

Gordon T Luu

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<https://gtluu.github.io/>

Objective

Interdisciplinary scientist passionate applying in data science and bioanalytical chemistry to studying natural products through mass spectrometry with an expertise including but not limited to mass spectrometry, liquid chromatography, programming (Python, R, SQL, HTML/CSS, bash), and NMR. Experienced in analysis of untargeted metabolomics data using existing pipelines/software and developing novel pipelines towards the detection of small molecules of interest. Currently in search of an internship to gain industrial experience towards becoming a data scientist.

Education

University of California, Santa Cruz PhD Candidate in Chemistry	Jan 2021 - Present
University of Illinois at Chicago PhD Candidate in Pharmacognosy (transferred)	Aug 2018 - Dec 2020
San Francisco State University Bachelor of Science in Microbiology Minor in Chemistry Graduated <i>cum laude</i>	Aug 2013 - May 2018

Research Experience

PhD Candidate University of California, Santa Cruz University of Illinois at Chicago Advisor: Dr. Laura Sanchez	Jan 2021 - Present Aug 2018 - Dec 2020
<ul style="list-style-type: none">• 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 Microbiome: I use mass spectrometry-based proteomics to detect and identify ovarian cancer biomarkers, which can be used to inform new screening/diagnostic procedures.• Software and Data Analysis Pipelines: I write software and design data analysis pipelines for the above projects and others in the Sanchez Lab in order to streamline proper data analysis workflows.	
Undergraduate Research Assistant San Francisco State University Advisor: Dr. Taro Amagata	Apr 2016 - Jul 2018
<ul style="list-style-type: none">• 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

2022	American Society for Mass Spectrometry Graduate Student Travel Award
2020	University of Illinois Cancer Center Cancer Science Prize - Poster 2 nd 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 20 th Annual Student Showcase - Poster Section UL 3 rd Place

Publications

9. **Luu, G.T.**, Ge, C., Tang, Y., Li, K.L., Cologna, S.M., Burdette, J.E., Su, J., Sanchez, L.M. (2022). An integrated approach to protein discovery and detection from complex biofluids. *bioRxiv*. doi: 10.1101/2022.01.03.474834. *Submitted to PNAS*.
8. **Luu, G.T.**, Lizama-Chamu, I., McCaughey, C.S., Sanchez, L.M., Wang, M. (2021). TIMSCONVERT: A simple workflow for conversion of trapped ion mobility data to open-source formats. *bioRxiv*. doi: 10.1101/2021.12.09.472024. *Submitted to Bioinformatics, In Revision*.
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>
7. **Luu, G.T.** and Sanchez, L.M. (2021). Towards improvement of screening through mass spectrometry-based proteomics: ovarian cancer as a case study. *International Journal of Mass Spectrometry*. 469: 116679. doi: 10.1016/j.ijms.2021.116679.
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.
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
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.
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.

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.

* indicates co-first authorship

Oral Presentations

13. **Luu, G.T.***, Lizama-Chamu, I., McCaughey, C.S., Sanchez, L.M., Wang, M. Leveraging Mass Spectrometry Data for Natural Product Discovery. Oral Presentation at UCSC Small Metabolite Community. Santa Cruz, CA. March 2022.
12. **Luu, G.T.***, Cologna, S.M. Burdette, J.E., Sanchez, L.M. Tampons as a Source of Proteins for MALDI-TOF Based Profiling to Screen for Ovarian Cancer. Oral Presentation at American Society of Mass Spectrometry Annual Conference 2021. Philadelphia, PA. October 2021.
11. **Luu, G.T.*** and Sanchez, L.M. MALDI-TOF Based Ovarian Cancer Screening Using Proteins Sourced from Tampons. Oral Presentation at UCSC Chemistry and Biochemistry Annual Fall Conference 2021. Santa Cruz, CA. September 2021.
10. Wang, M.* and **Luu, G.T.*** The Mass Spectrometry Query Language - A flexible way to discover, explore and extract mass spectrometry data. Oral Presentation at UIC Small Metabolite Community. Virtual. September 2021.
9. **Luu, G.T.*** and Sanchez, L.M. A Potential Ovarian Cancer Biomarker Identified from Murine Vaginal Lavages Using Bottom-Up Proteomics. Oral Presentation at Chemical Biology in the Bay Area Day 2021. Virtual. May 2021.
8. **Luu, G.T.*** and Sanchez, L.M. Identification of Ovarian Cancer Biomarkers from Murine Vaginal Lavages Using Bottom-Up Proteomics. Oral Presentation at University of California Chemical Symposium 2021. Virtual. March 2021.
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. November 2020. <https://buchi.showpad.com/share/RmvYjCCoqE2hPWzKntTc>
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.
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.
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.
3. **Luu, G.T.*** and Sanchez, L.M. Discovery of Ovarian Cancer Biomarkers Using Bottom Up Proteomics. Oral Presentation at UIC Small Metabolite Community. Chicago, IL. April 2020.

