good knowledge of basic biochemistry. Some experience in protein purification, enzymology, or membrane biology will be helpful.

Indiana University – International Summer Undergraduate Research Program

(IU-ISURP)

Summer Research Experience 2020

Position Description

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

Indiana University - Tsinghua University
Summer Research Experience 2020
Position Description

Professor's Name	David P. Giedroc
Department	Chemistry

Lab website	https://giedroc.lab.indiana.edu
Position Description	We seek individuals interested in understanding the molecular mechanisms of the adaptive response of microbial pathogens to transition metal restriction and hydrogen sulfide toxicity.
Desired Skills & Background	A good knowledge of basic protein purification and other biochemical techniques will be helpful, but not required.

Indiana University - Tsinghua University

Summer Research Experience 2020

Position Description

Professor's Name	Stephen C. Jacobson
Department	Chemistry
Lab website	http://www.indiana.edu/~scjweb/
Position Description	My research group and I are developing micro- and nanofabricated instrumentation and using this instrumentation to study various chemical and biochemical problems. Recently, we have focused our attention in the following areas: (1) microfluidic separations, (2) nanofluidic transport and sensing, (3) photolithographic mapping, and (4) cell-based assays. Participation in any of these project is possible for the summer research program.

Desired Skills & Background	Interest in analytical chemistry and micro- and nanofluidics is necessary. Experience in microfabrication, microfluidics, optical spectroscopy, scanning electron microscopy, separations, or cell-based assays is preferred.

Indiana University

International Summer Undergraduate Research Program (IU-ISURP) 2020

Position Description

Professor's Name	Hengyao Niu
Department	Molecular and Cellular Biochemistry
Faculty Profile	http://www.indiana.edu/~mcbdept/faculty/niu.shtml
Position Description	Mechanisms and regulation of DNA break repair.
Desired Skills & Background	Biochemistry, Molecular Biology or related fields, e.g. Genetics etc. General molecular biology techniques, e.g. molecular cloning and PCR based site-directed mutagenesis, are desired but not required.

Indiana University
International Summer Undergraduate Research Program 2020
Position Description

Professor's Name	Jim Reilly
Department	Chemistry
Lab website	http://www.chem.indiana.edu/faculty/james-reilly/
Position Description	<p>This project involves chemically labeling and cross-linking protein molecules and analyzing the products of these reactions using high resolution mass spectrometry.</p> <p>The student will extract proteins from bacterial samples, perform enzymatic digestions, record mass spectra and utilize computer programs to interpret the data.</p>
Desired Skills & Background	Knowledge of basic biochemistry. Some experience in mass spectrometry or computer programming would be helpful.

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

Summer Research Experience 2020

Position Description

Indiana University – International Summer Undergraduate Research Program**(IU-ISURP)****Summer Research Experience 2020**

Professor's Name	Sara Skrabalak	Position
Department	Chemistry	
Lab website	http://www.indiana.edu/~skrablo/	
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.	

Description

Professor's Name	Nicholas Sokol
Department	Biology
Lab website	http://sokollab.strikingly.com/
Position Description	The student will participate in a genetic screen to identify novel genes required for stem cell based tissue growth using the fruitfly model system. Initial characterization of resulting mutants can also be performed.

Desired Skills & Background	A good knowledge of basic genetics. Some experience in molecular biology will be helpful.
-----------------------------	---

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

Summer Research Experience 2020

Position Description

Professor's Name	Steven Tait
Department	Chemistry
Lab website	http://tait.chem.indiana.edu
Position Description	Structural and chemical analysis of metal-ligand single-atom catalysts at surfaces.
Desired Skills & Background	This project will involve the structural characterization of metal-ligand single-atom catalysts at surfaces. Students interested in this project should have successfully completed 1-2 years of undergraduate coursework in chemistry or physics. They should have completed chemistry laboratory coursework that involves the preparation and handling of solutions. Prior experience with surface chemistry and catalysis is not necessary. The students should have an interest in how molecular structure impacts larger-scale properties (structure and function) and have an interest in learning state-of-the-art analysis methods (see

	examples of research studies in the publication list on our website).
--	---

Indiana University – International Summer Undergraduate Research Program

(IU-ISURP)

Summer Research Experience 2020

Position Description

Professor's Name	Claire Walczak
Department	Medical Sciences / Biochemistry and Molecular Biology
Lab website	http://walczaklab-iu.mystrikingly.com/
Position Description	Understanding the molecular mechanisms governing accurate chromosome segregation
Desired Skills & Background	Courses in cell and molecular biology. Some laboratory experience.

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

Summer Research Experience 2020

Position Description

Professor's Name	Xingchen Ye
Department	Chemistry
Lab website	https://www.chem.indiana.edu/faculty/xingchen-ye/
Position Description	Precision synthesis of colloidal nanocrystals and their integration into mesoscale assemblies for energy conversion
Desired Skills & Background	

Indiana University – International Summer Undergraduate Research Program

(IU-ISURP)

Summer Research Experience 2020

Position Description

Professor's Name	Yan Yu
Department	Chemistry
Lab website	http://www.indiana.edu/~yulab/
Position Description	The Yu laboratory develops nanotechnology to understand and engineer cell functions. We design novel

	nanomaterials, use them to elucidate interactions at the nano-bio interface, and then translate the fundamental knowledge into developing new therapeutic materials.
Desired Skills & Background	Particle fabrication and functionalization; fluorescence imaging.