



## The 14th Annual Spring Undergraduate Research Festival

Wednesday, April 18, 2018 4:30pm-6:30pm

University of Iowa University Capitol Centre 2<sup>nd</sup> floor South Atrium Iowa City, Iowa This event is hosted by the Iowa Center for Research by Undergraduates.

ICRU promotes undergraduate involvement in research and creative projects at the University of Iowa, serving students, staff, and faculty.

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www.uiowa.edu/icru 319.335.8336 icru@uiowa.edu The Spring Undergraduate Research Festival is proud to showcase over **100 visual presentations** given by the University of Iowa's student researchers and creative scholars. Presenters work in over **50 different departments** across campus and represent the senior, junior, sophomore, and freshman classes.

#### Odd numbered posters will present from 4:30-5:30PM Even numbered posters will present from 5:30-6:30PM \*\*\*Please note that at 5:30, all of the boards will be turned around to show the even numbering and the second hour presenters' posters\*\*\*

We hope that you enjoy talking with these outstanding students and will see you again in for the 8th Annual Fall Undergraduate Research Festival!
Programs with full abstracts are available on the ICRU website: <u>www.uiowa.edu/icru</u>.

Many thanks to the over 100 graduate and professional students and postdocs who have volunteered their time to serve as poster judges for this event.



### First Hour Presenters 4:30-5:30PM

#### (odd numbers only)

#### 1 - Ashley Arkfeld

*Optimizing Scholarship Allocations to Shape a First-Year Class* Majors: Business Analytics & Information Systems, Marketing Mentor: Jeffrey Ohlmann (Management Sciences)

#### 3 - Serif Bacevac

Mechanisms for Insulin-dependent Regulation of Skeletal Muscle Mitochondria by OPA-1 Major: Health & Human Physiology Mentor: Antentor Hinton (Internal Medicine)

#### 5 - Jennifer Banks

*Dismal River Housing: a comparative study of Apache housing structures* Major: Anthropology Mentor: Matthew Hill (Anthropology)

#### 7 - Rachel Bartlett

Exploring Aural and Haptic Feedback for Visually Impaired People on a Track: A Wizard of Oz Study Major: Psychology & Informatics Mentor: Kyle Rector (Computer Science)

#### 9 - Marc Beer

Adaptive consequences of color variation among recently diverged varieties of a specialist insect Major: Biology Mentor: Andrew Forbes (Biology)

#### 11 - Mark Biangmano

Do Wishes Influence Expectations? Depends How You Ask Major: Psychology Mentor: Paul Windschitl (Psychological & Brain Sciences)

#### 13 - Aaron Buelow

Low Force Electrically Induced Exercise (LFEE) Attenuates Blood Metabolic Biomarkers in People with and without Spinal Cord Injury Major: Biomedical Engineering Mentor: Richard Shields (Physical Therapy and Rehabilitation)

#### 15 - William Bui Tran

Fat-Derived FGF21 is Dispensable for the Resistance to Diet-Induced Obesity Observed in Mice Lacking OPA1 in Adipose Tissue Major: Biomedical Engineering Mentors: Renata Pereira (Internal Medicine); E. Dale Abel (Internal Medicine)

#### 17 - Joseph Burba

Fluorescence-Monitored Assays for Binding Affinity of Calmodulin Mutants to NaV Major: Biochemistry Mentor: Madeline Shea (Biochemistry)

#### 19 - Eleanor Burke

*Errors in Estimation - Predictors and Consequences* Major: Psychology Mentor: Gary Gaeth (Marketing); Irwin Levin (Psychology)

#### 21 - Akanksha Chilukuri

Effects of Preeclampsia on Cortical Growth and Cortical-Dependent Behavior Using a Vasopressin Mouse Model Major: Neuroscience Mentor: Hanna Stevens (Psychiatry)

#### 23 - Ross Clowser

Society for Ethnomusicology Podcast Majors: Music (Jazz Studies), International Relations Mentor: Trevor Harvey (Music)

#### 25 - Liam Crawford

StoryCarnival: Developing Design Principles for Early Childhood Learning Environments Majors: Computer Science, Philosophy Mentor: Juan Pablo Hourcade (Computer Science)

