

Theresa Denise Gaines, PhD

Assistant Professor Delta State University

Founder, Game Designer and Artist at Big Magnet Games

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PROFESSIONAL SUMMARY

Motivated and undaunted educator focused on intentionally transforming introductory chemistry learning spaces through active learning techniques, guided metacognitive reflections, and alternative assessments as to facilitate an inclusive and equitable experience to inspire, equip and retain historically excluded learners in STEM-related fields. Imaginative game designer with experience in creating and play-testing chemistry card games designed for in-class and out-of-class practice. Experience in facilitating undergraduate research in organic chemistry using reductive amination reactions to synthesize small molecule heterocyclic CXCR4 modulators and analyzing the impacts of activities and games on student perceptions of, and performance in chemistry.

EDUCATION

Ph.D. in Organic Chemistry

August 2017

Georgia State University

Principal Investigator: Dr. Suazette Mooring

Dissertation Title: Design, synthesis, and analysis of small molecule heterocyclic-aromatic based CXCR4 modulators.

B.S. in Chemistry

May 2012

University of Notre Dame

Research Advisor: Dr. Marvin Miller

Topic: Synthesis of potential anti-XDR tuberculosis antibiotics.

PROFESSIONAL EXPERIENCE

Assistant Professor

Fall 2019 – Present

Division of Math and Sciences, Delta State University

Scholar in Residence

Summer 2021

Center for Sustainable Nanotechnology (CSN), University of Minnesota

Visiting Professor

Summer 2020

Center for Sustainable Nanotechnology (CSN), University of Minnesota

Teaching Postdoctoral Fellow

Summer 2017 – Summer 2019

Department of Physical Sciences, Dixie State University

TEACHING

Delta State University

Fall 2019 – Present

Division of Math and Sciences

- **Introduction to the Chemical World (online):** Fall 2019, 2020, 2021
- **Introduction to Organic Chemistry Lecture:** Fall 2019, 2020, 2021
- **Introduction to Organic Chemistry Laboratory:** Fall 2019, 2020, 2021
- **Organic Chemistry 1 Lecture:** Fall 2019, 2020, 2021

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- **Organic Chemistry 1 Laboratory:** Fall 2019, 2020, 2021 (*two sections*)
- **Organic Chemistry 2 Lecture:** Spring 2020, 2021
- **Organic Chemistry 2 Laboratory:** Spring 2020, 2021 (*two sections*)
- **Introduction to Polymer Chemistry:** Spring 2020, 2021
- **Independent Research:** Spring 2020, Fall 2020, Spring 2021, Fall 2021 (Total: 1 MS student and 6 UG students)

Dixie State University

2017 – 2019

Department of Physical Sciences

- **General, Organic, Biological Chemistry 2 Lecture:** Fall 2017, 2018, Spring 2018, 2019
- **General, Organic, Biological Chemistry 2 Laboratory:** Fall 2017, 2018, Spring 2018, 2019
- **Organic Chemistry 1 Lecture:** Spring 2018, 2019
- **Organic Chemistry 1 Laboratory:** Fall 2017, 2018, Spring 2019
- **Organic Chemistry 2 Lecture:** Fall 2018
- **Organic Chemistry 2 Laboratory:** Spring 2018, 2019, Fall 2018
- **Advanced Organic Chemistry:** Fall 2018
- **Independent Research:** Fall 2018, Spring 2019 (5 UG students)

Georgia State University

2012 – 2017

Department of Chemistry

- **General Chemistry 2 Laboratory, Instructor of Record:** Spring 2016, 2017
- **Integrated Science III: Biology and Chemistry, Instructor of Record:** Fall 2016
- **Organic Chemistry 1 Lecture, Flipped Classroom TA:** Fall 2015 (150 students)
- **Organic Chemistry 1 Laboratory, TA:** Fall 2012, Spring 2013

GRANTS

Faculty Research and Grant Writing Fund

Fall 2019 – Spring 2020

Delta State University

AWARDS AND HONORS

Faculty Teaching Program Fellow

Spring 2020

Gertrude C. Ford Center for Teaching and Learning, Delta State University

Connected Educator Award Recognition Recipient

Fall 2019

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Next Prof Science Future Faculty Workshop Participant

Summer 2019

University of Michigan

Al Baumstark Fellowship

Spring 2017

Georgia State University Chemistry College of Arts and Sciences

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1st Place Graduate Poster Session **Fall 2016**
Emory University STEM Research and Career Symposium

