

Gordon Luu

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Education

University of Illinois at Chicago
PhD Student in Pharmacognosy
Advisor: Dr. Laura Sanchez

Aug 2018 - Present

San Francisco State University
Bachelor of Science in Microbiology
Minor in Chemistry
Graduated *cum laude*

Aug 2013 - May 2018

Research Experience

PhD Candidate

University of California, Santa Cruz

Jan 2021 - Present

University of Illinois at Chicago

Aug 2018 - Dec 2020

Advisor: Dr. Laura Sanchez

- The goal of my thesis work is to interrogate the cheese rind microbiome and human vaginal microenvironment using multi-omics technologies to assess chemical signaling pathways.
- Cheese Rind Microbiome: I use mass spectrometry-based untargeted metabolomics and genome mining to analyze complex community interactions to 1) determine their ecological roles, and 2) identify potential dietary health benefits.
- Human Vaginal Microenvironment: I use mass spectrometry-based proteomics to detect and identify ovarian cancer biomarkers, which can be used to inform new screening/diagnostic procedures.

Undergraduate Research Assistant

Apr 2016 - Jul 2018

San Francisco State University

Advisor: Dr. Taro Amagata

- I generated and screened a chemical extract library from Actinomycetes to prioritize strains producing unknown cytotoxic secondary metabolites requiring isolation, genome mining, and structure elucidation for discovery of novel anti-cancer therapeutics.

Awards

2020 University of Illinois Cancer Center Cancer Science Prize - Poster 2nd Place

2020 2020 Oscar Robert Oldberg Prize in Pharmaceutical Chemistry

2020 BUCHI Scholar Award 2020 Runner Up

2020 Ruth L. Kirschstein national Research Service Award (NRSA) Institutional Research Training (T32) Grant Award

2019 Northeastern University May Institute Travel Fellowship

2018 San Francisco State University College of Science and Engineering 20th Annual Student Showcase - Poster Section UL 3rd Place

Publications

1. Cleary, J.L., **Luu, G.T.**, Pierce, E.C., Dutton, R.J., Sanchez, L.M. (2019). BLANKA: an Algorithm for Blank Subtraction in Mass Spectrometry of Complex Biological Samples. *Journal of The American Society for Mass Spectrometry*. 30(8): 1426-1434. doi:10.1007/s13361-019-02185-8.
2. Grim, C.M.*, **Luu, G.T.***, Sanchez, L.M. (2019). Staring into the void: demystifying microbial metabolomics. *FEMS Microbiology Letters*. 366(11): fnz135. doi:10.1093/femsle/fnz135.
3. Spraker, J.E., **Luu, G.T.**, Sanchez, L.M. (2019). Imaging mass spectrometry for natural products discovery: a review of ionization methods. *Natural Product Reports*. 37(2): 150-162. doi:10.1039/c9np00038k.
4. Caudill, V.R., Qin, S., Winstead, R., Kaur, J., Tisthammer, K., Pineda, E.G., Carja, O., Eggo, R.M., Koelle, K., Lythgoe, K., Roy, S., Allen, N., Aviles, M., Baker, B.A., Bauer, W., Bermudez, S., Carlson, C., Catalan, F.L., Chemel, A.K., Evans, D., Fiutek, N., Fryer, E., Goodfellow, S.M., Hecht, M., Hopp, K., Hopson Jr., E., Jaber, A., Kinney, C., Lao, D., Le, A., Lo, J., Lopez, A.G., Lopez, A., Lorenzo, F.G., **Luu, G.T.**, Mahoney, A., Melton, R.L., Nascimento, G.D., Pradhananga, A., Rodrigues, N.S., Shieh, A., Singh, R., Sulaeman, H., Thu, R., Tran, K., Tran, L., Winters, E.J., Wong, A., Pennings, P.S. (2020). CpG-creating Mutations are Costly in Many Human Viruses. *Evolutionary Ecology*. 34(3):339-359. doi: 10.1007/s10682-020-10039-z
5. **Luu, G.T.***, Condren, A.R.*, Kahl, L., Dietrich, L., Sanchez, L.M. (2020). Evaluation of data analysis platforms and compatibility with MALDI-TOF imaging mass spectrometry data sets. *Journal of The American Society for Mass Spectrometry*. 31(6): 1313-1320. doi:10.1021/jasms.0c00039
6. **Luu, G.T.**, Galey, M.M., Sanchez, L.M. (2020). Optimization of protein extraction from tampons for mass spectrometry-based ovarian cancer biomarker discovery. *BUCHI Application Note*. <https://www.buchi.com/us-en/node/11206>.

* indicates co-first authorship

Oral Presentations

1. **Luu, G.T.*** and Amagata, T. Discovery of Novel Cytotoxic Secondary Metabolites in Actinomycetes Through Analysis of Biosynthetic Gene Clusters. Oral Presentation at UC Berkeley 19th Annual Microbiology Student Symposium. Berkeley, CA. April 2018.
2. **Luu, G.T.*** and Sanchez, L.M. Cheese-Rind Microbes: Untargeted metabolomics of complex biological systems. UIC Small Metabolite Community. Oral Presentation at Chicago, IL. February 2019.
3. **Luu, G.T.*** and Sanchez, L.M. Discovery of Ovarian Cancer Biomarkers Using Bottom Up Proteomics. UIC Small Metabolite Community. Oral Presentation at Chicago, IL. April 2020.
4. **Luu, G.T.*** and Sanchez, L.M. Complex Community Metabolome Interactions from the Cheese Rind-Derived Microbiome. Oral Presentation at American Society for Pharmacognosy 2020 Young Members Symposium. Virtual. August 2020.

