Jean-Louis Bru, Ph.D.

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Department of Biological Sciences

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EDUCATION

Ph.D. in Microbiology December 2022
University of California, Irvine – Irvine, CA

M.S. in Biological Sciences March 2022
University of California, Irvine – Irvine, CA

B.S. in Biochemistry & Molecular Biology June 2017
University of California, Irvine – Irvine, CA

B.A. in French June 2017
University of California, Irvine – Irvine, CA

Transferred from Golden West College to UC Irvine June 2014
Golden West College – Huntington Beach, CA

TEACHING POSITIONS

Instructional Assistant Professor (Full-Time, Non-Tenure Track Position) Fall 2023 – Present
Chapman University – Orange, CA

BIOL 204L: Introduction to Biology Lab (4 courses, 16-20 students)
BIOL 205: Evolution and Diversity of Multicellular Organisms Lecture (2 courses, 69-84 students)
BIOL 205L: Evolution and Diversity of Multicellular Organisms Lab (2 courses, 16-18 students)
BIOL 208L: Molecular Biology Lab (2 courses, 16-17 students)
BIOL 227: Darwin and the Galápagos Lecture (1 course, 24 students)
BIOL 317: Microbiology Lecture (5 courses, 45-56 students)
BIOL 317L: Microbiology Lab (4 courses, 16-20 students)
BIOL 329: Immunology Lecture (1 course, 23 students)
BIOL 417: Medical Microbiology Lecture (2 courses, 15-17 students)
BIOL 450: Cell Biology Lecture (2 courses, 17-19 students)
BIOL 498: Capstone Course for Biology Major (4 courses, 13-16 students)

- Create engaging lessons that incorporate active learning activity and case studies to connect biological concepts with real-world applications, which enhance the learning experience for students.
- Design stunning Canvas course template for students to have an intuitive navigation experience, which promotes engagement and keeps students on top of their work.
- Participate in the Schmid Success Task Force survey committee to plan, implement, and analyze surveys that gather feedback from students to create a diverse, equitable, and inclusive environment.

Adjunct Professor – BIOL G210: General Microbiology Lecture Fall 2022 – Summer 2024
Golden West College – Huntington Beach, CA

- Arranged the lecture slides in a concise manner to help students navigate challenging microbiology materials and include case study during lecture to relate microbiology concepts to real-world scenarios.

Adjunct Professor – BIOL G210L: General Microbiology Laboratory Fall 2022 – Summer 2024
Golden West College – Huntington Beach, CA

- Lectured twice a week on microbiology concepts and techniques before students perform their laboratory experiments on various microorganisms.
- Guided students throughout their microbial experiments which include using aseptic techniques, differentiating mixed bacterial cultures, and identifying unknown microorganisms.

Lecturer – BIOSCI M122: General Microbiology Lecture Summer 2024 – Summer 2025
University of California, Irvine – Irvine, CA
- Use active learning strategies to lecture students weekly, assess their learning with quizzes, and provide detailed feedback on their assignments or summative exams.

Lecturer – BIOSCI M118L: Experimental Microbiology Lab Summer 2021 – Summer 2023
University of California, Irvine – Irvine, CA
- Develop and teach a 5-week course on antibiotic resistance, differentiating bacterial species, writing composition, and literature comprehension with a focus on developing critical thinking skills by solving scientific challenges and designing experiments.

Laboratory Coordinator – BIOL 205L: General Biology II Spring 2023
Chapman University – Orange, CA
- Coordinated with a team of laboratory instructors to align lab activities with the course curriculum goals.
- Assisted laboratory instructors in providing effective communication with students, troubleshooting issues arise during laboratory experiments, and helping address questions or concerns from students.

Laboratory Instructor – BIOL 205L: General Biology II Spring 2022 – Spring 2023
Chapman University – Orange, CA
- Presented weekly 30-45 min pre-laboratory lecture about lab exercises and theory, then guided students in correct laboratory technique and safety during the execution of an inquiry-based laboratory experiment.
- Held weekly office hours, graded all assignments submitted by students, and helped write midterm and final exam for the laboratory section of BIOL 205L - Evolution and Diversity of Multicellular Organisms.

Lecturer – BIOL 450: Cell Biology Fall 2022
Chapman University – Orange, CA
- Outlined and taught the 16-week course on cell structure and cellular physiology with specific student learning objectives (SLOs) so that students understand the concepts and techniques used in cell biology.
- Engaged students in learning activities such as “You’re the Professor!” and assessments that encouraged them to test their knowledge and collaborate outside of the class.

