J-P. Bingham
College of Tropical Agriculture and Human Resources
Molecular Biosciences and Bioengineering (MBBE)

Educator, Mentor and Scholar

Education

Degree	University	Major
Bachelors (1989-1991) Biochemistry	School of Science, Griffith University, Brisbane, Australia	Biochemistry/Biological Chemistry
Bachelors with Honours (1992) Clinical Biochemistry	School of Science, Griffith University, Brisbane, Australia	Clinical Chemistry/Toxinology
PhD (1993 – 1998) Biochemistry (Admitted 13/09/1999)	Center for Drug Design and Development, Dept of Biochemistry, University of Queensland, Brisbane, Australia	Peptide synthesis/Proteomics

Professional Appointments

Title	Employer	Dates of Employment
Associate Professor	Dept. of Molecular Bioscience and Bioengineering, University of Hawaii, Honolulu, HI	2020 - present
Associate Professor & Graduate Chair	Dept. of Molecular Bioscience and Bioengineering, University of Hawaii, Honolulu, HI	2014 – 2020 (Spring)
Assistant Professor	Dept. of Molecular Bioscience and Bioengineering, University of Hawaii, Honolulu, HI	2007 - 2014
Assistant Research Professor	Dept. of Biology, Clarkson University, Potsdam, NY	2003 - 2007
Post-doctoral position II	Dept. of Pharmacology, Yale School of Medicine, New Haven, CT	2000 - 2003
Post-doctoral position I	Mass Spectrometry Facility, Dept. of Pharmaceutical Chemistry, University of California, San Francisco, CA	1998 - 2000

Professional Memberships

2006-Current Member, American Peptide Society
2006–current Member, American Chemical Society
2004–current Member, Advancing Science, Serving Society
2003–current Member, International Society on Toxinology
1992–current Member, Malacological Society of Australasia
1992–current Member, Federation of the European Biochemical Societies

UH Awards:

- CTAHR Teaching Excellence Award (2011)
- Peter V. Garrod Distinguished Graduate Mentoring Award (2017)

Courses Taught at UHM

- **MBBE 402 Principles of Biochemistry (4 Cr)***
- MBBE 402L Principles of Biochemistry (2 Cr)
- MBBE 610 Building a Better GR. Community. (1-3 Cr)
- MBBE 610 Graduate Seminar (1 Cr)
- **MBBE 611 Professional Development (1 Cr) (cross reg. with TPSS and PEPS)**
- MBBE 691 Special Topics: Fermentation Biochemistry (3 Cr)
- **MBBE 666 Fermentation Biochemistry (3 Cr)**
- MBBE 691 Lectureship Preparation (1-2 Cr)
- **MBBE 499 Undergraduate Research (varying Cr)**
- **MBBE 699 Graduate Research (varying Cr)**
- HNFAS 699 Graduate Research (varying Cr)
- **MBBE 700 Thesis (varying Cr)**
- HNFAS 700 Thesis (varying Cr)
- **MBBE 800 Dissertation (varying Cr)**

(**Bold:** present yearly teaching load)

Period	Number of Students Taught[1]	Total Credit Hours Completed	Credit Hours per Student
2007-2013	954	3497	3.66
2014-2019 *	771	4059	5.27
2019-2024*	697	4093	5.87
UH Career Total	2422	11649	4.81

[1] includes duplicate students

Leadership Roles (Committees, Boards, Advisory, etc.)

- INBRE PATHway Director – State-wide oversight for UG research and professional development (2017 – Present)
- UHCC (U54) Co-Director (Co-PI) Genomic Work Force Development Core (2023 – Present)
- USDA NexGen Co-Director (Co-PI) Creation of a Cooperative BS Degree Program for the Marianas Islands and Beyond (Award # 2023-70440-40178) (2023 – Present)
- INBRE UHM Campus Coordinator (2017 – Present)
- Bayer Faculty and Campus Coordinator (2022 – Present) – Chair for Bayer-CTAHR Graduate Internships and UG Mentorship Programs.
- Organizer of the INBRE Biomedical Research Symposium, a yearly event (2017 – Present)
- Committee Member of the annual CTAHR Student Research Symposium (2013 – 2019)
- Program Advisor and Evaluator (Chair) for the USDA PaCoN Project, PI: Dr Mohammad Arif (PEPS) – (2023 – present)
- Program Reviewer and Evaluator of JABSOM Graduate Programs (2023)
- UH Search Committee Advocate (2022 – Present) (served on 4 Committees)
- Appointed to UH Institutional Review Entity (IRE) for DURC (Dual Use Research of Concern) (10/2015 – Present), 4th Term
- Appointed to UHM Chemical and Physical Hazards Committee (08/2018 – present) 3rd Term
- Advisee to UH CTAHR Office of Communication Services Advisory Council (2020 – present)
- Recruitment Search committee member: MBBE Plant Biochemistry, Position # #82027 (2023)
- Chaired Recruitment Search committees
  - MBBE Plant Biochemistry, Position # 82027 (2016)
  - MBBE Biomolecular Interactions, Position # #84193 (2019)
- Faculty mentorship NIH CORBA (2020-2022) – Dr Mohammad Arif (PEPS, CTAHR)

- Faculty Advisory Committee for Extension Experiences for Undergraduates (REEU) (2020 - present) Drs. Michael Muszynski and Nhu Nguyen (TPPS, CTAHR)
- Appointed member of the CTAHR Associate Dean of Students Advisory Council (2017-2018)
- Advisory Committee Drs Ingelia White/Hongwei Li – Agripharmatech UH Windward CC (2017-2020)
- Governor-appointed member of the Hawaii State Oversight Committee for Medical Marijuana (2016 - 2020)
- Govern Appointment member of the Hawaii State Pesticide Board (2016 – 2022)
- Co-organizer of the inaugural CTAHR 3MEP (2016)
- Co-organizer of the Office of Graduate Education Three Minute Thesis competition (3MT); Head Judge (2016, 2017, 2018)
- Vice-President of the CTAHR Faculty Senate, 2013 – 2014
- Member of the CTAHR Faculty Senate Executive, 2011– 2014, Chair: Instructional Review Committee
- Fulbright Scholar host (Prof. Z. Baoanan, University of the Philippines, Baguio (11/2012-04/2013)
- Participant in the UH-Manoa Strategic Planning Process Focus Group session (2010; 2019)
- Represented CTAHR at Teaching "SURVIVAL SKILLS" AND ETHICS 16th Annual Trainer-of-Trainers Conference Supported by NIH, June 21-26, 2010, Santa Fe, New Mexico
- Member of the CTAHR Faculty Senate, 2009 – 2010, Member of the Instructional Review Committee
- Represented CTAHR on Faculty Panel—Striking a Balance: Teaching, Research, Service-for the New Faculty Orientation (Jan. 2009)
- Member of MBBE Graduate Steering Committee (2009)
- Member of MBBE Curricula Committee (2009 - 2020)
- Represented MBBE on the Biology Steering Committee (2008-2009)

How have I grown:

	Growth	Assistant Professor (2007-2014)	Associate Professor (2014-Present)
Teaching	New Graduate Courses (UHM-1)	**0**	**2**
	Modified Laboratory (UHM-2) WI designation	**0**	**1***
	Graduated Students MS/PhD	**6/1**	**16/5**
	PhD Committee chair(ed)/member	**2/7**	**8/15**
	PhD Committee University Representative (Graduated/active)	**0/0**	**4/3 (+1 terminated)**
	MS Committees chair(ed)/member	**8/7**	**19/24**
	Students taught in total (via 400- and 600-level courses)	**954**	**1408**
	Bingham Laboratory Research Students (UG and GR) who now hold a PhD or MD (degree/total research students)	**11/14**	**18/38 (including in pursuit of)**
Leadership Roles	Departmental	**0**	**Past MBBE Graduate Chair (2014-2020)**
	State/National	**0**	**INBRE HI PATHways Director (Key-Personnel) (2017 – Present)** **NIH U54 UHM Director of Genomic Workforce Development (Co-PI) (2023 – Present)** **National Co-Chair for NIH Genomic Workforce Development Consortium (2023 – Present; Chair-Elect)** **USDA Hawaii/Guam NEXTGEN (Co-PI) (2024 – Present)** **USDA Hawaii NEXTGEN (Chair, Evaluation Committee) (2023 – Present)**

[a]Excludes Start-up funds; [b]Excludes amounts provided by Team Science Grants; *Laid foundation/curricula and piloted the course and then assisted in creating the Writing Intensive (WI) Biochemistry Laboratory (MBBE 402L) with Dr. Daniel Owens (2020).

