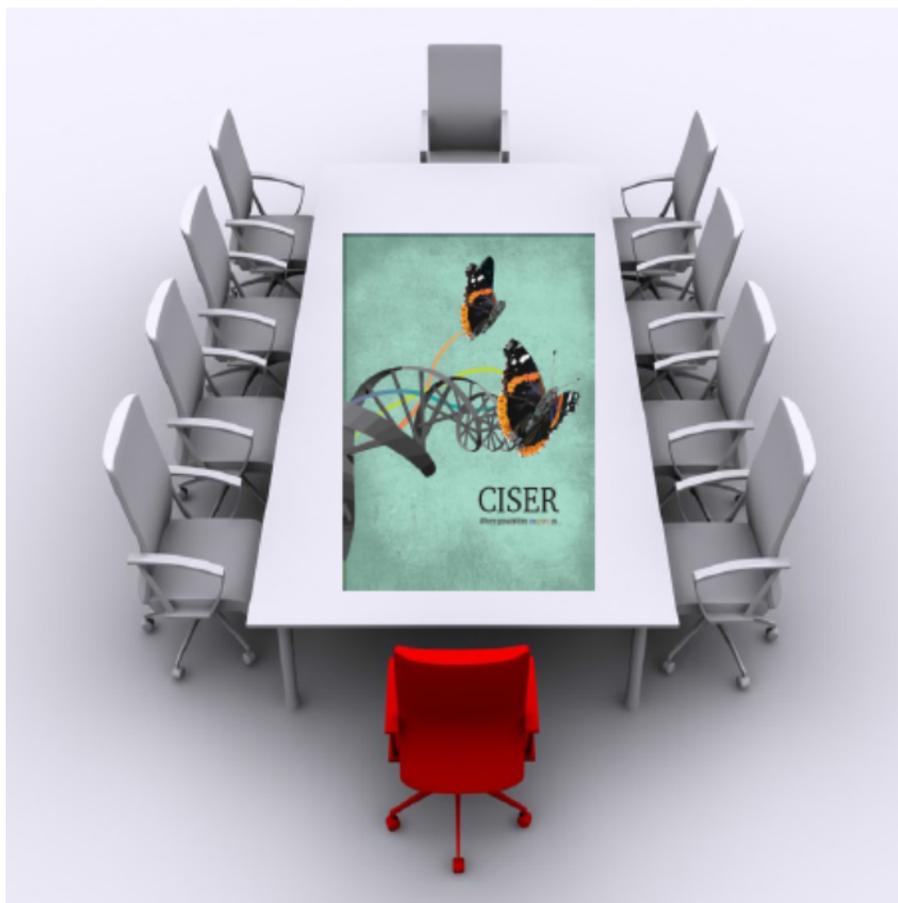


# PROGRAM



# 2016 SCHOLAR RESEARCH FORUM

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**Maksym Zhelyeznyakov**,  
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## Join the Discussion

Text @ciser to 81010



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*Special thanks to Chris and Vickie Rodriguez, and Meagan Sovine, for their generous funding of the Christopher Rodriguez Research Presentation Awards. Their support has made the presentation of these awards possible at the Scholar Research Forum. We deeply appreciate their generosity.*

Text **@ciser** to **81010** with questions and comments during the presentations

**8:30-8:50** Coffee

**8:50-9:00** Welcome Comments: Roman Taraban

## Chemistry, Physics and Technology

**9:00-9:50**

**Holden R. Fried** (Mentor: Michael F. Mayer)

### *Synthesis of a [2]Rotaxane via Dynamic Ring-Chain Equilibration*

I am a 5<sup>th</sup> year biochemistry/mathematics double major working in organic chemistry. I have been working with Dr. Mayer studying mechanically interlocked compounds since the fall of 2014. In addition to my organic chemistry research, I am also the wet-lab manager for iGEM, an international genetic engineering/synthetic biology research competition. After graduating, I plan to attend graduate school to earn my Ph.D. in chemistry. In my spare time I like to play piano, compose music, and read.

