



Idaho State  
University

Graduate  
School

**FALL 2021**  
**THREE MINUTE THESIS**  
**EVENT PROGRAM**



FOUNDED BY THE UNIVERSITY OF QUEENSLAND

NOVEMBER 18, 2021

L.E. AND THELMA E. STEPHENS PERFORMING ARTS CENTER

# Fall 2021 Three Minute Thesis Event Program

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# Letter from the Dean of the Graduate School



Welcome to the Three Minute Thesis Competition at Idaho State University! Whether you are joining us as a graduate student contestant, a judge, a faculty mentor, or interested community member, please know that we are thrilled with your interest in the strength of the research and creative activity occurring at Idaho State University.

The Three Minute Thesis Competition was started at the University of Queensland (Australia) in 2008. It now takes place at over 900 universities in more than 85 countries across the world. It has become a staple part of many graduate students' educational journey. We are pleased to have hosted this event at Idaho State University since 2018, and tonight's winners will be invited to participate in state and possibly national and international versions of tonight's event. The reasons for the event's popularity are arguably twofold. For our graduate researchers, clinicians, and artists, this event represents an unparalleled opportunity to present their work to an interested public in clear, compelling, and accessible terms – a skill that will be important throughout their professional careers in years to come. For the rest of us, the event offers a view of the compelling and remarkable advancements that these talented individuals are making in their various fields. In doing so, it essentially offers us a glimpse into our future – of where our intellectual and artistic journey as a species might be taking us.

Those participating today will come from a variety of disciplines – biologists working to better understand the dynamics of the ecosystems in which we live, engineers looking to build better bridges, health care workers identifying how we might enjoy a higher quality of life, humanists and artists exploring how our collective experiences have shaped and are reshaping our contemporary world. I encourage you to listen to their presentations with an eye towards seeing their research in its broadest implications, because we cannot stratify the value of what we will hear today. Cures for systemic diseases, for instance, are of critical importance to us all – but, as our recent history has shown us, systemic disease can just as easily be social as physical, and both can be deeply destructive. Many of the answers that we need to address the challenges we collectively face will unquestionably emerge from the minds of researchers, artists, and clinicians populating our universities today.

I urge you to revel in the experience of hearing from these brilliant individuals (and in the experience of sharing your own hard-won knowledge if you are presenting!). I am certain that doing so will inspire you, as it does me every year, with hope – a renewed belief in a brighter, emergent future for ourselves, our students, our community, our institution, and our world.

Dr. Adam Bradford  
Dean of the Graduate School  
Professor of English

# Agenda

**Thursday, November 18, 2021**

L.E. and Thelma E. Stephens Performing Arts Center  
1002 Sam Nixon Avenue, Pocatello, ID

## 3MT Competition

**Black Box Theatre**

Join us virtually via  
[Youtube Live](#)

<b>7:00 PM</b>	<b>Event Introduction &amp; Opening</b> Associate Dean Tracy Collum
<b>7:05 PM</b>	<b>Three Minute Thesis Presentations</b>
Presenter 1	<b>Jessica Shotwell</b> Speech-Language Pathology - MS
Presenter 2	<b>Allison Loyola</b> Pharmaceutical Science - MS
Presenter 3	<b>Olivia Morzenti</b> Dental Hygiene - MS
Presenter 4	<b>Paula Webb</b> Communication - MA
Presenter 5	<b>Mel Anderson</b> English - MA
Presenter 6	<b>Maysoon Rashid</b> Public Health - MPH
Presenter 7	<b>Dana Drinkall</b> Geology - MS

Presenter 8	<b>Uma Shankar Medasetti</b> Applied Science & Engineering - PhD
Presenter 9	<b>Arina Ranjit</b> Pharmaceutical Science - PhD
Presenter 10	<b>Pamela Pascali</b> Anthropology - MS
Presenter 11	<b>Katie Roberts</b> Speech-Language Pathology - MS
Presenter 13	<b>Biraj Shakya</b> Measurement and Control Engineering - MS
Presenter 14	<b>Shereen Ainsworth</b> Political Science - DA
Presenter 16	<b>Rana Mazumder</b> Accountancy - MAcc
Presenter 17	<b>Mahesh Acharya</b> Applied Science & Engineering - PhD
Presenter 18	<b>Krystoff Kissoon</b> Political Science - DA
Presenter 19	<b>Cailee Cunningham</b> Communication - MA
Presenter 20	<b>Farjana Afrin</b> Pharmaceutical Science - PhD
Presenter 21	<b>Vincent Akula</b> Mechanical Engineering - MS

