HONORS COLLOQUIUM

Fall 2026

PROGRAM OF ABSTRACTS
for Honors Thesis Projects submitted by undergraduate students completing the
USD Honors Program in December 2026.

Thesis projects will be presented to the public during short oral presentations on
December 5, 2026 from 9 a.m. to 12:30 p.m.
in the Learning Commons on the University of San Diego campus.

SCHEDULE AT A GLANCE

9:00 a.m. *Refreshments & Welcome*
9:10 a.m. Student Presentations (Block A)
10:10 a.m. *Break*
10:20 a.m. Student Presentations (Block B)
11:20 a.m. *Break*
11:30 a.m. Student Presentations (Block C)

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Schedule of Thesis Presentations

	Learning Commons, Town Square	
Block A 9:10 AM	**Emma Combs** (EOSC/Walther) **Samantha Springer** (PHIL/Tigard) **Evelyn Yandle** (CHEM/Bell Jr.)	
Break - 10:10 AM		
	Learning Commons, Room 102	**Learning Commons, Room 104**
Block B 10:20 AM	**Chiara McWilliam** (ISBN/Daspro) **Sofia Quezada** (PSYC/Galvan) **Julie Garabet** (CHEM/Bell Jr.)	**Mia Gleason** (IREL/Spiegel) **Egemen Tangun** (NEUR/Haberman) **Sydney Ignasiak** (ECON/Deng)
Break - 11:20 AM		
Block C 11:30 AM	**Annika Goodwyn** (NEUR/Bonds) **Diba Zarkeshan Isfahani** (ISBN/Nahavandi) **Abigail Moeslacher** (PSYC/Green Rosas)	**Alison Colburn** (NEUR/Wenzel) **Stefanie Kourani**(ECON/Esfahani) **Samantha Cotter** (CHEM/Clark)
End - 12:30 PM		

ABSTRACTS

(listed alphabetically by academic disciplines)

CHEMISTRY AND BIOCHEMISTRY

SAMANTHA COTTER

Thesis Advisor: Dr. Tim Clark, Chemistry and Biochemistry

Regioselectivity in the C-H Borylation of Aryl Germanes

Cross-coupling reactions are commonly used in medicinal chemistry to form new bonds in complicated, multi-step syntheses. However, similarities between nucleophilic coupling partner reactivities create selectivity challenges. Recent advances have shown germanium as a potential solution to this issue. Germanium has orthogonal reactivity to many carbon-nucleophile bonds, including boron, and has shown some success in cross-coupling reactions. In this work, aryl germanes were synthesized and C-H borylation conditions were developed to streamline access to aromatic molecules that have orthogonally reactive coupling nucleophiles. In addition, the magnitude of regioselectivity was established for a series of substituents by steric control.

JULIE GARABET

Thesis Advisor: Dr. Anthony Bell Jr., Chemistry and Biochemistry

Characterization of Extracellular HMGB1 Binding Interactions with Immunogenic and Non-Immunogenic CpG DNA

High Mobility Group Box 1 (HMGB1) is a DNA-binding protein that functions both inside and outside the cell. Within the nucleus, HMGB1 contributes to DNA regulation, while extracellularly, it acts as a pro-inflammatory cytokine associated with inflammatory and autoimmune diseases. Previous research has explored oligonucleotides (short, single-stranded DNA molecules) as potential inhibitors of HMGB1's inflammatory activity. However, the molecular basis of HMGB1 binding to single-stranded oligonucleotides, which lack a stable, defined structure, remains poorly understood. This study investigates HMGB1 binding interactions with two non-immunogenic oligonucleotides, KT-THIO and KT-BDNA, which differ in their chemical backbones. Dynamic light scattering (DLS) and circular dichroism (CD) are used to examine changes in molecular size and structural properties. Preliminary findings suggest that HMGB1 interacts with both oligonucleotides, although the mechanisms underlying these interactions remain unclear. Understanding these interactions may provide insight into DNA recognition and support future development of therapeutic strategies targeting extracellular HMGB1.