**Colt Cagle** (Mentor: Michelle Pantoya)

### *Thermal Properties of Kerosene Based Fuels with Select Additives*

I am a sophomore in mechanical engineering working at the Combustion Lab under Dr. Michelle Pantoya. I plan on staying with combustion for a large part of my undergraduate studies but am interested in branching out to certain material sciences as I progress further into my education. My dream is to be involved in the production or design of aerospace engines after I graduate. In my free time I like to make knives out at my shop as well as play music and cook mediocre food.

**Matthew L. Jordan** (Mentor: Theodore Wiesner)

### *Effect of Nanocatalyst Particle Size on Apparent Reaction Rates*

I am currently a senior in chemical engineering. I was first exposed to research through a summer REU program while still at community college. I worked on heterogeneous catalysis research for ethylene production my first summer followed by a project on biodiesel production the following summer. Currently I am researching under Dr. Wiesner in order to understand the various factors affecting nanoscale reaction rates. My goal is to enter a career in the sustainable energy realm. Outside of academics, I enjoy playing tennis or an occasional movie.

**Maksym Zhelyeznyakov** (Mentor: Johnathan H. Frank at Sandia National Labs)

*Lagrangian Particle Tracking Applied to High-Speed Particle Imaging Velocimetry*

I am a senior physics major. I am currently studying integration algorithms for computational fluid dynamics with Dr. Kevin Long in the TTU math department. I plan to pursue a PhD in electrical engineering, and eventually run my own lab focusing on computational and experimental optics. My interests outside of academia include programming, building circuits, and recently ballroom dancing.

**Brody Moore** (Mentor: Kevin Long)

*Simulating Evolution in Barred Spiral Galaxies Using Various Integration and Approximation Techniques*

I am a junior majoring in physics with a minor in mathematics. My research interests include fluid motion, electrostatics and dynamics. I have begun a computational project with Dr. Kevin Long of the TTU mathematics department working on computational simulation of the evolution of galaxies. This project begins as a standard motion problem but is planned to be adapted to a fluid approximation of galaxy motion in barred spiral galaxies.

**Kenia Ascencio** (Mentor: Marie Bugarel)

*Identifying West Texas Yeasts used for Wine Fermentation*

I am a Junior majoring in Cell and Molecular biology. I am currently working with Dr. Marie Bugarel on a project involving yeasts in the wine making process. My future goals include completing the STEM MBA program and attending medical school. Outside of the lab and CISER I am involved with several service organizations including the band sorority Tau Beta Sigma and Alpha Phi Omega. I am also currently a member of the marching band at Texas Tech.

**Vijayanta Jain** (Mentor: Wesley Dotson)

*Comparing Visual Attention to Robot-Delivered Instruction versus Human-Delivered Instruction for Autism Intervention Programming*

I am an international transfer student majoring in Computer Science. I am currently working at Burkhart Center for Autism Education and Research under my faculty mentor. The research project I am currently working on is an examination of visual and behavioral markers of attention for robot versus human-delivered instruction in autism intervention. Following graduation, I plan to pursue a Master's degree in Computer Science specializing in an interdisciplinary approach to social robotics. For leisure I like to run, watch marathon movie sessions, and participate in outdoor activities.

## **Ecology and Toxicology**

**9:50-10:20**

**Jorge Franco Lopez** (Mentor: David Campos)

*Comparison of Commercially Available and Novel Lactic Acid Bacteria (FS56 and L28) as a Bio-Sanitizers to Inhibit Listeria Monocytogenes on Stainless Steel Surfaces*

I am a senior in Chemistry. I plan to graduate in Spring of 2018 and hopefully start grad school in Food Microbiology. I currently work at the International Center for Food Industry Excellence (ICFIE) lab. My research focuses on finding new applications of Lactic Acid Bacteria (LAB) in the food industry. In the future I wish to continue specializing on Lactic Acid Bacteria. In my free time I like to play soccer, play video games and go to the animal shelter.

**Aicha Fokar** (Mentor: Masoud Zabet)

*The Effect of Brassinosteroids on Polyamine Biosynthesis in Arabidopsis*

I am a senior studying cell and molecular biology in Dr. Zabet Masoud's biotechnology lab, where we use various forms of mass spectrometry to gain information on relatively unknown compounds in plants. Specifically, I study the role and function of the polyamine molecule in Arabidopsis plants. I look forward to delving into the biotechnology and genomics field, and later pursue a career in pharmacology and toxicology. My interests include research, political science, and art.