Laboratory Instructor – BIOL 204L: General Biology I Fall 2022
Chapman University – Orange, CA
- Given weekly 30 min pre-laboratory lectures on introductory concepts in biology, then explained to first year biology students the laboratory activities to ensure safe laboratory experiments.
- Managed the logistical aspect of laboratory courses by recording post lab assignment and exam grades.

Teaching Assistant – 10 BIOSCI Lecture Courses Fall 2018 – Winter 2022
University of California, Irvine – Irvine, CA
BIOSCI 98: Biochemistry (3 courses, 50-200 students)
BIOSCI 99: Molecular Biology (2 courses, 50-150 students)
BIOSCI M114: Advanced Biochemistry (1 course, 43 students)
BIOSCI M122: General Microbiology (4 courses, 40-100 students)
- Prepared discussion materials, held weekly office hours, provided close mentorship to students.

Lab Instructor – 9 BIOSCI Lab Courses Fall 2018 – Winter 2022
University of California, Irvine – Irvine, CA
BIOSCI M114L: Biochemistry Lab (3 courses, 20-22 students)
BIOSCI M116L: Molecular Biology Lab (4 courses, 20-22 students)
BIOSCI M118L: Experimental Microbiology Lab (2 courses, 18-40 students)
- Prepared laboratory materials for students, delivered instructional lectures, demonstrated lab techniques to assist students with lab projects, and provided feedback to assignments, lab reports, and exams.

ADDITIONAL TEACHING EXPERIENCE

Faculty Fellow / Associate – Center for Learning & Teaching Excellence Spring 2025 – Present
Chapman University – Orange, CA

- Use AI tools to create interactive learning experiences, such as biological or psychological simulations:
  - Link to Interactive 3D Skeleton
  - Link to Lac Operon Simulation
  - Link to PCR & Gel Electrophoresis Simulation
  - Link to 1 out of 40+ Personality Disorder Chatbot
- Meet individually with instructors interested in using AI (Copilot, Claude, ChatGPT, Gemini, Perplexity) or specific teaching tools (Gradescope, YuJa, Labster, Canvas API) in their courses.
- Redesign the Center for Learning & Teaching Excellence official website to promote and include additional teaching tools and techniques for instructors across the entire university.
- Upcoming workshops & presentation for the Center for Learning & Teaching Excellence:
  - ***Grading with AI Tools***: Participants will learn to use AI to provide efficient and consistent, rubric-based feedback on student essays and problem sets.
  - ***Make Personalized Canvas Quiz in 5 Minutes with AI and Google Sheets***: Participants will learn a workflow for generating quiz questions with AI and automatically uploading them to Canvas
  - ***Create Relevant Case Studies with AI***: Participants will learn how to create authentic case study scenarios that enhance student application of concepts and use critical thinking skills.
  - ***Building Interactive Learning Apps with AI***: Participants will see concrete examples of AI-generated educational apps that enhance student engagement and learning.

Workshop Presenter – Center for Learning & Teaching Excellence Symposium Winter 2025
Chapman University – Orange, CA

- Title: "Leveraging AI to Close Academic Readiness Gaps"
- Focused on leveraging artificial intelligence tools, particularly AI tutors and learning assistants like Personify and NotebookLM, to address academic readiness gaps and enhance student learning outcomes.

Canvas Design Leader – Educational Technology Services Community Meeting Fall 2024 – Present
Chapman University – Orange, CA

- Title: "Fostering Excellence in Digital Course Design"
- Developed and led a Canvas design initiative that enhanced student engagement and learning outcomes through intuitive navigation, clear organization, and user-centered course structures.

Syllabus Design Presenter – Center for Learning & Teaching Excellence Workshop
Fall 2023
Chapman University – Orange, CA

- Featured presenter at a faculty workshop, showcasing innovative syllabus that promotes engagement through clear organization and design.

Guest Lecturer – BIOL 211: Cellular and Molecular Biology Fall 2021 – Spring 2022
Santa Ana College – Santa Ana, CA

- Title: "Antibiotic Resistance in the Microbiota of Refugees from the Middle East in Germany"

Guest Lecturer – BIOSCI Lecture & Lab Courses Spring 2020 – Fall 2021
University of California, Irvine – Irvine, CA
BIOSCI M114L: Biochemistry Lab (Topic: "Protein Isoaspartyl Methyl Transferase (PIMT) Kinetics")
BIOSCI M116L: Molecular Biology Lab (Topics: "RNA Sequencing Analysis" and "Scientific Articles")
BIOSCI M137: Microbial Genetics (Topic: "Antibiotic Resistance in the Microbiota of Refugees")

- Designed lectures and assignments that include active learning, assessment, and diversity/inclusivity.