	Growth	Assistant Professor (2007-2014)	Associate Professor (2014-Present)
Scholarship/Grants	Publications	**14**	**32**
	Research Grants (Direct Funds, listed as PI or Co-PI)	**$795,000[a]**	**$2,570,953.31[b]**
	Team Science Grants (Direct Funds, listed as Co-PI or Key-Personnel)	**0**	**$52,210,077.00 (~$5,000,000.00 direct under budgetary control)**
	Major Federal Training Grants (NIH, USDA)	**0**	**3**
	Natural History Documentaries promoting Bingham's cone snail works (views via YouTube)	**14,000**	**9.7 Milion**
	Advise and mentor(ed)ing Faculty/Faculty Grants	**0**	**5**
	Research Symposium Organized (as Head Judge, Judge Recruitment, and Evaluation)	**2013, 2014 CTAHR Student Research Symposium (SRS) (x2)**	**2015-2019 CTAHR Student Research Symposium (x5) 2017- 2024 INBRE Student Research Symposium (x8) 3-Minute Thesis (3MT) (2016, 2018, 2019, 2020) (x3)**
	Research & Development Partnerships with Hawaiian Businesses	**0**	**5**
Service	UH Service Committees	**9**	**28**
	Governor Appointed Service Committees (Hawaii)	**0**	**2**
	Leading Bayer Graduate Student (a) Mentorship and (b) Internship Programs	**0**	**2**

Graduate Chair of MBBE: Leading one of UH's largest graduate programs demanded immense commitment. During my tenure, the MBBE program produced nearly half of CTAHR's PhD graduates, with cohorts of 65-114 students. My efforts streamlined student recruitment, retention, and compliance, earning recognition as an innovator in graduate education. This dedication culminated in receiving the prestigious Peter V. Garrod Distinguished Graduate Mentoring Award (2017) —the only faculty member in CTAHR to do so.

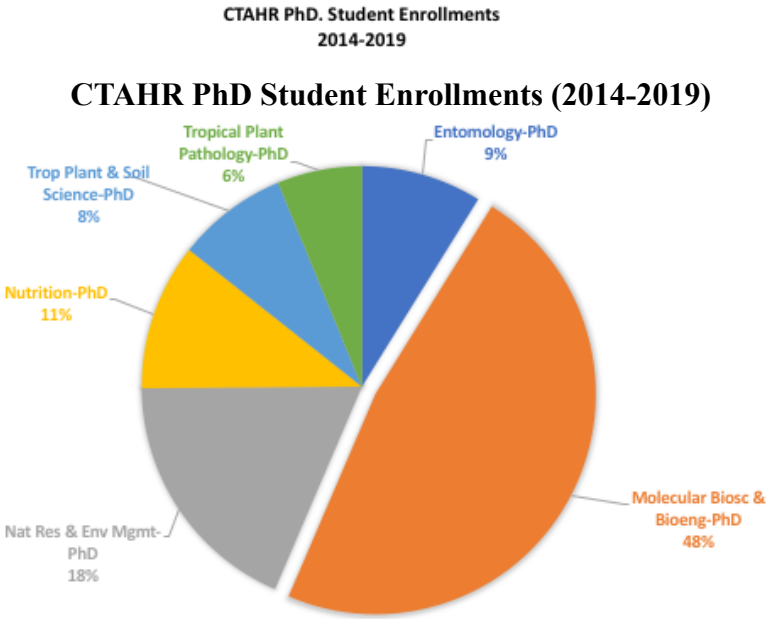
Graduate Chair 2014-2020, designed, built and implemented new student tools:

- Student recruitment and orientation to the program are promoted by 1:1 interaction with each GR student
- MBBE Student Orientation Seminar
- MBBE Academic Planner (MS and PhD)
- MBBE Student Handbook
- MBBE Student Guidebook
- MBBE Student Filling Handbook
- MBBE PhD and MS – Proposal calculator
- MBBE PhD and MS Proposal Rubric and Student Evaluation Sheet
- MBBE PhD Flyers
- How Well do you know the rules that govern your graduate degree?
- MBBE Individual Professional Development Plan (IDP)
- MBBE Graduate Seminar (MBBE 610)
- MBBE Professional Development Class (MBBE 611)

(some tools were Graduate Research Projects)

This appointment has provided essential mentoring, managerial skills, and networks to advance my skills as an accomplished educator, graduate mentor, student advisor, and listener.

The impact of my tenure as MBBE Graduate Chair has left a lasting legacy, most clearly seen in our students' profound growth and self-awareness. As the table below illustrates, I transformed the MBBE Graduate Program into an open, transparent, and equitable system where students



were empowered to take greater ownership of their journey to becoming successful graduate scholars.

The MBBE PhD and MS programs at UHM demonstrate consistent and strong performance within CTAHR, 2013-2024. The MBBE PhD program frequently ranks 1st or 2nd in CTAHR, with stable enrollment numbers ranging from the mid-30s to low-40s. It often competes favourably with other top programs across the university, placing within the top 10-15% of all PhD programs. The MBBE MS program, while experiencing more fluctuations, similarly ranks 1st or 2nd within CTAHR and falls within the top 30-40% of MS programs across the university.

Overall, the MBBE programs are among the strongest in CTAHR, maintaining competitiveness within the college and across other disciplines, including Medicine and Engineering. These programs' stable and strong enrollment trends highlight their appeal and importance within the university's graduate offerings. These statements are derived from the statistical analysis of PhD and MS Enrollments, 2013-2024, across the UH system, provided by the University of Hawai‘i at Mānoa Graduate Division.

Evaluation of Student Perception of the MBBE Graduate Program

Graduate Student Survey*	Graduate Student Survey* response		
Question	**2010**	**2014***	**2019**
"Can you obtain accurate information about MBBE Graduate Program policies"	Yes 56.36% No 21.82% Unsure 18.18%	Yes 94.12%; No 1.96% Unsure 1.96%	Question not provided
"Do you believe that the MBBE Graduate Program should have a detailed handbook that governs all aspects of the policies and procedures for MS and PhD. candidacy in a fully transparent manner"	Yes 89% No 7% Unsure 4%	***Handbook implemented** **MBBE Academic Planner** **Implementation of Professional Development Seminar**	**Handbook implemented** **Guidebook implemented** **Filling Guidebook implemented**
"Are you satisfied with the present departmental policies for MS. And PhD. candidature?"	Yes 79% No 21% Unsure 2%	Yes 85% No 15%	Yes 92% No 4% Unsure 4%
"As a graduate student, do you believe you are obtaining a meaningful education?"	Yes 83% No 5% Unsure 9% No Comment 4%	Yes 83% No 4% Unsure 13% No Comment 0%	Yes 96% No 0% 4% unsure No Comment 0%

* Survey Monkey (yearly survey of well-being, happiness and program satisfaction and worth)

Newly Enrolled MBBE Graduate Students 2013-2024 (Bingham Graduate Chair:2014-2020)

