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

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 Muguerza, 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  
Brighid DeAngelis, Theatre Tech and Design  
Advisor: Adrienne Macki Braconi, Assistant Professor, Dramatic Arts

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

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
<table>
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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:

Susan Herbst, President, University of Connecticut

Mun Choi, Provost and Executive Vice President for Academic Affairs

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

Office of Undergraduate Research

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