Course Design – BIOSCI M116L: Molecular Biology Lab Summer & Fall 2020
University of California, Irvine – Irvine, CA

- Developed bioinformatic instructions for online assignments on SARS-CoV-2 genetic analysis.
- Designed quizzes with experimental data and figures that required critical thinking to answer questions.

PEDAGOGY TRAINING

California Community College Internship Program (CCCIP) September 2021 – June 2022
Santa Ana College – Santa Ana, CA
- Experienced faculty life, governance, and teaching at a local community college in Orange County.

Pedagogical Fellows Program January 2021 – December 2021
University of California, Irvine – Irvine, CA
- Received ~100 hrs of advanced pedagogical training and learned strategies for success on academic job market, including job search strategies, writing cover letters, CV, and teaching statement.
- Regarded as "preparing future faculty" program; competitive selection based on record of excellent teaching, promising scholarship, and service to the University, department, and professional community.

Certificate in Course Design October 2021
University of California, Irvine – Irvine, CA
- Learned the foundational overview of successful course design practices. Practiced backward course design by establishing goals for student learning and aligning assignments/assessments with these goals.

PRE-Professor Program (PREPP) January 2021 – May 2021
California State University, Long Beach – Long Beach, CA
- Experienced faculty position, instructionally related activities (teaching, curriculum, mentoring students), service activities, and how research is conducted at a master's comprehensive university.

Certificate in Remote Instruction October 2020
University of California, Irvine – Irvine, CA
- Trained on research-based methods to effectively teach online courses and assist faculty members to transition to online format from in-person courses.

Certificate in Preparing for a Faculty Career July 2019
University of California, Irvine – Irvine, CA
- Learned the academic job search process, the nature of faculty positions at different sorts of institutions, and how to successfully navigate the transition into a faculty career.

Teaching Assistant Professional Development Program (TAPDP) September 2018
University of California, Irvine – Irvine, CA
- Trained teaching assistants on advanced research-based teaching methods including active learning and backward course design; learned how to mentor and supervise undergraduate students.

AWARDS AND HONORS

Canvas Spotlight 2023, 2024, 2025
Chapman University – Orange, CA
- Recognize faculty with outstanding Canvas design that emphasizes organization and ease of navigation.
- In the process of scaling the design to more courses across colleges at Chapman University.

Graduate Assistance in Areas of National Need January 2022 - September 2022
Federal Department of Education
- Support graduates to sustain and enhance capacity for teaching and research in areas of national need.

Molecular Biology & Biochemistry Outstanding Graduate Student Award August 2021
Department of Molecular Biology & Biochemistry at University of California, Irvine – Irvine, CA
- Annual award presented to the most outstanding graduate student with promising future in academia.

Division of Teaching Excellence and Innovation (DTEI) Summer Fellowship 2020, 2021
University of California, Irvine – Irvine, CA
- DTEI graduate fellows work with faculty members to develop high quality remote courses.

Edward Steinhaus Teaching Award June 2020
School of Biological Sciences at University of California, Irvine – Irvine, CA
- Annual award presented to the most outstanding graduate students with promising future as educator.

Graduate Research Fellowships Program May 2019
National Science Foundation
- Received Honorable Mention out of approximately 12,000 applications and 2,000 award offers.
- The program supports outstanding graduate students who are pursuing research-based doctoral degrees.

Excellence in Research in Biological Sciences April 2017
School of Biological Sciences at University of California, Irvine – Irvine, CA
- Annual reward presented to undergraduates for their outstanding research which gives them the opportunity to have their research published in UCI Undergraduate Research Journal.

Undergraduate Research Opportunities Program (UROP) September 2016
University of California, Irvine – Irvine, CA
- Received fellowship to support proposal writing, research plans development, and results presentation.

Summer Undergraduate Research Program (SURP) July 2016
University of California, Irvine – Irvine, CA
- Received fellowship to support summer research projects under the guidance of a UCI faculty member.

Vietnamese Student Association Leadership Award May 2014
Golden West College – Huntington Beach, CA
- Annual award presented to recognize promising future leaders in the Vietnamese community.

