

# Gordon Luu

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## Education

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University of California, Santa Cruz PhD Candidate in Chemistry Advisor: Dr. Laura Sanchez	Jan 2021 - Present
University of Illinois at Chicago PhD Candidate in Pharmacognosy Advisor: Dr. Laura Sanchez	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

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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"><li>• 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.</li><li>• 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.</li><li>• 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.</li></ul>	
Undergraduate Research Assistant San Francisco State University Advisor: Dr. Taro Amagata	Apr 2016 - Jul 2018
<ul style="list-style-type: none"><li>• 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.</li></ul>	

## Awards

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2020	University of Illinois Cancer Center Cancer Science Prize - Poster 2 <sup>nd</sup> 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

## Publications

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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>
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*. Submitted.

\* indicates co-first authorship

## Oral Presentations

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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 19<sup>th</sup> 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. Oral Presentation at UIC Small Metabolite Community. Chicago, IL. February 2019.
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.

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. November 2020.  
<https://buchi.showpad.com/share/RmvYjCCogE2hPWrZKntTc>
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.

\* indicates presenter(s)

## Posters

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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 19<sup>th</sup> 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 20<sup>th</sup> 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 University of Illinois at Chicago College of Pharmacy Research Day 2020. Virtual. November 2020.

\* indicates presenter(s)

## Mentoring

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Shreya Keyshore Jun 2020 - Aug 2020  
Haverford College

- Co-mentored in analysis of MALDI-TOF imaging mass spectrometry datasets to identify secondary metabolites produced by the omentum in ovarian cancer.

## Teaching Experience

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PHAR 504 Teaching Assistant Aug 2019 - Dec 2019

University of Illinois at Chicago College of Pharmacy

- 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

- 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

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Expand Your Horizons 2020 Conference Mar 2021

- 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 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

- Skype A Scientist aims to connect students in classrooms to scientists.
- As a microbiologist, I spoke to a 6<sup>th</sup> 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

- 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**

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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.