#### 27 - Christine Czarnecki

Formulation of novel dry powder antibacterial aerosols using central composite design of experiments Major: Chemical & Biochemical Engineering Mentor: Jennifer Fiegel (Chemical & Biochemical Engineering)

#### 29 - Sarah DeLong-Duhon

Resolving phylogenetic relationships between three endemic Stereum fungi species Major: Environmental Science Mentor: Andrew Forbes (Biology)

#### 31 - Monica Derby

Personalizing symptom management strategies to meet the needs of rural residents with advanced cancer Major: Nursing Mentor: Stephanie Gilbertson-White (Nursing)

#### 33 - Joshua Dunigan

Calcium-Triggered Activation of Calcineurin: Release of the Auto-Inhibitory Domain is Regulated by Calmodulin Majors: Genetics & Biotechnology Mentor: Madeline Shea (Biochemistry)

#### 35 - Lauren Dunlay

Neuronal activity in the infralimbic cortex during cocaine seeking: representations of environment and decision making Major: Psychology Mentors: Ryan LaLumiere (Psychological & Brain Sciences); Victoria Muller Ewald (Psychological and Brain Sciences)

#### 37 - Ryder Fink

*Genetic Modifiers of a Drosophila model of sodium channelopathies* Major: Human Physiology Mentor: Toshihiro Kitamoto (Anesthesia)

#### 39 - Kathryn Gabel

Narrative Skills in School-Age Children who are Hard of Hearing Major: Speech & Hearing Science Mentor: Elizabeth Walker (Communication Sciences & Disorders)

#### 41 - Manisha Gore

The effects of semioccluded vocal tract (SOVT) techniques on the vocal tract and vocal folds Majors: Speech and Hearing Science

Mentor: Eileen Finnegan (Communication Sciences & Disorders)

#### 43 - Christina Grimes

Characterization of infralimbic cortical activity in rats while seeking or abstaining from cocaine Major: Psychology Mentors: Victoria Muller Ewald (Psychological & Brain Sciences); Ryan LaLumiere (Psychological & Brain Sciences)

#### 45 - Emily Hanson

Quantifying and Identifying Hidden Hearing Loss Major: Communication Sciences & Disorders Mentors: Inyong Choi (Communication Sciences & Disorders); Shawn Goodman (Communication Sciences & Disorders)

#### 47 - Carolyn Hoemann

Young, Urban Cambodian's Perceptions of Local Healthcare Services: an Exploratory Qualitative Analysis Major: Ethics & Public Policy

#### 49 - Jessica Janota

Aphasia Reading Club Outcomes: Acquisition and Use of Metacognitive Reading Strategies Major: Speech & Hearing Science Mentor: Alison Lemke (Communication Sciences & Disorders)

#### 51 - Tiara Kane

Social Justice in Dickens' A Tale of Two Cities and today Major: English Mentor: Takis Poulakos (Rhetoric)

#### 53 - Alethea Kapolas

Sandstone:shale ratio maps of the Pennsylvanian lower Cherokee Group in southern Iowa Major: Environmental Science Mentors: Emily Finzel (Earth & Environmental Sciences); Justin Rosenblume (Earth and Environmental Sciences)

#### 55 - Madison Kasparek

Acceptability of Measures assessing Environmental Confounders of Dietary Habits Major: Physiology Mentor: Teresa Marshall (Preventative & Community Dentistry)

#### 57 - Morgan Kemerling

Investigating the Effects of Exercise on Adipose Tissue Metabolism Major: Human Physiology Mentor: Kathleen Markan (Pharmacology)

#### 59 - Eric Knapp

Determining Parameters for Optimal Transferrable Shadow Cure Polymerization Major: Chemical Engineering Mentor: Julie Jessop (Chemical & Biochemical Engineering)

#### 61 - Virginia Lamas Meza

Analysis of Extractable Lipids and PCB 136 (2,2',3,3',6,6'hexachlorobiphenyl) in Transgenic Mice Tissues Major: Environmental Chemistry Mentor: Hans-Joachim Lehmler (Occupational and Environmental Health)

#### 63 - Josh Larson

*CaNoRock - The Canada-Norway Student Sounding Rocket Field School* Majors: Electrical Engineering, Physics Mentor: David M. Miles (Physics & Astronomy)

