

Jacobs H. Jordan

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EDUCATION

2018 Aug (degree conferral date): PhD, Organic Chemistry, Tulane University, New Orleans, LA, United States. *The noncovalent interactions behind the direct and inverse Hofmeister effects*. Oral defense & requirements completed May 17, 2018. (Supervisor: Bruce C. Gibb)

2010 Dec: Bachelor of Science, Chemistry, University of New Orleans, New Orleans, LA, United States

2009 Dec: Bachelor of Science, Biology, University of New Orleans, New Orleans, LA, United States

RESEARCH EXPERIENCE

Graduate Research:

Synthesis of functionalized deep-cavity cavitands via protective group installation towards water-soluble hosts

- Compound characterization by ¹H Nuclear Magnetic Resonance Spectroscopy (NMR), ¹³C NMR, COSY, Matrix-Assisted Laser Desorption Ionization Time-of-Flight (MALDI-TOF), Electrospray Ionization MS (ESI-MS), Diffusion-oriented spectroscopy (DOSY), Nuclear-Overhauser Effect Spectroscopy (NOESY) Gas Chromatography (GC) MS, and High-Resolution-MS (HRMS)
- Implement lead optimization and retrosynthetic approaches in multi-step organic synthesis to innovate, identify and synthesize late-stage functionalized molecules for modulation of the hydrophobic effect and guest affinity

Synthesis of Novel Water-Soluble Cavitands for ion recognition and understanding the reverse Hofmeister effect

- Synthesis of anion receptors to investigate ion recognition properties of water-soluble cavitands by ¹H NMR titration experiments
- Provide a diverse library of water-soluble cavitands bearing ammonium, pyridinium, imidazolium, carboxylate, and alkyl ammonium water-soluble functional groups
- Develop and implement high-throughput multi-well ultraviolet-visible (UV-Vis) absorbance turbidity assays for the characterization of compound solubility in the presence of sodium salts
- Characterize and assemble water-soluble resorcin[4]arenes into discrete supramolecular polymers
- Characterize high-order assemblies of novel o-xyllyl bridged cavitands

Inhibition of specific-viral proteins by deep-cavity cavitands

- Evaluate the selectivity, binding affinity, and inhibition of novel cavitands towards simian virus 40 T-antigen utilizing fluorescence and UV-Vis spectroscopy in a high-throughput assay format
- Study nucleotide, nucleoside, and nucleobase binding affinity in buffered water towards hydrophobic pockets

Molecular protections using a deep-cavity cavitand

- Ester-hydrolysis product isolation and identification utilizing ESI-MS towards an understanding of the hydrolysis mechanism of encapsulated esters
- Identification of reaction and deep-cavity cavitand side products and impurities using ESI-MS and MALDI-TOF from oxidations in aqueous solution

Undergraduate Research:

Synthesis of Novel Cannabinoid Receptor Ligands for Biological Evaluation (Advisor: M. Trudell)

- Develop novel synthesis of cannabinoid receptor ligands
- Establish a library of ligands utilizing a one-pot microwave reaction for biological evaluation.

PUBLICATIONS & RESEARCH

(*Denotes undergraduate researcher contribution)

Peer-Reviewed Publications:

5*. *Ion-hydrocarbon and/or Ion-Ion Interactions: The Direct and Reverse Hofmeister Effect in a Synthetic Host*. J. H. Jordan, C. L. D. Gibb, A. Wishard, T. Pham*, B. C. Gibb, *J. Am. Chem. Soc.*, **2018**, *140* (11), 4092-4099 DOI: 10.1021/jacs.8b00196

JACS Spotlight: *New Insight into How Salt Ions Boost or Hamper Solubility* DOI:10.1021/jacs.8b02872

4. *Synthesis of Water-Soluble Deep-Cavity Cavitands*, M. B. Hillyer, C. L. D. Gibb, P. S. Sokkalingam, J. H. Jordan, S. E. Ioup, J. T. Mague, B. C. Gibb, *Organic Letters*, **2016**, *18*, 4048-51 DOI: 10.1021/acs.orglett.6b01903

3. *Investigation of Lysine-functionalized Dendrimers as Dichlorvos Detoxification Agents*, E. F. Durán-Lara, J. L. Marple, J. A. Giesen, Y. Fang, J. H. Jordan, W. T. Godbey, A. Marican, L. S. Santos, S. M. Grayson, *Biomacromolecules*, **2015**, *16*, 3434 – 3444, DOI: 10.1021/acs.biomac.5b00657