**Claudia Santillan** (Mentor: Celine Godard-Codding)

*Assessing the Effects of Crude Oil and Common Marine Contaminants Using Novel Precision-Cut Skin and Blubber Organotypic Cultures of Bottlenose Dolphins (*Tursiops truncatus*)*

I am a Senior Biochemistry and Food Science major. I recently started working in Dr. Celine Godard-Codding's lab studying the effects of common marine contaminants on bottle-nosed dolphins using novel organotypic and skin cultures. After earning my Ph.D. I plan to continue to conduct research that will help to protect the wildlife and their environment. Outside of the lab, I enjoy having controversial discussions, reading books about far off lands and exploring the outdoors.

**Gregory Knox** (Mentor: Caleb Phillips)

*Microbiome and Physiological Responses to Pregnancy*

I am studying Cell and Molecular Biology as well as Biochemistry with a minor in math. I have been studying the microbiome of bats under Dr. Caleb Phillips and have also participated in the iGEM Raiders synthetic biology team. I plan on pursuing a master's degree in bioengineering to focus on either Systems and Synthetic Biology or Cell and Tissue Engineering. My hobbies include reading, running, and learning new random things.

**10:20-10:30 Break**

## **Genetics and Biological Sciences**

**10:30-10:50**

**Zach Nguyen** (Mentor: David A. Ray)

*Analysis of Phylogenetic Relationships Within the Genus *Myotis* Using SINE Elements*

I am a junior majoring in Cell and Molecular biology with a double minor in Chemistry and Public Health. I am in Dr. David Ray's genomic lab and am working on a project that uses transposable elements, especially SINE element, to figure out the phylogenetic relationship between the species within the genus *Myotis*. My future goal is to attend an MD/MHP program and become a Surgical Oncologist. My interests include spontaneous traveling, painting, and cooking for my friends.

**Whitney Watson** (Mentor: Robert Bradley)

*Determining the Origin and Phylogenetic Significance of the Zonadhesin Gene in Rodentia*

I am a senior majoring in Microbiology with a minor in Chemistry working in Dr. Bradley's lab. My project investigates the significance of the Zonadhesin gene within all rodents. After graduation, I plan to attend Physician Assistant School and specialize in pediatrics. Outside of my schoolwork, organizations, and research I spend time outdoors appreciating nature, read as many books as I can and spend long hours at many interesting coffee shops around Lubbock.

**Greg Smith** (Mentor: Zhixim Xie)

*Genotyping AGO4 Locus in *Arabidopsis Thaliana* to Examine Phenotype*

I am a senior Biology major with a Chemistry minor. I am working in the Xie lab and am also an Intern for VWR working with CISER as the first Scholar/Intern. I have spent time as a volunteer and mentor for Bayless Elementary through the Honors College. In the future, I hope to gain acceptance into medical school and possibly practice either primary care or emergency medicine.

## **Biomedical Sciences**

**10:50-noon**

**Brianna George** (Mentor: Paul Soto)

*Long-Term Metabolic Effects Following Early-Life Exposure to Olanzapine*

I am a senior majoring in Psychology with a minor in Chemistry and am working in Dr. Paul Soto's lab. My research interests include drug abuse, addiction, and neurodegenerative diseases. I will be applying to graduate school for Behavioral Neuroscience. After graduate school, I would like to attend medical school with the hopes of working in Psychiatry or Neurology. Outside of school, I like to read, spend time with family and friends, and watch movies.

**Helen Scott** (Mentor: Matt Olson)

*Chagas Disease Risk: A Case Study with Lubbock, Texas*

I am currently in my second year at Texas Tech, finishing my pre-requisites so that I can begin nursing school next fall. I joined CISER and began working in Dr. Olson's lab at the start of 2015. Because of my work with him I have becoming very passionate about ecology and climate change. My other interests include: reading, running, and eating jolly ranchers.

