

GRAND CANYON UNIVERSITY PRESENTS THE
***CANYON UNDERGRADUATE
RESEARCH CONFERENCE***

SPRING 2026

The Canyon Undergraduate Research Conference (CURC) will feature multidisciplinary research and projects from undergraduate students. GCU and community guests are invited to explore engaging poster presentations and compelling oral presentations featuring undergraduate learners from the following programs: Canyon Emerging Scholars, Canyon Journal of Undergraduate Research authors and the Ingram Honors College.

MONDAY, APRIL 13

1 - 5 pm | Building 22
Antelope Gymnasium

***GRAND CANYON
UNIVERSITY™***

AGENDA

1-4 pm | Poster Session

- 1 - 2:30 pm: students available to present their research posters
- 2:30 - 4 pm: posters available for viewing

1-1:30 pm | Meet the Deans & Faculty

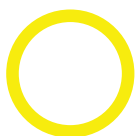
- Dr. Breanna Naegeli | Dean, Ingram Honors College

2:15 - 5 pm | Oral Presentations

- 2:15 - 3:15 pm: Canyon Undergraduate Research Symposium
- 3:30 - 5 pm: Canyon Emerging Scholars, Honors Showcase



Parking



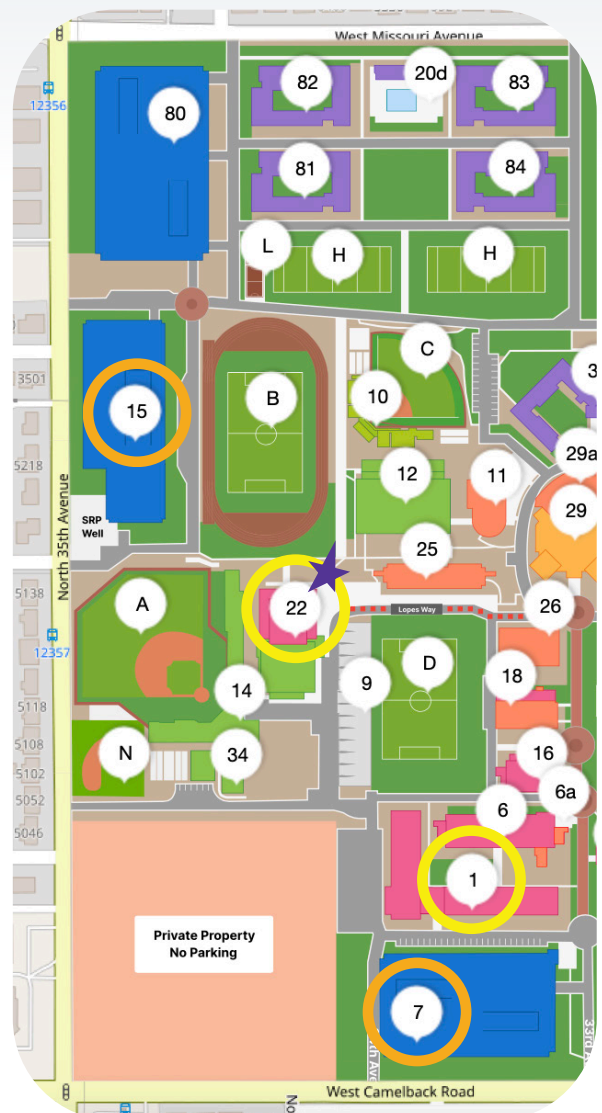
Canyon Undergraduate Research Conference



Conference Check-In & Information Station

TABLE OF CONTENTS

Poster Presentations.....	3
Canyon Undergraduate Research Symposium.....	11
Canyon Emerging Scholars.....	13
Honors Showcase.....	20
Canyon Journal of Undergraduate Research.....	27



POSTER PRESENTATIONS

ANTELOPE GYMNASIUM (BUILDING 22)