R E S E A R C H E X P E R I E N C E

Biology Education Research January 2025 – Present
Professor Jeremy Hsi, *University of California, Irvine – Irvine, CA*
- Characterized the interaction of *Pseudomonas aeruginosa* with *Staphylococcus aureus* producing phenol soluble modulins (PSMs) on semi-solid surfaces.
- Discovered that *Pseudomonas aeruginosa* produces *Pseudomonas* quinolone signal (PQS) under antibiotic treatment or bacteriophage infection to deviate healthy populations away from dangerous areas.

Ph.D. Research September 2018 – September 2022
Professor Albert Siryaporn, *University of California, Irvine – Irvine, CA*
- Characterized the interaction of *Pseudomonas aeruginosa* with *Staphylococcus aureus* producing phenol soluble modulins (PSMs) on semi-solid surfaces.
- Discovered that *Pseudomonas aeruginosa* produces *Pseudomonas* quinolone signal (PQS) under antibiotic treatment or bacteriophage infection to deviate healthy populations away from dangerous areas.

Undergraduate Research July 2015 – June 2017
Professor Dana W. Aswad, *University of California, Irvine – Irvine, CA*
- Determined enzymatic activity, thermal stability, and propensity to aggregation of 15 protein isoaspartyl methyltransferase (PIMT) mutants that could result in severe neurological disorders and cognitive aging.

PUBLICATIONS

Bru, J.-L., Kasallis, S.J., Chang, R., Nguyen, J., Pham, P., Warren, E., Whiteson, K., Høyland-Kroghsbod, N.M., Limoli, DH, Siryaporn, A. 2023. The great divide: rhamnolipids mediate separation between *P. aeruginosa* and *S. aureus*. *Front. cell. infect. microbiol*. https://doi.org/10.3389%2Ffcimb.2023.1245874

Kasallis, S.J.*, **Bru, J.-L.***, Chang, R., Siryaporn, A. *co-first authors. 2023. Understanding how bacterial collectives organize on surfaces by tracking surfactant flow. *Curr. Opin. Solid State Mater. Sci*. https://doi.org/10.1016/j.cossms.2023.101080

Bru, J.-L., Kasallis, S.J.**,** Høyland-Kroghsbod, N.M., Siryaporn, A. 2023. Swarming of *P. aeruginosa*: Through the lens of biophysics. *Phys. Biol*. https://doi.org/10.1063/5.0128140

Bru, J.-L., Høyland-Kroghsbod, N.M., Siryaporn, A. 2021. Spatial orchestration of bacterial populations by stress response. *Phys. Biol*. https://doi.org/10.1088/1478-3975/abdc0e

Bru, J.-L., Høyland-Kroghsbod, N.M., Siryaporn, A. 2020. Time-lapse Imaging of Bacterial Swarms and the Collective Stress Response. *JoVE*. https://doi.org/10.3791/60915

Bru, J.-L., Rawson, B., Trinh, C., Whiteson, K., Høyland-Kroghsbod, N.M., Siryaporn, A. 2019. PQS produced by the Pseudomonas aeruginosa stress response repels swarms away from bacteriophage and antibiotics. *J. Bacteriol*. https://doi.org/10.1128/jb.00383-19

Kim, J., Chen, B., **Bru, J.-L.**, Huynh, E., Momen, M., Aswad, D.W. 2018. New findings on SNP variants of human protein L-isoaspartyl methyltransferase that affect catalytic activity, thermal stability, and aggregation. *PLOS ONE*. https://doi.org/10.1371/journal.pone.0198266

Juang, C., Chen, B., **Bru, J.-L.**, Nguyen, K., Huynh, E., Momen, M., Kim, J., Aswad, D.W. 2017. Polymorphic Variants of Human Protein l-Isoaspartyl Methyltransferase Affect Catalytic Activity, Aggregation, and Thermal Stability. *J. Biol. Chem*. https://dx.doi.org/10.1074%2Fjbc.M116.765222

SELECTED PRESENTATIONS AT CONFERENCE

Bru, J.-L., Hsu, J.L., Cwik, S., Weglarz, K., Krumm, J. Qualitative Analysis of Student Perspectives on Course-based Undergraduate Research Experiences (CUREs) Using Natural History Collections. Poster presentation at the *Society for the Advancement of Biology Education Research Mid-West Conference*, November 2025.

