Summer Undergraduate Research Forum
Friday, July 31, 2015
## 2015 Summer Undergraduate Research Forum

**Friday, July 31, 2015**

### Schedule of Events

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Dr. Melissa DeBiasse

Melissa DeBiasse did her undergraduate studies at Indiana University and has a Master’s degree in Marine Biology from Nova Southeastern University. She completed her PhD in Biology under the mentorship of Michael Hellberg at Louisiana State University and is currently a postdoctoral researcher in Morgan Kelly’s lab at LSU. She is broadly interested in the processes that generate biodiversity in marine ecosystems. Melissa’s research uses genomic and transcriptomic data to examine the distribution of genetic and phenotypic variation within and among populations of marine invertebrates, particularly sponges, corals, and crustaceans.

Dr. Matthew Patterson

Matthew Patterson holds a BA in Physics from Rice University and completed a PhD in Physics from Louisiana State University in 2014 under the supervision of Phillip Sprunger. Currently he is a postdoctoral researcher in the LSU Superfund Research Center in LSU’s Department of Chemistry. In general, his research is focused on the fundamental properties of metal and metal oxide nanoparticles that makes them useful as catalysts in chemical reactions — their morphology, electronic structure, thermal stability, etc. Matt’s research typically focuses on using ultrahigh vacuum techniques such as scanning tunneling microscopy, photoelectron spectroscopy, electron energy loss spectroscopy, X-ray absorption spectroscopy, and more to prepare and characterize model nanoparticle systems.
The 22nd Annual Summer Undergraduate Research Forum (SURF) is pleased to showcase the numerous undergraduate students who have engaged in summer research projects this year at institutions throughout the LSU System.

SURF participants represent programs including:

Center for Computation & Technology Research Experiences for Undergraduates (CCT REU)

Initiative for Maximizing Student Diversity Program (IMSD)

LSU/BRCC Bridges to the Baccalaureate Program (Bridges)

LSU-Howard Hughes Medical Institute Program (HHMI)

LSU-Howard Hughes Medical Institute Professor’s Program (HHMI Professor’s)

Louisiana Alliance for Simulation-Guided Materials Applications (LASiGMA)

Louisiana Biomedical Research Network (LBRN)

Louisiana Science, Technology, Engineering, and Mathematics Research Scholars Program (LA-STEM)

Robert Noyce Scholarship Program for Geaux Teach (NOYCE)

Office of Strategic Initiatives Research Experiences for Undergraduate (OSI REU)

Physics & Astronomy Research Experiences for Undergraduates (P&A REU)

Supervised Undergraduate Research Experience (SURE)

High School Research (Math Circle)

Individual student researchers in various laboratories across LSU

SURF is sponsored by the programs listed above. Additional support was provided by the LSU College of Science.

2. **Sarah Ainsworth** (LSU, HHMI), Mike Keowen, Jon Fletcher, Mike Kearney, and Ann Chapman, LSU School of Veterinary Medicine, Veterinary Clinical Sciences, “Evaluation of Adrenocorticotropic Hormone (ACTH) Response to Varying Doses of Thyrotropin Releasing Hormone (TRH) in Normal Horses.”


4. **Frances Arinze** (LSU, OSI), Crystal Johnson, LSU Environmental Sciences, “Identifying Pathogenic Bacteria From Avian Cloacal and Fecal Samples Using Multiplex PCR.”

5. **Anna Baglione** (Ohio State, CCT), Stephen David Beck and Chris Branton, LSU School of Music and Center for Computation & Technology, “Many Devices, One Orchestra: An Internet of Things Approach to Digital Music Collaboration.”

6. **Karina Bercan** (Simmons College, CCT), Chris Branton, Brygg A. Ullmer and Alexandre Siqueira, LSU Electrical and Computer Engineering and Center for Computation & Technology, “Visualizing Supercomputer Cluster Activity with Kivy to Improve Usability.”

7. **Anthony Blankenship** (LSU-S, LBRN), Barzegar, Mansoureh; Shang, Chaowei; Huang, Shile, LSUHSC-S Biochemistry and Molecular Biology, “The Effect of Fungal Metabolite Fusarochromanone on Various Cell Types.”

8. **Christopher Bloise** (LSU, Other), Logan Kinamore, Samuel Shaw, Brent Stanfield, Vladimir Chouljenko and K. Gus Kousoulas, LSU School of Veterinary Medicine, Pathobiological Sciences, BioMMED, “Next Generation Sequencing of a Herpes Simplex Clinical Isolate.”