SESSION 1: MICROBIOLOGY

- 1 IN SILICO CLONING OF BIDIRECTIONAL HYDROGENASE FROM UNICELLULAR CYANOBACTERIA
Allison Adkison, Leon Chen, Isabella Avila-Ambrosi, Natalya Vitus, Galyna Kufryk
- 2 ANALYSIS OF ANABAENA VARIABILIS GROWTH CURVE AND IN SILICO GENETIC MODIFICATION
Sophia Balgey, Mariah Baji, Viviana Criscione, Mark Rossetti, Salem Alhelo, Ignacio La Iglesia Santillan, Antonio Ibarra Tabullo, Galyna Kufryk
- 3 A QUANTITATIVE ANALYSIS OF GROWTH OF FILAMENTOUS CYANOBACTERIA
Aliyah Fortner, Landon Sears, Serena Cardenas, Gabriel Arellano, Conner DeJesus, Wyatt Gardner, Galyna Kufryk
- 4 CHARACTERIZATION OF SECONDARY METABOLITES AND DNA BARCODING OF COMBRETUM ERYTHROPHYLLUM AND VITEX AGNUS-CASTUS
Ava Bautista, Karen Denzler
- 5 ANTIMICROBIAL ACTIVITY OF CAESALPINIA PARAGUARIENSIS AND LIBIDIBIA PULCHERRIMA EXTRACTS
Hannah Covarrubias, Karen Denzler
- 6 ANTIBACTERIAL EFFECTS OF SAPINDUS SAPONARIA ON BACTERIAL STRAINS
Aubrey Cox, Karen Denzler
- 7 INHIBITION OF STAPHYLOCOCCUS EPIDERMIDIS BY ACCA SELLOWIANA LEAVES
Leianna Fout, Karen Denzler
- 8 THE ANTIMICROBIAL ACTIVITY OF RHUS MICROPHYLLA, RHUS LANCEA, AND RHUS OVATA
Valia Kaliozakis, Karen Denzler
- 9 ANTIMICROBIAL ACTIVITY OF EYSENHARDTIA TEXANA (TEXAS KIDNEYWOOD) AGAINST GRAM-POSITIVE AND GRAM-NEGATIVE BACTERIA
Amera Nelson, Karen Denzler
- 10 FRUIT WASTE SAVES: ANTIOXIDANT AND ANTI-MICROBIAL POTENTIAL OF FRUIT PEELS AND SEEDS
Maame Osei-Fordwuo, Zoe Obermuller, Annelise Scruggs, Allison Peschl, Michael Cunningham, Clarissa Suwandy, Ramesh Velupillaimani
- 11 EVALUATION OF ANTIMICROBIAL POTENTIAL AND DNA BARCODING OF SALVIA ROSMARINUS AND CALENDULA OFFICINALIS
Emiliano Villa, Flavio Bustos, Velupillaimani
- 12 COMPARATIVE ANALYSIS OF MICROBIAL CONTAMINATION ON AMERICAN CURRENCY USING AGAR PLATE CULTURE
Shagun Kamboj, Ramesh Velupillaimani
- 13 VARIABILITY IN ANTIMICROBIAL EFFICACY OF CULTURALLY SIGNIFICANT INDIAN PLANTS
Shagun Kamboj, Miranda Cortez, Ramesh Velupillaimani
- 14 ASSESSMENT OF THE ANTIMICROBIAL EFFICACY AND BIOACTIVE COMPOUNDS OF CAMELLIA SINENSIS
Evan Leong, Aidan Hoffman, Reese Condon, Feuna Yamit, Ramesh Velupillaimani
- 15 EVALUATION OF ANTIBACTERIAL ACTIVITY AND BIOFILM INHIBITION AGAINST STREPTOCOCCUS MUTANS
Daegan Piequet, Aidan Hoffman, Josh Boadu, Isaiah Barnett, Haeden Hillsman, Hailie Hillsman, Karlee Lopez, Ramesh Velupillaimani
- 16 ANTIMICROBIAL ACTIVITY OF POLAR AND NONPOLAR EXTRACTS OF HETEROMELES ARBUTIFOLIA (TOYON)
Owen Swanson, Ramesh Velupillaimani
- 17 ALTERNATIVE ANTIMICROBIAL APPROACHES IN DENTISTRY: EVALUATING PARACRESS AND DESERT SAGE EXTRACTS AGAINST CARIOGENIC AND ORAL-ASSOCIATED BACTERIA
Lindsay Smith, Jacob Friesen, Misha Auld, Daisy Savarirajan

POSTER PRESENTATIONS

ANTELOPE GYMNASIUM (BUILDING 22)

- 18 EXPLORING PREVENTIVE ORAL CARE: UNDERGRADUATE DENTAL HYGIENE PERCEPTIONS AND EXPERIMENTAL PLANT-BASED MOUTHWASH
Conner Balak, Daisy Savarirajan
- 19 TURMERIC-BLACK PEPPER PHYTOCHEMICALS: A POTENTIAL ADJUNCT STRATEGY AGAINST ANTIMICROBIAL RESISTANCE
Ceren Bilong, Daisy Savarirajan
- 20 ANTIMYCOBACTERIAL FUROFURAN LIGNANS FROM ANEMOPSIS CALIFORNICA ROOTS: A THEORETICAL SYNTHESIS OF PUBLISHED RESEARCH
Ariel Chandler, Daisy Savarirajan
- 21 ANTIMICROBIAL POTENTIAL OF PALO VERDE (PARKINSONIA SPP.) AGAINST STREPTOCOCCUS MUTANS: A THEORETICAL ANALYSIS
Yoselin Esquivel Aranda, Daisy Savarirajan
- 22 BIOACTIVE COMPOUNDS OF PSIDIUM GUAJAVA LEAF EXTRACT AGAINST ORAL PATHOGENS: A THEORETICAL ANALYSIS OF CURRENT LITERATURE
Lillian Gettig, Daisy Savarirajan
- 23 TARGETING MRSA: A THEORETICAL REVIEW OF IN VITRO STUDIES ON ZANTHOXYLUM ARMATUM DC. FRUITS, SEEDS, AND BARK
Trish Hachtel, Daisy Savarirajan
- 24 SCREENING NATIVE COLORADO PLANTS FOR NOVEL BIOACTIVE LEADS AGAINST ANTIBIOTIC RESISTANCE
Jaycie Hayes, Daisy Savarirajan
- 25 SUPERIOR IN VITRO INHIBITION OF MYCOBACTERIUM BY GREEN TEA (CAMELLIA SINENSIS) RELATIVE TO CHLORAMPHENICOL
Maxwell Hinton, Daisy Savarirajan
- 26 THERAPEUTIC POTENTIAL OF SONORAN DESERT FLORA: A THEORETICAL SYNTHESIS FOR NOVEL BIOACTIVE LEADS
Ellyvin Kibui, Abigail Yohannes, Daisy Savarirajan
- 27 ANTIDERMATOPHYTIC ACTIVITY OF PLANT BIOACTIVE COMPOUNDS: A REVIEW OF PUBLISHED STUDIES
Bella Luna, Daisy Savarirajan
- 28 PINUS HALPENSIS FROM ARIZONA AND ITS POTENTIAL NEUROIMMUNE APPLICATIONS
Jessica Neamtu, Daisy Savarirajan
- 29 UNLOCKING NATURAL SYNERGY: TAMARINDUS INDICA EXTRACTS SURPASS ANTIBIOTICS AGAINST CLINICALLY SIGNIFICANT BACTERIA
Jasmine Perez, Ismael Urquiza, Daisy Savarirajan
- 30 BIOFILM INHIBITION AND THERAPEUTIC POTENTIAL OF JACK BEAN IN PERIODONTAL CARE: A THEORETICAL ANALYSIS
Abigail Perry, Daisy Savarirajan
- 31 A THEORETICAL OF TRIANTHEMA PROTULACASTRUM: NATURAL REMEDIES IN HUMAN PATHOGENS
Julia Ruof, Daisy Savarirajan
- 32 A THEORETICAL OF TRIANTHEMA PROTULACASTRUM: NATURAL REMEDIES IN HUMAN PATHOGENS
Julia Ruof, Daisy Savarirajan
- 33 ANTIMICROBIAL PROPERTIES OF ENCELIA FARINOSA: A THEORETICAL ANALYSIS OF PUBLISHED STUDIES ON ORAL PATHOGENS
Sebastian Salazar, Daisy Savarirajan