EVELYN YANDLE

Thesis Advisor: Dr. Anthony Bell Jr., Chemistry and Biochemistry

Consulting Advisor: Dr. Jessie Mills, Ethnic Studies

Beyond Weight Loss: Clinical Outcomes and Equity in GLP-1-Based Therapy

Glucagon-like peptide-1 (GLP-1)-based therapies have expanded from type 2 diabetes into leading treatments for obesity and related cardiometabolic conditions. However, structural barriers including cost, insurance coverage, and research representation influence which populations benefit from these medications. Therefore, critical evaluation of current racial and ethnic health disparities is necessary to ensure equitable access. This thesis integrates biochemical foundations, clinical research, and health equity analysis of GLP-1-based therapies beyond weight loss, utilizing data from studies conducted in the McLaughlin Lab at Stanford University. Key endpoints include gold-standard metabolic tests of insulin resistance, DXA-derived body composition, and gastric emptying scintigraphy. A health and healthcare justice framework guides the application of these findings into practice that advances metabolic care without reproducing existing inequities.

ECONOMICS

SYDNEY IGNASIAK

Thesis Advisor: Dr. Yue Deng, Economics

Foreign Direct Investment, Fixed Broadband, and Economic Growth in ASEAN: Evidence from a Fixed-Effects Panel Analysis

This thesis examines how foreign direct investment (FDI) and digital connectivity, measured by fixed broadband subscriptions, relate to gross domestic product (GDP) per capita growth across the Association of Southeast Asian Nations (ASEAN). Using an unbalanced panel of ten countries from 2000 to 2025, the analysis estimates fixed-effects models with year effects and standard errors clustered by country. Results show that FDI is positively associated with growth, while fixed broadband becomes positive and significant in more complete specifications. Gross capital formation is positively associated with growth, while inflation is negatively associated. The thesis extends this analysis by examining conditions associated with fixed-broadband expansion, testing an FDI $\times$ broadband interaction to determine whether connectivity changes the FDI-growth relationship, and evaluating whether stronger broadband access was associated with different growth outcomes during and after COVID-19. These analyses assess whether digital infrastructure complements foreign investment and supports economic resilience.

STEFANIE KOURANI

Thesis Advisor: Dr. Sara Esfahani, Economics

When Does Gold Hedge Inflation? Evidence from High-Inflation and Negative-Real-Yield Regimes in the United States

Gold is commonly viewed as a hedge against inflation, but research suggests that its effectiveness may depend on the broader economic environment. This study examines when gold provides an effective short-run inflation hedge in the United States. Using monthly U.S. data from January 2006 through July 2026, I examine the relationship between monthly gold returns and year-over-year CPI inflation while controlling for the 10-year TIPS real yield, the monthly return on the broad U.S. dollar index, market volatility measured by the VIX, and S&P 500 returns as an additional control. I then test whether the inflation-gold relationship becomes stronger during high-inflation periods and when real yields are negative. High inflation is initially defined as CPI inflation above 4 percent, while negative-real-yield periods are defined by a 10-year TIPS real yield below zero. The goal is to determine whether gold's inflation-hedging ability depends on the macroeconomic environment.

ENVIRONMENTAL AND OCEAN SCIENCES

EMMA COMBS

Thesis Advisor: Dr. Suzanné Walther and Dr. Sophie Taddeo, Environmental and Ocean Sciences

Mapping Environmental Equity: A GIS-Based Assessment of Green Space Access and Urban Heat Mitigation in San Diego

Urban green spaces provide essential ecosystem services, including heat mitigation, recreation, and psychological well-being, yet access to these benefits is often shaped by racial and socioeconomic inequities. This study uses GIS and the Natural Capital Project's InVEST Urban Nature Access and Urban Cooling models to assess green space accessibility and cooling capacity across San Diego County. Multiple linear regressions examine relationships among green space access, vegetation cooling capacity, age, and race. Results indicate that areas with higher proportions of racial and ethnic minority residents often have lower per capita access to public and private green spaces and reduced cooling benefits associated with greenspace. Modeled cooling capacity was associated with surface temperatures, whereas total green space area was not, suggesting that vegetation structure and quality may be more important than area alone. These findings highlight the importance of equity-centered urban planning to address environmental disparities and prioritize effective urban greening strategies.