#### 65 - Rikki Laser

Deficits in REM sleep twitching indicate developmental delay in a mouse model of autism Major: Neuroscience Mentors: Mark Blumberg (Psychological & Brain Sciences); Cassandra Coleman (Psychological & Brain Sciences)

#### 67 - Yahang Li

DRP-1 and Mitochondria-associated endoplasmic reticulum membranes are important for inducing fission during exercise Major: Biomedical Engineering Mentors: E. Dale Abel (Internal Medicine); Antentor Hinton (Internal Medicine)

#### 69 - Kaylee Lindburg

Economic Effects of Johnson County Minimum Wage Increase on Local Business Activity Major: Economics Mentor: John Solow (Economics)

#### 71 - Michael Lord

The Role of Uncoupling Protein 2 (UCP2) in Platelet Mitochondrial Function Major: Human Physiology Mentor: Rhonda Souvenir (Internal Medicine)

#### 73 - Lucas Maakestad

The Effects of Protein Architectures on Polymerase Selection During Translesion Synthesis Majors: Biochemistry, Chemistry Mentor: Todd Washington (Biochemistry)

#### 75 - Russell Martin

Using zebrafish to test potential drugs for their efficacy against epileptic seizures Major: Biomedical Engineering Mentors: Robert Cornell (Anatomy & Cell Biology); Alexander Bassuk (Pediatrics)

#### 77 - Hailey Moore

Polarization in the Radio Arc in the Galactic Center Major: Physics & Astronomy Mentor: Cornelia Lang (Physics & Astronomy)

#### 79 - Sarah Nguyen

The role of the surface completion in the convexity context effect Major: Psychology Mentor: Cathleen Moore (Psychological & Brain Sciences)

#### 81 - Claire O'Connell

Validating Rotamer Optimization Using Goldstein Elimination Criteria Major: Biomedical Engineering Mentor: Michael Schnieders (Biomedical Engineering)

#### 83 - McKenna Pierson

Adolescent Risk Taking and Sensitivity to Negative Outcomes Major: Psychology Mentor: Jatin Vaidya (Psychiatry)

#### 85 - Morgan Rafferty

*Artificial Intelligence for Financial Services* Major: Mathematics Mentor: Isabel Darcy (Mathematics)

#### 87 - Alex Rice

*How Technology is Transforming the Retail Space* Major: Economics Mentor: Julia Garlick (Economics)

#### 89 - Amy Schembari

The Effect of Career Preparation and Perceived Proactivity on Anticipated Person-Environment Fit Majors: Marketing, Entrepreneurial Management Mentor: Amy Kristof-Brown (Management & Organizations)

#### 91 - Cassandra Sheridan

The Role of Category Density in Pigeon's Tracking of Relevant Information Major: Psychology Mentors: Ed Wasserman (Psychological & Brain Sciences); Leyre Castro (Psychological and Brian Sciences)

#### 93 - Neevetha Sivagurunathan

The Effects of ADHD and Depression on Sensitivity to Reward and Punishment Majors: Psychology, Statistics Mentor: Molly Nikolas (Psychological & Brain Sciences)

#### 95 - Brittany Stephanie

*Car Insurance Factors* Major: Mathematics Mentor: Isabel Darcy (Mathematics)

#### 97 - Sarah Stueve

Uncoupling Protein (UCP)-2 and Thrombosis Risk Major: Biology Mentor: Rhonda Souvenir (Internal Medicine)

#### 99 - Keely Sybesma

*Effects of Biomass Burning Emissions on Pregnancies in Temuco, Chile* Majors: Mathematics, Chemistry Mentor: Elizabeth Stone (Chemistry)

#### 101 - Ravjot Virdi

Effect of combination therapy with Annexin V and CTLA 4 in a mouse model of breast cancer Major: Bioimedical Sciences Mentors: Joel Shilyansky (Surgery, Pediatrics); Chaobo Yin (Surgery)

#### 103 - Bowen Wang

Effect of Country-by-Country Reporting on Multinational Enterprise Tax Avoidance Strategy Major: Accounting Mentors: Kevin Markle (Accounting); Jaron Wilde (Accounting)

#### 105 - Nicole Wendel

Monitoring and Modeling Drug Dissolution Kinetics: New Experiment for Pharmaceutical Education Major: Chemistry Mentor: Lei Geng (Chemistry)