POSTER PRESENTATIONS

ANTELOPE GYMNASIUM (BUILDING 22)

- 34 THEORETICAL ASSESSMENT OF PLANT-DERIVED NANOTHERAPEUTICS: ECHINACEA ANGUSTIFOLIA AGAINST MDR KLEBSIELLA PNEUMONIAE
Eleanora Scholten, Daisy Savarirajan
- 35 POTENTIAL INHIBITORY EFFECTS OF PRICKLY PEAR CACTUS FRUIT, SEED, AND STEM EXTRACTS AGAINST STREPTOCOCCUS MUTANS
Kamryn Skidmore, Samuel Fournier, Daisy Savarirajan
- 36 POTENTIAL HEALTH-RELEVANT PROPERTIES OF SALVIA HISPANICA L. (CHIA SEEDS): A THEORETICAL ANALYSIS OF PUBLISHED STUDIES
Ariyah Snively, Daisy Savarirajan
- 37 LEVERAGING VITAMIN C FOR ENHANCING ANTIBIOTIC ACTIVITY AND DISRUPTING BIOFILMS
Elijah Winslow, Daisy Savarirajan
- 38 EFFECTS OF TEMOZOLOMIDE ON THE SKIN MICROBIOME
Sarah Jones, Madhavi Chakravadhanula

SESSION 2: CANCER RESEARCH

- 38 INVESTIGATING THE EFFECTS OF MICROPLASTICS ON PEDIATRIC ANAPLASTIC ASTROCYTOMA
Morgan Dirks, Raylene Silva, Madhavi Chakravadhanula
- 39 COMBINED EFFECTS OF TEMOZOLOMIDE WITH α -CEMBRENEDIOL ON THE MAPK PATHWAY IN PEDIATRIC ANAPLASTIC ASTROCYTOMA
Emily Flammang, Haydyn Wiesner, Madhavi Chakravadhanula
- 40 ACCELERATING DRUG DISCOVERY WITH ALPHAFOLD-3: TOWARDS EPITOPIC DRUG CANDIDATES
Elijah Winslow, Owen Swanson, Richard Connors
- 41 CREKA-COMBRETASTATIN: A TERNARY LIGAND WITH TARGETED ANTICANCER ACTIVITY
Alexandra Dixon, Nicola Greenwood, Anya Vinyard, Richard Connors
- 42 TOWARDS TARGETED HEART FAILURE THERAPEUTICS: DESIGNING CRPPR-APELIN-17
Sydney Baydo, Zachary Sideco, Anya Vinyard, Richard Connors
- 43 TOWARDS CEPHALOSPORIN DUAL LIGANDS: CEPHALOSPORIN AND COMBRETASTATIN SYNTHESSES
Arianna Breindel, Macdell Mostow, Luke Palaniuk, Kathryn Wolff, Richard Connors
- 44 PROGRESS TOWARDS A NEXT GENERATION GELMAN PHOTOREACTOR
Bella Walker, Cody Groves, Richard Connors
- 45 PLANT-BASED INDUCTION OF APOPTOSIS IN BREAST CANCER CELLS BY ORIGANUM VULGARE
Ana Camorlinga, Arielle Weber, Karen Denzler
- 46 INVESTIGATING THE EFFECTS OF MORUS ALBA FLAVONOIDS ON CELL VIABILITY, APOPTOSIS, AND DNA DEGRADATION IN TRIPLE NEGATIVE BREAST CANCER CELLS
Mara Cecil, Karen Denzler
- 47 MOLECULAR INSIGHTS INTO VAUQUELINIA CALIFORNICA-INDUCED APOPTOSIS IN TRIPLE-NEGATIVE BREAST CANCER
Landon Gray, Matthew Tran, Karen Denzler
- 48 EXTRACT OF LARREA TRIDENTATA AFFECTS CELL GROWTH AND VIABILITY AND INDUCES CASPASE-3/7 IN BREAST CANCER ADENOCARCINOMA CELLS
Tyler Langdon, Lukas Hecker, Karen Denzler

POSTER PRESENTATIONS

ANTELOPE GYMNASIUM (BUILDING 22)

- 49 PROMOTING APOPTOSIS IN BREAST CANCER CELLS WITH KIDNEYWOOD PLANT EXTRACTS
Alexandra Weber, Karen Denzler
- 50 VALIDATION OF OXIDATIVE STRESS INDUCTION IN AN SH-SY5Y ALZHEIMER'S DISEASE MODEL USING A ROS QUANTIFICATION ASSAY
Roderick Richards III, Aidan Clifford, Adnan Ahmetovic, Sherlin Moses, Hikmet Nural-Guvenner
- 51 QPCR-BASED ANALYSIS OF OXIDATIVE STRESS & AGE-MEDIATED TRANSCRIPTIONAL RESPONSE IN AN SH-SY5Y ALZHEIMER'S DISEASE MODEL
Caleb Karg, Kyle Patrick, Luigi Akamangwa, Joshua Oliver, Sherlin Moses, Hikmet Nural-Guvenner
- 52 MODELING OXIDATIVE AND METABOLIC STRESS IN SH-SY5Y CELLS TO INVESTIGATE MITOCHONDRIAL DYSFUNCTION IN ALZHEIMER'S DISEASE
Sophie Bricker, Natalie Conceicao Larson, Sherlin Moses, Hikmet Guvenner

