

FALL FRONTIERS

A RESEARCH POSTER EXHIBITION

THE 3RD ANNUAL FALL CELEBRATION OF
UNDERGRADUATE SCHOLARSHIP, INNOVATION,
AND CREATIVITY

October 28, 2015

5:00 p.m. – 7:00 p.m.

Wilbur Cross South Reading Room

UConn

ENRICHMENT PROGRAMS

OFFICE OF
UNDERGRADUATE RESEARCH

Sponsored by
The University of Connecticut

Office of Undergraduate Research
Enrichment Programs
Honors Program

About Frontiers in Undergraduate Research

The Office of Undergraduate Research has sponsored the Frontiers in Undergraduate Research Poster Exhibition each spring for the past eighteen years. In Spring 2015, over 230 students presented posters for 207 research projects. The projects spanned the disciplines and included both independent research and work done in collaboration with other undergraduates as well as graduate student and faculty mentors.

The Office of Undergraduate Research is pleased to sponsor the 3rd Annual Fall Frontiers Poster Exhibition. With tremendous growth in the number of undergraduate researchers and increased funding available to students, this annual Fall poster exhibition provides another opportunity for UConn's top student researchers to share their exciting work.

3rd Annual Fall Frontiers Poster Exhibition

Poster Exhibition

Wednesday, October 28, 2015
5:00 p.m. – 7:00 p.m.

Introduction and Welcome

Caroline McGuire, Director, Office of Undergraduate Research

Keynote Speaker

Cameron Faustman, Associate Dean of Academic Programs, College of Agriculture, Health and Natural Resources; Director, Ratcliffe Hicks School of Agriculture; and Professor, Department of Animal Science

Closing Remarks

Jennifer Lease Butts, Assistant Vice Provost, Enrichment Programs, and Director, Honors Program

Student Posters and Presenters

This listing of projects includes the undergraduate student authors and their faculty mentors. Many projects also include the contributions and mentorship of dedicated graduate students and post-doctoral scholars. In some cases students work with faculty outside their school or college; in most cases, research is grouped according to the student's major.

1. ATLAS Arm - Cost Effective Prosthesis Using Additive Manufacturing and Open Source Electronics

Stephen Hawes, Mechanical Engineering

Advisor: Anson Ma, Assistant Professor, Chemical and Biomolecular Engineering

2. The Fabrication of Drug Encapsulated Microparticles for the Purpose of Drug Delivery for Pain Management

Anurag Ojha, Biomedical Engineering

Advisor: Sangamesh Kumbar, Assistant Professor, Orthopaedic Surgery, UConn Health

3. Encapsulation of Hydrophobic Quantum Dots in Nanodisc Lipid Bilayers: A Novel Imaging Probe

Justin Letendre, Biomedical Engineering

Advisor: Mu-Ping Nieh, Associate Professor, Chemical and Biomolecular Engineering

4. Growth of ZnO Nanocolumns on Silica Nanospheres Using Glancing Angle Pulsed Laser Deposition

Nico Wright, Materials Science and Engineering and German Studies

Advisor: Sarath Witanachchi, Physics, University of South Florida

5. Solution Precursor Plasma Spray

Kevin Yong, Materials Science and Engineering

Advisor: Balakrishnan Nair, President, HiFunda LLC

Advisor: Jiwen Wang, Senior Research Scientist, HiFunda LLC

6. Machine Learning Algorithms and Pattern Recognition for Brain-Computer Interfaces

Ashley Dumaine, Computer Science and Engineering

Advisor: Laurent Michel, Associate Professor, Computer Science and Engineering

7. Patient Derived and Intra-Operatively formed Biomaterial for Tissue Engineering

Shalmli Joshi, Biomedical Engineering

Advisor: Syam Nukavarapu, Assistant Professor, Orthopaedic Surgery, UConn Health

8. An Investigation of Potential Changes in Resources to Promote Health Equity

Moe Uddin, Biomedical Engineering

Advisor: Lawrence Young, M.P.H., Center for Health Equity, Saint Francis Hospital and Medical Center

Advisor: Luis Diez-Morales, M.D., Associate Professor, UConn Health and Saint Francis Hospital

9. Health Care Reform, Fertility and Infant Health: Evidence from Massachusetts

Andrew Carroll, Economics and Psychology

Advisor: David Simon, Assistant Professor, Economics

10. Demographics Reveal Gaps in Food Access and Inequality

Christopher Bruno, Resource Economics

Advisor: Ben Campbell, Assistant Professor and Extension Economist, Agricultural and Resource Economics