2. *Water-Soluble Cavitands*, J. H. Jordan, B. C. Gibb, in *Reference Module in Chemistry, Molecular Sciences and Chemical Engineering*, Elsevier, July **2015**. DOI: 10.1016/B978-0-12-409547-2.10789-9

1. *Molecular containers assembled through the hydrophobic effect*, Jordan, J.H.; Gibb, B.C., *Chem. Soc. Rev.*, **2015**, *44*, 547 – 585, DOI:10.1039/C4CS00191E

Research / Works in Progress:

7. *Anion/Cation Recognition by Cucurbit[7]urils: the Direct and Inverse Hofmeister Effects in Supramolecular Complexes*, J. H. Jordan, M. B. Sullivan, A. Wishard, J. T. Mague, B. C. Gibb, *In Preparation*

6*. *Nor, Mono, di, and tri-alkylated ammoniums: insights into the direct and inverse Hofmeister effect*, J. H. Jordan, W. Yao, A. Wishard, J. O'Brien*, B.C. Gibb, *In Preparation*

5. *Getting Specific About Non-Specifics: Ion-Ion Interactions and Functional Group Dependence for the Reverse Hofmeister Effect*, J. H. Jordan, W. Yao, A. Wishard, J. T. Mague, B. C. Gibb, *In Preparation*

4. *Selective Molecular Protection by a Water-Soluble Capsule*, K. Wang, J. H. Jordan, B. C. Gibb, *In Preparation*

3. *Effects of buffer and counterion on halide affinity of a water-soluble anion receptor*, J. H. Jordan, W. Yao, A. Wishard, B. C. Gibb, *In Preparation*

2. *Molecular Protection of Fatty Acid Methyl Esters within a Supramolecular Nano-capsule*, K. Wang, J. W. Barnett, J.H. Jordan, H.S. Ashbaugh, B.C. Gibb, *In Preparation*

1. *A water-soluble Resorcin[4]arene forms a Supramolecular Polymer in Solution*, J. H. Jordan, A. Wishard, J. T. Mague, B. C. Gibb, *In Preparation*

MANAGEMENT AND OTHER WORK EXPERIENCE

2006 – 2011: Operations Supervisor, Remote Airport Services (formerly Rush it of Louisiana), Kenner, LA 70062. (504) 471-0080. Contact: Angela Dauterive

- Worked flexible schedule 50 – 60 hours / week
- Manage staff and schedule for full/part-time, and seasonal employees and over thirty sub-contractors
- Supervise accounting – accounts payable and receivables – and customer service and relations

2005 – 2007: *Technicians Assistant*, **United Communications**, St. Rose, LA 70087. (504) 468-2122. Contact: Greg Knight

- Install telecommunications (telecom) equipment (hard-line, message-on-hold, voicemail, phone blocks)
- Diagnose and Service networks, patch-panels, audio-video (A/V) equipment, and surveillance equipment

TEACHING EXPERIENCE

Instructional / Lab Experience:

2015 – 2018: *Organic Chemistry Lab I & II* Teaching Assistant (4 semesters)

- Instruct multiple labs consisting of approx. 16 students in lab-safety and protocols
- Prepare lessons, quizzes, and exams; hold regular office hours and assign course grades

2016, Fall: *Organic Chemistry I*, Guest Lecturer, Organic Reactions, Reactions of phenols and alcohols

2012 – 2016: *Organic Chemistry I & II Lecture* Teaching Assistant (3 semesters)

- Responsibilities include: proctor exams and grading exams and quizzes

2011 – 2012: *General Chemistry Lab*, Teaching Assistant (2 semesters) Lab instructor and Lab Manager

- Grades lab reports and assignments, hold office hours, assign grades
- Prepare stock solutions and reagents. Prepare experiment plans, and implement lab protocols

Development:

2017: Center for Engaged Learning and Teaching (CELT) Intensive Teaching Workshop, 16th of May

Mentoring:

2012 – 2013: Joshua Newman – tandem, one-pot synthesis of deep-cavity cavitands

2013: Joshua King – synthesis and characterization of novel *ortho*-benzyl bridged cavitands

2016: Thu Pham (NSF, REU) Development of critical precipitation assays to investigate anion complexation to deep-cavity cavitands towards quantifying manifestations of the Reverse Hofmeister Effect. *J. Am. Chem. Soc.*, **2018**, *140* (11), 4092-4099 DOI: 10.1021/jacs.8b00196

2016 – 2017: Jeffrey O'Brien (B.S., '17, Cell & Mol. Biol) synthesis of nor, mono, di, and tri-alkylated ammonium cavitands for explorations into the direct and inverse Hofmeister effect in synthetic hosts (*in preparation*)