SESSION 3: CHEMISTRY

- 53 BIOGEOCHEMICAL MODEL FOR REMEDIATION OF CONTAMINANTS: MODEL VALIDATION AND ERROR PROPAGATION
Elijah Jibben, Randhir Deo
- 54 ELECTROCHEMICAL DETECTION OF BIOMOLECULES AT NATURAL POLYMER MODIFIED ELECTRODE
Isaac Davis, Jaylen Warren, Rianne Melchor, Logan Stimmel, Randhir Deo
- 55 ELECTROCHEMICAL DETECTION OF GLUTATHIONE AT MEDIATOR-MODIFIED CARBON ELECTRODE
Alexander Cisneros, Randhir Deo
- 56 LIGNOSULFONATE BASED ELECTRODE FOR BIOSENSOR APPLICATION
Alexander Cisneros, Adah Luebcke, Kenneth Tofah, Randhir Deo

SESSION 4: FORENSIC SCIENCE

- 57 RIDGE THE GAP
Carley Jenkins, Olivia Casebolt, Amber Kaalberg, Scott Rex, Melissa Beddow
- 58 ARIZONA SOLE PURPOSE DATABASE
Genesis Vera, Adrian Brown, McKenna Jenkins, Gabriel Igielski, David Jones, Sienna Buttafuoco, Leah Webb, Melissa Beddow

SESSION 5: ORGANISMAL BIOLOGY

- 59 CARDINAL TEMPERATURES FOR GERMINATION AND EARLY GROWTH: A SURVEY
Jenna Smith, Elissa Santos, Lucy Beekham, Ryan Blevins, Joshua Oliver, Elisabeth Bruce, Vanessa Klein, Neal Adam
- 60 INHIBITION OF GERMINATION AND EARLY PLANT GROWTH IN SALINE CONDITIONS
Jenna Smith, Lucy Beekham, Zachary Sherman, Parker Larson, Hailey Vetruba, Aravis Molitor, Isabella Hanson, Vanessa Klein, Neal Adam
- 61 INHIBITION OF PLANT GROWTH IN SALINE CONDITIONS
Lucy Beekham, Jenna Smith, Zachary Sherman, Parker Larson, Hailey Vetruba, Aravis Molitor, Isabella Hanson, Vanessa Klein, Neal Adam

POSTER PRESENTATIONS

ANTELOPE GYMNASIUM (BUILDING 22)

- 62 IDENTIFICATION OF TARA CACALACO BY DNA SEQUENCE OF THE RBCL GENE
Maria Regina Camacho, Karen Denzler
- 63 IDENTIFICATION OF EUCALYPTUS OLEOSA BY DNA BARCODING
Savannah Carrillo, Karen Denzler
- 64 MYRTACEAE FAMILY ANTIMICROBIAL DISCOVERY: EUCALYPTUS PAPUANA & EUCALYPTUS KRUSEANA WITH SEEDS
Natasha Suarez Nunez, Karen Denzler
- 65 OBESITY PHENOTYPES AND EARLY VASCULAR BURDEN IN COLLEGE-AGED ADULTS: ASSOCIATIONS WITH BLOOD PRESSURE AND ARTERIAL STIFFNESS
Cooper Davis, Dalton Lesser, Zachary Zeigler
- 66 AEROBIC CAPACITY OUTPERFORMS BODY COMPOSITION AS A PREDICTOR OF ARMY COMBAT FITNESS TEST PERFORMANCE AMONG MILITARY PERSONNEL
Lillian Tang, Zachary Zeigler
- 67 AEROBIC FITNESS AS A PROTECTIVE MEDIATOR: EXAMINING SLEEP QUALITY, PSYCHOLOGICAL DISTRESS, AND CARDIOVASCULAR HEALTH IN COLLEGE STUDENTS
Jonah Terry, Kylie Simonson, Zachary Ziegler
- 68 THE IMPACT OF CHRONOTYPE ON POST-EXERCISE HYPOTENSION AND NOCTURNAL BLOOD PRESSURE DIPPING: OPTIMIZING EXERCISE TIMING FOR HYPERTENSION MANAGEMENT
Colton Reger, Kaelyn Gardner, Lindsey Carter, Monika Burt, Paige Biagi, Kirk Waite, Kingston Cusick, Leanne Harder, Jacob Peak, Lillian Tang, Zachary Zeigler
- 69 CLUB SPORTS STRENGTH AND CONDITIONING: EVIDENCE-BASED PRACTICE
Dakota Surface, Charlotte Mueller, Adam Baggetta, Eddie Smith, Jacob Havenar
- 70 EFFECTS OF SHORT-TERM CREATINE SUPPLEMENTATION ON MUSCLE HEMODYNAMICS AND ISOKINETIC STRENGTH DURING KNEE EXTENSION AND FLEXION
Kayley Brennan, Abigail Sheldon, Ella Browder, Arionne Drew, Alicia Watson, Griffin De Abreu, Gabriel Romo, Eddie Smith, Zachary Zeigler
- 71 IMPLEMENTING EXERCISE IS MEDICINE AS A CAMPUS-WIDE PUBLIC HEALTH INITIATIVE AT GRAND CANYON UNIVERSITY
Lindsay Carter, Kayley Brennan, Eddie Smith
- 72 FITNESS-FATNESS INDEX ON PREDICTING CARDIOVASCULAR OUTCOMES IN COLLEGE-AGED STUDENTS
Dalton Lesser, Cooper Davis, Logan Kimball, Zachary Zeigler
- 73 GENDER MODERATION OF THE RELATIONSHIP BETWEEN ACADEMIC PERFORMANCE AND BLOOD PRESSURE IN COLLEGE STUDENTS
Leanne Harder, Elise Bayer, Kayley Brennan, Zachary Zeigler
- 74 HANDHELD EEG DEVICE ENABLES RAPID NEUROLOGICAL ASSESSMENT BY MINIMALLY TRAINED OPERATORS
Elise Bayer, Michael McKenney, Zachary Zeigler
- 75 PREDICTING MUSCULOSKELETAL INJURY IN COLLEGIATE CLUB SPORT ATHLETES: A PROSPECTIVE COHORT STUDY INTEGRATING BASELINE PHYSICAL ASSESSMENT AND TRAINING LOAD MONITORING
Kaelyn Gardner, Eddie Smith, Zachary Zeigler
- 76 LOPES ORTHOPEDIC CLINIC: UNDERGRADUATE CLINICAL EDUCATION
Jerome Zito, Ashlynn Caudill, Leanne Harder, Jenna Duffek, Eddie Smith