5. **Luu, G.T.***, Kishore, S., Sanchez, L.M. BLANKA: a tool for Blank Subtraction in Mass Spectrometry of Complex Biological Samples. Flash Talk at Chicago Mass Spec Day 2020. Virtual. August 2020.
6. **Luu, G.T.***, Kishore, S., Sanchez, L.M. BLANKA: a tool for Blank Subtraction in Mass Spectrometry of Complex Biological Samples. Flash Talk at Global Natural Products Social First User Meeting. Virtual. August 2020.
7. **Luu, G.T.***, Galey, M.M., Sanchez, L.M. Optimization of protein extraction from tampons for mass spectrometry-based ovarian cancer biomarker discovery. Recorded Oral Presentation for BUCHI Online Webinar. Virtual.
<https://buchi.showpad.com/share/RmvYjCCoqE2hPWrZKntTc>.

* indicates presenter(s)

Posters

1. **Luu, G.T.***, Bray, W.M., Lokey, R.S., Valeriote, F.A., Amagata, T. A New Cytotoxic Furaquinocin Isolated from the Marine-Derived Streptomyces sp. CP53-67. Poster at CSUPERB 2018. Santa Clara, CA, January 2018.
2. **Luu, G.T.*** and Amagata, T. Discovery of Novel Cytotoxic Secondary Metabolites in Actinomycetes Through Analysis of Biosynthetic Gene Clusters. Poster at UC Berkeley 19th Annual Microbiology Student Symposium. Berkeley, CA. April 2018.
3. **Luu, G.T.***, Bray, W.M., Lokey, R.S., Amagata, T. Discovery of Novel Secondary Metabolites from Streptomyces sp. CP26-58. Poster at SFSU COSE 20th Annual Student Showcase. San Francisco, CA. May 2018.
4. **Luu, G.T.***, Grim, C.M.*, Zink, K., Burdette, J., Sanchez, L.M. Investigation of the metabolites in ovarian cancer using imaging mass spectrometry. Poster at Chicago Mass Spec Day. Chicago, IL. July 2019.
5. **Luu, G.T.***, Cleary-Little, J.L., Pierce, E.C., Dutton, R.J., Sanchez, L.M. Complex Community Metabolome Interactions from the Cheese Rind-Derived Microbiome. Poster at American Society of Mass Spectrometry Annual Conference 2020 Reboot. Virtual. June 2020.
6. **Luu, G.T.***, Galey, M.M., Sanchez, L.M. Optimization of protein extraction from tampons for mass spectrometry-based ovarian cancer biomarker discovery. Poster at UIC College of Pharmacy Research Day 2020. Virtual. November 2020.

* indicates presenter(s)

Mentoring

Shreya Kishore	May 2020 – July 2020
Haverford College	
<ul style="list-style-type: none"> • Mentored in 1) mining mass spectrometry-based metabolomics datasets to identify differentially expressed secondary metabolites and 2) developing an in-house metabolite database using Python, Flask, HTML/CSS, and MySQL. 	

Teaching Experience

PHAR 504 Teaching Assistant	Aug 2019 – Dec 2019
University of Illinois at Chicago College of Pharmacy	
<ul style="list-style-type: none"> • Pathophysiology, Drug Action, and Therapeutics (PDAT) 5: Immunology/Respiratory 	

PHAR 505 Teaching Assistant Jan 2019 – May 2019
University of Illinois at Chicago College of Pharmacy

- Pathophysiology, Drug Action, and Therapeutics (PDAT) 5: Cardiovascular

PHAR 503 Teaching Assistant Aug 2018 – Dec 2018
University of Illinois at Chicago College of Pharmacy

- Pathophysiology, Drug Action, and Therapeutics (PDAT) 3: Renal, Electrolytes, and Nutrition

Supplemental Instruction Facilitator Aug 2016 – May 2018
San Francisco State University College of Science and Engineering

- The Supplemental Instruction Program
- Facilitator for supplemental instruction classes in Calculus II and General Chemistry I

CHEM 335 Teaching Assistant Aug 2017 – Dec 2017
San Francisco State University College of Science and Engineering

- Organic Chemistry II

Outreach Activities

Skype A Scientist Oct 2020

- Skype A Scientist aims to connect students in classrooms to scientists.
- As a microbiologist, I spoke to a 6th grade class interested in the human microbiome and the life of a scientist.
- Communicated my work on the cheese microbiome and answered questions related to my work and life as a student/scientist.

Expanding Your Horizons 2020 Conference (canceled, COVID-19) Mar 2020

- Expanding Your Horizons (EYH) Chicago is a non-profit organization that hosts one day symposiums aimed at introducing STEM careers to middle school-aged girls through engaging activities and workshops.
- Workshop: Cheese Rind Microbes: Introducing A Taste of Science – One-hour workshop designed to provide a high-level overview of microbial diversity in fermented foods, including hands-on microbiology demonstrations and discussion on microbial diversity and metabolites.

NSF Cheese Outreach Module Sep 2018 – Oct 2018

- Set of three workshops for the education of elementary school aged students from underserved communities on microbial communities using the cheese microbiome as a model system for fermented foods.

Extracurricular Activities

UCSF COVID-19 Hackathon May 2020 – June 2020

Team 38 – UCSF Doctor's Academy Student Tracker Tool

- In collaboration with the UCSF Fresno Latino Center for Medical Education and Research (LaCMER), the Doctor's Academy program aims to prepare high school students from economically or educationally disadvantaged backgrounds for careers as future healthcare professionals.
- Learned front and back-end technologies to create a basic web application using Python, MySQL, Flask, SQLAlchemy, HTML, CSS, and Javascript to assist in tracking UCSF Doctor's Academy student academic progress.