INTERNATIONAL BUSINESS

CHIARA MCWILLIAM

Thesis Advisor: Dr. Eileen Daspro, International Business

Global Sporting Events as Instruments of Nation Branding and International Influence

Hosting the Olympics or the FIFA World Cup costs billions, yet countries compete hard for the chance. These events put a host country in front of a global audience and offer a rare opportunity to shape how the world sees it. This thesis examines how host countries use major sporting events as tools of nation branding and soft power, and the dominant messaging themes reflected in the international coverage. It compares four hosts with different goals: London 2012, Beijing 2008, Qatar 2022, and Milan-Cortina 2026. For each, it analyzes government documents, official promotional materials, and international media articles, sorting them by common themes. By comparing intended messages with international coverage, this research shows what countries try to achieve by hosting and where their messaging succeeds or falls short.

DIBA ZARKESHAN ISFAHANI

Thesis Advisor: Dr. Afsaneh Nahavandi, International Business

Beyond the Headlines: Iranian Women's Financial Agency in a Restricted Economy

Standard economic indicators often portray Iranian women as financial bystanders due to the legal and institutional barriers they face. Yet on the ground, women actively build, manage, and control substantial wealth through informal lending circles, family capital, digital platforms, and alternative assets. This thesis investigates the striking gap between Western perceptions and economic reality in Iran. Combining international financial data with qualitative interviews of Iranian women and business professionals, the study reveals how financial agency thrives alongside formal restrictions. Ultimately, this research challenges traditional metrics of financial inclusion and offers finance and international business a more complete model for evaluating women's true economic power in restricted markets.

INTERNATIONAL RELATIONS

MIA GLEASON

Thesis Advisor: Dr. Avi Spiegel, Political Science and International Relations

A Comparative Analysis of Youth Counter-Radicalization Policy Within Education in France and the UK

Despite facing similar terrorist threats after 9/11, Britain and France have adopted diverging counterterrorism policies, specifically in countering youth radicalization. Both states have broadly incorporated counterterrorism efforts into education, but their institutional responses reflect distinct approaches to preventing youth radicalization. Existing research has extensively examined Britain's Prevent duty in education, while under-examining contrasts between British and French educational policies. To address this literature gap, this thesis employs a comparative case study to analyze how domestic political, historical, and institutional factors shape their individual strategies. The findings aim to explain why two states facing similar security challenges produce varying policy reforms and how national contexts influence counter-radicalization efforts. This comparison seeks to contribute to broader debates on the education-security nexus and youth radicalization.

NEUROSCIENCE

ALISON COLBURN

Thesis Advisor: Dr. Jennifer Wenzel, Neuroscience, Cognition and Behavior

Estrous Cycle Classification in Female Rats: From Cocaine-Conditioned Place Aversion to Automated Staging

Despite the female sex making up roughly 50% of our world population, neuroscientific studies have historically included only a fraction of females due to the assumption that ovarian fluctuations introduce higher rates of variability. Nonetheless, accurate determination of the estrous cycle is necessary for understanding how these fluctuations influence female behaviors and neurobiology. Traditional cytological classification methods rely on subjective interpretations of the relative amounts of leukocytes, nucleated epithelial cells, and cornified epithelial cells, leading to limitations in accuracy and generalizability across laboratory settings. The present study compared manual classifications with three other deep-learning classification models to measure reliability and consistency across estrus, metestrus, diestrus, and proestrus stages; These systems were Object Detection for Estrous Staging (ODES), EstrousNet, and SECREIT. By comparing the various methods of estrous staging, an evaluation of consistency will help to clarify the utility of automated image classification, serving as a tool for improving standardization across labs.

ANNIKA GOODWYN

Thesis Advisor: Dr. Jacqueline Bonds, Neuroscience, Cognition and Behavior

Oligodendrogenesis and Its Critical Role in Healthy Brain Function

Neurogenesis is the process by which new neural cells are generated in the brain, and it plays a critical role in many processes including cognition and affective behavior. This thesis focuses specifically on oligodendrogenesis, the process through which neural stem cells become oligodendrocytes, the myelinating cells of the CNS. When this process is disrupted, communication throughout the brain can deteriorate, potentially exacerbating cognitive decline as seen in neurodegenerative diseases, such as Multiple Sclerosis (MS). By investigating how neural cells develop and what influences their fate, our research aims to deepen our understanding of the mechanisms which dictate oligodendrogenesis and how these processes may be altered in MS. Ultimately, comprehending these cellular mechanisms may help researchers better understand how the brain changes with age and why these changes contribute to diseases affecting memory, cognition, and quality of life.