POSTER PRESENTATIONS

ANTELOPE GYMNASIUM (BUILDING 22)

- 77 LUMEN DEVICE VERSUS DIETARY COUNSELING ON WEIGHT LOSS AND ARTERIAL STIFFNESS IN MIDDLE AGED ADULTS WITH OBESITY: A RANDOMIZED TRIAL
Analie Conner, Megan Bratetic, Lillian Tang, Elise Bayer, Kayley Brennan, Monika Burt, Zachary Zeigler
- 78 THE EFFICACY OF LOW INTENSITY AND HIGH INTENSITY CARDIOVASCULAR EXERCISE ON INDUCING POST-EXERCISE HYPOTENSION IN "NON-RESPONDERS"
Elizabeth Liu, Camryn Marthaler, Lillian Tang, Brayden Scwhendke, Ryeen Gabuya, Kaitlyn Wabakken, Zachary Zeigler
- 79 PERSONAL TRAINING AS A COMMUNITY HEALTH INITIATIVE
Caleb Karg, Kambry Tutty, Caitlin Etling, Matthew Savencu, Eddie Smith
- 80 EFFECTS OF DISCONTINUING ELECTRIC SCOOTER USE ON CARDIOVASCULAR FITNESS AND HEALTH OUTCOMES
Kambry Tutty, Paige Biagi, Kylie Simonson, Cole Warren, Ceana Smith, Joshua Manning, Zachary Zeigler
- 81 EFFECTS OF SPORTS-SPECIFIC MUSCLE CONTRACTIONS ON ARTERIAL STIFFNESS IN CLUB SPORTS COLLEGIATE ATHLETES
Paige Biagi, Elise Bayer, Lillian Tang, Kylie Simonson, Jerome Zito, Zachary Zeigler
- 82 EFFECTS OF SHORT-FORM FITSPIRATION VIDEOS ON ACUTE PSYCHOLOGICAL RESPONSES TO EXERCISE
Ella Browder, Camryn Marthaler, Drue Haro, Kaelvn Gardner, Logan Wilde, Megan Krueger, Paige Biagi, Russell Webb, Sophia Marasco, Taylor Smith, Jacob Havenar
- 83 CANYON UNDERGRADUATE RESEARCH CONFERENCE: THE EFFECT OF BODY COMPOSITION ON EXERCISE BLOOD PRESSURE
Kylie Simonson, Paige Biagi, Zachary Zeigler
- 84 EMOTIONAL EATING MEDIATES THE RELATIONSHIP BETWEEN WEIGHT CYCLING AND BODY FAT PERCENTAGE IN YOUNG ADULTS
Camryn Marthaler, Elise Bayer, Lillian Tang, Zachary Zeigler
- 85 SUCCESSFUL COHABITATION BETWEEN WESTERN BURROWING OWLS AND HERPETOFAUNA IN THE SONORAN DESERT
Rachel Pikstein, Faith Schenk, Ezekiel Newlin
- 86 EVALUATING COMPARISONS OF SKULL AND BODY MORPHOLOGY TO UNRAVEL SPECIATION TRENDS AMONG INVASIVE OMNIVOROUS LIZARDS
Ezekiel Newlin, Evan Allert, Nicholas Peterson, Rachel Pikstein
- 87 GENETIC AND ECOLOGICAL ASSESSMENT OF THE TEGU INVASION
Ezekiel Newlin, Evan Allert, Nicholas Peterson, Rachel Pikstein

POSTER PRESENTATIONS

ANTELOPE GYMNASIUM (BUILDING 22)

SESSION 6: ENGINEERING & TECHNOLOGY

- 88 EOBSERVABLE COULOMB FORCE LAB DESIGN FOR UNIVERSITY PHYSICS
Gary Cao, Brayden Bentley, Divya Dharshini Krishnakumar Juttu, Hudson Kilcup
- 89 PRICE RIGHT MOBILE APP
Gianna Ross, Blake Almanza, Dylan Lewis, Bridger Davidson, Kelton Gardner, Ethan Gerspacher, Bill Hughes
- 90 FOLLOW ME ROBOT
Evan Klaasen, Jesus Ruiz Suarez, Benjamin Parenteau, Claire Jones, Gabriel Eberhart, Blaze, Bill Hughes
- 91 HUMAN ACTIVITY RECOGNITION USING FMCW AUTOMOTIVE RADAR
Evan Sarris, Jennifer Cormier, Arseny Kondratyuk, Luciano Caraciolo Albuquerque
- 92 FR4 COPPER VS. CONDUCTIVE INK PCB MANUFACTURING - A COMPARATIVE STUDY
Hannah Uhlenhop, Adam Ruof, Jesus Sierra, Joel Lara, Luciano Caraciolo Albuquerque
- 93 AUTONOMOUS IMAGE-BASED MACHINE (A.I.M)
Ariana Delpino, Arie Gerard, David Demland, Mathew Hobson, Nolan Tuttle, Korben Widmer, Ryan Woodward