GAANN Fellowship Awardee **2013 – 2017**
Georgia State University

Questbridge Scholar **2008 – 2012**
University of Notre Dame

PUBLICATIONS

Gaines, T.; Garcia, F.; Virani, S.; Liang, Z.; Yoon, Y.; Oum, Y. H.; Shim, H.; Mooring, S. R. Synthesis and evaluation of 2,5-furan, 2,5-thiophene and 3,4-thiophene-based derivatives as CXCR4 inhibitors. *Eur J Med Chem* **2019**, *181*, 111562. doi:10.1016/j.ejmech.2019.111562.

Gaines, T.; Camp, D.; Bai, R.; Liang, Z.; Yoon, Y.; Oum, Y. H.; Shim, H.; Mooring, S. R. Synthesis and evaluation of 2,5 and 2,6 pyridine-based CXCR4 inhibitors. *Bioorg Med Chem* **2016**, *24(21)*, 5052-5060. doi:10.1016/j.bmc.2016.08.018.

Bai, R.; Liang, Z.; Yoon, Y.; Liu, S.; **Gaines, T.;** Oum, Y.; Shi, Q.; Mooring, S. R.; Shim, H. Symmetrical bis-tertiary amines as novel CXCR4 inhibitors. *Eur J Med Chem* **2016**, *118(8)*, 340-350. doi:10.1016/j.ejmech.2016.04.040.

Mooring, S. R.; **Gaines, T.;** Liang, Z.; Shim, H. Synthesis of pyridine derivatives as potential antagonists of chemokine receptor type 4. *Heterocyc Comm* **2014**, *20(3)*, 149-153. doi:10.1515/hc-2014-0041.

Gaines, T.; Fulton, K. Shining a Light on Resonance: An Activity and Analogy. *In prep. October 2021.*

Gaines, T.; Fulton, K. Hybridization: A Paper Activity. *In prep. October 2021.*

Gaines, T.; Setting the Table for Organic Chemistry. *In prep. December 2021.*

INVITED PRESENTATIONS

CSN: Webinar **August 2021**
Prioritizing Equity in Chemistry

CSN: Research Talk **July 2021**
Playing to our Strengths – Research in our Current Pandemic

CSN: Game Jam **July 2021**
Let's Think (Game) Design!

Com Sci Con: Panelist **March 2021**
Education and Outreach: Making Science Accessible

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CBS Unstoppable (*Twitch*): Guest Scientist **March 2021**
Today I Learned: Intermolecular Forces of Cheesemaking

NOBCCChE STEM Week: Keynote Speaker **November 2019**
Excelling in Excellence

Delta State University: Research Talk **March 2019**
Card Games and Chemistry

Jacksonville State University: Lecture **March 2019**
Science of Cheesemaking: Intermolecular Forces at Play

University of Florida – Gainesville: Lecture **January 2019**
Chirality and Stereoisomerism

Dixie State University: Lecture **May 2017**
Physical Properties of Amino Acids and Structural Components of Peptides

CONFERENCE PRESENTATIONS

Theresa Gaines, Alison Fullilove. Flexing Functional Group Prowess: Piloting a Virtual Functional Group Field Day Activity. Poster Presentation. 1st Annual Black in X Conference. June 30, 2021.

Theresa Gaines. Making Resonance Transparent: Design and Considerations for Chemistry Card Games to Teach Resonance. Poster Presentation. 46th Annual National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCCChE) Conference. September 24, 2020.

Theresa Gaines. Making Resonance Transparent: Creation, Implementation and Evaluation of Card Games for Classroom Use. 26th Biennial Conference on Chemistry Education. Abstract Accepted March 31, 2020. Conference terminated due to the Covid-19 pandemic on April 2, 2020, by the Executive Committee of the Division of Chemical Education, American Chemical Society; and, therefore, this presentation could not be given as intended.

Theresa Gaines. Making Resonance Transparent: Implementation and Evaluation of Chemistry Card Games to Teach Resonance. Poster Presentation. 84th Annual Mississippi Academy of Sciences Conference. Biloxi, Mississippi. February 20, 2020.

Theresa Gaines. Barely Functional, Chaperones, Songbird and ImproviChem: Games to build fluency in Organic Chemistry. Poster Presentation. 45th NOBCCChE National Conference. Orlando, Florida. September 18, 2018.

