Westminster is committed to promoting undergraduate research, exploration, and creativity. For many years, our students have presented their work both on and off campus, in a variety of settings. The Undergraduate Scholars Forum, however, allows the College to highlight our students’ achievements in a formal and comprehensive way. On this day, nearly 150 students from a dozen disciplines will offer paper presentations, poster presentations, multi-media presentations, and creative performances. Students, faculty, staff, alumni, and trustees are invited to gather together to learn from these presenters. The Scholars Forum is truly a celebration of scholarship on our campus and a way to show off all the great work our students do.

OPENING SESSION AND WELCOME
9:00 a.m.
CSC Lecture Hall

WELCOME
Dr. David Roebuck
Vice President for Academic Affairs and Dean of Faculty

STUDENT PRESENTATION
Cailey Edwards
“Miley Cyrus and Janis Joplin: Sex and the Sound of Feminism”
Dr. Cinnamon Brown, Advisor

CONCURRENT SESSIONS I
9:45 - 10:45 a.m.

BIOLOGY POSTER SESSION
Moderators: Drs. Dawn Holliday, Jane Kenney-Hunt, and Jeff Mayne
CSC Atrium

Quantitative Genetics of Skeletal Traits in BXD Recombinant Inbred Strain Mice
Madison Rybak and McKenna Peters
Advisor: Jane Kenney-Hunt

Partial Purification of Lipase
Brooke Berendzen, AnnaLee Chitwood, Alicia Key, and Bayley Flavin
Advisor: Jeff Mayne

Purification of Hyaluronidase
DeHaven McCracy, Abby Theroff, Sydney Pinkerton, Jahne Williams
Advisor: Jeff Mayne

Bromelain Purification from Pineapple.
Ben VanHoogstrate, Joshua Udinyiwe, Philip Udinyiwe, and Grant Powderly
Advisor: Jeff Mayne

The Biochemical Characterization and Purification of Beta Amylase from Saccharomyces Cerevisiae
Samatha Henderson, Matthew Hagen, and Brandon Swain
Advisor: Jeff Mayne

Purification and Characterization of Lactate Dehydrogenase
Brenden Stafford, Madison Gregory, John Pervinich, and Tyson Peng
Advisor: Jeff Mayne

Purification of β-Galactosidase
Lydia Hale, Abby Beach, Destri Eichman, and Axel Izaguirre-Garcia
Advisor: Jeff Mayne
The Health of Prairie Habitat  
*Tania Lay Guterres and Mercy Taban*  
Advisor: Dawn Holliday

Identifying and Quantifying Microbial Life in Ozark Caverns  
*Emily Davidson and DeHaven McCrary*  
Advisor: Dawn Holliday

A Head of the Times: New and Improved Cranio-Facial Surgery Techniques and Treatments  
*Gracie Koonce*  
Advisor: Dawn Holliday

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**MENTAL ILLNESS STIGMA, VIOLENCE, & ANXIETY**  
Moderator: Dr. Abby Coats  
CSC 330

Reducing Stigma Towards People with Mental Illness  
*LaForce Hamilton, David Sissac, and Jeremy George*  
Advisor: Abby Coats

Paraphilic Symptomatology as a Predictor for Violence: Is Deviant Sexual Behavior a Risk Factor for Criminal Action or Recidivism?  
*Aspen DeShong*  
Advisors: Abby Coats and Brandy Baczwaski

Cadavers, Death Anxiety, and Adolescence  
*Khaled Khalili, Larke Tyler, and Abbegayle Sutterfield*  
Advisor: Abby Coats

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**SOCIAL JUSTICE AND HAPPINESS**  
Moderator: Dr. John Langton  
CSC 329

The Rawlsian Conception of Social Justice and Why Happiness in the United States is in Decline  
*John Burch*  
Advisor: John Langton

Ecuador, Happiness, and the Rawlsian Conception of Social Justice  
*Estefania Proano*  
Advisor: John Langton

