2019 GRADUATE RESEARCH SYMPOSIUM

DUKE UNIVERSITY
JULY 11-14, 2019

DOC Graduate Research Symposium

Duke University, Durham, NC July 11-14, 2019

THURSDAY, JULY 11

2:00 pm - 4:30 pm Arrival and Dormitory **Check-in at Edens Quad – House 2A**

2:30 pm - 4:30 pm Industrial Poster Session – **Penn Pavilion**

4:30 pm - 5:45 pm Registration and Pizza – **Penn Pavilion**

THURSDAY EVENING ***Presiding: Gary Molander, University of Pennsylvania***

5:45 pm - 6:00 pm **Welcome – Penn Pavilion**

6:00 pm - 6:50 pm **David Nicewicz, UNC Chapel Hill**

New Avenues in Synthesis Enabled by Organic Photoredox Catalysts

6:50 pm - 7:10 pm **Sun Dongbang**
Yale University
Asymmetric Synthesis of (–)-Naltrexone

7:10 pm - 7:30 pm **Kaitie Cartwright**
The University of Kansas
Direct Decarboxylative Olefination via Photoredox/Cobalt Dual Catalysis

7:30 pm - 7:50 pm **Lucas Hernandez**
University of Illinois at Urbana - Champaign
Synthesis of Isocarbostyril Alkaloids from Benzene

7:50 pm - 8:10 pm **Conner Farley**
Purdue University
Catalytic Reductive Carbene and Vinylidene Transfer Reactions

8:10 pm - 8:30 pm **Chengpeng Wang**
University of Chicago
Direct β-Functionalization of Ketones via Pd-Catalyzed Redox Cascade

8:45 pm - 11:30 pm Reception and **Poster Session 1 – Penn Pavilion**

FRIDAY, JULY 12 ***Presiding: P. Andrew Evans, Queen's University***

8:15 am - 9:00 am Continental Breakfast – **Penn Pavilion**

9:00 am - 9:40 am **Larry Hamann, Celgene – Penn Pavilion**

Expanding the Druggable Genome through Cereblon-Mediated Protein Degradation

9:40 am - 10:00 am **Seung Wook Kim**
University of Texas at Austin
Amphiphilic π-Allyliridium Catalyzed Nucleophilic and Electrophilic Allylation

10:00 am - 10:20 am **Veronika Kottisch**

Cornell University

Photocontrolled Cationic Polymerization and Its Role in Externally-Regulated Copolymer Synthesis

10:20 am - 10:40 am Coffee Break – **Penn Pavilion**

10:40 am - 11:20 am **Ruben Tommasi, Entasis Therapeutics**

Improving our Approach Towards Gram-Negative Drug Discovery

11:20 am - 11:40 am **Yan Chen**

The Scripps Research Institute

Overcoming the Limitations of γ- and δ-C–H Arylation of Amines through Ligand

11:40 am - 12:00 am **Erin Hancock**

Indiana University - Bloomington

Lessons on Strain and Stability: Synthesis of Ladderane-Containing Natural Products and Applications

12:00 - 12:15 pm **Group Photograph**

12:15 pm - 2:30 pm Lunch and **Poster Session 1 – Penn Pavilion**

ACADEMIC WORKSHOPS – Gary A. Molander

2:30 pm - 3:10 pm **WORKSHOP 1: Academic Support – Penn Pavilion**

Robert G. Lees, NIGMS

Stephen Ritter, ACS Publications

3:10 pm - 3:30 pm **WORKSHOP 2: Entrepreneurship – Penn Pavilion**

Dennis Gilmore, Senior Director

Center of Technology for Energy, Environment & Engineering, RTI International

3:30 pm - 5:00 pm **WORKSHOP 3: Academic Life – Penn Pavilion**

Andy Evans (Queen's University), Brian Goess (Furman University), Craig Hawker (UCSB), Gary Molander (UPenn), David Nicewicz (UNC Chapel Hill), Ross Widenhoefer (Duke University)

FRIDAY EVENING ***Presiding: Angie Angeles, Gilead Sciences***

5:00 pm - 6:30 pm Dinner – **Penn Pavillion**

6:30 pm - 7:20 pm **Brian Goess, Furman University – Penn Pavilion**

Navigating the Tenure Track at a Research-Intensive Primarily-Undergraduate Institution