2. **Luu, G.T.*** and Sanchez, L.M. Cheese-Rind Microbes: Untargeted metabolomics of complex biological systems. Oral Presentation at UIC Small Metabolite Community. Chicago, IL. February 2019.
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.

* indicates presenter(s)

Posters

8. **Luu, G.T.***, Lizama-Chamu, I., McCaughey, C.S., Sanchez, L.M., Wang, M. Leveraging Mass Spectrometry Data for Natural Product Discovery. Poster at Marine Natural Products Gordon Research Conference 2022 and Gordon Research Seminar 2022. Ventura, CA. March 2022.
7. **Luu, G.T.***, Little, J.C., Pierce, E.C., Dutton, R.J., Sanchez, L.M. Using Tripartite Communities to Identify Bacterial-Fungal Interactions in the Cheese Rind Microbiome. Poster at American Society of Pharmacognosy Vanguard of Natural Product Research 2021. Virtual. July 2021.
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 University of Illinois at Chicago College of Pharmacy Research Day 2020. Virtual. November 2020.
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.
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.
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.
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.
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.

* indicates presenter(s)

Mentoring

Shreya Keyshore Haverford College	Jun 2020 - Aug 2020
Kiley Cleland, ACCESS Student Cabrillo College	Jun 2021 - Aug 2021
Celine Ertekin, Volunteer University of California, Santa Cruz	Oct 2021 - Present
Eowyn Acres, Volunteer University of California, Santa Cruz	Oct 2021 - Present

Teaching Experience

PHAR 504 Pathophysiology, Drug Action, and Therapeutics (PDAT) 5: Immunology/Respiratory University of Illinois at Chicago College of Pharmacy	Aug 2019 - Dec 2019
PHAR 505 Pathophysiology, Drug Action, and Therapeutics (PDAT) 5: Cardiovascular University of Illinois at Chicago College of Pharmacy	Jan 2019 - May 2019
PHAR 503 Pathophysiology, Drug Action, and Therapeutics (PDAT) 5: Renal, Electrolytes, and Nutrition University of Illinois at Chicago College of Pharmacy	Aug 2018 - Dec 2018
Supplemental Instruction Facilitator Calculus II and General Chemistry I San Francisco State University College of Science and Engineering	Aug 2016 - May 2018
CHEM 335 Organic Chemistry San Francisco State University College of Science and Engineering	Aug 2017 - Dec 2017

Outreach Activities

Expand Your Horizons 2021 and 2022 Conference	Mar 2021 Mar 2022
<ul style="list-style-type: none">• 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 adapted to a virtual format designed to provide a high-level overview of microbial diversity in fermented foods, including virtual activities and discussion on microbial diversity and metabolites.• https://gtluu.github.io/eyh2021/	
Skype A Scientist	Oct 2020
<ul style="list-style-type: none">• 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 work on the cheese microbiome and answered questions related to my work and life as a student/scientist.	
Expand Your Horizons 2020 Conference (canceled Due to COVID-19)	Mar 2020
<ul style="list-style-type: none">• 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 diversity using the cheese microbiome as a model system for fermented foods.

Extracurricular Activities

UCSF COVID-19 Hackathon

May 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.