PRESENTATIONS

Oral Presentations:

8. *Reverse Hofmeister Effects in Synthetic Hosts*, **255th American Chemical Society National Meeting**, New Orleans, LA, 20th of March, **2018**

7. *Reverse Hofmeister Effects in Synthetic Hosts: Functional Group Dependence for the Inverse Hofmeister Series*, **4th Young Researcher Conference (YRC)** Hosted by the Alliance for Diversity in Science and Engineering (ADSE), New Orleans, LA, 17th of March, **2018**

6. *Water-soluble cavitands and anion complexation*, **72nd Southwest Regional Meeting of the American Chemical Society**, Galveston, TX, 12th of November, **2016**
5. *Deep-cavity cavitands for protein inhibition*, **252nd American Chemical Society National Meeting**, Philadelphia, PA, 24th of August, **2016**
4. *Studies of deep-cavity cavitands*, **252nd American Chemical Society National Meeting**, Philadelphia, PA, 24th of August, **2016**
3. *Deep-cavity cavitands as protein inhibition agents*, **251st American Chemical Society National Meeting**, San Diego, CA, 15th of March, **2016**
2. *Protein inhibition by a deep-cavity cavitand*, **248th American Chemical Society National Meeting**, San Francisco, CA, 13th of August, **2014**
1. *Nanotheranostics: Methods for Combating Multiple Drug Resistance*, Departmental Seminar, **Tulane University**, New Orleans, LA, 26th of September, **2012**

Poster Presentations:

12. *Getting specific about non-specific interactions: Functional group dependence for the inverse Hofmeister series*, **255th American Chemical Society National Meeting**, New Orleans, LA, 18th – 22nd of March, **2018** (SciMix Presentation)
11. *Water-soluble cavitands: applications in anion recognition and protein inhibition*. **254th ACS National Meeting**, Washington, D.C., 20–24th, of August, **2017**, (AEI SciMix Presentation)
10. *The Reverse Hofmeister Effect in Synthetic Hosts*, **11th Annual SSE Research Day** (Tulane University), New Orleans, LA, 13th of April, **2017**
9. *Design and synthesis of water-soluble, deep-cavity cavitands and applications in protein inhibition*, **10th Annual SSE Research Day** (Tulane University), New Orleans, LA, 6th of April, **2016** (Runner-up, best poster)
8. *Studies of Deep Cavity Cavitands*, **251st ACS National Meeting**, San Diego, CA, 13–17th of March, **2016**
7. *A water-soluble resorcin[4]arene self-assembles into a supramolecular polymer in solution*, **3rd Applied Polymer Technology Extension Consortium** (APTEC 2015), New Orleans, LA, 9th of November, **2015**
6. *Design and synthesis of water-soluble, deep-cavity cavitands and applications in protein inhibition*, **13th International Conference on Calixarenes** (Calix2015), Giardini-Naxos, Italy, 5–9th of July, **2015**
5. *Design and synthesis of water-soluble, deep-cavity cavitands and applications in protein inhibition*, **10th International Symposium on Macrocyclic and Supramolecular Chemistry** (ISMSC-10), Strasbourg, France, June 28th – 2nd of July, **2015**
4. *Inhibition of sv40-Tag Helicase by a Deep-Cavity Cavitand*, **2014 Mardi Gras Symposium**, New Orleans, Louisiana, 28th of February, **2014**

3. *Binding of Deep-Cavity Cavitands to Specific Protein Targets: Potential Helicase Inhibitors*, **69th Southwest Regional Meeting of the ACS**, Waco, Texas, 16–19th of November, **2013**

2. *Binding of Octa-Acid Deep-Cavity Cavitand to Specific Protein Targets*, **12th International Conference on Calixarenes (Calix2013)**, St. John's, Newfoundland, 14–17th of July, **2013**

1. *Binding of Octa-Acid Deep-Cavity Cavitand to Specific Protein Targets*, **8th International Symposium on Macrocyclic and Supramolecular Chemistry (ISMSC-8)**, Crystal City, VA, 7–11th of July, **2013**

COLLABORATIONS

2016 – 2018: *The reverse Hofmeister effect in Cucurbit[7]urils*, Collaboration with Liu Lab (Chemistry, Wuhan University of Science & Technology, China) and Rick Lab, (Department of Chemistry, University of New Orleans, USA)

2015: *Investigation of Lysine-Functionalized Dendrimers as Dichlorvos Detoxification Agents*, Collaboration with Grayson Lab (Chemistry, Tulane University, USA)