7:20 pm - 7:40 pm **Georgios Alachouzos**

University of Rochester

Cyclization Strategies for the Synthesis of Complex Halocyclopentenes: Expedient Routes to Heterocyclic Natural Products

8:00 - 9:30 pm **WORKSHOP 4: Industrial Life – French Science Center (FSC)**

Group A *(Angeles)* FSC-2231	***Group B*** *(Widenhoefer)* FSC-3232	***Group C*** *(Molander)* FSC-2237	***Group D*** *(Evans)* FSC-4233
Erika Crane, Abbvie	Ving Lee, Adesis	Stephen Greszler, Abbvie	Zhenzhen Dong, Adesis
Nathan Ross, Adesis	Justin Malinowski, Amgen	Dave St. Jean, Amgen	Kate Ashton, Amgen
Austin Smith, Amgen	Chuck Frazier, Apeel	John Turman, Biogen	Fang Gao, Biogen
Steve Wisniewski, BMS	Sarah Lee, Baxter Pharma.	Martin Eastgate, BMS	Evan Horn, Celgene
Larry Hamann, Celgene	Mike Hay, BMS	Alyssa Antropow, Celgene	Zach Buchan, Corteva
Ruben Tommasi, Entasis	Belgin Canturk, Corteva	Neil Johnson, GSK	Liana Hie, FMC
Steve Staben, Genentech	Chris Regens, Gilead	Evan Styduhar, Incyte	Eddy Yue, Incyte
Justin Cisar, Janssen	Anna Dunn, GSK	Jamie McCabe Dunn, Merck	Mike Luzung, Kallyope
Bill Morris, Merck	Mike Ameriks, Janssen	A.-M. Dechert Schmitt, Pfizer	Ping Zhang, Novartis
Cheryl Hayward, Pfizer	Kevin Hesp., Pfizer	Naoko Ichiishi, Takeda	Wolfgang Notz, Takeda
Qi Zheng, PPG	Andy Combs, Prelude Thera.		

9:30 pm - 11:45 pm Reception and **Poster Session 2 – Penn Pavilion**

SATURDAY, JULY 13 ***Presiding: Ross Widenhoefer, Duke University***

8:15 am - 9:00 am Continental Breakfast – **Penn Pavilion**

9:00 am - 9:50 am **Craig Hawker – UCSB – Penn Pavilion**

The Power of Organic Chemistry in Polymer Synthesis

9:50 am - 10:10 am **Rory McAtee**
University of Michigan
Alkene Aminoarylation via a Radical Smiles Reaction

10:10 am - 10:30 am **Zebediah Girvin**
University of Wisconsin- Madison
Foldamers: A New Approach to Catalysis

10:30 am - 10:55 am Coffee Break – **Penn Pavilion**

10:55 am - 11:35 am **Sarah Lee, Baxter Pharmaceuticals**

Life After a PhD Program (What Next??)

11:35 am - 11:55 am **Benjamin Ravetz**
Columbia University
Photoredox Catalysis Using Infrared Light via Triplet Fusion Upconversion

11:55 am - 12:15 am **Devon Schatz**
University of California, Irvine
Total Synthesis of (–)-Nodulisporic Acid C

12:15 pm - 2:30 pm Lunch and **Poster Session 2 – Penn Pavilion**

SATURDAY, AFTERNOON ***Presiding: David St. Jean, Amgen***

2:30 pm - 3:10 pm **Martin Eastgate, BMS – Penn Pavilion**

Innovating in Industry: A User Guide

3:10 pm - 3:30 pm **Joshua McManus**

University of North Carolina at Chapel Hill

Generation and Alkylation of α-Carbamyl Radicals via Organic Photoredox Catalysis

3:30 pm - 3:55 pm Coffee Break – **Penn Pavilion**

3:55 pm - 4:15 pm **Michael Yamano**

University of California, Los Angeles

Harnessing Strained heterocyclic Allene Intermediates

4:15 pm - 4:35 pm **Matthew Cerda**

University of Oregon

Chemical Tools for the Delivery of Reactive Sulfur Species

4:35 pm - 4:55 pm **Amy Ott**

University of Minnesota

Enantioselective Synthesis with Activated Azides: Mechanism and Methods

4:55 pm - 5:15 pm **Sophia Robinson**

University of Utah

Monomer Property Transfer Predicts Oligomeric Solubility: Development of Highly Soluble Organic Flow Battery Electrolytes