EGEMEN TANGUN

Thesis Advisor: Dr. Adam Haberman, Biology

Quantifying Lysosomal and Cytoskeletal Defects in Photoreceptors of a Drosophila Model of Alzheimer's Disease

Drosophila Melanogaster is a robust model organism for studying Alzheimer's Disease in which neurodegeneration can be quantified by imaging the compound eye. While Aβ plaques and neurofibrillary Tau tangles are the protein hallmarks associated with AD, the endo-lysosomal system has been implicated as part of the complex Alzheimer's puzzle. In my thesis I focus specifically on the lysosome, the primary degradative organelle of the cell, whose endogenous proteasomes are expected to dissolve amyloid and other waste aggregates. Imaging disease-state lysosomes is the first step in understanding why the endo-lysosomal system fails to adequately clear waste in AD. Results are discussed in terms of several possible pathways of lysosomal dysfunction: accumulations of non-functional lysosomes, loss of lysosomes due to damage or a combination of the two.

PHILOSOPHY

SAMANTHA SPRINGER

Thesis Advisor: Dr. Daniel Tigard, Philosophy

The Ethics of AI in Legal Judgement: A Case Against Robot Judges

The development of AI is fundamentally changing how social institutions operate in society. Increasing use of AI in legal systems specifically raises questions about the morality of mechanizing institutions that uphold human rights and instantiate the rule of law. While many scholars acknowledge the benefits of improving efficiency and costs of notoriously slow and costly legal systems, using AI for judicial decision-making—which I refer to as using 'robot judges'—is more contested. I argue that replacing human judicial decision-making with robot judges undermines the morality of law, posing threats to social progress, citizen's due process rights, and moral sensitivity in the legal sphere. The evolving nature of law requires judges to be capable of flexible interpretation and moral reasoning, which AI lacks. After warning against full automation of courts, I consider what level of AI implementation is most ethical before concluding that strict limitations of judicial AI usage should be enforced.

PSYCHOLOGY

ABIGAIL MOESLACHER

Thesis Advisor: Dr. Yessica Green-Rosas, Psychology

The Interaction of Psychological Comorbidities and Polysubstance use to Influence Unintentional Overdose Risk Among Young Adults in the Context of Illicit Fentanyl Exposure

This thesis investigates how mental health conditions, polysubstance use, and opioid exposure interact to compound overdose risk among young adults aged 18 to 25 by analyzing post-2015 empirical studies and federal health data sourced from databases, such as PubMed and PsycINFO, alongside Centers for Disease Control & Prevention reports. The rapid proliferation of illicitly manufactured fentanyl has dramatically escalated the toxic drug crisis, making accidental overdose a leading cause of death in this population. Preliminary findings demonstrate how underlying psychological distress frequently drives individuals toward polysubstance self-medication, drastically heightening vulnerability to fatal fentanyl poisoning. By challenging traditional single-substance treatment models and the systemic separation of mental health and addiction services, this review establishes a conceptual framework for integrated care. Ultimately, this thesis offers actionable insights for public health policymakers, clinicians, and harm reduction advocates seeking to implement low-barrier, transdiagnostic strategies that effectively prevent fatal overdoses in high-risk young adults.

SOFIA QUEZADA

Thesis Advisor: Dr. Veronica Galvan, Psychology

Supporting Bilingual Children and Their Families: From Research to Practice

As bilingual children develop language and literacy skills, families play an important role in supporting learning across languages. However, research-based guidance may not always be accessible to parents navigating bilingual development. This thesis examined how schools can translate research on bilingual language and literacy development into practical guidance for families. Specifically, this thesis explored three areas: the home literacy environment, the importance of maintaining the home language while developing English, and the role of school-family partnerships. By examining research on home literacy resources, parent-child interactions, and language exposure, this thesis sought to identify strategies that could inform the development of a family literacy syllabus. The syllabus is intended to provide schools with accessible, evidence-based guidance that families can use to support bilingual children's learning at home. Ultimately, this thesis aimed to bridge the gap between research and practice by making bilingual literacy support more accessible to families.