9. **Kerigan Bowman** (LSU, HHMI), Zishou Cheng and Huangen Ding, LSU Biological Science, “Disruption of Iron-sulfur Clusters in Proteins by Combination of Blue Light and Flavin Mononucleotide (FMN).”


11. **James Burns** (BRCC, Bridges), Sumit Libi and Cristina Sabliov, LSU Biological & Agricultural Engineering, “Nanoprecipitation Technique for Synthesis of PLGA Nanoparticles in Millifluidic Chip.”


13. **Brandon Byrd** (LSU, IMSD), Graca Vicente and Ning Zhao, LSU Chemistry, “8-Halogenated BODIPYs.”

14. **Raquel Candela** (Centenary, LBRN), Jiucheng He, Haydee Bazan and Nicolas Bazan, LSUHSC-NO Neuroscience Center, “PEDF + DHA Stimulate Corneal Nerve Regeneration in Mice After Injury.”

15. **Isaiah Carr** (Norfolk State, CCT), Samuel Kellar, Ka Ming Tam, and Juana Moreno, LSU Physics & Astronomy and Center for Computation & Technology, “Solving the Schrödinger Equation for a System with a Disordered Potential.”

16. **Jasmine Chappell** (Tuskegee, LA-SIGMA), Yan Shen and Francisco Hung, LSU Chemical Engineering and Center for Computation & Technology, “Molecular Simulation of a Deep Eutectic Solvent Inside Nanoporous Materials.”

17. **Seleipiri Charles** (LSU, SURE), Corey Landry and Adam Melvin, LSU Chemical Engineering, “Single Cell Encapsulation Using a Microfluidic Droplet Generator.”

111. **Candace Chatman** (Baton Rouge Magnet High School, Math Circle), Paxton Turner, LSU Mathematics, “Semiregular Tilings.”

112. **Albert Chen** (McKinley High School, Math Circle), Spencer Roby and Tyler Meyer, LSU Mathematics, “The Cookie Clicker Problem.”

18. **Federico Cifuentes-Urtubey** (University of Maryland – Baltimore County, CCT), David Koppelman, LSU Electrical and Computer Engineering and Center for Computation & Technology, “Developing a Representativeness Measurement for Program Execution with Instruction-level Visualization.”


21. **Michael Daniel** (LSU, LA-STEM), Nia Hurst and Kanchan Maiti, LSU Oceanography and Coastal Sciences, “Hypereutrophication in the University Lakes: What is phosphorus’ role in this?”

23. Viet Q. Dao (LSU, HHMI), Crystal N. Johnson and William J. Platt, LSU Environmental Sciences, “Use of polymerase chain reaction and gel electrophoresis to examine bacterial diversity in pine savanna soils.”


26. Siddhartha H. Dhakal (ULM, LBRN), Grant Gallien and Timothy P. Foster, LSUHSC-NO Microbiology, Immunology and Parasitology, “Design, Engineering and Evaluation of the host-targeted metabolic modulators for the control of viral replication.”

27. Rebecca DiTusa (LSU, LA-SiGMA), M. Curtis, J Hebert, Z. Diao and R. Jin, LSU Physics & Astronomy, “Growth of AMnT2 (A= Sr, Ba; T= Bi, Sb) Single Crystals.”

28. Christina Dorsett (LATECH, LBRN), Maria F. Dutreil, Amy L. Strong, Melysssa R. Bratton, Thomas E. Weise, Matthew E. Burow and Bruce A. Bunnell, TULANE-MC Pharmacology, Center for Stem Cell Research and Regenerative Medicine, “Bisphenol A and its analogs enhance adipogenic differentiation of human adipose stem cells.”

29. Quoc-Nam Duong (ULM, LBRN), Mansoureh Barzegar, Chaowei Shang and Shile Huang, LSUHSC-S Biochemistry, “The Effect of Novel Compound LU-188 on Cancer Cells.”


31. Peace Effion Ekpo (Southern University-NO, LBRN), Aram Astrayan and Nicolas Bazan, LSUHSC-NO Neuroscience Center of Excellence, “NPD1 is Regulating Inflammasone Formation In RPE Cells.”

32. Jonte O. Ellison (LSU, IMSD), Darlene L. Downey, Carol H Carter-Wiendtjes, Deepak Bhatnagar and Matthew K Gilbert, USDA-ARS Food and Feed Safety Unit, “Characterization of a putative secondary metabolic gene cluster in Aspergillus flavus strain Af70 and its role in development and toxin production.”

33. Lacey Falgout (Southeastern LA University, LBRN), Binhua Ling, TNPRI Comparative Pathology, “Viral Detection in Lymphatic Tissues of SIV-infected Chinese Rhesus Macaques on Antiretroviral Therapy.”

