Spring 2023 Award Recipients

College of Arts and Sciences

Adams, Lindsey

White pine encroachment into hardwood forests: effects on leaf litter and soil microbial communities and biogeochemistry

Faculty Mentor: Jennifer Bhatnagar (CAS, Biology)

Ahmed, Sanaa

Characterizing the cellular and circuit-level mechanisms of therapeutic psychedelics

Faculty Mentor: Steve Ramirez (CAS, Psychological & Brain Sciences)

Allbert, Katie

Children's motivations for giving

Faculty Mentor: Peter Blake (CAS, Psychology)

Amado-Mejia, Sam

"Write Back Soon: Open Letters on Blackness, Prison, & Abolition"

Faculty Mentor: Ianna Owen (CAS, English)

Amir, Emily

Evaluating the Chemoselectivity of a Novel Vanadium (V) Catalyst

Faculty Mentor: John Snyder (CAS, Chemistry)

Antonopoulos, Francesca

The Relationship between Stomach-Related Health Problems and Water System Fluoridation

Faculty Mentor: Randall Ellis (CAS, Economics)

Belisle, Lily

Flourishing Under Conditions of Extreme Adversity: Is Suffering an Obstacle to or Pre-Condition for

Flourishing?

Faculty Mentor: Deborah Carr (CAS, Sociology)

Bhogal, Sukhneet

Understanding the Biophysics of Deep Brain Stimulation Faculty Mentor: Xue Han (CAS, Biomedical Engineering)

Bin Alfadino, Anas

Najati Sidqi: His Memoir and Works

Faculty Mentor: Margaret Litvin (CAS, Arabic)

Blumenthal, Emmy

Neural Networks Represent Inputs with Limited Memorized Archetypes

Faculty Mentor: Pankaj Mehta (CAS, Physics)

chen, siyu

Finalizing Maps and Graphics for Mughal Gardens in Kashmir Publication Faculty Mentor: Jan Haenraets (CAS, History of Art & Architecture)

Curry, Aidan

'Hate the Corrupt Ruling Class': The Alternative Influence Network and Populist Polarization

Faculty Mentor: Rachel Meade (CAS, Political Science)

Ettinger, Sevillana

Modeling the relation between callous-unemotional traits (CU) and positive and negative parenting behaviors across the ages of 3, 4, and 5 years.

Faculty Mentor: Kimberly Saudino (CAS, Psychological & Brain Sciences)

Figueiras, Francisco

Identifying Novel Viral Protein Interactions Affecting Host Cell Apoptosis and Growth via a Tiling Approach

Faculty Mentor: Juan Fuxman Bass (CAS, Biology)

Gomez, Julie

Characterizing the behavioral mechanisms of therapeutic psychedelics

Faculty Mentor: Steve Ramirez (CAS, Neuroscience)

Gordon, Gideon

Najati Sidqi: His memoirs and nonfiction

Faculty Mentor: Margaret Litvin (CAS, Middle East and South Asian Languages and Literature)

He, Zixian

Developing a general biophysical modeling platform to simulate physiological consequence of neural connections in health and diseases

Faculty Mentor: Arash Yazdanbakhsh (CAS, Psychological & Brain Sciences)

Heo, Sora

"The Pan-African Ethic and the Spirit of Capitalism"

Faculty Mentor: Zachary Mondesire (CAS, International Relations)

Hill, Nicole

The Missing Link: Latin America's role in creating a universal prohibition on the Use of Force

Faculty Mentor: Andrei Mamolea (CAS, Pardee-International Relations)

Iaia. Alessandro

Central American Court of Justice: The Overlooked Actors in Early 20th Century

Faculty Mentor: Andrei Mamolea (CAS, International Relations)

Jo, Sehjin

An Anatomical mapping and characterization of the Drosophila Melanogaster Circadian Rhythm Circuit Faculty Mentor: Kyle Gobrogge (CAS, Neuroscience)

Kaur, Simran

Characterization of the interaction between microtubules and V-ATPases in nurse cell clearance during Drosophila melanogaster oogenesis

Faculty Mentor: Kim McCall (CAS, Biology)

Keefauver, Tori

How is the parental language used during a parent-child interaction related to child parasympathetic regulation across time?