#### 107 - Ziling Xia

How to Improve the Health of International Students in American Colleges Major: Health & Human Physiology Mentor: Gayle Walter (Health & Human Physiology)

#### 109 - Ziying Yu

Social media sentiments and company performance Majors: Finance, Mathematics Mentor: Shagun Pant (Finance)

#### 111 - Cody Zak

Role of infralimbic projections to the nucleus accumbens core in extinction of cocaine seeking behavior. Majors: Psychology, Neurobiology Mentors: Ryan LaLumiere (Psychological & Brain Sciences); Kelle Nett (Psychological and Brain Sciences)

#### 113 - Shao Yang Zhang

Angiotensin AT1A Receptors on AVP-expressing Neurons Contribute to Vasopressin Secretion Major: Biomedical Engineering Mentor: Justin Grobe (Pharmacology)

#### 115 - Shiwen Zhou

Parents' Mind-Mindedness in Infancy and Children's Theory of Mind at Preschool Age Majors: Psychology, Communication Studies Mentor: Grazyna Kochanska (Psychological & Brain Sciences)

## Second Hour Presenters 5:30-6:30PM

(even numbers only—boards will be turned around)

#### 2 - Kevin Blicharski; Alexander Powers

Bootstrapping Using Machine Learning to Create Training Datasets for Automatic Cerebellum Segmentation

Major: Computer Science and Engineering; Computer Science and Engineering

Mentor: Hans Johnson (Electrical and Computer Engineering)

#### 4 - Alexis Brannan

Teaching Boronic Acids New Tricks: Hydrogen-donor templates and supramolecular catalysts of [2+2] photocycloadditions in the solid state Major: Human Physiology Mentors: Leonard MacGillivray (Chemistry); Gonzalo Campillo (Chemistry)

#### 6 - Ashely Chong

*Exploring the Creative Process* Major: International Studies Mentor: Natasa Duricova (International Writing Program)

#### 8 - Greg Collins

OPA1 deletion results in ER stress, cardiac dysfunction and death Major: Human Physiology Mentors: E. Dale Abel (Internal Medicine); Helena Kenny (Internal Medicine)

#### 10 - Geoff Collins

The formation and tracking of 3D breast cancer cellular spheroids in a high throughput format Major: Biochemistry Mentor: Meng Wu (Pharmaceutical Sciences and Experimental Therapeutics)

#### 12 - Cody Crawford

Revitalization of the University of Iowa's Bird Egg Collection after 100 Years of Dormancy Major: Biology Mentor: Cindy Opitz (Pentacrest Museums)

#### 14 - Mackenzie Cross

Analyzing the Faunal Assemblage Produced by Woodland Hunters Major: Anthropology Mentor: James Enloe (Anthropology)

#### 16 - Victoria Cunningham

Familial Characteristics of Urinary Chronic Pelvic Pain Syndrome (UCPPS) in the MAPP Research Network Data Major: Human Physiology Mentor: Susan Lutgendorf (Psychological & Brain Sciences)

#### 18 - Riley Deutsch

An Ex Vivo Staining Technique for Enhanced Image Contrast of Tissue Samples in Micro Computed Tomography Major: Biomedical Engineering Mentor: Jessica Sieren (Radiology)

#### 20 - Alayna Dieter

Skeletal Muscle-Specific DRP1 Deficiency Alters Autophagy, Increases ER Stress and Apoptosis and Reduces Force Generation in Skeletal Muscle Major: Biochemistry Mentor: Marcelo Correia (Internal Medicine)

#### 22 - Gabrielle Duncan

Epigenetic Investigation of Military Sexual Trauma in Post-Traumatic Stress Disorder Majors: Human Physiology, Cell & Developmental Biology Mentor: Gen Shinozaki (Psychiatry)

#### 24 - Caroline Emory

*Efferent Auditory Feedback During Human Vocalization* Majors: Speech & Hearing Science, Psychology Mentor: Shawn Goodman (Communication Sciences & Disorders)

#### 26 - Zhiting (Jack) Feng

Boronic ester coordination enables [2+2]-photodimerizations in the solid state - a green chemistry approach for the synthesis of useful building blocks Majors: Biochemistry, Ethics & Public Policy

Mentor: Leonard MacGillivray (Chemistry)

#### 28 - Rebecca Frederick

What's in front? Measuring figure-ground segregation across the visual field Majors: Psychology, English Mentor: Cathleen Moore (Psychological & Brain Sciences)

