Welcome,

to the first ever Scholars Research Symposium. We are grateful that you have been able to join us this evening as we celebrate the research and creative endeavors of students within our University Scholars Program and associated with our Office of Fellowships. In the posters presented here, you will see three types of projects.

**Scholars Independent Research Projects**

Last spring, the University Scholars Program & Office of Fellowships introduced a first-of-its-kind for Northeastern summer fellowship of up to $4,000 to enable University Scholars to pursue original, student-initiated independent research, creative performance, and project-making in close collaboration with a faculty mentor. Our Faculty Fellows hosted a series of workshops to guide students through the process of conceptualizing a project and putting forth a feasible and reasonable proposal, while the projects themselves were shepherded by faculty from across the university.

**Clinton Global Initiative University Commitments to Action**

As a result of our membership of the Clinton Global Initiative University network, Northeastern University has pledged to support select student-initiated Commitments to Action through financial awards and mentorship. Commitments to Action are made in one of five focus areas: education, environment and climate change, peace and human rights, poverty alleviation, and public health. All Northeastern students are invited to submit their proposals directly to the Clinton Foundation and receive support from the University Scholars & Office of Fellowships.

**Research Experiences for Undergraduates & Research Internships**

Research Experiences for Undergraduates are supported by the National Science Foundation, while the funding for Research Internships varies. Competition for REU and these internships is stiff, as undergraduates have the opportunity to work closely with advanced researchers. These awards are designed to help nurture the next generation of American scientists, engineers, and mathematicians.
1. PURO
Kelli Lynch COE’17, Ian McLarney DMSB’17, Sofia Sotelo DMSB’17
This project’s purpose was twofold: to evaluate the performance of a water purification device that uses ultraviolet light, and to better understand access to safe drinking water in Santa Cruz de la Sierra, Bolivia.

Advised by Professor Veronica Godoy-Carter

2. CHARACTERIZATION OF THE EXPRESSION OF THE ERYTHROPOIETIC BLOODTHIRSTY GENE IN TRANSGENIC ZEBRAFISH THROUGH THE USE OF FLUORESCENT REPORTERS
Benjamin Moran COS’18
The project uses cloning technology to illustrate when and where the bloodthirsty gene, a known regulator of red blood cell development, is expressed (active) in zebrafish embryos.

Advised by Professor H. William Detrich, III

3. THE IMPLEMENTATION OF A BIOFUEL NETWORK IN SOUTH AMERICA
Andrew Mello COE’17, Raashmi Patalapati COE’18
This project sought to better understand the production and distribution of biofuels in South America, exploring the political, social, economical, and environmental motivations that have shaped the network’s development.

Advised by Professor Courtney Pfluger

4. PREGNANCY AND CHILDBIRTH EDUCATION IN CAP-HAÏTIEN, HAITI
Gaylen Alexander Bouvé’17
This project evaluated the educational needs surrounding pregnancy and childbirth for women seeking care at a clinic run by the group MamaBaby Haiti, utilizing an educational needs assessment to help inform the clinic’s existing prenatal education program.

Advised by Professor Tiffany Kim
5. EFFECTIVENESS OF USING TAXIS TO HELP THE POOR: A UNIQUE MICROFINANCING INITIATIVE IN NEPAL
Siddhartha Pant DMSB’18
This project assessed whether the microfinancing initiative that helped Nepalese taxi drivers purchase their own taxis was effective in raising the quality of life and per capita income of the drivers.

Advised by Professor Sophie Bacq

6. ANALYZING THE RHETORIC AND DICTION OF AMERICAN POLITICIANS ON TWITTER
Alexander Kavourias CCIS’18
This project examined the way U.S. politicians, specifically members of Congress and their staffs, use Twitter as not only an effective means of communicating with constituents, but also as a powerful political tool to aid in the advancement of their political careers.

Advised by Professor David A. Smith

7. BOSTON AS AN URBAN HEAT ISLAND
Hannah Bergam COS’17
The goal of this project was the creation of a multi-layered map of different characteristics of Boston (population density, green spaces, etc.) compared against the city’s meteorological data.

Advised by Professor Matthias Ruth

8. EFFECTS OF AMERICA ON FRENCH FOOD IN THE SEVENTEENTH CENTURY
Natalie Grace Schulz COS’17
Less than fifty years after France established its first colony in the Americas, La Varenne published the first Haute Cuisine cookbook, encompassing much of what is considered modern French food. This project examined the impact of transatlantic travel upon the food revolution in 17th-century France.

Advised by Professor Christopher Parsons
9. THE GIBSON GIRL: FORGOTTEN ICON
Catarina Smith COE’18
This project sought to understand why and how Charles Dana Gibson’s illustrations of the iconic, idealized “Gibson Girl” rose to prominence in the late 19th century, then faded from view after the First World War.