34. Summer Flowers (LSU, CCT), Christopher Granier, Jonathan Dowling and Georgios Veronis, LSU Electrical and Computer Engineering and Center for Computation & Technology, “Optimized Aperiodic Multilayer Structures For Countermeasure Applications.”

35. Jordan Frick (LSU, LA-SiGMA), Jordan R. Frick, Yifan Yang, Matthew C. Patterson, Phillip T. Sprunger, William C. McKee and Ye Xu, LSU Physics & Astronomy, “CO absorption of Au and Pt nanoclusters on h-BN.”


38. Scott Gaignard (LSU, HHMI), M. Del Rocio Banos-Lara and Antonieta Guerrero-Plata, LSU Pathobiological Sciences and Center for Experimental Infectious Disease Research, “Regulation of the Antiviral Immune Response by Mucin 21 Expression in Human Respiratory Infections.”

39. Grant Gallien (ULM, LBRN), Siddhartha H. Dhakal and Timothy P. Foster, LSUHSC-NO Microbiology, Immunology, and Parasitology, “Evaluation of PPAR-Associated Host Metabolic Pathways for Development of Host-Targeted Antivirals.”

40. Joseph Z Gombeda (BRCC, Bridges), Leah Garber and Daniel Hayes, LSU Biological Engineering, “Biomedical Applications of Thiol-acrylate Polymerization.”

41. Genesis Green (Southern University-BR, LBRN), Nicolas G. Bazan and Pranab K. Mukherjee, LSUHSC-NO Neuroscience Department, “Signaling in ARPE-19 Cells Survival Under Stress.”


43. Kevin Hartline (LSU, LA-SiGMA), Vishnu Khaspa and Gerald Baumgartner, LSU School of Electrical Engineering and Computer Science, “Interfacing the TCE Language Frontend to the Ohio State/PNNL Equation Interpreter.”

44. Jessica Hebert (LSU, LA-SiGMA), D.P. Young and J.F. DiTusa, LSU Physics & Astronomy, “Synthesis and Characterization of Ferromagnetic FeScGe and MnScGe having the Fe2P Crystal Structure.”

45. Rachel Horne (BRCC, Bridges), Paul Rider, Muzammel Haque and Konstantin Gus Kousoulas, LSU Pathobiological Sciences, “Generation of Antibodies Against Specific Herpes Simplex Virus Type 1 (HSV-1) Proteins.”
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46. Reid Horton (Stony Brook University, CCT), Joohyun Kim, LSU Center for Computation & Technology, “Distributed Suffix Trees on Apache Hama.”

47. Angela Huang (The College of New Jersey, CCT), Kang Zhang and Xin (Shane) Li, LSU Electrical and Computer Engineering and Center for Computation & Technology, “Computational Forensics: Creating a Digital Environment for Facial Synthesis and Reconstruction.”


49. Erik Jensen (Old Dominion University, CCT), Shang Zhi, Feng Chen and Mayank Tyagi, LSU Petroleum Engineering and Center for Computation & Technology, “Fluid Flow through Porous Media Simulation Scalability with OpenFOAM and MPI.”


51. Brianne S. Jones (BRCC, Bridges), Nicholas Braud, Ioan H. Negulescu and Roger A. Laine, LSU Biological Sciences, “Identifying a Protein Found in Formosan (Soldier) Termite Secretions Using SDS PAGE Gel Electrophoresis and the Zymogram Method.”

52. Jasmine Jones (LSU, OSI), Rui Zhang and David Heins, Mary Bird Perkins Medical Physics, “Calibrating the High Density Magnetic Port within Tissue Expanders to Achieve more Accurate Dose Calculations for Postmastectomy Patients with Immediate Breast Reconstruction.”

53. Hailey Katzman (LSU, NOYCE), Scott Baldridge, LSU Mathematics, “How Can We Visualize a Matrix?”


55. Charles W. Kazer (Swarthmore, CCT), Richard Platania, Sayan Goswami, Arghya Kusum Das and Seung-Jong Park, LSU Electrical and Computer Engineering and Center for Computation & Technology, “Distributed Genome Preprocessing Using Apache Hadoop.”

56. Saher Khan (LSU, HHMI), Wesley Maddox, Tyler Rodriguez and Evanna Gleason, LSU Biological Sciences, “Exploring the Expression of Cl- Transport Proteins in Retinal Amacrine Cells.”

57. Jenifer Kidd (BRCC, Bridges), Samia O’Bryan, Yan Luo and Michael Mathis, LSU Comparative Biomedical Sciences, “Constructing an Adenovirus for Colon Cancer Targeted Therapy.”