- Purification and characterization of G1, G2, and G3 Lysine-functionalized dendrimers by flash-chromatography and dynamic light scattering (DLS)

ADDITIONAL LEADERSHIP & EXPERIENCE

Awards, Honors, Recognitions:

OGPS/GSSA Travel Award	March 2018
<i>Acc. Chem. Res.</i> Editorial Advisory Board, 255 th ACS Nat'l Meeting	March 2018
<ul style="list-style-type: none"> • Student participant by faculty nomination 	
Graduate Honor Board, School of Science & Engineering (SSE)	August 2014 – August 2017
<ul style="list-style-type: none"> • faculty nomination 	
SSE Deans & OGPS/GSSA Travel Award & Ramaswamy endowment	May 2017
Southwest Regional Student Presenter Travel Scholarship, 72 nd SWRM	October 2016
<ul style="list-style-type: none"> • competitive scholarship 	
Division of Organic Chemistry Travel Award 252 nd ACS Nat'l Meeting	June 2016
<ul style="list-style-type: none"> • competitive award 	
OGPS/GSSA Travel Award	May 2016
10 th Annual SSE Research Day finalist – Honorable Mention	April 2016
SSE Deans Travel Award & Ramaswamy endowment	March 2016
SSE Deans Travel Award & OGPS/GSSA Travel Award	June 2015
13 th International Conference on Calixarenes Travel Grant	June 2015
<ul style="list-style-type: none"> • competitive grant 	
SSE Deans Travel Award & OGPS/GSSA Travel Award	July 2014
Louisiana Local Section ACS Travel Award, 69 th SWRM	November 2013
SSE Deans Travel Award	June 2013
<i>J. Org. Chem.</i> , Editorial Advisory Board, 245 th ACS Nat'l Meeting	8 th of April 2013
<ul style="list-style-type: none"> • Student participant by special nomination only 	
SSE Board of Advisors Reception	April 2012
<ul style="list-style-type: none"> • by special invitation only 	

Community Service and Outreach:

Xavier University-NSF-REU Chemistry Program Lab Tours	July 2014
Xavier-NYU, NSF-PREM / LA-SIGMA Lab Tours	June 2014
ACS Local Section Hospitality Booth, 245 th ACS National Meeting	April 2013
French Quarter walking tour guide, 245 th ACS National Meeting	April 2013
ACS Chemistry Ambassador	Dec 2012 – present

Professional Development:

Chemical Health & Safety: Developing Leadership Skills in Academic Laboratory Safety workshop	18 th of March 2018
ACS Reviewer Lab (completed date)	25 th of January 2018
MestReNova tools for DOSY processing (webinar)	24 th of May 2017
Small-molecule screening to find inhibitors of PPI's using SPR and ITC	14 th of March 2017

AFFILIATIONS

Professional Organizations:

American Association for the Advancement of Science (AAAS), American Chemical Society (ACS), Golden Key International Honour Society

Professional Service:

- *LabTrove/ChemTrove Trial*, Royal Society of Chemistry, Jan 31 – July 20th, 2014, hosted by University of Southampton, United Kingdom
- *2014 Mardi Gras Symposium*, Web. Design & Symposium Planning, Feb. 28th, 2014, New Orleans, LA
- *American Chemical Society, ChemWorx Workshop*, Dec. 4 – 6th, 2013, Washington D.C.

Academic Service:

- **Associated Student Body (ASB)**
 - 2012 – 2015: Senator, ASB Elections Committee, ASB Restructuring Committee
- **Graduate and Professional Student Association (GAPSA)**
 - 2012 – 2015: Senator, Educational Policy Committee
- **Graduate Studies Student Association (GSSA)**
 - 2014 – 2015: President, Awards, Legislative & Executive Committee Chair
 - 2013 – 2014: Vice President, Awards & Events Committee Chair
 - 2012 – 2013: Representative, Budget Committee

SKILLS, INSTRUMENTATION & OTHER TECHNOLOGIES

Ultraviolet-Visible (UV/Vis) spectroscopy, Nuclear Magnetic Resonance (NMR) spectroscopy, Gas-Chromatography-Mass Spectrometry (GC-MS), Matrix-Assisted Laser Desorption Ionization (MALDI-MS), Electrospray Ionization (ESI-MS), chromatography, basic cell-culture, Dynamic Light Scattering (DLS), supramolecular chemistry, nanotechnology, Hofmeister, hydrophobic effect, organic synthesis, multi-step synthesis, high-throughput assay, multi-well / microplate assay, turbidity assay