## Vote for People's Choice Award



[Click Here to Vote](#)

OR

**Event Code:**  
**#287507**

**8:25 PM**

**Closing Remarks**

President Kevin Satterlee

## Awards Reception

Rotunda

Join us virtually via  
[Youtube Live](#)

**8:30 PM**

**Event Opening**

Dean Adam Bradford

**8:45 PM**

**Winners Announced**

Associate Dean Tracy Collum

**9:00 PM**

**Reception**

*Enjoy libations & hors d'oeuvres*

## *The Helianthus Trio*

School of Performing Arts | Department of Music

**Natalie Cohen**

Violin

Performance in Music - BM

**Bohan Hou**

Violin

Performance in Music - BM

**Lydia Ring**

Viola

Music Education - BME

# Spring 2021 3MT Winners



## 1st place

**Corina Sanchez**

Biology - MS

***Reducing the Impact of Common Ravens on Greater Sage-Grouse through Egg-Oiling***



## 2nd place

**Shelby Weber**

Clinical Psychology - PhD

***Understanding the Relations Among Adverse Childhood Experiences (ACE), Substance Use, and Reoffending Among Juvenile Offenders***



## 3rd place

**Bindal Makwana**

Clinical Psychology - PhD

***Sideline High-School Athlete Study: An Examination of the Predictability of Concussion from a Computerized Neuropsychological Battery***



## People's Choice

**Jessica Johnson**

Educational Leadership - MEd

***School Climate and Culture: Defined by Relationships, Strengthened by Community***



## Upcoming Events

### **State Three Minute Thesis Competition**

February 15, 2022

Boise, Idaho

### **Spring 2022 Graduate Research Symposium**

Wednesday, March 16, 2022

Ballroom, Pond Student Union, Pocatello, Idaho



### **Regional Three Minute Thesis Competition**

*Western Association of Graduate Schools Annual Meeting*

March 20-23, 2022

Denver, Colorado

# Abstracts

## Mahesh Acharya

Applied Science & Engineering - PhD

### ***Titanium Alloy Bars for Construction of Resilient and Durable Concrete Structures***

Titanium Alloy Bars (TiABs) are advanced materials that have recently been applied in the civil engineering industry. The research at Idaho State University (ISU) is on-going and explores the use of TiABs in construction of new bridges and building. TiABs can provide earthquake-resiliency and durability in a single package.

## Farjana Afrin

Pharmaceutical Science - PhD

### ***Developing probes targeting Sphingolipid Metabolizing Enzymes - Sphingomyelin Synthase & Sphingosine Kinase***

Ceramide is the central biomolecule in the cellular sphingolipid rheostat. The different enzymes involved in ceramide metabolism can be therapeutically significant. My target is to synthesize small molecules, targeting these specific ceramide metabolizing enzymes - Sphingomyelinase & Sphingosine Kinase. Inhibition of both of these enzymes result in the accumulation of cellular ceramide, which in turn can initiate apoptosis in cancer cells. I am also planning to develop cell assay to quantify the cellular ceramide.

## Shereen Ainsworth

Political Science - DA

### ***The Opioid in America: Can Individual Bias Make or Break Policy Support?***

Using a nationwide public opinion survey, I will seek to explain how social contact with and social construction of drug abusers can influence support for various policy solutions. Preliminary results suggest both social construction and social contact as well as risk perceptions can influence public policy support.