Canada and the Rawlsian Conception of Justice  
*Andrew Bennett*  
Advisor: John Langton

Vietnamese Happiness: A Paradox of the Rawlsian Conception of Social Justice  
*Andrew Patterson*  
Advisor: John Langton

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**HEALTH AND EXERCISE SCIENCE**  
Moderator: Therese Miller  
CSC 303

Physiological Benefits of the Islamic Prayer  
*Yusuf Nuur*  
Advisor: Therese Miller

Kinematic Comparison Between a Novice and Proficient Golfer  
*Evan Collner*  
Advisors: Therese Miller and Josh Thompson
CONCURRENT SESSIONS II

11:00 a.m. - 12:00 p.m.

PHYSIOLOGY POSTER SESSION
Moderator: Dr. Dawn Holliday
CSC Atrium

Oxidative Stressed? Caffeine Can Help!
Destri Eichman, Abigail Beach, and Celeste Cummings
Advisor: Dawn Holliday

Sugar Rush: The Sympathetic Nervous System Effects on the Heart and Blood Glucose Concentration
Axel Izaguirre-Garcia, Matthew Copher, and Tylan Jamison
Advisor: Dawn Holliday

Vaping: Harmful to You--But for All Your Friends, Too?
Evan Collner, Denzel Dean, and Bailey Johnson
Advisor: Dawn Holliday

What's Up, Dog? Not Your Stress Levels!
Abby Theroff, Alondria Buggs, and Alexa McPherson
Advisor: Dawn Holliday

Mind Boosting Molecules: The Effects of PQQ Supplementation on Cognitive Function & Stress
Lydia Hale, Teri Davis, and Ashley Kistaitis
Advisor: Dawn Holliday

Think Smarter, Hit Harder: Caffeine!
Grant Powderly, Collin Caywood, and Maggie Morris
Advisor: Dawn Holliday

FAST Track to Fitness: The Effects of Intermittent Fasting on Athletic Performance
Natalie Tiffany, Kally Claeyss, and Ally Tomson
Advisor: Dawn Holliday

NATIONAL SECURITY: CONFLICT AND COOPERATION
Moderator: Dr. Tobias Gibson
CSC 329

The Inherent Challenges of the Dark Web and National Security
Andrew Brophy
Advisor: Tobias Gibson

Rethinking Water Wars: The Strategic Rationalism of Cooperation in Transboundary River Basins
Mason Evers
Advisor: Tobias Gibson

The Varying Threats of the Sovereign Citizen Movement
Braden Eisenbeis
Advisor: Tobias Gibson

COMPARATIVE AND INTERNATIONAL POLITICS: PROBLEMS AND SOLUTIONS
Moderator: Dr. Kali Wright-Smith
CSC 303

Gender Quotas: The Solution to Achieving Gender Parity in Politics?
Olivia Wilson
Advisor: Kali Wright-Smith

World War Ice
Sandra Mondragon
Advisor: Kali Wright-Smith
STUDENTS, MINDSETS, AND EMOTIONS
Moderator: Dr. David Jones
CSC 206

An Investigation into the Role of Classroom Environment on the Way Students Perceive Failure and its Impact on Mindset Development
Meghan Tinney
Advisor: Abby Coats

Enhancing Emotion Perception in Normally Developing College Students
Eliza Tovizi
Advisor: David Jones

Creating a More Observational Mindset
Lisa Gardner
Advisor: David Jones

Body Image
Ravina Kate
Advisor: David Jones

ACCOUNTING FRAUD
Moderator: Prof. Ashley Dodson
CSC 330

Fraud from the Front Porch
Anna Bartley, Brammika Balamurugan and Rohit Bhandari
Advisor: Ashley Dodson

Panasonics Fraud Case
Nick Lakowski, Sam Dunne and Matt Brown
Advisor: Ashley Dodson

LUNCH BREAK 12:00-1:00 P.M.

CONCURRENT SESSIONS III
1:15-2:15 p.m.