11. Ensuring Economic Growth Promotes Economic and Social Rights: The Role of Gender Equality in Education

Gwendolyn Peyton, Economics

Advisor: Susan Randolph, Associate Professor, Economics

12. Parents' Ideas about School Involvement in Three Cultural Groups

Dan Carvalheiro, Human Development and Family Studies

Advisor: Sara Harkness, Professor, Human Development and Family Studies

13. Underrepresentation of Minorities in Gifted and Talented Programs: A Content Analysis of Five District Program Plans

Jessica Stargardter, Elementary Education

Advisor: E. Jean Gubbins, Professor, Educational Psychology

14. Enhancing Engagement in Education with the Integrated Vocabulary of Comprehension System

Timothy Henning, Digital Media and Design

Advisor: Sharon Ware, Assistant Research Professor, Educational Psychology

Advisor: Michael Coyne, Professor, Educational Psychology

15. Development of Polysyllabic Word Reading Skill in Elementary-Age Children: Insights from Adult Performance

LaShawna Thompson, Elementary Education

Advisor: Devin Kearns, Assistant Professor, Educational Psychology

16. The Role of Empowerment in Undergraduate Women's Honors Programs

Casey Healey, Economics and Spanish

Advisor: Jaclyn Chaney, Assistant Director for Curriculum, Assessment, and Planning, Honors Program

Advisor: Paula Wilmot, Assistant Director, Honors Residential Communities and Programming, Honors Program

17. How Your Friends Keep You Healthy: Social Support as a Stress Prevention Resource

Benjamin White, Psychology

Advisor: Bradley Wright, Associate Professor, Sociology

18. Use and Acceptance of Technical Signs in Deaf Higher Education

Emily Stassen, Molecular and Cell Biology and Individualized Major:
American Sign Language and Deaf Culture

Advisor: Diane Lillo-Martin, Distinguished Professor, Linguistics

19. A New Methodology for Understanding Development through Joint Action

Cassandra Zwarycz, Psychology and Human Development and
Family Studies

Advisor: Adam Sheya, Assistant Professor, Psychological Sciences

20. Esperanto: The Ones Who Hope

Catherine Thomas, Molecular and Cell Biology

Edward Anderson, Mechanical Engineering

Advisor: Charles Hagen, Associate Professor, Art and Art History

21. Neural Processing of Sound in Adult Bilinguals

Michael Figueiredo, Speech, Language, and Hearing Sciences

Advisor: Erika Skoe, Assistant Professor, Speech, Language, and
Hearing Sciences

22. Mu Rhythm and Social Cognitive Functioning in Early Childhood

Yayla Lopez, Psychology

Joanna Vann, Human Development and Family Studies

David LoTurco, Psychology

Advisor: Kimberly Cuevas, Assistant Professor, Psychological
Sciences

23. Spoodle's Control: A Measure of Portion Size and Food Selection - A Pilot Study

Joan Daniel, Psychology

Ashley Mills, Psychology and Human Development and Family
Studies

Advisor: Amy Gorin, Associate Professor, Psychological Sciences

24. Cultivating Change: Building a Cooperative Garden to Improve Local Communities

Kayla Rutland, Nutritional Sciences

Advisor: Phoebe Godfrey, Assistant Professor in Residence, Sociology

25. Planting Seeds for the Future: A Childhood Nutrition and Gardening Study

Elizabeth Lamonte, Nutritional Sciences

Advisor: Heather Peracchio, Visiting Assistant Professor, Allied Health Sciences, Bethel Extension Center

26. The Comparison of Maternal Descriptions of Late Preterm and Full Term Infant Breastfeeding Behavior

Lindsay Moore, Nursing

Advisor: Ruth Lucas, Assistant Professor, Nursing

27. Meta-Analysis of Bariatric Surgery in Obese Adolescent Patients

Katie Feeney, Allied Health Sciences

Ali Corso, Individualized Major: Community Health and Wellness

Advisor: Tania Huedo-Medina, Assistant Professor, Allied Health Sciences

28. The Relationship between Reminiscence Functions, Depressive Symptoms, Physical Activity, and Chronic Pain in Older Black Adults

Rubby Koomson, Nursing

Advisor: Juliette Shellman, Associate Professor, Nursing

29. Type 1 Diabetes: The Liminal Space between Ability and Disability

Victoria Sylvestre, Nursing

Advisor: Erin Eighan, Ph.D. Candidate, English

30. Between Citizenship and Nationality: An Overview of Federal Citizenship Legislation for the U.S. Pacific Island Territories, 1900 to Present