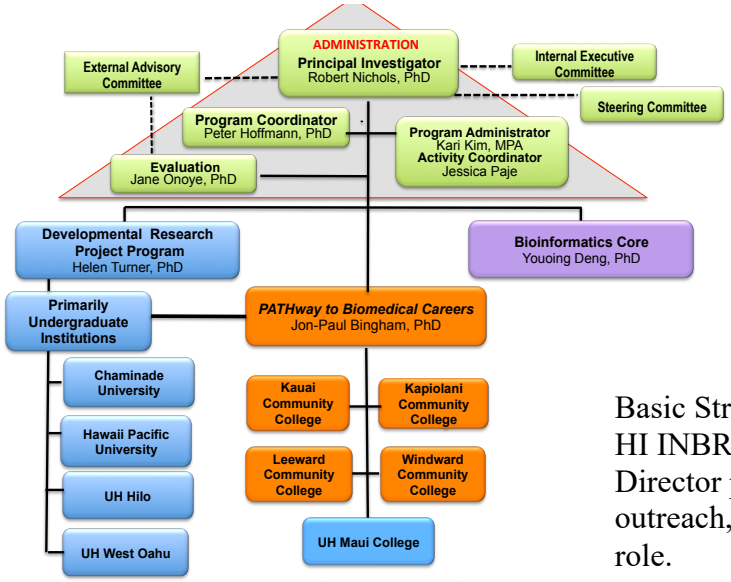
	2013			2014			2015			2016			2017			2018			2019			2020			2021			2022			2023			2024	
MS	X	X	X	X	X	X	10	2	-	11	3	9	1	-	9	2	-	6	3	-	5	4	-	6	-	-	5	X	X	X	X	X	X	X	X
PhD	X	X	X	X	X	X	8	2	-	3	5	1	-	-	7	-	-	9	2	-	5	7	-	2	2	-	2	X	X	X	X	X	X	X	X
	10	0	22	8	0	19	18	4	0	14	8	10	1	0	16	2	-	15	5	-	10	11	-	8	2		7	7	0	9	7	5	4	10	X
MS total	X			X			12			24			10			8			8			10			5			X			X			X	
PhD total	X			X			10			8			7			9			7			9			4			X			X			X	
Total	22			27			22			32			17			17			15			19			9			7			16			10	

Degree Awarded MBBE Graduate Students 2013-2024 (Bingham Graduate Chair:2014-2020)

	2013			2014			2015			2016			2017			2018			2019			2020			2021			2022			2023			2024		
MS	3	-	9	4	6	3	3	1	4	5	2	3	7	4	2	2	1	-	2	3	-	2	1	-	1	1	1	1	2	2	-	-	1	2	X	X
PhD	3	2	2	1	-	5	5	4	-	4	-	-	1	3	2	2	1	3	-	4	1	4	4	2	2	1	1	4	4	2	2	1	1	3	X	X
	6	2	11	5	6	8	8	5	4	9	2	3	8	7	4	4	2	3	2	7	1	6	5	2	3	1	2	5	7	4	2	1	2	5	X	X
MS total	12			13			8			10			13			3			5			3			3			5			1			2		
PhD total	7			6			9			4			6			6			5			10			5			10			4			3		
Total	19			19			17			14			19			9			10			13			8			15			5			5		

Insight Gained: *The true extent of time and effort required for such a commitment can only be fully understood through firsthand experience. This journey demands an extraordinary blend of collaboration, outreach, networking, resilience, determination, and unwavering resolve—qualities that are not for the faint of heart. It is a path that tests and strengthens every fibre of your being.*

Director of the INBRE V PATHways Program (2017 - Present): INBRE (IDeA Networks of Biomedical Research Excellence) is a Hawaii statewide grant program involving most of our undergraduate-based institutions and nearly all of our UH community colleges. The core mission of INBRE is to get UG students involved in biomedical research right from the beginning of their college experience. INBRE also supports a cadre of young investigators (new tenure-track faculty) as sites for the INBRE UG experiences. http://inbre.jabsom.hawaii.edu/?page_id=11. Interactions include students, faculty, campus administrators, and the INBRE administration.



Basic Structural Arrangement of HI INBRE, with PATHways Director playing a central outreach, training and education role.

INBRE Student Research Experience Program Summary

Program Phase	Year 1	Year 2	Year 3	Year 4	Year 5	Grand Total
INBRE III	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	
UH & PUI Institutions	63	102	117	135*	178*	595
INBRE IV	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	
UH & PUI Institutions	216*	209*[1]	141*[1]	152*[1]	183*	901
INBRE V	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	
UH & PUI Institutions	250*	249*				

* Bingham appointed INBRE PATHways Director; [1]COVID-19 period - March 2020 through Spring 2021, with a gradual return to in-person classes starting Fall 2021.

Legend

UH Institutions include:
Kapiolani Community College
Leeward Community College
University of Hawaii at Manoa
University of Hawaii Maui College

PUI Institutions include:
Chaminade University of Honolulu (CUH)
Hawaii Pacific University (HPU)
University of Hawaii at Hilo (UHH)
University of Hawaii at West Oahu (UHW)

As the INBRE PATHways Director, I oversee all undergraduate INBRE research activities across Hawaii, working closely with faculty from the University of Hawaii institutions and Partner University Institutions (PUIs) (listed above), as well as with administrators. Yet the success of initiatives like INBRE reflects the exceptional support from a dedicated and capable team. It is a privilege to continue working alongside them.

In this role, I have implemented innovative programs that have significantly increased student participation and retention across the state. This position has also enabled me to build vital leadership skills by fostering collaboration among faculty across nine Hawaiian and Partner University Institutions (PUIs). Additionally, it has strengthened my network with senior UH administration, including Chancellors, Vice-Chancellors, and Deans.

Moreover, I actively promote the MBB/BE undergraduate and MBBE Graduate programs and develop educational milestones to prepare Hawaii's undergraduates for the workforce and advanced professional education. These efforts now include INBRE partnerships with initiatives like USDA NEXTGEN (Food Biosecurity, PI: Dr. Mohammad Arif) and the NIH Genomic Resource Center (PI: Lang Wu; Co-PI Bingham). Promoting shared resources, experiences, and advice across inter-federal agencies remains a key priority.

Activities and Responsibilities as INBRE PATHway Director:

1. **Student Advising:**
    - Guide the INBRE application process, including identifying and screening laboratory mentors/projects.
    - Conduct open-door sessions offering career advice, academic planning tools, and resources.
    - Assist with letters of recommendation and provide advice for pre-medical school students.
2. **INBRE Student Research Symposium:**
    - Organize and host the annual symposium, including leading a guest panel discussion (with Bingham as the organizer, host, and MC).
    - Serve as the INBRE Head Judge, recruiting over 80 faculty and graduate student judges, assigning 40-60 posters, and managing the orientation and judging process.
    - Develop assessment items and scoring sheets with the support of a team that I direct and coordinate.
    - Adapted and expanded the model from the now-defunct CTAHR student research symposium, transforming it into <u>one of the premier student research symposiums in the state.</u>

3. **INBRE Summer Program (2020, 2021, 2023, and 2024):**
    - Oversee a summer program with 30-45 participants from INBRE programs in Hawaii and other INBRE states.
    - Coordinate 5-10 lectures on Professional Development, 15 on Bioinformatics, and 5-10 Research Seminars.
    - Facilitate access to a three-step Certified Bioinformatics course for INBRE students.
    - The program is also attended by USDA NextGen Graduate Students (PI: Mohammad Arif).
4. **INBRE Bioinformatics Summer Course:**
    - Designed and implemented an online synchronous Introduction to Bioinformatics course.
    - Developed course content, curriculum, assessments, and surveys, highlighted in Bartlett, B., et al. (2023) https://doi.org/10.1002/bmb.21762.
    - We are drafting a follow-up article on further content development and student learning outcomes.
    - This course is a joint effort and shared resource with the U54 Genomic Workforce Development Core (PI: Bingham) and the UHCC "Cancer Research Education, Advancement, Training and Empowerment" (CREATE) summer program (PI: Maskarinec).
5. **Professional Development Program:**
    - Conduct continuous education sessions, including face-to-face lectures and working groups on topics such as:
        - Establishing your professional identity
        - The benefits of professional membership
        - Understanding graduate degrees
        - Career opportunities with a graduate degree
        - Insights into medical school admissions
        - CV preparation
        - Job interview strategies

INBRE HI continues to collaborate with SEPA (Science Education Partnership Award/CIRCLES), Minority Health Research Training (MHIRT), UHM The Undergraduate Research Opportunities Program (UROP), and the UHM Honors Program, integrating and supporting student research activities and professional and career development. Two additional programs that INBRE V (current cycle) will be striking alliances with are (i) Regional Alliance of INBRE Networks (RAIN) and (ii) Hawaii Data Science Institute (HI-DSI); some of these activities are via the PATHway Program to emphasize UG student recruitment and shared resources to ensure student success.