5:30 pm - 8:30 pm Dinner – **Downtown Durham**

8:30 pm Drinks and Games: Kraft House (Duke Campus)

SUNDAY, JULY 14 ***Presiding: Gary A. Molander, University of Pennsylvania***

8:15 am - 9:00 am Continental Breakfast – **Penn Pavilion**

9:00 am - 9:20 am **Nathan Adamson** – **Penn Pavilion**

Duke University

Pd-Catalyzed Enantioselective Hydrofunctionalizations of Conjugated Dienes and Enynes

9:20 am - 9:40 am **Aleksandra Holownia**

University of Toronto

Borylated Reagents Enable the Transfer of Boron Across Diverse Molecular Scaffolds

9:40 am - 10:10 am **Johnny Lee**

Stony Brook University

Catalytic Radical Difluoromethoxylation of Arenes and Heteroarenes

10:10 am - 10:40 am Coffee Break – **Penn Pavilion**

10:40 am - 11:00 am **Allyson Boyington**

Emory University

Development of Selective Intermolecular Couplings of Aryl Radical Species with Olefins

11:00 am - 11:20 am **Jonathan Chen**

Harvard University

Development of Highly Functionalized Nucleic Acid Polymers as Small Molecule and Protein Binders

11:20 am - 11:40 pm **Rebecca DiPucchio**

University of British Columbia

Tantalum-Catalysed Hydroaminoalkylation of Heterocycles: A Key Step in a Divergent Two-Step Synthesis of Indolizidine and Quinolizidine Alkaloids

11:40 am - 12:00 pm **Seoyoung Cho**

Duke University

Modular Difunctionalization of Aryl Triflates by Three-Component Reaction: A Versatile Approach to Access Functionalized Aminoarenes via Aryne Intermediates

12:00 pm - 1:00 pm Lunch – **Penn Pavilion**

12:00 pm - 2:00 pm Check out at **at Edens Quad – House 2A**

2:00 pm Depart

THURSDAY, JULY 11: POSTER SESSION 1

1. **Megan Kwiatkowski – University of North Carolina at Chapel Hill**
   Metal-Catalyzed Mizoroki-Heck-Type Reactions of Unactivated Alkyl Bromides
2. **Andrew Smaligo – University of California, Los Angeles**
   Dealkenylative Functionalizations of C(sp3)–C(sp2) Bonds
3. **David Huang – Yale University**
   Oxidative Transformations of Carbonyls and Heterocycles Enabled by Palladium and Nickel Catalysis
4. **Suraj Ayer – Duke University**
   Sulfamate Esters Guide C–H Functionalization of Alkanes
5. **Toya Scaggs – Indiana University - Bloomington**
   Strategies and Catalysis for the Synthesis of Epidithiodiketopiperazines
6. **Joshua Corbin – University of Wisconsin - Madison**
   Biomimetic Imino-Nazarov Cyclization via Eneallene Aziridination
7. **Junhui Zhou – University of Delaware**
   Synthesis and Development of Peptidoglycan Fragment Microarray to Investigate Innate Immune Signaling
8. **Aran Hubbell – Cornell University**
   Regioselective Carbonylation of 2,2-Disubstituted Epoxides

9. **Daniel Nasrallah – University of Michigan**

   New Strategies for Carbonyl-Olefin Metathesis

10. **Daniel Kim – Yale University**

    Z-Selective Alkene Isomerization by Cobalt(I) Complexes

11. **Joshua Malone – Louisiana State University**

    Brønsted Acid-Catalyzed Formal [2+2+1] Annulation for the Modular Synthesis of Tetrahydroindoles and Tetrahydrocyclopenta[b]pyrroles

12. **Ashley Forney – Virginia Commonwealth University**

    Green Catalyzed Oxidative Transformations by Bioinspired Metallocomplexes

13. **Quang Luu – Texas A&M University**

    The Dual Roles of Werner Complexes in Organic Synthesis: Chiral Catalysts and in-situ Chiral Solvating Agents

14. **Jordan Dotson – University of California, Los Angeles**

    Taming Radicals in the Solid State: Synthetic Approach to Chimonanthine

15. **Roberta R. Rodrigues – University of Mississippi**

    Benzothiadiazole and Thienopyrroledione-Based Organic Photosensitizers as Strong Photoinduced Oxidants: Application in High Voltage Dye-Sensitized Solar Cells with Iron Tris(bipyridine)