## Vincent Akula

Mechanical Engineering - MS

### ***The effect of physical changes in air flow on the heating performance of a forced air circulation delivery system***

Keeping houses warm in the winter contributes significantly to energy consumption in the U.S. Experts believe that there is a potential to reduce residential energy consumption by harnessing “accessible and cost-effective technologies” such as a highly efficient heating system. In this study, simulation is carried out on a modified residential building heating system and the results are compared with a baseline model to investigate optimization opportunities. The results will provide a roadmap for an innovative residential heating system design

## Mel Anderson

English - MA

### ***It's the Time and the Place***

Critical trauma theory in literature posits that trauma is both unremembered and unspeakable. I argue that the problem with trauma communication isn't a problem with the expressive language of trauma survivors, but with the receptive language of non-survivors who are uncomfortable hearing spoken trauma. This leads to social shame for survivors who attempt to speak, and robs the opportunity to learn from their experiences. Trauma can be remembered and spoken. When will we allow it to be heard?

## Cailee Cunningham

Communication - MA

### ***Narcissism, Ostracism, & Victimhood: How Fascists use Memes as an Indoctrination Tool***

Memes have become a modern means of sharing emotions, thoughts, and even information between a multitude of social media platforms. Memes can work as propaganda to promote dangerous ideologies. Modern fascist movements have used memes as a way to indoctrinate internet users. Sharing these memes stand to empower a fascist audience with the perception of acceptance. This study dissects alt-right memes and imagery to better understand how the true message is hidden, and how non-political users are coerced into joining a fascist movement.

## Dana Drinkall

Geology - MS

### ***Landslide Monitoring and Hazard Assessment Using Uncrewed Aerial Vehicles Along Railway Corridors***

Landslides along railways pose a threat for derailments and potential for contamination of the nearby environment. In 2021, we used drone-based LiDAR to fly landslides along railroads adjacent to rivers in northern Idaho. With this data we are mapping change from LiDAR collected in 2017 to assess the stability of slopes. Further, we are developing an algorithm to model landslide potential using machine learning. We expect these techniques to aid society in monitoring and management of these hazards to prevent future environmental contamination.

## Krystoff Kissoon

Political Science - DA

### ***"Here Every Creed and Race Find an Equal Place" But Not Queer People?***

Trinidad & Tobago (TT) is one of the most diverse countries, yet LGBTQ+ individuals experience severe discrimination. Why do we accept some groups into the "melting pot" but not others? In TT, I argue it is because citizens think about LGBTQ+ rights in terms of race and religion rather than human rights. Government elites are discouraged from passing LGBTQ+ rights because violating racial and religious norms can hurt their political success. This creates unique challenges for LGBTQ+ advocates who may require new strategies to be successful.

## Allison Loyola

Pharmaceutical Science - MS

### ***Altered microglia the gardeners of the CNS may potentially lead to atypical feeding behaviors in a valproic acid rodent model of autism***

If the neurons in the brain were a garden and microglia the gardener, pruning and attending to the neurons, imagine what would happen to the garden if the gardener were killed by drugs and environmental toxins during brain development. In my thesis I will evaluate the effect of anti seizure medication valproic acid on microglia, the consequence this has on neurons and eventually how that alters feeding behaviors in mouse pups.

## Rana Mazumder

Accountancy - MAcc

### ***Staring into the Abyss: Does Accounting Face a Looming Enrollment Cliff Crisis?***

Although education is a key issue in the US and has consistently seen enrollment numbers rise, experts have begun to predict an oncoming enrollment cliff that will lead to reductions of individuals enrolled in degree-seeking programs. This reduction may require significant changes in the structure and operation of higher education entities. As this enrollment cliff may disproportionately affect certain disciplines, we use data from the National Center for Education Statistics to analyze trends in Accounting degrees at the US institutions.

## Uma Shankar Medasetti

Applied Science & Engineering - PhD

### ***Virtual Reality and Augmented Reality as Novel Tools for Training of Emergency Responders***

The Research emphasizes the use of Extended Realities(XR) technologies like Virtual Reality (VR), Augmented Reality (AR) to build novel virtual environments for training first responders/emergency responders. The AR/VR training can enhance training and exercises by creating realistic workplace experiences and allowing individuals to take risks while working in a demanding environment where morbidity and mortality outcomes are simulated.