INBRE Podcasts Undertaken by Bingham as PATHways Director, archived in the INBRE Professional Development Library:
https://docs.google.com/document/d/1Ij8s1W1TXhxUtXYu5AXPhWKEzd71wpkPqmw4bKE3kWs/edit?usp=drive_link

Interviews (45 min. session)

1. Research Seminar (Dr. Ben Fogelgren) (Summer 2020)
2. Tight Junctions: Manning the Frontiers of our Innate Immune Defense (Dr. Christopher Capaldo) (Summer 2020)
3. Data Science (Dr. Turner) (Fall 2021)
4. Going with the flow to stop sepsis progression (Dr. Natalija Glibetic) (Fall 2021)
5. Peptidyl t-RNA hydrolase 2 (PTHRH2) protects the heart from Peripartum Cardiomyopathy (PPCM) (Dr. Vanessa Montoya Uribe) (Fall 2021)
6. Structural and Functional Mimicry of Disulfide-Rich Peptides (Dr. Chino Cabalteja) (Spring 2022)
7. INBRE Graduate Schools (Dr. J-P. Bingham) (Summer 2022)
8. Pursuing a career in academic pharmacy (Dr. Mike Espiritu) (Summer 2022)
9. BioHub (Chan Zuckerberg) (Fall 2022)
10. LCMS Acquisition and Analysis (Justin Reinicke) (Fall 2022)
11. Sage Therapeutics (Dr. Zachary Bergeron) (Fall 2022)
12. What's in Your Water (Seth Newton) (Fall 2022)
13. miR-15a/16-1 Cluster Regulation of T Cell Activation (Dr. Frank Urena) (Spring 2023)
14. The Utilization and Unique Biochemistry of Natural Products (Dr. Daniel Owens) (Spring 2023)

How to Videos/Presentations- undertaken or hosted by Bingham (1 hour sessions):

1. Mentorship (Dr. J-P. Bingham) (Summer 2020)
2. Hear from Med. Students about MCATS – Panel discussion (Fall 2020)
3. INBRE Abstracts - How to do an Abstract (Dr. J-P. Bingham) (Spring 2021)
4. Professional Development (Dr. J-P. Bingham) (Fall 2021)
5. How to present a poster and engage your audience, but first do the abstract! (Dr. J-P. Bingham) (Spring 2022)
6. INBRE Graduate Schools (Dr. J-P. Bingham) (Spring 2022)
7. Graduate School Admission Process (Discussion with iDean Julienne Maeda) (Fall 2022)
8. How to present a poster and engage your audience (Dr. J-P. Bingham) (Fall 2022)
9. How to Create and Present a Winning Poster (Dr. J-P. Bingham) (Spring 2023)
10. How to Write an Abstract (Dr. J-P. Bingham) (Spring 2023)
11. Job analysis and Cover Letters (Dr. J-P. Bingham) (Spring 2023)
12. Mentorship (Dr. J-P. Bingham) (Spring 2023)
13. CV Writing Workshop Part 1 (Summer 2023)
14. CV Writing Workshop Part 2 (Summer 2023)
15. Success in Job Hunting and Interviews (Dr. J-P. Bingham) (Fall 2023)
16. Unlocking the Power of LinkedIn: A Guide to Networking (Angelica Valdez and Mark Oandasan) (Fall 2023)

Insight Gained: *A simple comment, thoughtful guidance, and the freedom to explore can profoundly transform a student's entire educational journey. Engaging with students from diverse backgrounds and aspirations starts with asking the right questions and genuinely listening to their needs. This approach not only shapes their future but also fosters meaningful growth within the entire academic community.*

NIH U54 – Pacific Center for Genome Research (PCGR)

- **Grant Amount:** $11 M (08/2023-06/2028) (PI Wu, UHCC – Co-PI: Deng, Bingham, Cassel)
- **Role:** Co-Director, Genomic Workforce Development Core (GWDC) (2023 - Present) (~$1.5 M)

The Pacific Center for Genome Research (PCGR) is a newly established program funded by NIH's National Human Genome Research Institute (NHGRI) via a U54 mechanism dedicated to training the next generation of genomic scientists, with a particular emphasis on advancing precision medicine. This initiative focuses on the career development of underrepresented minority populations, explicitly targeting Native Hawaiians and Pacific Islanders.

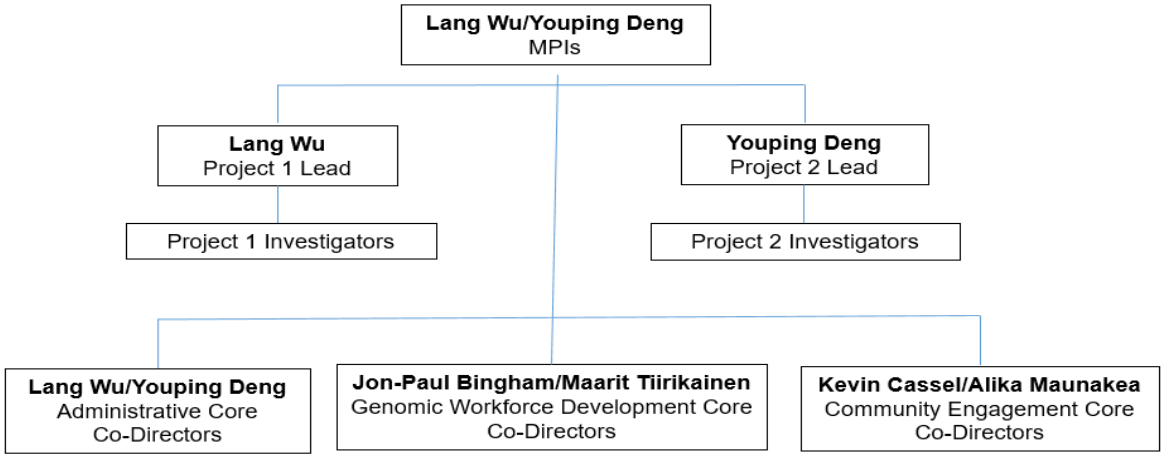


Figure 1. Center organization chart

As the Co-Director of the Genomic Workforce Development Core (GWDC), my responsibilities include overseeing scientific training, professional development, and career advancement for undergraduate (UG), graduate (GR), and post-doctoral fellows. I also manage the daily operations of the Graduate Training program within the PCGR.

Graduate Training Program Tracks

Graduate students have the option to choose from three primary training tracks:

1. **GC (Genomics Core Skills):**
    - **Duration:** 2 years
    - **Degree:** MS or PhD/MD
    - **Focus:** This course provides a foundational understanding of genomic technologies, preparing students for Genomics Technician positions or more advanced roles (with the optional Module 4a in GM for Core Lab Manager Training).

2. **GC + GM (Genomics and Core Management Skills):**
    - **Duration:** 4-5 years
    - **Degree:** PhD
    - **Focus:** Offers specialized training for Core Laboratory Manager/Director roles. This includes advanced genomic technologies and skills in managing supply ordering, service rate setting, invoicing, and interactions with fiscal offices, administrative entities, and vendors.
3. **GC + GB (Genomics and Bioinformatics Skills):**
    - **Duration:** 4-5 years
    - **Degree:** PhD
    - **Focus:** Tailored for those aiming to become bioinformaticians, this track ensures a solid understanding of genomic lab methodologies that best support genomic data analysis.

Each track is structured into modules and sub-modules to ensure comprehensive training tailored to the student's career goals. Students undertake this with the prescribed coursework and research activities, as is typical for degree compliance.

With six U54 Genomic Centers nationwide, we have a strong foundation for student exchanges and collaborative research activities, both in-person and virtually. These opportunities allow us to leverage the unique expertise of each cohort. At UHM UHCC, our cohort is specifically focused on developing the graduate genomic workforce, offering a distinctive model for how NIH-sponsored core facilities can serve as portals for student training.

Insight Gained: *Integrating research and training resources is essential to empower students to chart their paths. This strategy not only fosters student success by guiding them toward their career goals but also demands significant resource management and networking expertise. Working with underrepresented minorities is profoundly enriching, requiring a commitment to embracing diverse experiences and overcoming challenges. This journey is a transformative and humbling experience for educators, underscoring the value of inclusivity in shaping future leaders.*

- **Title:** Creation of a Cooperative BS Degree Program (Coop-BSDP) for the Marianas Islands & Beyond
- **Grant Amount:** $11 M (08/2023-06/2028) (PI Jolly U of Guam)
- **Role:** (Co-Pi) Director for UHM (2023 - Present) (~$ 0.6 M)
- **Note: This project has only just officially commenced (June 2024)**

USDA Nextgen Program involving partnership with:

1. University of Guam
2. Northern Marianas College
3. Guam Community
4. University of Florida,
5. University, and the University of Hawai'i at Mānoa.