PROJECT DEMONSTRATION: ENGINEERING 101
Moderator: Dr. Peng Yu
CSC 205

Model Helicopter
Team Panthers: Dalton Landreth, Sean Sax, and Jacob Warren
Advisor: Charles Lahmeyer

Hydraulic Claw Machine
Team Poltergeist: Nolan Brune, David Wilder, and Lukas Vitt
Advisor: Charles Lahmeyer

An Apparent Perpetual-Motion Machine
Team Blackhawks: Cassidy Busch and Carter Keeney
Advisor: Charles Lahmeyer

Water-powered Hydraulic Press
Team Jaybirds: Colton Headrick, Michael Spence, and Adrian Webb
Advisor: Charles Lahmeyer

Visual Representation of a V6 Engine
Team Rocketman: Tyler Bise, Deryl VanNostrand, and Andrew Yount
Advisor: Charles Lahmeyer

Earthquake-Resistant Building
Team Beavers: Mathew Allen and Saunak Patel
Advisor: Charles Lahmeyer
ENVIRONMENTAL SCIENCE AND CHEMISTRY POSTER SESSION

Moderators: Dr. David Schmidt and Dr. Bharat Dhital
CSC 126

A Lost World Mystery: Using Petrography and Taxonomy to Reconstruct an Ancient Environment
Leticia Ferreira, Sean Pelato, and Rebecca Roth
Advisor: David Schmidt

A Water Quality Analysis of Stinson Creek, Fulton, Missouri
Leticia Ferreira, Tania Lay Guterres, and Isaac Newberry
Advisor: David Schmidt

Light Harvesting in Dye-Sensitized Solar Cells
Michael Cermak
Advisor: Bharat Dhital

EDUCATION POSTERS:
IMPROVING TEACHING PRACTICE ACTION RESEARCH PROJECTS

Moderator: Dr. Tami Ensor
CSC Atrium

Brandon Beeler, Shelby Buchholz, Andi Hinckle, Bryce Moorman, Brett Paglusch, Jeremy Schneider, Anna Sodeman, Emmi Theroff, Taylor White
Advisor: Tami Ensor

FILM, TELEVISION, AND LITERATURE

Moderator: Dr. Theresa Adams
CSC 330

Identity and the Self: Survival of Autonomy as Character Motivation in George Orwell’s 1984
Aspen DeShong
Advisor: Theresa Adams

Batman in Film and Television: A Reflection of American Society
Jacob Hansen
Advisor: Mark Boulton

American Holocaust Cinema
Travis Parker
Advisor: Sam Goodfellow

TRANSNATIONAL STUDIES

Moderator: Dr. Jeremy Straughn
CSC 329

Transnational Environmental Issues: Can Countries Cooperate?
Andrea Ramos
Advisor: Jeremy Straughn

Emily Davidson
Advisor: Jeremy Straughn

A Story Told for the Third Time:
The Palestinian Refugees from Syria in Diaspora
Neveen Abu-Elula
Advisor: Jeremy Straughn

WAR, CONFLICT, AND THE MILITARY

Moderator: Dr. Mark Boulton
CSC 303

To the Guillotine: How Leadership Decapitation Affects the Prosperity of Terrorist Groups
Brooke Thompson
Advisor: Mark Boulton
Desert Eagles: An Analysis of Airpower during the Suez Crisis  
*Chandler Casey*  
Advisor: Mark Boulton

Philip H. Sauer: Westminster’s Hero at Khe Sanh  
*Thomas Boreman*  
Advisor: Mark Boulton

**CONCURRENT SESSIONS IV**

2:30-3:30 p.m.