Advised by Professor Victoria Cain

10. CHARACTERIZATION OF SCINTILLATORS FOR BACKGROUND REDUCTION IN EXTREMELY LOW TEMPERATURE PARTICLE SEARCHES
Nick DePorzio COS’17
This project entailed the development of a system to test how well scintillators—materials that alert when background “noise” is present in an experiment—work at very low temperatures, as well as the deployment of that system to perform some of the very first low-temperature characterizations of plastic scintillators.

Advised by Professor Emanuela Barberis

11. TYPE-PRESERVING CPS TRANSLATION FOR DEPENDENTLY-TYPED LANGUAGES
Durward Benham CCIS’18, Nicholas Rioux CCIS’18
Software developers may write proofs to make formal guarantees that their programs will operate as expected. However, when a compiler translates these programs into code that the computer can run, these guarantees are lost. Scholars developed a method of compiling computer programs that guarantees proven correctness properties are preserved.

Advised by Professor Amal Ahmed

12. OVERHEAT OR DEPLETE: AN EXPLORATION OF FERROELECTRIC MATERIALS IN ENERGY CONVERSION
Emma Kaeli COE’18
This research aims to successfully create a ferroelectric material capable of efficient energy conversion from thermal energy to electricity.

Advised by Professor Katherine Ziemer
13. SÃO RIO: VULNERABLE SPACES
Mariya Lupandina CAMD’18, Joaquin Diaz CSSH’18
By examining the organization of urban space in two Brazilian cities, this project adds to the small quantity of English language scholarship on Brazilian urbanism, with an emphasis on the segregation of the city and how this leads to the decline and eradication of public space.

Advised by Professor Thomas Vicino

14. HOW SOCIAL NETWORKS AFFECT CURRENCY EXCHANGE RATES IN COUNTRIES WITH GOVERNMENT-CONTROLLED CURRENCY EXCHANGE RATES: THE CASE OF VENEZUELA
Carlos Elias Campos CSSH’18
The main objective of this project is to empirically analyze the effect that people’s interactions through social networks have had on black-market exchange rates, and how this could potentially lead to dire economic situations such as the current one in Venezuela.

Advised by Dr. Gustavo Vicentini

15. LINKING LAND DEGRADATION TO POLITICAL GOVERNANCE IN NORTH AFRICA
Amina Ly COS’18
The project explored the environmental and political factors that have contributed to desertification in North West Africa.

Advised by Professor Tarik Gouhier

16. MINDING THE GAP: LONDON’S TRANSPORTATION AND ITS IMPLEMENTATION IN THE CITY OF BOSTON
Laura Blumenfeld COE’18, Mariana Mora Sanchez COE’18
This project examined the Docklands Light Railway system in London, which consists of driverless trains and mostly elevated stations, as a potential model for other transportation systems, specifically Boston’s Green Line.

Advised by Dr. Daniel Dulaski
17. NEUROSCIENCE OUTREACH PROJECT
George Bekheet COS’18, John Howard COE’18, Marc Tawfik COS’18
Scholars attempted to produce a dynamic and interactive neuron model that can be used to stimulate interest among high school students and improve their learning experience.

Advised by Professor David Kaeli and Dr. Jade Zee

18. VOCALIZATION IN STREET ART: SOCIAL THEMES IN THE GRAFFITI, MURALS, AND STICKER ART OF JAPAN AND THE UNITED STATES
Sami Berrada DMSB’17, Aaron Kubala Undeclared’18
By assessing the sticker and graffiti art of America and Japan, evaluating the motives of the artists, and conducting interviews with graffiti artists (within the street art community termed “writers”), this research identified a set of common themes and motifs: anti-authoritarianism, environmentalism, distrust of nuclear energy, and a love of hip-hop culture.

Advised by Professor Allan Bird

19. SHORT SALE OR SHORT STICK? UNDERSTANDING ARMS-LENGTH POLICIES AND THEIR IMPACT ON SHORT SALE BUYBACK PROGRAMS
Rose Leopold CSSH’17
This research compared the responses of four states (California, Massachusetts, Florida and Illinois) to the Federal Housing Finance Agency’s “arms-length policy,” which prevents borrowers from buying back their home in the event of a short sale.

Advised by Governor Michael Dukakis

20. PROTECTING PLANES FROM THE DANGERS OF WEATHER
Thomas Mage COE’18
This research focused upon developing a hydrophobic coating that could offer planes protection in dangerous weather conditions.

Advised by Professor Katherine Ziemer and Dr. Lucas Landherr
21. SOCIAL EFFECTS OF COFFEE SHOPS IN THE JORDAAN NEIGHBORHOOD OF AMSTERDAM
James Card COE’18, Hayden Henderson COE’18, Joseph Schenosky CSSH’18
This project investigated the effects that the industrialized sale of cannabis from coffeeshops had on the social framework of the Jordaan neighborhood.