COMPASS enhances student qualifications for science and agriculture careers through course-sharing at the University of Florida, University of Hawai'i Manoa, and Utah State University and through internships, research, study-abroad programs, and scholarships. These opportunities help students overcome financial barriers, making them more competitive for local and federal jobs.

Program objectives

1. Expand critical course offerings through institutional partnerships
2. Increase student retention and qualifications through experiential learning opportunities
3. Provide scholarships for food, agriculture, nutrition, natural resources, and human sciences (FANH) students
4. Build student leadership skills through planning and implementing community outreach and recruitment activities.

Major program activities

- providing student career counselling
- facilitating paid internships and research
- promoting professional development and networking
- organizing study-abroad opportunities
- building community engagement skills

Insight Gained: *The intricate process of intertwining inter-institutional fiscal strategies, educational frameworks, and student transfers may be slow, but the outcomes are immensely rewarding. The pursuit of enrichment and student diversity is not without its challenges, yet these are challenges that must be boldly embraced. The transformative impact on our institutions and students makes every effort worthwhile.*

Bingham Lab Research Area:

A. Contributions to Science

1. Discovery, Synthesis, and Bioengineering of Peptide Conotoxins

Peptide conotoxins have been a central focus of my research career, particularly in their development as novel probes for mammalian and insect/invertebrate ion channels. We are among the few groups worldwide maintaining a bio-sustainable supply of milked *Conus* venoms. This unique resource has allowed us to pioneer in-house animal husbandry techniques for feeding and caring for these highly venomous marine snails. While other researchers have attempted to adopt our milked venom strategies, their efforts have typically been short-lived.

2. Advancing Peptide Toxin Research and Development

We have employed classical and proteomic biochemical techniques to enhance the understanding, discovery, and application of new peptide toxins. These methods enable us to investigate the structural activity relationships of toxins, including rapid disulfide bond analysis and the identification of post-translational modifications—features that are highly abundant in conotoxins and other peptide toxins derived from scorpions and spiders. These characteristics often present challenges in *de novo* characterisation and subsequent chemical synthesis, potentially hindering the development of peptide toxins in human pharmaceuticals, veterinary applications and pesticides. Our research explicitly addresses these bottlenecks to facilitate rapid throughput and the future development of lead compounds.

3. Advancements in Peptide Synthesis

Our ongoing work in the chemical synthesis and bioengineering of peptide toxins, including plant-derived peptide cyclotides, has led to the development of novel chemical strategies to enhance the production of complex peptides through thiol ester ligation. By utilising Trifluoromethanesulfonic acid (TFMSA), we have overcome the need for Hydrogen Fluoride (HF), a significant hurdle for many small peptide research laboratories. We are exploring new avenues to bioengineer 'parent-template' toxins by integrating this approach with peptide *N*- to *C*-terminal cyclisation (for peptide cyclotide production). These toxins can be chemically bioconjugated via click-chemistry to create pharmacologically stable compounds that improve the targeting and labelling of specific ion channels.

4. Agricultural and Health Implications

The ion channel targets we focus on, particularly in molluscs and insects, offer novel approaches in agricultural science, food security, and crop protection. These advancements hold the potential for significant human health impacts by combating blood flukes and mollusc-vector diseases such as snail fever (*bilharzia* or *schistosomiasis*) and rat lungworm (*Angiostrongylus cantonensis*). Often categorised as "neglected tropical diseases," these conditions cause considerable harm in developing countries and among agricultural workers.

5. Mentorship and Student Success

I take great pride in the success of my graduate and undergraduate students, who have become researchers and professionals across the globe. They have received rigorous training in biochemistry, including peptide, mass spectrometric, chromatographic sciences, and aquaculture.

With guidance and support, they have been able to explore and advance their interests, whether in academia or industrial research. They carry forward a unique perspective on the lessons nature can teach and valuable insights into the strategic pharmacological developments that have driven the evolution and diversification of the nervous system. Dr. Michael Espiritu and Dr. Cliff Kapono have become Tenure Track Assistant Professors in Pharmaceutical Sciences at Pacific University School of Pharmacy in Hillsboro, Oregon, and Arizona State University, respectively. It is both humbling and gratifying to see that most of my undergraduate and graduate research students have gone on to earn terminal degrees, whether PhD or medical.

B. Contributions to Hawaiian Value-added Products: Collaborative product development – stimulation of economic growth in Hawai'i

1. 'Olena (turmeric) Daily Wellness Inc/Good Mana LLC

Working with scientific separation and analytical abilities, the Bingham Laboratory has assisted in developing and validating unique extraction techniques and processing methodologies that add significant value to the fledging Hawaii Olena Industry. Collaborating with Dr Radovich (TPSS), our research efforts have also examined stock materials and the favourable environment to ensure the production of high-quality materials. This industry holds the potential to be worth millions of dollars to Hawaii. Our goal is to continue supporting its growth.

2. 'Awapuhi (Ginger) Bitter Root Brewery

Proprietary extraction techniques developed in the Bingham Laboratory have enabled Bitter Root Brewery (BRB) (https://www.facebook.com/brbhawaii) to create a range of unique, high-quality products that showcase the diverse flavour profiles of Hawaiian Ginger. These innovations have produced Ginger Beer, ginger syrups, and ginger cookies, all made in Hawaii. BRB originated from a UHM student entrepreneurship research course (MBBE 666: Fermentation Biochemistry) and is now a thriving business run by UH MBBE graduates. This success story exemplifies the power of student entrepreneurship in STEM fields and the potential impact on Hawaii's economy.

2. 'Ulu (Breadfruit) Ulu Cooperative / La Tour Bakery

In collaboration with the Hawai'i 'Ulu Cooperative (https://eatbreadfruit.com/), the Bingham Laboratory has recently developed value-added products featuring 'Ulu as a primary carbohydrate base. These innovations include a distinctive bread pudding and, more recently, a uniquely flavoured 'Ulu Vodka. The Bingham Laboratory is discussing partnering with La Tour Bakehouse to expand Ulu product offerings further. This initiative is rooted in a graduate student-led concept. Our work exemplifies non-academic partnership collaboration, support, and perseverance in developing new value-added Hawaiian products.

3. Sea Weed (Limu)/ Okonokai (ōh-kō-nō-kah-ee) Sea Snacks

Our partnership with Okonokai (https://okonokai.com) marks our latest venture in R&D, focused on supporting Hawaiian-based enterprises. This collaboration emerged from a forum panel discussion hosted by the UH Pacific Asian Center for Entrepreneurship (PACE) at the new Residences for Innovative Student Entrepreneurs (RISE) building. A shared interest in developing unique products—grown, harvested, and made in Hawaii with Aloha—was established during this event. Together, we aim to enhance the flavour, explore nutritional benefits, and refine processing techniques to improve the quality and profitability of Kona-grown seaweed products.

Insight Gained: *As a minority-serving institution committed to advancing Hawaii's well-being, the University of Hawaii is an untapped reservoir of talent and expertise. By championing diversity, inclusion, and entrepreneurship in STEM, we can catalyze the economic growth Hawaii urgently needs. Our mission is to weave these principles into every facet of our work—education, mentorship, and research—demonstrating that success is not only possible but inevitable. Think local, think talent, think network, and uncover unseen opportunities!*

Graduate Students (2024)

Category	Current Number of Students	Number Graduated (Career)
Chair of Master's Committees.	7	26
Chair of Ph.D. Committees	3	6
Member of Master's Committees	2	24
Member of PhD. Committees	7	33

Present Bingham Laboratory Graduate Students (*MBBE unless otherwise indicated)
Ph.D.