58. Logan C. Kinamore (LSU, Other), Christopher Bloise, Samuel Shaw, Brent Stanfield, Vladimir Chouljenko and K. Gus Kousoulas, LSU School of Veterinary Medicine, Pathobiological Sciences, BioMMED, “Next Generation Sequencing of a Herpes Simplex Clinical Isolate.”


61. Thomas Lavastida (LSU, CCT), Shuai Zheng, Wuyi Yu and Xin (Shane) Li, LSU Electrical and Computer Engineering and Center for Computation & Technology, “Developing an Indoor Localization and Mapping System for iRobot using Microsoft Kinect and Raspberry Pi.”


63. Ryan LeBlanc (BRCC, Bridges), Ryoichi Teruyama, LSU Biological Sciences, “Sexually Dimorphic Oxytocin Receptor Expressing Cells in the Mouse Hypothalamus: A Histological Analysis.”

64. Nathaniel Leslie (Harvey Mudd College, P&As), Peter Diener, LSU Physics & Astronomy and Center for Computation & Technology, “Evolution of Coupled Scalar Modes in a Rotating Black Hole Spacetime.”


66. Samuel Li (Episcopal, Math Circle), Spencer Roby and Tyler Meyer, LSU Mathematics, “The Cookie Clicker Problem.”

67. Lauren Lilly (LSU, HHMI), Jacob Beckham, Amy Guitreau, Letica Torres, Terrence Tiersch and W. T. Monroe, LSU Biological Engineering, “Surface Functionalization of Microdevices to Reduce Cell Fouling.”

68. Najib Mahmud (LSU, HHMI), Joomeyoung Kim, LSU Biological Sciences, “The effect of age on DNA methylation levels of Peg3 in colorectal tissue.”

69. Brea Manuel (LSU, IMSD), Victoria Cooley, Lauren Meaux and Matthew Calamia, LSU Psychology, “Relationships Among Different Neuropsychological Tests.”

70. **Kain A. McGee** (LSU, HHMI), Ayxa R. Martinez and George M. Strain, LSU School of Veterinary Medicine, Comparative Biomedical Sciences, Clinical Neurophysiology, “Distortion Product Otoacoustic Emissions for Detecting Presbycusis in Dogs.”

71. **Jacob Meariman** (LSU, HHMI), Dinesh Deochand and Anne Grove, LSU Biological Sciences, “In vivo Reporter Gene Assay for the Transcriptional Regulator PecS from *Pectobacterium atrosepticum*.”

72. **Fatima Min-Rivas** (University of Redlands, P&A), Thomas Corbitt, LSU Physics & Astronomy, “Optimizing Micro-Fabricated Mechanical Resonators For Gravitational Wave Experiments.”


74. **Meagan Moore** (BRCC, Bridges), Ryoichi Teruyama, LSU Biological Sciences, “Salted ChiPs: Regulation of ENaC in Vasopressin Neurons by Mineralocorticoid Receptor.”

75. **Patience Mukashyaka** (Spelman College, HHMI), Sujeet Kumar, Cersten Bradley and William Doerrler, LSU Biological Sciences, “Site Directed mutational analysis of DedA/Tvp38 membrane protein family members in E.coli.”

76. **Kaitlyn Mussio** (Centenary, LBRN), Punprabhashi Vidanapathirana, Anuja Pande, Farhana Hasan, Noureen Siraj, Anne Grove and Isiah M Warner, LSU Chemistry, “Protein Separation using Cationic Ionic Liquid-PAGE.”

77. **Marilyn Ndukwe** (Xavier, LBRN), Sudarshan Thapa and Yong-Hwan Lee, LSU Biological Sciences, “Insight into the Mechanism of Pseudo-Glycosyltransferases using VldE Chimera 1.”

78. **Marie Neubrander** (Baton Rouge Magnet High School, Math Circle), Paxton Turner, LSU Mathematics, “Semiregular Tilings.”


81. **Victor Opurum** (Mississippi Valley State, HHMI), Bidur Bohara, Jiang Zhang and Bijaya Karki, LSU School of Electrical Engineering and Computer Science, “Visualization from AtomViz Documentation File.”

82. **Zinaida Osipova** (ULM, LBRN), Ibba Salomè V, Ghonim Mohamed A, Pyakurel Kusma and Boulares A Hamid, LSUHSC-NO Pharmacology, “Common and differential roles of inducible NO synthase and poly(ADP-ribose)polymerase in allergen-induced inflammation and airway hyperresponsiveness: a potential connection to NO levels.”