Faculty Mentor: Nicholas Wagner (CAS, Psychological & Brain Sciences)

Kelly, Thomas

Relation between GPS scintillation and aurora in the nightside high-latitude ionosphere Faculty Mentor: Toshi Nishimura (CAS, Space Physics)

Kil, Raymond

Detecting Signals for Soft Unclustered Energy Pattern (SUEP) at CMS

Faculty Mentor: Zeynep Demiragli (CAS, Physics)

Kim, Hahnbie

Characterizing the Effects of Disease-Causing Mutations in NEMO on Homodimer Stability Faculty Mentor: Adrian Whitty (CAS, Chemistry)

Krick, Sam

Examining the Comorbidity of Alcoholism and Depression in Drosophila melanogaster $\,$

Faculty Mentor: Kyle Gobrogge (CAS, Neuroscience)

Lannon, Owen

Investigating the Byzantine period archaeobotanical assemblage at Tel Shimron

Faculty Mentor: John Marston (CAS, Archaeology)

Lee, David

Visualizing pre-symptomatic impact of Alzheimer's Disease onto MRI scans with Generative Adversarial Networks to assist in early detection

Faculty Mentor: Arash Yazdanbakhsh (CAS, Psychological & Brain Sciences)

Li, Shuchang

"Why Are You Useless: The Cross-Cultural Effects of Verbal Abuse in Childhood And Adolescent within Chinese Families"

Faculty Mentor: Catherine Caldwell-Harris (CAS, Psychological & Brain Sciences)

Liberti, Gina

Parent Behaviors and Joint Engagement in Children with ASD: Links to Children's Language Levels. Faculty Mentor: Helen Tager-Flusberg (CAS, Psychological & Brain Sciences)

Mapaye, Russell

Locating Slit Locations on Jupiter in Terms of a Geographical Coordinate System

Faculty Mentor: Luke Moore (CAS, Astronomy)

Marantz, Ella

How understanding interconnectedness of organisms on Earth impacts concerns about transgressions against the environment.

Faculty Mentor: Deborah Kelemen (CAS, Psychological & Brain Sciences)

Marshall-Pinko, Eitan

The 1919 Boston Police Strike: A Visual Retelling Faculty Mentor: Andrew Robichaud (CAS, History)

McMahon, Nicolas

Galactic Wings: The Local Environment of the X-Shaped Radio Source in Abell 1145

Faculty Mentor: Elizabeth Blanton (CAS, Astronomy)

Mei, Zhengxian

Application of Lightcone Hamiltonian Truncation in 2d QCD

Faculty Mentor: Andrew Fitzpatrick (CAS, Physics)

Meyer, Rachel

The influence of culture on parents' guilt and shame about their child's autism

Faculty Mentor: Kristin Long (CAS, Psychological & Brain Sciences)

Mitsuoka, Keegan

Sources on Women's Songs and Gendered Power: Gaining Proficiency in Reviewing & Managing

Humanistic Social Science Scholarship

Faculty Mentor: Joanna Davidson (CAS, Anthropology)

Mu, Jonathan

Negative Sensory Aftereffects in Visual Curvature Detection

Faculty Mentor: Arash Yazdanbakhsh (CAS, Psychological & Brain Sciences)

Nagree, Aden

Exploring the effect of increased temperature on the rate of cellular regeneration of the sea anemone

Aiptasia

Faculty Mentor: Sarah Davies (CAS, Biology)

O'Donnell, Olivia

Pond Area and Marsh Degradation in the Great Marsh Massachusetts Faculty Mentor: Duncan FitzGerald (CAS, Earth and Environment)

Oladokun, Amira

Large Scale Synthesis of Key Building Blocks for Spiromeroterpenoid Synthesis

Faculty Mentor: John Porco (CAS, Chemistry)

Ponda, Ruhika

#Truth: How to Navigate Modern News Media Like a Platonic Philosopher-King or -Queen

Faculty Mentor: Sophie Klein (CAS, Core Curriculum/Classics)

Roberts, Brooke

Vision through a virtual lens

Faculty Mentor: Sam Ling (CAS, Psychology & Brain Sciences)

Sebastian, Alissa

Sustained Attention and Parkinson's Disease: an fNIRS study

Faculty Mentor: Alice Cronin-Golomb (CAS, Psychological & Brain Sciences)

Shah, Raza

How they have done it: How gun organizations and companies have created an untouchable industry

and why it matters.
Faculty Mentor: Cari Babitzke (CAS, History)

Sloane, Eleanor

Investigating vanadium(V) catalyzed oxidation mechanism of allylic alcohols.