PhD (Chair)

- Nicholas Sinclair
- Chelsea Miller
- Angelica Valdez

MS (Plan A) (Chair)

- June Jackson (TPSS)
- Yichen Dou
- Jessie Nguyen
- Kulani DeSimone
- Mitchell Marabella
- Adrian Gomez
- Buster Bickerton

Present PhD. Student Committees (member)

- Mathew Riek (Chemistry) (UR)
- Justin Padron (CMB)
- Ludwig Mayerlen (TRMD)
- Hongwen Wu (CMB
- Prem Lal Mahato (HNFAS)
- Ivy Vo (CNS)
- Lovina Abdi (RDB) (UR)

MS (Plan A)

- Nicolas Cetraro
- Beverly Jane Rice

Completed/Past Students

PhD (Chair)

- Emory Zitello
- Anthony Mau
- Ray Zhang
- Michael Espiritu
- Parasha Thapa
- Zachary Bergeron

MS (Plan A) (Chair)

- Erick Delgado
- Sean Wiere
- Chino Cabalteja
- Peter Yu
- Elizabeth Andrews
- Angelique Showman
- Christopher Sugai
- Jeffery Milisen
- Kristen Wheeler
- Zeb Philips
- Joyceyln Chun
- Mahrukh Khaw
- Cliff Kapono
- Justin Calpito (HNFAS)
- Vinany Menony
- Megan Chi

MS (Plan B)

- Elizabeth Mau
- Akash Reddy

Past Graduate Students Committees *

Ph.D.

- Rina Carrillo
- Abdulla Ali (PEPS) (UR)
- Joey Ooak
- David Maison (TRMD)
- Bjarne Barlett
- Frank Urena
- Michael Honda
- Francis Saka-Kawada
- Sreeramul Kalluri (Chemistry) (UR)
- Eun Ju Cho
- Maribel Zaportza
- Hilario Luzminda
- Devin Takara
- Samson Souza (Chemistry) (UR)
- Archana Pal
- Vishal Singh Negi
- Zhibin Liang
- Margaret Baker
- Nhan Hua
- Normal Wang
- Alejandro Preciada (Chemistry) (UR)
- Steffen Oeser
- Sliva Moriano Gutierrez
- Kazue Ishihara
- Camila Ortega Ramirez
- Archana P Pant (TPSS)
- Natalija Gilbetic
- James Murphy
- James Dorthey
- Peter Toves (TPSS) (UR)
- Emily Teng (TPSS) (UR)

MS (Plan A)

- Jessica Maruwan
- Kento Sega (NHFAS)
- David Knittel
- Todd Anderson (TPPS)
- Vincent Tree
- Rina Carrillo
- Rick Shimshock
- Elizabeth Feldeverd
- Simon Che
- Adam Baker
- Jadd Correia
- Sofia Doello Roman
- Jannai Yafuso
- Majdouline Le Roy
- James Carrillo
- Maia Corpuz
- Jihyun Kim
- Kelli Konicek
- Wanderley Vital de Sousa (HNFA)
- Isabel Rushanaedy

MS (Plan B)

- Arby Baron
- Daniel Roettger
- Molly Green
- Amiha Calrson

Undergraduate Teaching Philosophy:

Higher education is a vital and rewarding pursuit that merits great respect. As a Biochemistry Professor, I aim to help students understand the core principles of Biology and Organic Chemistry and apply them to Biochemistry. This field reveals the metabolic processes in plants, animals, and humans, offering insights into health and disease.

Reflecting on my journey in learning biochemistry, I appreciate the importance of the mentors and skills that guided my understanding. Biochemistry often requires a broad perspective to connect individual biochemical events. To facilitate this, I use various technologies—such as YouTube videos, podcasts, and documentaries—that bring the world of biochemistry to life, sparking discussions about its interconnected nature.

As a guide through the complexities of biochemistry, I stress that motivation and interest are the keys to learning. While textbooks may sometimes feel dry, they are essential to education, and homework reinforces this understanding. These principles define my teaching approach.

Classroom education provides the foundation for learning, application, and comprehension. The limited hours we spend in class are precious, necessitating a disciplined approach to learning. Although this may seem daunting, I offer extensive support, safety nets, and progress monitoring systems that students can rely on.

As a lecturer, I deliver critical information while supporting and encouraging students to delve deeper into the subject. My expectations are clear—though some may find them demanding, many students rise to the challenge and exceed their expectations. Watching them grow fills me with pride. When students commit to biochemistry with both heart and mind, they can all succeed, and this preparation serves them well beyond the classroom. It is enriching to stay connected with students after the course, hearing their amazement at what they have learned, retained, and applied, benefiting their graduate studies and beyond.

I regularly review student feedback to improve the course. I take critical and constructive comments seriously and implement suggestions to make our lecture time more effective.

Ultimately, my mission is to guide students toward greater opportunities. Many are still exploring the possibilities of a science degree and may need guidance in career planning. Though it may not be formally part of my job, I take the initiative to get to know my students better, offering valuable advice and insights. I stay in touch with them, and they often share stories of pursuing advanced degrees, reflecting on the anecdotes and examples from our biochemistry class. Most importantly, they often say, "You told us that biochemistry would come back to haunt us—and it certainly does!"

Knowing that I have successfully taught biochemistry's foundational principles brings me immense satisfaction as I have laid the groundwork for my students' future endeavors.

Graduate Teaching Philosophy:

To help graduate students understand what it means to be a professional scientist or researcher, it is essential to instil the principles of thorough research, ethical behaviour, collegiality, mentorship, and a focused commitment to their study. However, many graduate students find this journey daunting and challenging, often facing seemingly insurmountable obstacles and a need for clear guidance. They frequently require specific directions to navigate their training, sometimes only recognizing the importance of particular experiences or information fragments much later, particularly when confronted with high-pressure situations.

In this context, my approach to training, which encompasses coursework, laboratory supervision, and mentorship, plays a significant role in shaping the development of graduate students within my department, college, and university. I strive to leave a lasting impact on those I mentor by providing comprehensive skills training, including practical techniques that enhance their employability, offering valuable guidance, and fostering a supportive 'Ohana style' environment. My undergraduate and graduate students have attested to the effectiveness of this approach.

As a research professor, my ultimate goal is to equip graduate students with a solid professional identity, a clear career focus, essential survival skills, and the ability to become mentors themselves over time. This vision encapsulates my Graduate Teaching Philosophy. However, it is essential to acknowledge that this approach, with its strengths and weaknesses, reflects my experiences and growth as a research mentor and educator. Through this framework, I aim to provide valuable guidance to help graduate students achieve their career goals.

Upon arriving in Hawaii, I took the initiative to engage with numerous graduate students, actively listening to their experiences as emerging professionals, their concerns about educational development, and their perceptions of areas needing improvement within the department, college, and university. Based on their feedback, I conducted a pilot course titled "When a PhD is Not Enough" under the MBBE 610 Seminar 2008. We explored various aspects of professional development with a small group of students. To my surprise, the demand for such a course was substantial. After further refinement, the course was officially offered in 2009 and quickly gained immense popularity, consistently reaching full enrollment capacity. The program successfully achieved its primary objectives of fostering student confidence and professionalism. To further enhance their professional career development, we introduced individual portfolios, which laid the foundation for their future growth and examined the transition and requirements of becoming a principal investigator, whether in academia or industry. This program now primarily targets PhD students, providing them with valuable insights into career opportunities, directions, and the importance of effective planning. Starting in 2011, these courses have been offered bi-annually and are open to all graduate students, regardless of their department. Over the past decade, this enduring success reinforces one of my core beliefs as a graduate educator: "If we equip students with a reliable compass, they will find their path to success – our role is to teach them how to use that compass effectively."

Select a few student comments (eCAFE, MBBE 611):

- “I feel I have matured professionally through the development of a portfolio. This portfolio will hopefully follow me through many successful interview processes and get me where I want to be.”
- “I will remember this course every time I revise my CV or write a cover letter or grant...or when I think about/evaluate my career goals.”
- I had better tools to increase my chances of getting the job of my choice. My mom just told me she wished she had taken this class. :)

Teaching Activities:

One of my primary teaching activities involves establishing a strong foundation in biochemical principles through the MBBE/BIOL 402 Biochemistry course. The successful development of the MBBE 402 Biochemistry Laboratory, now a writing-intensive course, developed in conjunction with Dr Daniel Owens – provided for standardization of core content, which has been a significant achievement. This focus on building a solid foundation has earned recognition for my teaching style and standards. Students often describe it as "one of the most challenging courses in the Biology program, yet also one of the most rewarding." The course is taught with passion and sets realistic expectations.

To broaden our focus on biochemistry, I introduced a graduate-level course, Fermentation Biochemistry (3 credits; MBBE 666), as a special topic. This course has been well-received and is highly popular among our graduate students. Through multiple iterations, we have refined the syllabus based on student feedback to meet the desired learning objectives. In Fall 2022, the course was officially added to the MBBE Graduate Program. It includes instruction on developing new STEM technology-based start-ups and entrepreneurship for small businesses. The success of this course has already led to the creation of a small company led by several graduate students.