SESSION 7: CANYON EMERGING SCHOLARS

- 94 LOYALTY DYNAMICS THEORY: THE BIOLOGICAL DOMAIN
Colin O'Reilly, Elijah Winslow, Owen Swanson, Liam Kindelberger, Hope Ingalls, Randall Clarkson
- 95 INVESTIGATING APOPTOSIS IN PARKINSON'S DISEASE
Logan Fuchsberger, Emily Ledezma Perez, Aaron Millet, Randall Clarkson, Maurice Jabbour
- 96 LGE DESIGN BUILD
Owen Ekstrom, Tabyana Jennings, Natalie Shepherd, Emma Grove, Eli Riney, Breelyn Caffey, Anna Zamora, Chris Murphy
- 97 GAME CONFERENCE PROPOSAL
Olivia Barton, Claudia Vanessa Gonzales, Tabyana Jennings, Owen Ekstrom, Elliott Riggs, Zeth Peña, Megan Eddy, Audrey Lotz, Breelyn Caffey, Easton Ikenaga, Anna Zamora, Mica Paden, Cecelia Fett, Easton Ikenaga, Bekah Forrette, Chris Murphy, GCU Esports
- 98 TEDx GCU PROPOSAL
Olivia Barton, Elliott Riggs, Emma Grove, Owen Ekstrom, Megan Eddy, Anna Zamora, Delaney Duran, Mica Paden, Madison Land, MARRISA SALAZAR, Chris Murphy, TEDxGCU Team
- 99 CONSTANT CONFLICT: A CASE STUDY OF FORMER ARIZONA GOVERNOR EVAN MECHAM'S POPULISM AND THE MEDIA
Tricia Alexander, Kim Kennedy

POSTER PRESENTATIONS

ANTELOPE GYMNASIUM (BUILDING 22)

SESSION 8: HIGH SCHOOL SCHOLARS

- 100 THE EFFECT OF MICROGRAVITY ON THE GROWTH AND STRUCTURE OF COVALENT ORGANIC FRAMEWORKS (COFS)
Vedika Kashyap, Victor Gomez, Kyle Vo, Sukrant Vaddi, Nikhil Karandikar
- 101 HOW VIRTUAL REALITY CAN ACT AS TOOL TO ENHANCE LITERARY COMPREHENSION THROUGH THE BOOK PATIENT ZERO
Kyla Tucker
- 102 OPTIMIZING MALWARE FAMILY DETECTION BY LEVERAGING DL-DRIVEN CNNs FOR AI-ASSISTED VISUAL BINARY CLASSIFICATION
Aarav Shandilya, Euwain Sheard, Zakary Boem
- 103 AUTOMATED EARLY WILDFIRE DETECTION USING CONVOLUTIONAL NEURAL NETWORKS
Aashrith Reddy Geetla, Shreyas Damera
- 104 ENHANCING MACHINE LEARNING MODELS FOR PHISHING WEBSITE DETECTION
Kanav Agarwal
- 105 USING CITIZEN SCIENCE TO EDUCATE THE MASSES: A CASE STUDY
Anthony Garcia
- 106 THE PUBLIC PERCEPTION OF MODERN DISNEY MOVIES AND HOW THEY FEEL ABOUT THOSE MOVIES
Uriah Malave
- 107 EFFECT OF CINEMATIC ELEMENTS IN THE HORROR FILMS
Salvador Gonzalez III
- 108 ACCURATE REPRESENTATION OR CULTURAL HARM?
Anthony Saguibo
- 109 A CORRELATION STUDY ON COLLEGE PREP HIGH SCHOOL GRADUATES, ACADEMIC PERFORMANCE, BODY IMAGE, PERFECTIONISM, AND SOCIAL MEDIA
Zainab Al Ahmad
- 110 EFFECTS OF K-POP INSTRUMENTALS ON UH STUDENTS' MATHEMATICAL PERFORMANCE
Annie Pham
- 111 A TARGETED RNAI APPROACH TO SUSTAINABLE BIOLOGICAL CONTROL THROUGH SILENCING DIFFERENTIALLY EXPRESSED OVARIAN GENES: A CASE STUDY IN LYGUS HESPERUS
Shireen Arora
- 112 FROM MUTATION PAIRS TO DRUG RESPONSE: A COMPUTATIONAL FRAMEWORK FOR PREDICTING CFTR DISEASE SEVERITY
Sri Moukthika Malladi





**CANYON
UNDERGRADUATE
RESEARCH
SYMPOSIUM**

CANYON UNDERGRADUATE RESEARCH SYMPOSIUM

PRESENTING IN 22-101

2:15 **Guest Welcome & Introduction**

Christian Character Education Platform

Presenter: Anna Zamora, Bryn Miller

Faculty Advisor: Chris Murphy

Colleges: CAM, Ingram Honors College; Canyon Emerging Scholars, Canyon Creative

Early Childhood & Early Childhood Special Education Partnership

Presenter: Madeleine Emmons, Skylar Rick, Hailey Aguilera

Faculty Advisor: Jena Ekard

College/Affiliations: COE; Canyon Emerging Scholars

The Image Dei and the Life of Prayer

Presenter: Zachary Johnson

Faculty Advisor: Dr. Gary Osmundsen

College/Affiliations: COT; Canyon Emerging Scholars

Experiencing Awe in Virtual Reality

Presenter: Shagun Kamboj, Abigaile N. Goble, Ashley Lopez, Miranda Courtney, Colin O'Reilly

Faculty Advisor: Dr. Magen Branham

College/Affiliations: CHSS; Canyon Emerging Scholars, E.P.I.C. Lab

ASL Translator

Presenter: Gavin Higgins, Truong Anh Dao Nguyen, Victoria Howard, Tayton Cousineau, Kimberly Norton

Faculty Advisor: David Demland

College/Affiliations: CET; Canyon Emerging Scholars, Canyon Artificial Intelligence Research (CAIR)

Reimagining the Impossible: Leadership Inside Out

Presenters: Judah Floyd, Mishayla Varner, Luke Lascurain

Faculty Advisors: Dr. Breanna Naegeli, Dr. Marette Hahn

College/Affiliations: Ingram Honors College

Closing Remarks & Dismissal



***CANYON EMERGING
SCHOLARS***

**CANYON
EMERGING
SCHOLARS
PRESENTATIONS**

CANYON EMERGING SCHOLARS

PRESENTING IN 14-100

Room Moderator: Amelia Miller, Office of Research and Grants

3:30 **Guest Welcome & Introduction**

3:35 **Nicotine Uses of Adolescence: Literature Review**

Presenter: Zoe Obermuller

Faculty Advisor: Christy Torkildson

3:50 **The Cost of Altruism in Rats**

Presenters: Colin O'Reilly, Jordyn Tran Nguyen, Shagun Kamboj, Dylan Danico, Shelby Harmon