16. **Summer Laffoon – University of Illinois at Urbana- Champaign**

    Influencing Product Distribution of Alkyne Metathesis of Multitopic Precursors by Manipulating Relative Rates

17. **Justin Dressler – University of Oregon**

    Tuning the Diradical Character and Singlet-Triplet Energy Gap in Diindenoanthracene Derivatives

18. **Jeffrey Henry – University of Notre Dame**

    Synthesis, Conformational Preferences, and Biological Activity of Conformational Analogues of the Microtubule-Stabilizing Agents, (–)-Zampanolide and (–)-Dactylolide

FRIDAY, JULY 12: POSTER SESSION 2

19. **Megan Hoerrner – University of Delaware**

    Nickel-Catalyzed Cross-Couplings of Alkyl Amines Via C-N Bond Activation

20. **Michael McLaughlin – University of North Carolina at Chapel Hill**

    Enantioselective Phenolic α-Oxidation Using Hydrogen Peroxide via an Unusual Double Dearomatization Mechanism

21. **Kelly Morrison – Emory University**

    Total Synthesis and Biological Investigation of Metal-Binding Natural Products as Bacterial Inhibitors

22. **Jadab Majhi – Queen's University**

    Synthesis of Stereodefined Tetra- and Trisubstituted Olefins via the Manipulation of Existing Olefin Mixtures

23. **Wanqing Li – University of California, Davis**

    2,3-Difluoro Sialic Acid Analogs as Potential Bacterial Sialidase Inhibitors

24. **Shuai Zheng – University of Pennsylvania**

    Photoredox PCET/Ni Dual-Catalyzed Olefin Difunctionalization: Reaction Scope and Mechanism

25. **Aleksandra Nilova – Portland State University**

    Iodane-Guided C-H Functionalization to Synthesize Sterically Congested Arenes

26. **Erik Leonhardt – University of Oregon**

    Fluorinated Cycloparaphenylenes as Building Blocks for Self-Assembled Carbon Nanotube Mimics

27. **Kaylib Robinson – North Carolina State University**

    The Lipoxazolidinones and Analogs as Leads for Novel Antibacterial Compounds

28. **Eric Alexy – California Institute of Technology**

    Stereoselective Synthesis of Fully-Substituted Acyclic Stereocenters

29. **Sarah Scott – The University of Florida**

    Development of the Enyne Cope Rearrangement for Applications in Complex Molecule Synthesis

30. **Sean Kennedy – Northern Illinois University**

    Acid-Promoted Synthesis of Cyclic Imides from Carboxylic Acids & Isocyanates

31. **Charissa Munteanu – University of Texas at San Antonio**

    User's Guide for the Direct Borylation of Aryl (Pseudo)Halides with $B_2(OH)_4$ Utilizing Ni or Pd Catalysis

32. **Riley Svec – University of Illinois, Urbana-Champaign**

    Imidazotetrazines for the Treatment of Glioblastoma & as Synthetic Diazoalkane Precursors

33. **Xianglin Yin – Purdue University - West Layfayette**

    Total Syntheses of Stemona Alkaloids

34. **Sean Rafferty – Ohio State University**

    Accessing Ketyl Reactivity via Atom Transfer Catalysis

35. **Manish Walia – Temple University**

    First Synthesis of Bis-Aspidosperma Alkaloid (–)-Melodinine K

36. **Christine Dimirjian – University of California, Davis**

    Utilization of Hydrazone Intermediates to Form Five-Membered Heterocycles

For interactive campus map: http://maps.duke.edu/map/?id=21

15-501


French Science Center


Duke Forest


Kilgo Quad


Cameron Indoor Stadium


Chapel Drive


West Union


Fitzpatrick Center


Wilson Rec


Duke Gardens


Crowell Quad


Mill Village

MORREENE RD

ERWIN ROAD

CIRCUIT DRIVE

CIRCUIT DR

RESEARCH DRIVE

FULTON STR

ENCE DRIVE

8 SCIENCE DRIVE

ing Garage
r construction)