83. **Gavin Pappas** (LSU, Other), Adam Melvin and Nora Safabakhsh, LSU Chemical Engineering, “Rapid Uptake of Fluorescent Peptides into Intact Mammalian Cells using a B-hairpin Sequence Motif.”


85. **Eric Pavlovich** (BRCC, LBRN), Alexandra Evans and Grover Waldrop, LSU Biochemistry, “Mutation of Carboxyl Transferase on the beta subunit.”

86. **Laura Perilloux** (Centenary, LBRN), Chaowei Shang, Mansoureh Barzegar and Shile Huang, LSUHSC-S Biochemistry and Molecular Biology, “Toxic Effects of Cadmium on Cells.”

87. **Khang Pham** (LSU, LA-SIGMA), Samuel Kellar, Ka Ming Tam and Juana Moreno, LSU Physics & Astronomy and Center for Computation & Technology, “Dynamics of Bose-Einstein Condensates in Different Random Potentials.”


89. **Lina Pulgarin-Duque** (Carnegie Mellon University, CCT), Patrick Mancuso and Steven Brandt, LSU Electrical and Computer Engineering and Center for Computation & Technology, “Enhancing the Chess AI with a ‘First Blood’ Approach to an Alphabeta Algorithm.”


92. **Leonie K Robinson** (LSU, LBRN), Jorgelina Calandria, LSUHSC-NO Neuroscience Center of Excellence, “HMGB1 role in NPD1-dependent neuroprotection via wnt/b-catenin in RPE cells.”
101. **Meghana Theegala** (LSU, HHMI), René Adalberto, Chigüila Arévalo and Kayanush Aryana, LSU Dairy Science, “Effect of flaxseed on the bile tolerance of Lactobacillus acidophilus LA-K, Lactobacillus bulgaricus LB, and Streptococcus thermophilus ST-M5.”

102. **Tanner Traweek** (ULM, LBRN), Allison Richard and Jacqueline M. Stephens, PBRC Adipocyte Biology, “Physiological Responses of STAT signaling in Mammalian Models.”

103. **Kingsley Ifeanyi Uche** (Claflin University, HHMI), Ma D Banos-Lara and Antonieta Guerrero-Plata, LSU School of Veterinary Medicine, Pathobiological Sciences, BioMMED, “Role of Mucin 19 in the Innate Immune Response to Human Paramyxovirus Infections.”

104. **John A. Underwood** (Baton Rouge Magnet High School, LA-SiGMA), Cyrill Slezak and Juana Moreno, LSU Physics & Astronomy and Center for Computation & Technology, “Examining Student Learning Gains and High School Science Teachers’ Responses to Data-driven Pedagogical Interventions.”


106. **Todd C. Veale** (LSU, HHMI), Anuja R. Pande and Anne Grove, LSU Biological Sciences, “A mutagenic study of OhrR from Burkholderia thailandensis.”


109. **Zhaoqing Wang** (BRCC, Bridges), Helia Cheng and Shaomian Yao, LSU Comparative Biomedical Sciences, “Dental pulp stem cells express heat-shock protein B8 (HSPB8) regulatory MicroRNAs.”

110. **Anusha Zaman** (Baton Rouge Magnet High School, Math Circle), Candace Chatman, Marie Neubrander, Anusha Zaman, Paxton Turner and Matt Barnes, LSU Mathematics, “Semiregular Tilings.”
WE GRATEFULLY ACKNOWLEDGE THE EFFORT, PARTICIPATION AND SUPPORT OF THE MANY LSU STAFF, FACULTY AND ADMINISTRATORS WHO MAKE THIS FORUM A SUCCESS EACH YEAR

LBRN projects were supported by the National Institute of General Medical Sciences of the National Institutes of Health under Award Number P20GM103424 and by the Louisiana Board of Regents Support Fund. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health or Louisiana Board of Regents.

LSU-HHMI projects were supported in part by a Howard Hughes Medical Institute grant through the Undergraduate Biological Sciences Education Program to LSU.

HHMI Professors Program projects were supported by the Howard Hughes Medical Institute grant awarded to HHMI Professor Isiah M. Warner.

Bridges research was supported by a “Bridges to the Baccalaureate” award from the National Institute of General Medical Science of the National Institutes of Health under award number IR25GM102765.

CCT REU, LA-SiGMA, P&A REU and Robert Noyce Scholarship Program projects are supported by the National Science Foundation. Award Numbers OCI-1263236 (CCT REU) and EPS-1003897 (LA-SiGMA).

SURE projects were supported by the Louisiana Board of Regents.