Faculty Advisors: Dr. Magen Branham, Dr. Randall Clarkson, Dr. Maurice Jabbour

4:05 **Lament in Worship**

Presenter: Brinley Shannonhouse, Emmah Barnes

Faculty Advisor: Dr. Ryan Brandt

4:20 **Neuroticism as a Predictor of Academic Self-Efficacy in College Students**

Presenter: Sienna Cline

Faculty Advisor: Dr. Magen Branham

4:35 **AI Facilitation in the Classroom: Promoting Human Flourishing**

Presenter: Benjamin Bieschke

Faculty Advisor: Dr. Lanell Mason

4:45 **Dismissal**

CANYON EMERGING SCHOLARS

PRESENTING IN 14-102

Room Moderator: Madison Anderson, Office of Research and Grants

3:30 **Guest Welcome & Introduction**

3:35 **Codeswitching Among Chinese-Sundanese Indonesians**

Presenter: Emma Park, Holly Osborn, Elowine Webster

Faculty Advisor: Dr. Stan Meyer

3:50 **Intersections Between Habit Psychology and Spiritual Formation**

Presenter: Holly Osborn

Faculty Advisor: Dr. Ryan Brandt

4:05 **Evangelism in Secular Liberal Education**

Presenter: Zaqueo Ambrocio

Faculty Advisor: Dr. Lanelle Mason

4:20 **A Historical Review of how Humans have Communicated**

Presenters: Aida Wilson, Isabelle Thomas

Faculty Advisor: Dr. Ryan Brandt

4:30 **Dismissal**

CANYON EMERGING SCHOLARS: MICROBIOLOGY

PRESENTING IN 22-102

Chair: Dr. Galyna Kufryk, PhD

3:30

Analysis of *Anabaena variabilis* growth curve and in silico genetic modification

Sophia Balgey, Mariah Baji, Viviana Criscione, Mark Rossetti, Salem Alhelo, Ignacio La Iglesia Santillan, Antonio Ibarra Tabullo, Galyna Kufryk

3:50

A quantitative analysis of growth of filamentous cyanobacteria

Aliyah Fortner, Landon Sears, Serena Cardenas, Gabriel Arellano, Conner DeJesus, Wyatt Gardner, Galyna Kufryk

4:10

Evaluation of antibacterial activity and biofilm inhibition against *Streptococcus mutans*

Daegan Piequet, Aidan Hoffman, Josh Boadu, Isaiah Barnett, Haeden Hillsman, Hailie Hillsman, Karlee Lopez, Ramesh Velupillaimani

4:30

Superior in vitro inhibition of *Mycobacterium* by green tea (*Camellia sinensis*) relative to chloramphenicol

Maxwell Hinton, Daisy Savarirajan

4:50

Dismissal

CANYON EMERGING SCHOLARS: CANCER RESEARCH & CHEMISTRY

PRESENTING IN 22-103

Chair: Rebecca Socia, MS

- 3:30 **Promoting apoptosis in breast cancer cells with kidneywood plant extracts**
Alexandra Weber, Karen Denzler
- 3:50 **CREKA-combretastatin: a ternary ligand with targeted anticancer activity**
Alexandra Dixon, Nicola Greenwood, Anya Vinyard, Richard Connors
- 4:10 **Biogeochemical model for remediation of contaminants: model validation and error propagation**
Elijah Jibben, Randhir Deo
- 4:30 **Lignosulfonate based electrode for biosensor application**
Alexander Cisneros, Adah Luebcke, Kenneth Tofah, Randhir Deo
- 4:50 **Dismissal**

CANYON EMERGING SCHOLARS: ORGANISMAL BIOLOGY

PRESENTING IN 22-104

Chair: Dr. Zachary Zeigler, PhD

3:30 **Cardinal temperatures for germination and early growth: a survey**

Jenna Smith, Elissa Santos, Lucy Beekham, Ryan Blevins, Joshua Oliver, Elisabeth Bruce, Vanessa Klein, Neal Adam

3:50 **Inhibition of germination and early plant growth in saline conditions**

Jenna Smith, Lucy Beekham, Zachary Sherman, Parker Larson, Hailey Vetruba, Aravis Molitor, Isabella Hanson, Vanessa Klein, Neal Adam

4:10 **Myrtaceae family antimicrobial discovery: Eucalyptus papuana & Eucalyptus kruseana with seeds**

Natasha Suarez Nunez, Karen Denzler

4:30 **Handheld EEG device enables rapid neurological assessment by minimally trained operators**

Elise Bayer, Michael McKenney, Zachary Zeigler

4:50 **Dismissal**

CANYON EMERGING SCHOLARS: ENGINEERING AND TECHNOLOGY

PRESENTING IN 9-100

Room Moderator: Katherine Urrutia, Director of Academic Excellence, CET

3:30 **EARLY WILDFIRE DETECTION:**

Team: Aashrith Reddy, Shreyas Damera

Advisor: Bill Hughes

3:45 **THOUGHT TO TEXT**

Team: Joshua Peek, Justin Diaz, Ryan Zdonek

Advisor: David Demland

4:00 **NURSE UP! PATHWAY PRACTICE**

Team: Stylianos Regas, Ysabelle Trinidad, Alberto Felix Castro, Avery Hernandez, Curtis Chall

Advisors: David Demland, Sharon Mortiz

4:15 **OBSERVABLE COULOMB FORCE LAB DESIGN FOR UNIVERSITY PHYSICS**

Team: Divya Dharshini Krishnakumar Juttu, Hudson Kilcup, Brayden Bentley

Advisor: Dr. Gary Cao

4:30 **FAITH**

Team: Noah Starkenburg, Colin Kwon, Matthew Allums, Naomi Cramer

Advisor: David Demland

4:45 **AUTONOMOUS IMAGE-BASED MACHINE (A.I.M)**

Team: Ariana Delpino, Arie Gerard, Mathew Hobson, Nolan Tuttle, Korben Widmer

Advisors: David Demland, Ryan Woodward

5:00 **Dismissal**



***INGRAM HONORS
COLLEGE***

HONORS SHOWCASE

HONORS SHOWCASE

STEM | 1-205

Judges:

Mark Murphy: Managing Partner, Practical Theory Enterprises, LLC

Andrew Aboytes: Senior Product Engineer, Microchip Technologies Inc.