#### 30 - Diana Garcia

Stone Tool Manufacture at Woodpecker Cave: Results from Raw Material Analysis Major: Anthropology Mentor: James Enloe (Anthropology)

#### 32 - Austin Greenough

A Comparison of the Critical Accounting Policies Between Significant U.S. Companies and Their Chinese Counterparts Major: Accounting Mentor: Cristi Gleason (Accounting)

#### 34 - Ye Guo

Interpretable Models for Explaining and Assisting Convolutional Neural Networks Majors: Finance, Business Analytics & Information Systems Mentor: Tong Wang (Business)

#### 36 - Cameron Hauser

Role of locus coeruleus noradrenergic neurons in CO2-induced arousal from sleep Major: Human Physiology Mentor: Gordon Buchanan (Neurology)

#### 38 - Kaelynn Heiberg; Rachel Maller

Equity Implemented: A Research-Practice Partnership with the Iowa City Community School District Major: Sociology, Ethics & Public Policy; Sociology Mentor: Sarah Bruch (Sociology)

#### 40 - Elise Heitmann

*Don't be so Dense: The Creation of Density Contour Maps* Major: Anthropology Mentor: James Enloe (Anthropology)

#### 42 - Brenda Herrera

Mechanisms Impacting Oral Health Equity in an Expanded Medicaid Program: Narratives from Program Members and Dentist Major: Global Health Mentor: Julie Reynolds (Dentistry, Public Policy Center)

#### 44 - Joshua Hjelmaas

State Surveillance Using Quantum Processor-Backed Cryptography: The Future of Electronic Privacy Law Major: Business Analytics and Information Systems Mentor: Andrew Hosmanek (Management & Organizations)

#### 46 - Zachary Juron; Mohamad Abdullah Mohd Kamal

*Topological Data Analysis (TDA) & the Chicago Cubs* Majors: Mathematics; Statistics, Mathematics Mentor: Isabel Darcy (Mathematics)

#### 48 - Khaled Kayali

Effects of Cypermethrin on the Morphology and Number of Microglia in the Embryonic Brain Major: Biomedical Engineering Mentor: Hanna Stevens (Psychiatry)

#### 50 - Katelyn Kelly

Use and Discard: Analyzing Piece Plotted and Screened Artifacts from Woodpecker Cave Majors: Anthropology, Psychology Mentor: James Enloe (Anthropology)

#### 52 - Breanna Kramer-Riesberg

Ebola Virus Infection of Skin Major: Microbiology Mentor: Al Klingelhutz (Microbiology)

#### 54 - Yunyi Li

Self-exciting risk modelling for predicting next location of series crimes Major: Business Analytics Mentor: Tong Wang (Management Science)

#### 56 - Carter Lilly

Comparing the Impact of Modified Paleolithic Diet and Low Saturated Fat Diet on Motor Function in the Setting of Fatigued Relapsing-Remitting Multiple Sclerosis Patients Major: Human Physiology Mentor: Terry Wahls (Internal Medicine)

#### 58 - Lingyi Liu

Probing Molecular Transport in Nanoporous Silica Particles by Single-Molecule Spectroscopy Majors: Chemistry, Biochemistry Mentor: Lei Geng (Chemistry)

#### 60 - Leigha Meredith

Characterizing Urban Forest Communities through Tree Surveys and Soundscape Recordings Major: Environmental Science Mentor: Heather Sander (Geography)

#### 62 - Alissia Milani

Lake Michigan Ozone Study: Characterization and Sources of Airborne Particles Major: Chemistry Mentor: Elizabeth Stone (Chemistry)

#### 64 - Prince Morkeh

ATL-1, the C. elegans ATR homolog, is required for maintaining chromosomal integrity in aging germline Major: French Mentor: Sarit Smolikove (Biology)

#### 68 - Margaret Mungai

MFN-2, a mitochondria-associated endoplasmic reticulum membrane protein may be important for the formation of insulin mediate ER-Mitocontacts Majors: Biology, Neuroscience Mentor: Antentor Hinton (Internal Medicine)

#### 70 - Matthew Murry

Autophagy protects cardiomyocytes against palmitate-induced death Major: Biology Mentor: Quan Jiang Zhang (Internal Medicine)