**SCANDALOUS WOMEN ACROSS THE AGES POSTER**  
Moderator: Dr. Cinnamon Brown  
CSC 207

Scandalous Beauty?: Eliza Suggs and Lizzie Velasquez  
*Lisa Gardner*  
Advisor: Cinnamon Brown

Christine Jorgensen & Tonya Harding: Challenging Femininity  
*Megan Davis*  
Advisor: Cinnamon Brown

Miley Cyrus and Janis Joplin: Sex and the Sound of Feminism  
*Cailey Edwards*  
Advisor: Cinnamon Brown

Scandalous in Color  
*Hannah Macon*  
Advisor: Cinnamon Brown

Ingredients for Scandal: Katherine Johnson and Michelle Obama  
*Khaled Khalili*  
Advisor: Cinnamon Brown

*Olivia Wilson*  
Advisor: Cinnamon Brown

American Female Artist across Ages  
*Tania Lay Gutierrez*  
Advisor: Cinnamon Brown

Dancing for Activism: Josephine Baker and Isadora Duncan  
*Danielle Crivello*  
Advisor: Cinnamon Brown

**EDUCATION POSTERS: READING ASSESSMENT CASE STUDIES**  
Moderator: Dr. Barri Bumgarner  
CSC 126

Carissa Bentlage, Reagan DeCamp, Jena Fisher, Andi Hinckle, Amber Johnson, Anna Rinehart, Anna Sodemann, Emmi Theroff  
Advisor: Barri L. Bumgarner

**HISTORY PRESENTATIONS**  
Moderator: Dr. Sam Goodfellow  
CSC 303

Celtic Resistance to English Dominance  
*Trevor “Doyle” Dow*  
Advisor: Sam Goodfellow

Female Slavery in America: The Experiences and Representations of Female Slaves in American History  
*Micha Frasher*  
Advisor: Mark Boulton
Terrorism or Tension: A Legal Analysis of the Tulsa Race Riot of 1921
Melissa Rolseth
Advisor: Mark Boulton

ECONOMICS
Moderator: Dr. Rabi Bhandari
CSC 329

Investigating Child Labor in Developing Countries and Child Labor's Role in Overall Development
Pfifer Duerkop
Advisor: Rabi Bhandari

The Factors of Fertilizer Usage in the United States
Katie Price
Advisor: Rabi Bhandari

PHYSICS AND MATH
Moderator: Dr. Laura Stumpe
CSC 330

The Fourth State of Matter: Plasma
Sarah Cradick
Advisor: Laura Stumpe

Rocket Science: A Computational Study using Model Rockets and VPython
Jon Wheeler, Matthew Hamilton, Connor Felter, Nick Monson, Colton Headrick, Tumain Nicholas
Advisor: Laura Stumpe

Academic Awards and Closing Remarks
3:30 p.m.
CSC Lecture Hall

Presentation of Undergraduate Scholars Forum and Academic Awards
Dr. Carolyn Perry

Special Thanks
Cover Design: Khaled Khalili '19

Design of the Undergraduate Scholars Forum by Members of the Teaching and Learning Committee:
Professors Theresa Adams, Mark Boulton, Barri Bumgarner, Angela Grogan, Nate Leonard, Sonia Manzoor, Linda Webster; I.T. Expert Jon Knatkal; Student Representatives Stacia Schollmeyer and Beau Thompson

Hosts and Ushers: The Education Association and The Ambassadors

For Generous and On-Going Support of the Undergraduate Scholars Forum:
Dr. David Stubbs, and Thad, Courtney, and Rebecca Stubbs
"I chose this design to represent the unique opportunity of exploration and freedom the USF has provided myself and the rest of the students here at Westminster College. I think back to the first Undergraduate Scholars Forum that I attended as a freshman, and I remember the feeling of amazement and inspiration at all the impressive academic work that my peers had done and how I was encouraged to live up to it and do my own research.

I used the imagery of space as it is one of the realms that is full of hidden secrets and worlds waiting to be explored. It is similar to the realm of science that we get to explore and discover here at Westminster.

A small detail that you might notice is how the astronaut has a lifeline connecting him to the Westminster logo. It is the feeling that I, as a student, have as a result of the support and care that the faculty continue to give all of us on our journeys of exploring the world."