Maye Henning, Political Science and Human Rights

Advisor: Charles Venator-Santiago, Associate Professor, Political Science

31. Politics of Water in Lima, Peru and Buenos Aires, Argentina

Renato Mugerza, Latin American Studies and Economics

Advisor: Veronica Herrera, Assistant Professor, Political Science

32. The White Male Protagonist in Post-9/11 Literature: Depression and Contemporary Solutions

Rebecca Hill, English

Advisor: Kathy Knapp, Associate Professor, English

33. The Urban Canvas: Visualizing the Cultural Pulse of Italian City Life through Public Art

John Colavito, Italian Literary and Cultural Studies and Biological Sciences

Advisor: Philip Balma, Associate Professor, Literatures, Cultures, and Languages

34. So Easy a Woman Could Do It

Alana Valdez, Art - Illustration

Advisor: Cora Lynn Deibler, Professor and Department Head, Art and Art History

35. Emoticare

Melissa Calderon, Digital Media and Design

Kristina Krusiy, Digital Media and Design and Psychology

Advisor: Phil Dwire, Assistant Professor in Residence, Digital Media and Design

Advisor: Steve Harper, Assistant Professor in Residence, Digital Media and Design

36. Enacted Violence: Materiality, Cultural Memory, and African American Performance

Brigid DeAngelis, Theatre Tech and Design

Advisor: Adrienne Macki Braconi, Assistant Professor, Dramatic Arts

37. The Music Editing Process: The Preparation of a Scholarly Edition of Dane Rhudyar's Late Piano Work, "Autumn"

Jonathan Schmieding, Music

Advisor: Ronald Squibbs, Associate Professor, Music

38. Hyaline Songs: An Instrumental Album about being Chinese American, Transgender, and Finding the Way Home

Calliope Wong, English

Advisor: Kenneth Fuchs, Professor, Music

39. Color Out Cancer

Jonathan Markovics, American Studies

Advisor: Lisa Hastings, Coordinator, Community Outreach Program and Off-Campus Housing, UConn Avery Point

40. Eleframes

Ashlesha Dhuri, Cognitive Science

Caleb Gates, Mechanical Engineering

Rosse Gates, Mechanical Engineering

Gazment Sosoli, Mechanical Engineering

Advisor: Matt Cremins, CEO, Voda Water

41. Major League Baseball's Next Expansion Team

Samuel Marshall, Accounting

Daniel Gutch, Accounting

Advisor: Steven Wisensale, Professor, Human Development and Family Studies

Advisor: Larry Gramling, Associate Dean and Assistant Professor, Business

42. Commercialization Plan Development

Chia-Yi Jean, Business Management

Advisor: Eric Sirois, CEO, Dura Biotech

43. Antioxidant Properties of Vitamins in Dietary Supplements

JJ Bivona, Biological Sciences

Advisor: Michael Vajdy, Ph.D., Co-founder, President and CSO, EpitoGenesis, Inc.

44. Dietary Influences on Apolipoprotein C-III Expression

Nelson Del Pilar, Molecular and Cell Biology

Advisor: Alison Bloom Kohan, Assistant Professor, Nutritional Sciences

45. Immune Checkpoint Inhibitor Lymphocyte Activation Gene-3 (LAG-3) Missense Variant rs870849 is Significantly Associated with Decreased Plasma LAG-3 Levels

Christian Caceres, Nutritional Sciences

Advisor: Annabelle Rodriguez-Oquendo, Professor, Cell Biology, UConn Health

46. Investigating the Biological Function of TRIM50 in Gastric Parietal Cells

Henry Guo, Biological Sciences

Advisor: Jianjie Ma, Professor, Surgery, The Dorothy M. Davis Heart and Lung Research Institute, The Ohio State University

Advisor: Pei-Hui Lin, Assistant Professor, Surgery, The Dorothy M. Davis Heart and Lung Research Institute, The Ohio State University

47. Glycosylation of the S-Layer Glycoprotein in Haloferax volcanii Impacts Horizontal Gene Transfer and Adherence in Biofilms

Klara Reisch, Molecular and Cell Biology

Advisor: Robertson Papke, Associate Professor, Molecular and Cell Biology

48. Manipulations of Metallothionein and its Effects on MDA-MB-231 Breast Cancer Cells: A Potential Target for Breast Cancer Therapeutics

Vinay Maliakal, Molecular and Cell Biology

Advisor: Michael Lynes, Professor and Department Head, Molecular and Cell Biology