An integral course within MBBE is the MBBE 611 (formerly 610) Professional Development seminar, tailored for students within 12 months of completing their degree. This seminar is crucial in enhancing students' understanding of workforce readiness and the transition from student to professional. By preparing our students through this course, we equip them for success beyond UHM. One student recently shared that they secured a higher salary by applying the negotiation techniques and job interview skills learned in this class. As a result, this course is now a requirement for all graduate students at UH JABSOM, and the UHM Graduate Division is considering developing it as a versatile platform to extend it to other departments and colleges.

The MBBE 610/611 Professional Development Seminar (1 credit) and MBBE 666 Fermentation Biochemistry (3 credits) are among the few new graduate courses introduced by the MBBE faculty in recent decades.

In 2022, I initiated a pilot lectureship internship for PhD students to help them develop classroom teaching and management skills (MBBE 691 Special Topics; 1 credit). Students in this course created active learning plans, designed curricula, refined syllabi, and developed personal teaching statements. The course focuses on enhancing professional expertise for potential lectureship roles. Student delivered class materials in the MBBE/BIOL 402 Biochemistry course. While still in its early stages as a graduate-level offering, I recognise the need to integrate this content more fully within the college. Other colleagues have already shown interest in the development of this class.

Future Activities

Education:

- I am challenging myself to teach a 100- or 200-level class for the first time to strengthen the MBB/BE undergraduate student pipeline. This initiative aims to enhance student connectivity and retention, which are essential for the growth and sustainability of the MBBE department.
- I will explore opportunities to leverage MBBE faculty strengths in leading an NSF training grant focused on improving student learning outcomes in biochemistry, bioengineering, and biotechnology. This grant will emphasize support for both individual and team-based student research projects.
- I plan to establish a 1-year, 3-semester model for the Post-baccalaureate Genomic Competencies Certificate (PGCC). This program will provide comprehensive coursework and laboratory training in genomics, potentially serving as a springboard for graduate research degrees.
- Additionally, I plan to assess the need for and implement undergraduate and graduate mini-courses focused on micro-credentialing, a concept not well-established at UH

Mentorship:

- I aim to expand my outreach in team science and training by including additional community partners for proposal collaborations and student internships.
- I will engage with the UHM Graduate Division to develop a curriculum for Graduate Professional Development across UHM and the Kakaʻako Campus.
- I plan to collaborate with new UH faculty and others to build statewide training capacities (Shen, NIH R25). Our first success will be with Hawaii Pacific University (Naik and Capaldo, NIH R16).
- Explore opportunities with the NSF or USDA NEXTGEN to establish a cross-disciplinary training grant and inter-institution networks. This initiative would connect our MBB and BE programs to the MBBE graduate program, providing funding for students, research support, and capacity development within the department. The focus would be on machine learning, technology transfer, and the growth of automated agriculture, whether on a small or large scale.

Research Direction:

- Becoming a gene jockey was an unexpected journey. Still, the combination of proteomics, genomics, and bioinformatics has proven to be a powerful tool in identifying new, pharmacologically unclassified peptide toxins from *Conus*. Our ability to chemically synthesize these sequences, study their biological activities and 3D structure, will help address biological complexity within *Conus* venoms (Radular, Milked, and Duct venom extracts).
- Opihi – creating a full genomic map of these beloved Hawaiian welks (to locate peptide hormone-like sequences, to help dissect their live cycle)

- Peptide bioengineering has taken the Bingham Laboratory in a new direction by integrating thioester ligation to achieve peptide cyclization of the parent template. This versatile approach allows for the engineering of highly potent biological molecules without relying on the traditional structure-activity analysis of the parent sequence. Once constructed, these cyclic peptides can be further manipulated with fluorescent tags introduced through highly selective chemistries.
- Value-added product development promoting the health benefits of *Hericium erinaceus* (Lion's Mane); 'Ulu (Breadfruit), 'Olena (turmeric), Limu (seaweed) and 'Awapuhi (Ginger).

Publications

Manuscripts in Preparation:

Zolmer, J., Saprio, D., Lincoln, N., & **Bingham, J.P.** (2025). Ulu – Breadfruit's products and potential: A current survey. **Target Journal:** ***Agronomy***

Calpito, J., **Bingham, J.-P.**, Kirk, E., Tavares, K., Motomura-Wages, S., Ahmad, A., Kantar, M. B., & Radovich, T. (2025). Quantification of curcuminoids in novel turmeric (*Curcuma longa*) germplasm. **Target Journal:** ***Agronomy.***

Valdez, A., Bartlett, B., Stitt-Bergh, M., & **Bingham, J.P.** (2025). A reflection on data science practicum for undergraduate students in bioinformatics: What we have learned. **Target Journal:** ***Biochemistry and Molecular Biology Education. (follow-up analysis)***

Dou, Y., Yu, P., Espiritu, M.J., Thapa, P., Zhang, Z., & **Bingham, J.P.** (2025). Combined peptide toxin bioengineering practices: The construction of a novel α-conotoxin incorporating N- to C-terminal cyclization and selective disulfide bond formation with 'Click-Chemistry' fluorophore attachment. **Target Journal: Peptides**

Valdez, A.R., Marabella, M.P., Glover, R., Bingham, J.P., "Signaling mechanisms involved in settlement and metamorphosis of marine molluscs: A Review," In Preparation. **Aquaculture focus**

Valdes, A.R., Marabella M.P., Bingham, J.P., "An updated, yearlong histological analysis of maturation trends for wild *Cellana exarata* and *C. sandwicensis*," In Preparation **Aquaculture focus**

Sinclair, N., & **Bingham, J.P.** Underutilized tropical plants and potential targets for fermented products: Hawaii (A review). **Target Journal:** ***Agronomy***

Sinclair, N., Miller, C., & **Bingham, J.P..** Milked venoms of *Conus* – The peptide toxin diversity within. **Target Journal: Toxins**

Espiritu, M.J., Miller, C., Zhang, Z., Thapa, P., & **Bingham, J.P**. The complexities of conotoxin discovery – The case of conotoxin MIIIB. **Target Journal: JBC**

Publications

Book Chapters:

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Lin, K., & **Bingham, J.-P.** (2024). Fungiculture with a smart biotechnological growth chamber. Poster presented at the INBRE Student Biomedical Research Symposium, April 29, 2024, Honolulu, HI. Poster #112.

Wong, J. T., Nguyen, J., & **Bingham, J.-P.** (2024). Characterizing the venom of the Hawaiian *Conus pennaceus*. INBRE Student Biomedical Research Symposium, April 29, 2024, Honolulu, HI. Poster #110.

Vital de Sousa Jr., Wanderley, **Bingham, Jon-Paul**, Wall, Marisa M., & Ho, Kacie K.H.Y. (2023) Catechin concentration influences the non-adsorbed fraction, physical, and chemical stability of pea protein oil-in-water emulsions. Oral presentation for the International Society for Nutraceuticals and Functional Foods 15th International Conference and Exhibition. Sheraton Princess Kaiulani Hotel, Honolulu, HI, USA. December 10-13, 2023.

DeSimone, K., & **Bingham, J.-P.** (2023). MELLA™ mushroom cultivator - A Kickstarter that failed to deliver. INBRE Student Biomedical Research Symposium, April 21, 2023, Honolulu, HI. Poster #197.

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Lin, K., & **Bingham, J.-P.** (2023). Fungiculture with a smart biotechnological growth chamber - A focus on improving food security. INBRE Student Biomedical Research Symposium, April 21, 2023, Honolulu, HI. Poster #188.

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Kirk, E., Tavares, K., Radovich, T., Wages, S., Ahmad, A., Uyeda, J., Paull, R. E., Silva, J., Bryant, G., Collier, E., Flanagan, K., **Bingham, J.-P.**, Ellinwood, J., & Sugano, J. (2023). Hawai'i turmeric production guidelines. *CTAHR Extension Publications*, 1-10. https://www.ctahr.hawaii.edu/oc/freepubs/pdf/VC-9.pdf

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Duda, T. F. Jr., **Bingham, J. P.**, Livett, B. G., Kohn, A. J., Massilia, G. R., Schultz, J. R., Down, J., Sandall, D., & Sweedler, J. V. (2004). How much at risk are cone snails? *Science, 303*(5660), 955-957. https://www.science.org/doi/10.1126/science.303.5660.955 / https://public.websites.umich.edu/~tfduda/pdf/duda-etal-2004.pdf

Lewis, R. J., **Bingham, J.**, Jones, A., Alewood, P. F., & Andrews, P. R. (1994). Drugs from the peptide venoms of marine cone shells. *Australian Biotechnology, 4*, 298-300.