Advised by Professor Natasha Frost

22. TECHNOLOGY AND DECISION-MAKING IN BOSTON PUBLIC SCHOOLS: WHY CHROMEBOOKS?
Allison Traylor CSSH’18, Eric Holland DMSB’17
This study sought to help educators and decision-makers both in Boston Public Schools and elsewhere understand the district’s typical decision-making processes for the acquisition of computer technologies, especially the how and why of the district’s large purchase of Chromebooks in 2014.

Advised by Dr. Polly Attwood and Dr. Gail Matthews-DeNatale

23. VICTIMS OF SEX TRAFFICKING: HOW THE PAST IS AFFECTING FUTURES
Akiera Gilbert CSSH’18
This project briefly analyzed the history of sexual trafficking within the United States and surveyed the opinions of professionals working to combat sex trafficking on the state of the industry today.

Advised by Professor Leo Beletsky

24. DIVERSITY AND DISCOURSE: ADDRESSING RELIGION IN THE CLASSROOM
Lindsey Bressler CSSH’18, Taylor Straatmann CSSH’18
This project examined the role of religion in public elementary school classrooms in Missouri and New York. Input from teachers, parents, religious leaders and interfaith leaders informs an assessment of the challenges presented by the issue.

Advised by Professor Elizabeth Bucar
25. DOVE SCIENCE: RANDALL FORSBERG AND FREEZE VOTER 84
Kimberly Dinehart CSSH’18
This research project aims to determine the role anti-nuclear activist Randall Forsberg played in the Nuclear Freeze Campaign leading up to the 1984 elections.

Advised by Professor Gretchen Heefner

26. COMPARING THE ECONOMIC DECISIONS OF COLLEGE STUDENTS IN LATIN AMERICA AND THE UNITED STATES
Brett Krutiansky CCIS’18, Berta Bartoli CSSH’18, Macarena Flores Kuri CSSH’18
This project invited students from different cultural backgrounds to complete economic games in order to determine the role of both cultural and educational background on their decision-making.

Advised by Professor William Dickens

RESEARCH EXPERIENCES FOR UNDERGRADUATES AND RESEARCH INTERNSHIPS

27. TO PASS OR NOT TO PASS? A QUESTION OF INTERPERSONAL SYNERGISTIC DYNAMICS
James Evans COS’18
This study aimed to model everyday tasks that require a decision of whether to cooperate or to act alone, and to understand influences that affect subjects’ decision-making.
With Auriel Washburn, Lynden K. Miles, Michael Richardson (University of Cincinnati)

28. METHOD TO ENHANCE SCHEDULED ARRIVAL ROBUSTNESS
Diana Regalbuto COE’18
MESAR is an algorithm that automatically adjusts the scheduled arrival times of aircraft’s on-the-go in response to mid-flight disturbances, such as
turbulence or medical emergencies.
With Shannon Zelinski, Jaewoo Jung, Savvy Verma, Debbi Ballinger (NASA Ames Research Center)

29. MILLIMETER WAVE WHOLE BODY SCANNING RADAR
Thurston Brevett COE’18
This system seeks to detect explosive-related threats by analyzing reflectivity, a property of a material, and to distinguish between two important types of materials.

With Professor Carey Rappaport, Jose Martinez, Borja Gonzalez-Valdes (Northeastern University)

30. THE EFFECT OF DIFFERENT DRYING ENVIRONMENTS ON MICROCRACKING IN ALKALI-ACTIVATED SLAG
Kristina Bennett COE’18
The goal of this research was to explore the causes of microcracking in slag-based alkali-activated materials (AAMs).

With Antoine E. Morandeau, Claire E. White (Princeton University)

CLINTON GLOBAL INITIATIVE UNIVERSITY COMMITMENTS TO ACTION

31. SOCIAL ENTERPRISE INSTITUTE STUDENT ASSOCIATION
Aline Beylerian CSSH’17, Becky Darling CSSH’15, Molly Mohr CSSH’16
Through a series of panels and events, this project aims to unite students interested in learning about social enterprise, educate and inform diverse members of the university community about social entrepreneurship, and serve as a resource for students who want to be actively involved in the Social Enterprise Institute.

32. EMPOWER AT-RISK FOSTER YOUTH TO GAIN ECONOMIC OPPORTUNITY
Justine Fischer COS’15
This 8-week pilot program partners with the Foster Skills organization to teach foster youth workplace etiquette and transferable skills in three different areas—writing, basic algebra, and computer skills—via theme-based learning techniques.
Our special thanks to

Dr. Susan Ambrose for delivering our keynote
&
to the generous faculty members
whose mentorship made the research on display this evening possible.

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Dr. Polly Attwood
Professor Sophie Bacq
Professor Emanuela Barberis
Professor Leo Beletsky
Professor Allan Bird
Professor Elizabeth Bucar
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