Faculty Mentor: John Snyder (CAS, Chemistry)

Snellgrove, Susannah

'Hate the Corrupt Ruling Class': The Alternative Influence Network and Populist Polarization

Faculty Mentor: Rachel Meade (CAS, Political Science)

Sproba, Gabriella

Monuments to Appropriation: American "Egyptomania" and Commemorative Iconography at Mount

Auburn Cemetery

Faculty Mentor: Deborah Kahn (CAS, History of Art and Architecture)

Subedi, Sambridhi

Investigating Age Differences After Trauma Exposure in the Context of Fear Regulation and Adolescent Neurodevelopment.

Faculty Mentor: Heidi Meyer (CAS, Psychology & Brain Sciences)

Thomson, Reid

Investigating Parental Care Response to Mate Loss in the Clown Anemonefish Amphiprion percula.

Faculty Mentor: Peter Buston (CAS, Biology)

Torio, Renee

Examining associations between parent-child attachment styles and language use during an emotional memory task

Faculty Mentor: Nicholas Wagner (CAS, Psychological & Brain Sciences)

Tronco, Katrina

Contextualizing Multi-Dimensional Elder Care in Israel's Kibbutzim on a Global Stage

Faculty Mentor: Meray Shohet (CAS, Anthropology)

Williams, Claire

The Effects of Climate Change through Extreme Weather on USAF Installations and its Implications for U.S. National Security

Faculty Mentor: Rosella Cappella (CAS, Political Science)

Wolf, Sarah

RF-Field Enhanced Biomarker Detection on Silicon Nanowire Field Effect Biosensor

Faculty Mentor: Raj Mohanty (CAS, Physics)

Wong, Audrey

How does environmental variability shape coral-associated algal and microbial network interactions across spatial and temporal scales

Faculty Mentor: Sarah Davies (CAS, Biology)

Zhang, Maggie

Jump Process Simulation Algorithms for modeling biological systems Faculty Mentor: Samuel Isaacson (CAS, Mathematics and Statistics)

Zhang, Angela

Predynastic settlements in Upper Egypt: reconstructing woodland vegetation in Halfiah Gibli and

Semaineh

Faculty Mentor: Mac Marston (CAS, Archaeology)

College of Fine Arts

Harwood, Kennedy

Contemporary Observational Painting: Mapping the Relevance of Plein Air in the 21st Century

Faculty Mentor: Josephine Halvorson (CFA, Painting)

Sabatini, Maya

Prague Quadrennial 2023 [UN]Common Design Project Faculty Mentor: James Noone (CFA, Scenic Design)

Schmidt, Emma

Exploring Documentation Efficiency of Anatomical Micro-Variations as an Artist

Faculty Mentor: Dana Clancy (CFA, Visual Arts)

Vento, Marc Andrea

Understanding the Eiffel Towers Architecture through Model Building

Faculty Mentor: Diane Fargo Fargo (CFA, Theater)

College of Communication / College of General Studies

Popovska, Viktoria

Women's Education in the 19th Century Bibliography Project

Faculty Mentor: Sheila Cordner (CGS, Humanities)

Longo, Emma

How Fossil Fuel Companies Use Native Advertisements to Promote Climate Denialism in U.S. Media Faculty Mentor: Michelle Amazeen (COM, Mass Communication, Advertising and Public Relations)

Menchaca

Menchaca, August

Using Analytics to write the most engaging educational tiktok video.

Faculty Mentor: Hayes Jackson (COM, Film/Television)

Weinberg, Sara

Protecting Climate Change Believers From Climate Change Misinformation

Faculty Mentor: Arunima Krishna (COM, Mass Communications)

Zheng, Chengze

Legitimizing users in Terms of Use: A examination of cultural discount through Facebook and TikTok

platform policies across countries

Faculty Mentor: Chris Chao Su (COM, Emerging Media Studies)

Engineering

Alsadoun, Woud

Development of an Agri-Voltic System with Bifacial PV (BPV) modules with External Reflectors with Ultrawhite Coating with BaSO4 nanoparticles for high diffuse reflectivity