## Olivia Morzenti

Dental Hygiene - MS

### ***Implicit Racial Preferences Among Dental Hygienists***

Implicit biases affect the patient-provider relationship, shared decisions and treatment goals, patient adherence, and interpersonal communication. While extensive literature exists on implicit bias among healthcare professionals, there is a dearth of research on implicit racial bias among dental hygienists. The purpose of this study is to investigate implicit racial preferences among dental hygienists. In this descriptive study design, a two-part web-based survey is used to identify implicit racial preferences of among dental hygienists.

## Pamela Pascali

Anthropology - MS

### ***Idaho's Stone Tool Sources: Simple Selection or Picking Preferentially?***

My research looks at Idaho obsidian sources and how precontact people utilized them through out time. By doing physical/chemical performance testing, and analyzing museum collections, I hope to understand if people were willing to go out of their way for a better quality tool source or we they simply using material that was easiest to obtain. I predict that with all things being equal, the better quality sources will be preferentially selected.

## Arina Ranjit

Pharmaceutical Science - PhD

### ***Novel Treatment Option for Rheumatoid Arthritis through Bone Targeted Delivery of Novokinin***

Novokinin, a peptide drug, could provide a novel therapeutic bone target for treating Rheumatoid Arthritis (RA). However, its metabolic instability limits efficacy. We aim to improve the half-life of novokinin by conjugating it with a bone targeting moiety, where bone functions as a reservoir for its sustained release. Using a rat model, our novokinin conjugate presented superior therapeutic effects due to its improved stability with no significant side effects.

## Maysoon Rashid

Public Health - MPH

### ***Acceptance of Silver Diamine Fluoride to Arrest Early Childhood Caries by Refugee Parents and Caregivers***

This study will provide information which can be used to improve the public health community's ability to reduce oral health disparities and risk of childhood caries in refugee communities. Additionally, increasing awareness about Silver Diamine Fluoride can be a way to reduce a barrier to treatment due to cost, and may have an effect on protecting and improving oral health among the refugee population. This is because parents' perception and acceptance are the main way to support the use of SDF treatment for primary teeth.

## Katie Roberts

Speech-Language Pathology - MS

### ***The Sustainability of Intensive Comprehensive Aphasia Programs***

Aphasia is a language disorder that commonly follows a stroke. Intensive Comprehensive Aphasia Programs (ICAPs) align with WHO-ICF recommendations by providing intensive therapy in individual and group settings for a cohort of individuals with aphasia. While ICAPs are effective, there are challenges to implementing and sustaining an ICAP. This study sought to understand the characteristics of sustained ICAPs from the perspective of international aphasiologists involved in an ICAP.

## Biraj Shakya

Measurement and Control Engineering - MS

### ***Circuit-embedded Reservoir Computer for Smart Noise Reduction of MCG Signals***

With the COVID-19 and its variation, checking up on cardiac activities has become more important than ever but going to hospital and using the traditional ECG machines is not an option for a lot of people. So instead of ECG, MCG can be collected without going to hospitals but sensors that collect MCG has a big challenge that is the noise at low frequency. We purpose a circuit with a lightweight machine learning model to reduce noise and extract ECG signal out of MCG signal.

## Jessica Shotwell

Speech-Language Pathology - MS

### ***Educator Knowledge and Perception of Dyslexia in Eastern Idaho: A Survey Study***

Dyslexia affects 5% to 17% of children in the US. Research shows that educators hold misconceptions related to dyslexia. This survey study explores the attitudes and knowledge base of Eastern Idaho educators in a variety of roles regarding dyslexia. We hope to have a positive impact on children who are struggling to learn to read by identifying misconceptions and gaps in the knowledge base of educators, thus highlighting the need for continued emphasis on dyslexia education, and informing the future establishment of in-service education.

## Paula Webb

Communication - MA

### ***The Learning Curve of Education***

Like a black hole, the archaic system of delivering knowledge to university students is draining the economy of nearly \$2 trillion dollars a year in student loan debt. By using the tools of modern technology the cost of education can be drastically reduced by streamlining and consolidating lectures online thus reducing facility and faculty expenses. This allows more students to access advanced education which in turn infuses money into the US economy and ultimately lowers the national student loan debt.



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