#### 72 - Danielle Nauman

The effects of vocal effort on bilabial contact pressure and intraoral air pressure Major: Speech & Hearing Sciences Mentor: Jerry Moon (Communication Sciences & Disorders)

#### 74 - Nhan Nguyen

Wnt5b is required for endoderm morphogenesis Major: Biomedical Engineering Mentor: Fang Lin (Anatomy & Cell Biology)

#### 76 - Aleisha Norton

*Psychosocial Well-Being and Depression in Ovarian Cancer Survivors* Majors: Biology, Psychology Mentor: Susan Lutgendorf (Psychological & Brain Sciences)

#### 78 - Danielle Pellack

Is Mitochondrial Fission Protective in Glaucoma Major: Human Physiology Mentor: Michael Anderson (Molecular Physiology & Biophysics, Ophthalmology & Visual Sciences)

#### 80 - Marissa Roseman

Do parasites help drive life history variation in natural populations? Majors: Biology, Environmental Science Mentor: Maurine Neiman (Biology)

#### 82 - Alexi Rubin

Analyzing the Effect of the Wahls and Swank Diets on Fatigue, Mood, and Cognition in Multiple Sclerosis Patients Major: Nursing Mentor: Terry Wahls (Internal Medicine)

#### 84 - Eli Schmidt

The guidance of visual attention through learned feature probabilities Major: Psychology Mentor: Shaun Vecera (Psychological & Brain Sciences)

#### 86 - Victoria Shihadah

Framing Expectations: The Effects of Transient Degraded Speech Conditions on Competition in Spoken Word Recognition Major: Speech & Hearing Science Mentor: Bob McMurray (Psychological & Brain Sciences)

#### 88 - Katie Sinwelski

*Evidenced-Based Interventions for Chemotherapy-Induced Dysgeusia* Major: Nursing Mentor: Catherine Cherwin (Nursing)

#### 90 - Zach Theiler

Homoleptic Neodymium(III) and Uranium(III) Phosphinodiboranates Majors: Biochemistry, Chemistry Mentor: Scott Daly (Chemistry)

#### 92 - Maegan Tyrrell

*Initial Qualitative Assessment of The Passport Project* Major: Health Promotion Mentor: Jon Winet (Art & Art History)

#### 94 - Allison Vaske

*Role of CDK8 Activity in Cardiovasuclar Disease* Major: Chemical Engineering Mentor: Chad Grueter (Internal Medicine)

#### 96 - Sophia Vogeler

Maternal NR supplementation during lactation promotes NAD metabolism for milk production and neonatal development Major: Biochemistry Mentor: Charles Brenner (Biochemistry)

#### 98 - Olivia von Gries

#getsmART! - A Digital Art Series Majors: Studio Art, Art History Mentor: Veronica Rose Smith (Museum of Art)

#### 100 - Jesse Weiss

Introducing e-consents in a Clinical Setting Major: Nursing Mentor: Debra Brandt (Obstetrics & Gynecology)

#### 102 - Michaela Wiltgen

Identifying risk factors for preeclampsia in subsequent pregnancies in women with a history of preeclampsia Major: Nursing Mentor: Debra Brandt (Obstetrics & Gynecology); Donna Santillan (Obstetrics & Gynecology)

#### 104 - Arthur Wold

The Shellfish Informant: Using Bivalve Remains to Reconstruct Ancient Environments Major: Anthropology Mentor: James Enloe (Anthropology)

#### 106 - Audrey Wood

Beyond the Text: Using Illustrations and Text Readers to Support Reading Comprehension in Post-Secondary Students with Intellectual or Developmental Disabilities Major: Speech & Hearing Science Mentor: Meredith Saletta (Communication Sciences & Disorders)

#### 108 - Cole Wymore

Surveying Parents at a Health Fair About Attitudes and Practices Related to Helmet Use Major: Human Physiology

#### 110 - Yuanxi Zhang

*Failure to Timely Remediation of ICFR Weaknesses and Audit Pricing* Majors: Accounting, Finance Mentor: Cristi Gleason (Accounting)

#### 112 - Shiwen Zhou

Parent-child Conversations about Road-crossing Safety in an Immersive Virtual Environment Majors: Psychology, Communication Studies Mentor: Jodie Plumert (Psychological & Brain Sciences)

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