Faculty Mentor: Malay Mazumder (ENG, Electrical & Computer Engineering and Materials Science & Engineering)

Boateng, Bernadelle

Creating an Optical Phantom to Mimic Skin Affected by Scleroderma Faculty Mentor: Darren Roblyer (ENG, Biomedical Engineering)

Boegholm, Isabelle

Tailoring fiber-optic vortices for energy efficient communication and computation

Faculty Mentor: Siddharth Ramachandran (ENG, Electrical & Computer Engineering and Materials

Science & Engineering)

Bosli, Massinissa

Characterizing human EEG alpha power changes during 24 hours of sleep deprivation Faculty Mentor: Laura Lewis (ENG, Biomedical Engineering)

Cheng, Cathy

Development of Soft Actuator for Underwater Jet Propulsion System of Bioinspired Soft Robot Faculty Mentor: Tommaso Ranzani (ENG, Mechanical Engineering)

Chiao, Deborah

The Study of Ionosphere and Applications in Space Using Dual Frequency Commercial Smartphones Faculty Mentor: Joshua Semeter (ENG, Electrical and Computer Engineering)

Crary, Peter

Task-Specific MIMO Chip: Testing and Measurement Faculty Mentor: Rabia Yazicigil (ENG, Electrical & Computer Engineering and Materials Science & Engineering)

Doshi, Rithvik

MIDI Music Generation using Machine Learning

Faculty Mentor: Brian Kulis (ENG, Electrical & Computer Engineering, Systems Engineering)

Duong, Eileen

Hardware Validation of Constant Curvature in Soft Robotic Limb (with Force Output and Thermal Consideration)

Faculty Mentor: Andrew Sabelhaus (ENG, Mechanical Engineering)

George, Abin

MicroFaaS: Energy Efficient Serverless on Bare-metal Single-board Computers

Faculty Mentor: Ayse Coskun (ENG, Electrical and Computer Engineering Department)

Ianus-Valdivia, Miguel

Control Barrier Functions for Soft Robotics

Faculty Mentor: Andrew Sabelhaus (ENG, Mechanical Engineering)

Keller, Madelyn

Comparing Aged, Young, and Senescent Murine Tenocytes

Faculty Mentor: Brianne Connizzo (ENG, Biomedical Engineering)

Kidess, Fadi

Smartphone-Based Computer Vision for Assisting Individuals with Visual Impairments

Faculty Mentor: Eshed Ohn-Bar (ENG, Electrical and Computer Engineering)

Korna, Farida

Raman Arthroscopic Needle Probe for Diagnostics of Early-stage Osteoarthritis

Faculty Mentor: Michael Albro (ENG, Mechanical Engineering)

Leal, Matthew

Soft Foldable Surgical Robotic Actuators using Pop-Up Book MEMS fabrication

Faculty Mentor: Sheila Russo (ENG, Mechanical Engineering)

Li, Jeffrey

Determining the viability of using magnetic bead-based cell isolation protocol to isolate lymphatic cells from peripheral blood mononuclear cells

Faculty Mentor: Christopher Chen (ENG, Biomedical Engineering)

Lin, Sunni

Prototyping a Contrastive Unpaired Translation (CUT) Framework for Virtual Staining OCT Faculty Mentor: Lei Tian (ENG, Electrical & Computer Engineering and Materials Science & Engineering)

Lobel, Maya

Modeling the effects of reverse pulse plating in Lithium-metal batteries.

Faculty Mentor: Emily Ryan (ENG, Mechanical Engineering)

McCarthy, Emily

Evaluating the Outcome of Grafted Conditioned Neural Progenitor Cells in Healthy and Injured Brains Faculty Mentor: Timothy O'Shea (ENG, Biomedical Engineering)

Niibori, Takaya

Induction of Cellular Senescence at Multiple Levels in Tendon Explants Faculty Mentor: Brianne Connizzo (ENG, Biomedical Engineering)

O'Connor, Payton

Hydroxyethyl Cellulose-Derived Hydrogels Allow for Transcriptomic Profiling of Astrocytes Faculty Mentor: Timothy O'Shea (ENG, Biomedical Engineering)

Raiff, Laura

Investigating the biophysical effects of ultrasound neuromodulation in cortical interneurons and excitatory neurons

Faculty Mentor: Xue Han (ENG, Biomedical Engineering)