Brienne Masingill: Director, Supply Chain; Collins Aerospace, an RTX Business

3:35 **Visualizing Coulomb's Force Through Experimental Design**

Divya Dharshini Krishnakumar Juttu

Faculty Advisor: Dr. Gary Cao

3:50 **A.I.M.: Autonomous Image-Based Machine**

Ariana Delpino, Arie Gerard, Mathew Hobson, Nolan Tuttle, Korben Widmer

Faculty Advisor: Ryan Woodward & David Demland

4:05 **Xii-Boy Ultra: World's First Wire-Free Portable Wii**

Bryce Shaw

4:20 **Investigating Neurotransmitter-Related Gene Expression Following Norpsilocin Treatment in a Cellular Model of Parkinson's Disease**

Isaiah Phillips, Logan Fuchsberger, Noah Barnes, Ashley Aguilares, Shagun Kamboj, Maya Splittorff, David Fitzpatrick

Faculty Advisors: Dr. Maurice Jabbour & Dr. Randall Clarkson

4:35 **Brain-Computer Interface Gaming (BrainGame)**

Kian Knudegaard, Joshua Peek, Maximus Mudd, Macquire Brand

Faculty Advisor: David Demland

4:47 **Dismissal**

HONORS SHOWCASE

BUSINESS, ENTREPRENEURSHIP & INTERNSHIPS | 1-120

Judges:

Delores Clemons: Fractional Agency Growth Officer, Davonne, LLC, DBA SalesLift Playbook

Jim Davidson: Managing Partner, JC Enterprises AZ, LLC

Aime Navarrete Reyes: Manager, Insight Solutions; Mastery Logistics Systems

John Straka: Regional Claims Manager, Federated Insurance

3:35 **CommonGround: The Infrastructure Adulthood Forgot**

Sarah Knezek

3:50 **AI Solutions for Child Trafficking**

Sydney Slamka

4:05 **Mom2Mom**

Cora Eckhoff

4:20 **Reinventing the Wheel**

Nathan Lake

4:47 **Dismissal**

HONORS SHOWCASE

HUMANITIES & EDUCATION | 1-201

Judges:

Erin O'Brien: Associate VP & Registrar, GCU Office of Academic Records

Maria Moreno Santos: Elementary Education, Alhambra Elementary School District

3:35 **Inside the Criminal Mind- The Process of Profiling**

Ava Lee

3:50 **Finding Family Across Borders: The Rise and Fall of International Adoption**

Addison Green

4:05 **Inside the Public Education System**

Riley Lowe

4:20 **In Plain Sight: Technological Exploitation of Minors on Social Media Platforms**

Taryn Brooks

4:35 **Loyalty or Victory? The Dynamics of Loyalty in a Group Performance Context**

Colin O'Reilly, Elijah Winslow, Owen Swanson, Liam Kindelberger, Hope Ingalls

Advisor: Dr. Randall Clarkson

4:47 **Dismissal**

HONORS SHOWCASE

MINISTRY, SERVICE & COMMUNITY OUTREACH | 1-203

Judges:

Carla Snyder: Executive Producer, 90,000 FEET ARIZONA

Anya Cofrancesco: Assistant Director, Ingram Honors College

3:35 **Mission Trip Leadership and Impact**
Jaclyn Carpenter

3:50 **Youth Alive**
Janessa Haffener, Olivia Houk

4:05 **They Have Names: From Homeless to Unhoused**
Adison Hamele

4:17 **Dismissal**

HONORS SHOWCASE

CIVICS, AMERICAN HISTORY & GOVERNMENT | 1-125

Judges:

Kim J. Miller: Founder & President, America's Women of Action

Dana Drew Shaw: Vice-President, GCU Government Relations

Carlos Alfaro: Founder, Arizona Talks Foundation

3:35 **Faith Behind the Badge: Staying Spiritually Strong in Law Enforcement**

Emily Kaselonis

Faculty Advisor: Dr. Ryan Brandt

3:50 **Phoenix Transportation Project**

Braeden Rasmus

4:05 **Addressing Barriers to FAFSA to Enhance Economic Mobility**

Jozy Kairu, Ellie Mohr

Faculty Advisor: Evelyn Racette

4:20 **How the Energy Behind a Campaign "Powered by Purpose" Models Civic Engagement**

Judah Floyd, Gracie Zimbardi, Alexandra Weber

4:32 **Dismissal**

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HONORS SHOWCASE

DIGITAL ARTS, FILM & PERFORMING ARTS | 1-305

Judges:

William Symington: Assistant Dean, GCU College of Arts & Media

Shannon Gardner: Feature Film Producer, Go AZ Productions

3:35 **Symbols and Promises**

Sierra Prosser

3:50 **Climate of Hope: Ethically Integrating Artificial Intelligence
Into Film to Encourage Conversations of Climate Change**

Kaylee Aschbrenner

4:05 **The Effect of Light & Color**

Abigail Rucker

Faculty Advisor: Dr. Marette Hahn

Disciple Run: A Short Film by Kaily Green

4:20 Kaily Green

Christian Character Education Platform

4:35 Anna Zamora, Bryn Miller

Faculty Advisor: Chris Murphy

Dismissal

4:47



CANYON JOURNAL

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Chris Murphy	Anya Cofrancesco
Jena Akard	Richard Connors
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Dr. Randall Ordovich-Clarkson	

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Carla Synder
Delores Clemons
Jim Davidson
Aime Navarrete Reyes
Mark Murphy
Andrew Aboytes
Brienne Masingill
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