Bru, J.-L., Hsu, J.L., Cwik, S., Weglarz, K., Krumm, J. Qualitative Analysis of Student Perspectives on Course-based Undergraduate Research Experiences (CUREs) Using Natural History Collections. Poster presentation at the *Society for the Advancement of Biology Education Research Annual Conference*, July 2025.

Bru, J.-L., Siryaporn, A. *P. aeruginosa* swarms are reorganized by phenol soluble modulins (PSMs) produced by *S. aureus*. Poster presentation at the *Molecular Genetics of Bacteria and Phages Meeting*, August 2022.

Bru, J.-L., Siryaporn, A. The Battle of the Surfactants by *Staphylococcus aureus* and *Pseudomonas aeruginosa*. Poster presentation at the *Cold Spring Harbor meeting: Microbial Pathogenesis & Host Response*, September 2021.

Bru, J.-L., Høyland-Kroghsbod, N.M., Siryaporn, A. The production of PSMs by *Staphylococcus aureus* protects the population from *Pseudomonas aeruginosa* invasion. Poster presentation at the *Southern California Systems Biology Symposium*, March 2021.

Bru, J.-L., Siryaporn, A. *Pseudomonas aeruginosa* swarming on semisolid surface and its interaction with *Staphylococcus aureus*. Oral presentation at the *UCI Research in Progress Meeting*, October 2020.

Bru, J.-L., Whiteson, K., Høyland-Kroghsbod, N.M., Siryaporn, A. *Pseudomonas aeruginosa* uses *Pseudomonas* quinolone signaling molecules to stay out of danger from bacteriophage and antibiotics. Poster presentation at the *UCI Department of Molecular Biology & Biochemistry Retreat*, April 2019.

Bru, J.-L., Rawson, B., Trinh, C., Whiteson, K., Høyland-Kroghsbod, N.M., Siryaporn, A. The collective stress response enables *Pseudomonas aeruginosa* to evade bacteriophage and antibiotics. Poster presentation at the *UCI Department of Molecular Biology & Biochemistry Retreat*, March 2019.

Bru, J.-L., Nguyen, K., Huynh, E., Momen, M., Aswad, D.W. Mutations in Human Protein Isoaspartyl Methyltransferase (PIMT) Affect Kinetic Activity, Aggregation, and Thermal Stability. Poster presentation delivered at the *UCI Undergraduate Research Symposium*, May 2017.

Bru, J.-L., Aswad, D.W. Effect of Protein L-Isoaspartyl Methyltransferase Mutations on Central Nervous System Dysfunction. Poster presentation delivered at the E*xcellence in Research School of Biological Sciences Conference*, April 2017.

COMMUNITY OUTREACH & SERVICES

Committee Member – Development & Growth Committee 2025 – Present
Society for the Advancement of Biology Education Research (SABER) – Spokane, WA
- Collaborate with SABER Treasurer to develop and implement fundraising initiatives.

Board Member – Board of Director 2023 – Present
Union of Vietnamese Student Associations (UVSA) – Garden Grove, CA
- Contribute to the strategic planning and financial oversight to ensure long-term organization's success.

Operations Advisor – UVSA Tết Festival 2019 – Present
Orange County Fair & Event Center – Costa Mesa, CA (2019-2024)
Garden Grove Park – Garden Grove, CA (2025)
Golden West College – Huntington Beach, CA (2026)
- Train new members and assist the Operations Director in overseeing the logistics of the 3-day event.

Decorations Director – UVSA Tết Festival 2019 – 2020
Orange County Fair & Event Center – Costa Mesa, CA
- Designed and oversaw the decorative aspect of the 3-day event. Total budget: $5,000.

Operations Director – UVSA Tết Festival 2018 – 2019
Orange County Fair & Event Center – Costa Mesa, CA
- Planned the logistics of the 3-day event. Total budget: $50,000. Attendees: ~50,000.

Internal Vice President – Executive Board 2018 – 2019
Union of Vietnamese Student Associations (UVSA) – Garden Grove, CA
- Oversaw different aspects of the organization including administration and internal development
- Organized the annual and monthly planning schedules for internal events and workshops.

Communication Director – Project Leadership Education and Development 2014 – 2015
Union of Vietnamese Student Associations (UVSA) – Garden Grove, CA
- Outreached to high school and college students in Southern California to promote leadership camps
- Promoted leadership, teamwork, and Vietnamese culture to participants in UVSA camps.

President – Executive Board 2013 – 2014
Golden West College Vietnamese Student Association – Huntington Beach, CA
- Chief executive of the organization, delegating responsibilities to officers to promote Vietnamese culture