Schlegel, Hanna

Highly Sensitive Robust Microspine Structured Soft Capacitive Sensors Faculty Mentor: Tommaso Ranzani (ENG, Mechanical Engineering)

Stack, Eric

Investigating Nanoscale Cerium Oxide Coatingsin Lithium Ion Battery Cathodes as Oxygen Redox Electrocatalysts

Faculty Mentor: Srikanth Gopalan (ENG, Mechanical/Material Science Engineering)

Wilderotter, Sabrina

The Mimotope-to-Epitope Project

Faculty Mentor: Diane Joseph-McCarthy (ENG, Biomedical Engineering)

School of Medicine

Ai, Weikang

Analyze podocyte surface topography in a kidney disease animal model using field-emission scanning electron microscopy (FE-SEM)

Faculty Mentor: Weining Lu (MED, Nephrology Section, Medicine)

Barnard, Emily

Disseminating Skills from Motivational Interviewing for Loved Ones

Faculty Mentor: Emily Kline (MED, Psychiatry)

Field, Grace

Investigating the impact of altered myelination in Trisomy 21 using hOLS

Faculty Mentor: Ella Zeldich (MED, Anatomy & Neurobiology)

Fu, Eric

Regulation of γ -globin Gene Expression by Long Non-Coding RNA

Faculty Mentor: Shuaiying Cui (MED, Medicine)

Jayasinghe, Thisara

Evaluating the Implementation of an Assertive Community Treatment Model to Treat Urban Youth with Substance Induced Psychosis

Faculty Mentor: Amy Yule (MED, Psychiatry)

Jiang, Yuqiao

Transdermal measurement of Glomerular Filtration Rate in mouse kidney disease models

Faculty Mentor: Weining Lu (MED, Associate Professor of Pathology & Laboratory Medicine Nephrology

Section, Medicine)

Koo, Jisun

Exploring ethanol exposure and/or withdrawal changes in mRNA methylation levels of three opioid receptor genes by neuronal modeling.

Faculty Mentor: Huiping Zhang (MED, Psychiatry and Medicine (Biomedical Genetics))

Kortepeter, Daniel

Defining the role of YAP/TAZ in fibroblasts during lung epithelial regeneration

Faculty Mentor: Xaralabos Varelas (MED, Biochemistry)

Koutures, Anne

Cerebrovascular Disease, Repeated Head Injuries, and the Pathology of CTE

Faculty Mentor: Michael Alosco (MED, Neurology)

Long, Sophia

Targeting the beta1 Integrin Subunit in JAK2V617F+ Cells Using an Inhibitory Antibody

Faculty Mentor: Shinobu Matsuura (MED, Medicine)

Meyer, Jaclyn

A Comparison of Serum Brain-Derived Neurotrophic Factor Levels Between Young Adults in a Multiethnic Group

Faculty Mentor: Sherral Devine (MED, Anatomy & Neurobiology)

Murray, Sophia

Effects of HDAC1/LSD1 inhibition on TNBC-macrophage interactions and tumor progression in 3D tumor models

Faculty Mentor: Ruben Dries (MED, Hematology/Medical Oncology)

Nguyen, Tuyet-Anh

The Role of Ribosomal m6A in the Translational Stress Response and Tauopathy Faculty Mentor: Benjamin Wolozin (MED, Pharmacology)

Nie, Michelle

Information Transparency Empowers People: An Educational Hub of Gynecological, Sexual, and Reproductive Health for People of Color.

Faculty Mentor: Tejumola Adegoke (MED, Obstetrics & Gynecology)

Pagan, Juan

Role of the Melanocortin System in Regulating the Thyroid Axis Faculty Mentor: Ricardo da Costa e Sousa (MED, Medicine)

Ramadan, Nazly

The role of CK2 phosphorylation of the eIF5-mimic protein (5MP) for its interaction with eIF2β Faculty Mentor: Assen Marintchev (MED, Physiology/Biophysics)

Rasheed, Samaa

The Effects of Lactic Acid on epithelial integrity and HIV susceptibility Faculty Mentor: Deborah Anderson (MED, Infectious Disease)

Shi, Chuning

Deep Learning for Glomerular Ultrastructural Measurement in TEM Images Using Vision Transformation Faculty Mentor: Chao Zhang (MED, Medicine)