Closed for renovation

R. David Thomas Center

Fuqua School of Business

Law School

Gross Hall

Greenhouses

Phytotron

French Science Center

Biological Sciences

courtyard

Physics and Math

Environment Hall

Levine Science Research Center

Engineering Library and Engineering Administration

Teer

Hudson Hall

North Bldg

VA Hospital

Eye Center

Bryan Research Bldg

Seeley Mudd (Searle Ctr)

Duke Hospital North

Mary Trent Semans Medical Education Building

Medical Center Parking Garage

Pratt Engineering

FCIEMAS 10

Fitzpatrick Center for Interdisciplinary Engineering, Medicine, & Applied Sciences

Sanford School 7

Jack Coombs Stadium

Rubenstein Hall

Health and Wellness Center (under construction)

Parking Garage

Reynolds Theater, Griffith Theater

Bookstore

Bryan Center 9

Penn Pavilion

Page Aud.

Flowers

Plaza

Closed for renovation until May 2016

Chapel 3

Divinity School 11

Perkins Library

The Link

Bostock Library

The Edge

von der Heyden Pavilion

Old Chemistry Bldg

Languages Building

Perkins Quad 13

Davison Quad

Duke Hospital South Davison Building

School of Nursing

Hanes House

Asian and Mi Eastern Studi

TRENT DR

Williams Track & Koskinen Stadium

WHITFORD DRIVE

Coach K Center

Scharf Hall

Basketball Museum and Hall of Fame

Schwartz-Butters Athletic Center

Cameron Indoor Stadium

area under construction

Murray Bldg

Wallace Wade Stadium

Yoh Football Ctr

Aquatic Center

Card Gym

Wilson Rec Ctr

Krzyzewskiville

6

TOWERVIEW ROAD

Kilgo Quad

West Union 4

Closed for renovation (reopening Spring 2016)

Crowell Quad

Clocktower Quad 5

Craven Quad

Few Quad

Few Quad

Few Quad

Wannamaker

Women's Center

James B. Duke Statue 2

Bus Stop

Allen Bldg

Social Sciences Bldg

Sociology/ Psychology Bldg

12

FLOWERS DRIVE

Duke Student Health Center

Medical Center Parking Garage

Trent Hall

Pickens Bldg

ERWIN ROAD

YEARBY AVE

Intramural Building

Ambler Tennis Stadium

Sheffield Tennis Center

Hart House (private residence)

WANNAMAKER DRIVE

Note: Student parking only

4A Languages Dorm

4B 4C Keohane Quad

K4

4D

McClendon Tower

Student Access Only

CHAPEL DRIVE

1

Duke Gardens 14

The Terraces

Rose Garden

Pergola

pathway

Gardens Info

Doris Duke Center

ANDERSON STREET

MILL VILLAGE

Uncle Harry's Grocery

CENTRAL CAMPUS

International House

TO NIN

Undergraduate Admissions

McClendon Commons (Visitors Center)

Arts Center (construction to begin Fall 2015)

Parking & Transportation

ALEXANDER AVENUE

Disability Management

Duke Univ. Police

OREGON STREET

Muslim Life

Organization for Tropical Studies

Hull Avenue Dance Studio

HULL

FABER

SWIFT AVE

Freeman Ce for Jewish

TO EAST CAMP

Arts Annex

1A 1B 1C 2A 2C Edens Quad

3A 3B

Alumni Affairs

Forlines House

under renovation

Public Affairs

Graduate School Admissions

Undergraduate Financial Aid; Student Loan Office

Nicholas Institute Offices

CAMPUS DRIVE

Trinity Technology Services

Nasher Museum of Art 15

DUKE UNIVERSITY ROAD

DUKE UNIVERSITY ROAD

North W E S

For more information about Duke University, visit www.duke.edu.

est Campus

Academic/Administrative
Athletics
Hotel Accommodations
Housing
Medical Center
Dining
Snacks

Duke University Office of Undergraduate Admissions
2138 Campus Drive
Box 90586
Durham, NC 27708-0586

(919) 684-3214
www.admissions.duke.edu

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Map is not to scale and is intended to approximate building locatio

Speakers

M. Eastgate - Bristol-Myers Squibb
B. Goess - Furman University
L. Hamann - Celgene
C. Hawker - UC Santa Barbara
S. Lee - Baxter Pharmaceuticals
D. Nicewicz - UNC Chapel Hill
R. Tommasi - Entasis Therapeutics

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A. Angeles
P. A. Evans
G. A. Molander
R. Widenhofer