49. A Novel Class of Mitotic Arrest Agents Prime Colon Cancer Cells for Apoptosis: Regulated by p53 and Aurora kinase B

Michael Bond, Molecular and Cell Biology and Chemical Biology

Michelle Yeagley, Physiology and Neurobiology

Advisor: Charles Giardina, Professor, Molecular and Cell Biology

Advisor: Dennis Wright, Professor, Pharmaceutical Sciences

50. Closely Related Protein Structures by NMR

Megan Brady, Molecular and Cell Biology

Advisor: Andrei Alexandrescu, Professor, Molecular and Cell Biology

51. Synthesis and Purification of Cas9 for in vivo Gene Editing

John Averill, Molecular and Cell Biology

Advisor: Joseph LoTurco, Professor, Physiology and Neurobiology

52. The Effect of Bacterial PmtA on Jurkat T Cell Proliferation

Brian Greco, Biological Sciences

Advisor: Michael Lynes, Professor and Department Head, Molecular and Cell Biology

53. Melanoma Immune Evasion: A Computational Investigation of Differential Gene Expression

Cameron Flower, Biomedical Engineering

Advisor: Sahar Al Seesi, Assistant Professor in Residence, Computer Science and Engineering

Advisor: Pramod Srivastava, Professor, Immunology, and Director, Carole and Ray Neag Comprehensive Cancer Center

54. Bispecific Antibodies to Inhibit HIV-1 Infection

James Chapman, Chemical Engineering

Advisor: Richard Sutton, Associate Professor, Department of Internal Medicine, Yale School of Medicine

Advisor: Yi-Jun Zhang, Associate Research Scientist, Department of Internal Medicine, Yale School of Medicine

55. Comparison Between SSRI's and DAT Inhibitors on Effort Related Choice Behaviors in Rodents

Yumna Arif, Biological Sciences

Advisor: John Salamone, Distinguished Professor, Psychological Sciences

56. Utilization of Cell Free Translation to Test Post-Glycosylation Diversification Compounds

Asahi Hoque, Molecular and Cell Biology and Human Rights

Advisor: Victoria Robinson, Associate Professor, Molecular and Cell Biology

57. Softer Side of Chemistry: Covalent Modification of BSA for Silica Nanoparticles

Rashmi Pashankar, Economics

Advisor: Challa Kumar, Professor, Chemistry

58. Progress Toward the Total Synthesis of Tubingensin B

John Ovian, Chemistry

Advisor: Neil Garg, Professor, Chemistry and Biochemistry, University of California, Los Angeles

59. Bobbitt's Salt as a Mild Oxidant to Access the Nitrile Functionality

Sherif Eldirany, Chemistry

Advisor: William Bailey, Professor, Chemistry

60. Avian Dispersal of the Hemlock Woolly Adelgid

Nicholas Russo, Ecology and Evolutionary Biology

Advisor: Morgan Tingley, Assistant Professor, Ecology and Evolutionary Biology

Advisor: Carole Cheah, Connecticut Agricultural Experiment Station

61. Transporting the Impacts of Global Warming through the Food Chain in Coral Reefs

Ronald Tardiff, Marine Science and Maritime Studies

Advisor: Pia Kegler, Ph.D. Candidate, Leibniz Center for Tropical Marine Ecology

62. Exploring the Association between Singing Behavior and Cognitive Ability in Long-billed Hermits, *Phaethornis longirostris*

Virgilio Lopez, Molecular and Cell Biology

Advisor: Marcelo Araya-Salas, Ph.D. Candidate, Animal Behavior, University of New Mexico

63. Comparison of Microhabitats of Eastern Cottontails and New England Cottontails in Connecticut

Sara Weitkamp, Natural Resources

Advisor: Tracy Rittenhouse, Assistant Professor, Natural Resources and the Environment

64. Impacts of Urbanization on the Storm Drain Ecosystem: A Comparison of Micro and Macro Scale Variation

Nicholas Arisco, Biological Sciences

Advisor: Mark Urban, Associate Professor, Ecology and Evolutionary Biology

Alphabetical Listing of Presenters with Poster Numbers

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Special Thanks

The Office of Undergraduate Research wishes to thank the deans of the represented schools and colleges, the Provost's office, and the generous donors to the Honors Program for their support of undergraduate research through contributions to the Summer Undergraduate Research Fund, the UConn IDEA Grant, and OUR grant programs. In addition, we thank the following individuals for their support:

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Jennifer Lease Butts, *Assistant Vice Provost for Enrichment Programs and Director of the Honors Program*

Cheryl Cranick, *Communications, Honors Program*

Student Volunteers for the Fall Frontiers Poster Exhibition

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