Subramonian, Reshma

Brain pH and DNA methylation in schizophrenia (SCZ): underlying mechanisms of pathogenesis Faculty Mentor: Sam Thiagalingam (MED, Biomedical Genetics Section, Medicine)

Sullivan, Jessica

Facilitation of Extinction Retention and Reconsolidation Blockade in PTSD by Intravenous Allopregnanolone

Faculty Mentor: Ann Rasmusson (MED, Psychiatry)

Venkat, Purnima

The role of Cis- and Trans- cleavage activity of poliovirus 2A protease in viral proliferation Faculty Mentor: Mohsan Saeed (MED, Biochemistry)

Vurkac, Omer

Converting the urine albumin ELISA assay into an automated BLI Octet quantitation assay in a mouse model of chronic kidney disease.

Faculty Mentor: Weining Lu (MED, Medicine)

Wong, Alyssa

HIV status disclosure and discrimination in healthcare experienced by people with HIV who inject drugs Faculty Mentor: Karsten Lunze (MED, Medicine)

Zhang, Angela

Hypothalamic actions of thyroid hormones: The role of thyroid hormone receptor β signaling in the PVN and ARC nuclei.

Faculty Mentor: Ricardo H Sousa (MED, Medicine)

Zhao, John

The title of the project is the following: The applications of a-MSH neuropeptide on retinal survival and damage suppression following ischemia/reperfusion injury.

Faculty Mentor: Andrew Taylor (MED, Ophthalmology)

Other

Longhitano, Gaston

ODSearch: Fast and Resource Efficient On-device Natural Language Search for Fitness Trackers' Data Faculty Mentor: Reza Rawassizadeh (MET, Computer Science)

Ambrosetti, Jacopo

Hiding the Security State in Markets: Outsourcing Security and Defense in the US and Europe Faculty Mentor: Kaija Schilde (Pardee, International Relations)

Duan, Sam

Regulatory Security State Model and Elite Cooptation and Authoritarianization Faculty Mentor: Kaija Schilde (Pardee, International Relations)

Patro, Bontu Ankit

To what extent regulation shaped the transition from democracy to totalitarian state? Faculty Mentor: Kaija Schilde (Pardee, International Relations)

He, Zhiwei

Classification Methods for Decision Making in Illegal Drug Trafficking Networks Faculty Mentor: Orkun Baycik (Questrom, MPPL)

Bradley, Margaret

Promoting health seeking behaviors in resource-constrained settings: The RANI Project experience from Odisha, India

Faculty Mentor: Hagere Yilma (SAR, Health Sciences)

Chun, Iris

Characterization of synaptic inputs on inhibitory neurons in thalamic reticular nucleus Faculty Mentor: Basilis Zikopoulos (SAR, Neuroscience/Human Physiology)

Curran, Tomo

Defining Atypical Temporal Elements of Speech Prosody and White Matter Correlates in Children with Autism

Faculty Mentor: Jennifer Zuk (SAR, Speech, Language, & Hearing Sciences)

Fox, O'Neal

Effects of gait-restorative interventions on post-stroke locomotor control and walking automaticity Faculty Mentor: Lou Awad (SAR, Physical Therapy)

Huang, Yi-Hsi

Investigation of the Risk Perception Attitude (RPA) Framework; Findings from the RANI Project cluster Randomized Control Trials

Faculty Mentor: Hagere Yilma (SAR, Health Science)

Yang, Yiwen

Music-Based Wearable Sensor Walking Intervention for People With Chronic Knee Pain Faculty Mentor: Deepak Kumar (SAR, Physical Therapy & Athletic Training)

Yang, Shuhan

Dietary fibers and Human Health Outcomes Database: Impact of Resistant Fibers On Health Faculty Mentor: Nicola McKeown (SAR, Health Sciences)

Thompson, Alexandra

Dental Insurance Reform in Massachusetts: An Oral Health Policy Case Study Faculty Mentor: Raul Garcia (SDM, Dentistry)

Rodriguez, Grace

Project Title Evaluating Police Narratives in the Context of Mental Health Crisis among Children in Boston Public Schools

Faculty Mentor: Jennifer Green (SED/Wheelock, Special Education)

Turut, Dilara

Development of Natural and Supernatural Thinking

Faculty Mentor: Kathleen Corriveau (SED/Wheelock, Applied Human Development)