Theresa Gaines, Davita Camp, Renren Bai, Zhongxing Liang, Yonghyoun Yoon, Hyunsuk Shim, Suazette Reid Mooring. Design and Synthesis of Potential Pyridine-based CXCR4 Modulators.

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Poster Presentation. Emory University STEM Research and Career Symposium. Atlanta, Georgia. September 19, 2016.

Theresa Gaines, Davita Camp, Renren Bai, Zhongxing Liang, Yonghyoun Yoon, Hyunsuk Shim, Suazette Reid Mooring. Design and synthesis of potential heterocyclic based CXCR4 modulators. Oral Presentation. 252nd American Chemical Society National Meeting. Philadelphia, PA. August 22, 2016.

Theresa Gaines, Davita Camp, Gregory Adodo, Suazette Mooring, Zhongxing Liang, Hyunsuk Shim. Design and synthesis of potential CXCR4 modulators. Presented at the 8th Annual Graduate Research Symposium, Department of Chemistry and Center for Biotechnology and Drug Design, Georgia State University. Atlanta, GA. March 25, 2016.

Theresa Gaines, Suazette Mooring, Zhongxing Liang, Hyunsuk Shim. Design and Synthesis of Potential CXCR4 Modulators. Oral Presentation. 42nd NOBCCChE National Conference. Orlando, Florida. September 24, 2015.

Gaines, T.; Camp, D.; Adodo, G.; Mooring, S.; Liang, Z.; Shim, H. Design and synthesis of potential CXCR4 modulators. Presented at the 7th Annual Poster Day, Department of Chemistry and Center for Biotechnology and Drug Design, Georgia State University. Atlanta, GA. March 13, 2015.

Gaines, T.; Mooring, S.; Liang, Z.; Shim, H. Synthesis of pyridine and thiophene derivatives as potential antagonists of the chemokine receptor type 4. Presented at the 248th American Chemical Society National Meeting. San Francisco, CA. August 10, 2014.

Gaines, T.; Mooring, S.; Liang, Z.; Shim, H. Design and synthesis of potential CXCR4 antagonists. Presented at the 6th Annual Poster Day, Department of Chemistry and Center for Biotechnology and Drug Design, Georgia State University. Atlanta, GA. March 5, 2014.

Gaines, T.; Mooring, S.; Design and Synthesis of Potential CXCR4 Antagonists. Presented at the 65th Southeastern Regional Meeting of the American Chemical Society. Atlanta, GA. November 12-16, 2013.

Gaines, T.; Mooring, S.; Liang, Z.; Shim, H. Design of Potential CXCR4 Antagonists. Presented at the 5th Annual Poster Day, Department of Chemistry and Center for Biotechnology and Drug Design, Georgia State University. Atlanta, GA. March 2, 2013.

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SERVICE

Search Committee for Asst. Prof of Biology Education	Fall 2021
Distance Education Committee	Fall 2020 – Present
Excellence in Science Coordinating Committee	Fall 2020 – Present
American Chemical Society Club Faculty Advisor	Fall 2019 – Present
Search Committee for Instructor of Biology	Fall 2019

SYNERGISTIC ACTIVITIES

Big Magnet Games <i>Founder, Game Designer, and Artist</i>	Fall 2017 – Present
Louis Stokes Alliances for Minority Participation <i>LSMAMP Site Coordinator, Delta State University</i>	Summer 2020 – Present
Re-Direct Children's Ministries STEM Volunteer	Fall 2019 – Present
Educational Twitch Streamer <i>Twitch Affiliate, Twitch.tv and Fellow of The Knowledge Fellowship Community</i>	Spring 2020 – Present
Georgia State University Bio-Bus Workshop Instructor <i>Librarian's Workshop: Summer 2017</i> <i>SEPA Teacher's Summer Workshop: 2015, 2016, 2017</i>	2015 – 2017
Manuscript Reviewer <i>Journal of Chemical Education</i>	

PROFESSIONAL AFFILIATIONS

The Knowledge Fellowship – EDU Streaming Fellow	2020 – Present
Centers for Sustainable Nanotechnology – CSN Affiliate	2019 – Present
Mississippi Academy of Sciences – Member	2019 – Present
NOBCChE – National Member <i>National Organization for the Professional Advancement of Black Chemists and Chemical Engineers</i>	2014 – Present
American Chemical Society – National Member	2015 – Present