**Marilyn Mathew** (Mentor: Caleb Phillips)

*Temporal Community Variance and Relative Abundance of Chronic Wound Microbiota*

I am a senior Cell and Molecular Biology major. My primary interests lie in medicine and clinical research, specifically pediatric oncology. I am currently using Bioinformatics techniques to study the microbiome of chronic wound patients and the effects that antibiotics have on the bacterial flora of patients in Dr. Phillips lab. Outside of CISER and research, I am involved in the Gender Equity Committee's Woman's Leadership Institute, Mortar Board, iGEM, Tri-Beta, HON, and the honors college. My interests outside of academia include dance, cooking, and just relaxing with good company.

**Kennady Abbott** (Mentor: Peter Keyel)

*Elucidating the Role of Dnase1L3 in Systemic Lupus Erythematosus*

I am senior biochemistry major with minors in biology and public health, working in Dr. Peter Keyel's lab. My project centers on the study of a genetic determinant of Systemic Lupus Erythematosus. My goal is to gain admittance in an MD PhD program where I can combine foundational training in human physiology with my passion for scientific research. Outside of the lab, I enjoy spending time with friends, reading, and baking cookies.

**Hannah "Robin" Greer** (Mentor: Jannette Dufour)

*Infertility Associated with Early Type II Diabetes*

I am studying Cell and Molecular Biology as a junior at Texas Tech. I have been working in Dr. Dufour's lab since my freshman year. After graduation, I plan on pursuing a master's degree and then possibly a PhD. My hobbies include herb gardening, playing the ukulele, and playing videogames.

**Christopher Ponce** (Mentor: Shaikh Rahman)

*Vitamin D Increases Cholesterol Efflux and Apoptosis In Breast Cancer Cells*

I am a fourth-year student majoring in mathematics and minoring in chemistry. My research interest focuses on finding and understanding metabolic pathways that induce breast cancer cell growth. Currently, I am working on measuring the effects of Vitamin D3 on breast cancer cells by identifying changes in protein and gene expression. I am interested in attending medical school and hope to one day become a radiation oncologist. My other interests include hiking, road trips, and (according to my friends) living in the library.

**Stacy Galvan** (Mentor: Lauren Gollahon)

*Effectiveness of NI-07 as an Anti-Tumor Agent on Human and Canine Normal and Cancerous Cells*

I am a 4<sup>th</sup> year Microbiology major with a minor in Chemistry working in Dr. Gollahon's lab. My focus is on studying the effects of a potential anti-cancer agent on various cancerous and non-cancerous cells. I am planning to pursue a PhD and become a Medical Scientist to continue work in research. I am particularly interested in viruses and vaccines, allergy and asthma research and also cancer. My hobbies include sketching, training in martial arts, and playing with and teaching my children about science.

**Nitish Mittal** (Mentor: Stephanie Filleur)

*CD47 down-regulation by PEDF : A New Means of Inducing Tumor Cell Phagocytosis In Vitro*

I am a junior majoring in chemistry and minoring in biology and mathematics. The goal of my research is to evaluate the role CD47 in PEDF-induced phagocytosis by using several established prostate cancer cell lines – CL1-E10 and CL1-PEDF. My goal is to get into medical school and to help society in the best possible way. For leisure activities, I like playing lawn tennis and cricket, and watching Bollywood movies.

**Shawna Gallegos** (Mentor: Kendra Rumbaugh)

*Microbial Interactions in the Wound Environment*

I am a junior majoring in Microbiology with a minor in Chemistry and Forensic Science. I am working in Dr. Kendra Rumbaugh's lab studying poly-microbial interactions in the wound environment. I plan to attend graduate school where I will work towards a Master's in Microbiology. I hope to eventually marry my major and minor into an exciting career in the up and coming field of Forensic Microbiology.

**Brian C. Johnson** (Mentor: Kai Zhang)

*Growth of Leishmania Parasites in a Bacteria Co-Culture*

I am a senior cell and molecular Biology major. I have been studying Leishmania parasites under Dr. Kai Zhang for almost 2 years. My current research involves the growth of Leishmania mutants to find essential genes in the parasite. I plan to get my Ph.D. in Molecular Biology and research cancer/tumor cells. My hobbies include playing clarinet and playing video games. I am also the current Vice President of the Texas Tech Pokemon Club.