Other works

Scientific Advisor: in documentaries, Media production, textbook contributions, and Public Education:

KHON2 Local News (2013) (Producer: Ron Mizutani); Hawaii Public Radio (2013) (Producer: Molly Solomon); OC16 Tech Hawaii (2011) (Producer: Jay Fidel); Oelo 52 (2011) (Producer: Jay Fidel); Graber (2008) On the Tail of the Snail: Arts and Science for Kids (ASK) p 12-19; Kleinpaste R. (2008) Bug of the Month; Snorkeling at Night: New Zealand Growing Today, April p. 46.; Roberson M-R. (2008) Creature Comforts – Animals provide healing help for Humans, Zoogoer, Vol. 37 No.6 p18- 23.; 60 Minutes "The Bugman" – (2008) (Aust.) (Producer: Damien Comerford, 14.4K views)) – CD available; EcoGeeks - (2008) (Producer/interviewer Rob. Nelson; Wild Class Room) – CD available; Pearson Publishing BioAdventures (2008); Venoms, PBS Nova (2017) (9.2k views); Hakia Magazine (2017) (314K views)

Videos on toxins and Cone Shells that will compliment every chapter of their new Miller and Levine High School Biology textbook (print 7 million copies a year for 9th graders); Animal Planet (2006): Buggin' With Ruud (New Zealand Natural History); Flipside (UK; 2006): 'Killer Sea Snails' – Louise Murray; Radio 4, BBC Scotland (2005): 'Danger! Venomous snails' – Louise Yeoman – CD available; Discovery Channel (2005; Canada): Daily Planet – Exploration Productions Inc.; Associate Press (2005): 'Farming killer cone snails for research is a risky affair' – A. Chang; National Public Radio (2005; USA): 'Pulse of the Planet': 'Cone Shells – Poison Tongued; Cone Shells – Fascination; Cone Shells – medical uses'; ScienCentral, Inc.: Medical textbook: A Colour Atlas of Tropical Medicine and Parasitology; ODYSSEY, Cobblestone Publishing – Children's Science Magazine: 'Possibility is everywhere...even in poisonous snails' – Steven R. Wills.

Reviewer for:

Toxicon; Peptides; Biologics; Marine Drugs; International Journal of Molecular Sciences, Frontiers in Chemistry (ad-hoc)
Frontiers in Chemistry (Associate Editor position, May 2024 -Present)
National Science Foundation (NSF) Graduate Research Fellowship Program (GRFP)

Present Grant Support

Title of Grant: Hawaii INBRE V
Source of Grant: NIH NIGMS
Total Dollar Value: $22.3 M
Dates of Grant: Aug 2023 - 2028
Role (Key Personnel): PATHway Program Director (~$ 2.0 M/ $22.3 M)
(PI: Hoffmann)

Title of Grant: Pacific Center for Genome Research
Source of Grant: NIH NHGRI
Total Dollar Value: $10.9 M
Dates of Grant: Aug 2023 - 2028
Role Co-PI; Co-Director of the Genomic Workforce Development Core (~$1.5 M/10.9 M)
(PI: Lu, UHCC)

Title of Grant: Creation of a Cooperative BS Degree Program (Coop-BSDP) for the Marianas Islands & Beyond
Source of Grant: USDA; NeXTGeN
Total Dollar Value: $10 M
Dates of Grant: Oct 2023 - 2028
Role: CoPI and UHM Project Leader/Co-Director ($ 579K /$10 M)
(PI Jolly, UoG)

Title of Grant: Cone shell Genomics Pilot (Hawaii INBRE V)
Source of Grant: INBRE/NIH NIGMS
Total Dollar Value: $23,000
Dates of Grant: Aug 2024 - 2025
Role PI
(INBRE PI: Hoffmann)

Title of Grant: Equipment Grant (Hawaii INBRE V)
Source of Grant: INBRE/NIH NIGMS
Total Dollar Value: $14,000
Dates of Grant: April 2025
Role: PI

Past Funding Support (last 10 yrs only)

Title of Grant: Equipment Grant (Hawaii INBRE V)
Source of Grant: INBRE/NIH NIGMS
Total Dollar Value: $23,000
Dates of Grant: Aug 2023
Role: PI

Title of Grant: Mushroom Cultivation
Source of Grant: UHM UROP
Total Dollar Value: $9,000.00
Dates of Grant: August 2023
Role: PI

Title of Grant: Mushroom Cultivation and Peptide Discovery
Source of Grant: INBRE
Total Dollar Value: $4,000.00
Dates of Grant: May 2023
Role: PI

Title of Grant: Mushroom Cultivation and Peptide Discovery
Source of Grant: INBRE
Total Dollar Value: $4,000.00
Dates of Grant: Jan 2023
Role: PI

Title of Grant: Mushroom Cultivation and Peptide Discovery
Source of Grant: INBRE
Total Dollar Value: $6,000.00
Dates of Grant: Aug 2022
Role: PI

Title of Grant: Induced Spawning of ‘Opihi Using Novel Peptide and a Phosphodiesterase-5 (PDE5) Inhibitor
Source of Grant: UROP
Total Dollar Value: $4,986.00
Dates of Grant: Jan 2022
Role: PI

Title of Grant: Discovery of a Novel Anesthetic from *Conus*
Source of Grant: UROP
Total Dollar Value: $ 4,846.00
Dates of Grant: Jan 2022
Role: PI

Title of Grant: The design and modification of larvae rearing tanks for 'Opihi settlement
Source of Grant: UROP
Total Dollar Value: $4,784.00
Dates of Grant: August 2021
Role: PI

Title of Grant: Circadian Rhythm Based In Vivo Guppy Bioassay For Novel Drug Discovery
Source of Grant: UROP
Total Dollar Value: $5,017.14
Dates of Grant: August 2021
Role: PI

Title of Grant: Conovenomic Analysis of the milked venom from *Conus retifer* in Captivity
Source of Grant: UROP
Total Dollar Value: $4,982.00
Dates of Grant: May 2021
Role: PI

Title of Grant: *Conus pulicarius* as a novel source of anthelmintics for targeting rat lungworm
Source of Grant: UROP - 2020 Faculty Mentoring Grants for Summer Undergraduate Research and Creative Works
Total Dollar Value: $4822.00
Dates of Grant: May 2020
Role: PI

Title of Grant: Proteomic Analysis of Nonconforming Conopeptide Profiles in *Conus Striatus* to Uncover Novel Classification
Source of Grant: UROP
Total Dollar Value: $4,626.00
Dates of Grant: May 2019
Role: PI

Title of Grant: INBRE IV - Hawaii Statewide Research and Education Partnership (HiSREP)
Source of Grant: NIH NIGMS
Total Dollar Value:: $19,010,077.00 (~$1.5 Million)
Dates of Grant: 04/01/2018 - 2023
Role: Director of INBRE PATHways
PI: Nichols

Title of Grant: Expanding the Market for Hawaiian Turmeric with High Yielding and High Curcumin Varieties.
Source of Grant: AGRICULTURE, DEPT-HI
Total Dollar Value: $20,000.00
Dates of Grant: 02/23/2018
Role: Co-PI
PI: Radovich

Title of Grant: Investigation of Peptide Toxin Cyclotides as a Novel Approach to Insecticide Development
Source of Grant: Hatch Supplement Funding
Total Dollar Value: $56,000.00
Dates of Grant: FY 2018- 2019
Role: PI

Title of Grant: Exploring the life-history of Hawaiian limpets using oxygen isotope records
Source of Grant: UROP
Total Dollar Value: $9,493.00
Dates of Grant: Nov 2018
Role: PI

Title of Grant: Impact of configurations in α-conotoxins in *Conus virgo* in the development of anthelmintic drugs
Source of Grant: UROP
Total Dollar Value: $8,727.00
Dates of Grant: Nov 2018
Role: PI

Title of Grant: Chemical Synthesis of Novel GnRH-like Peptides for Aquaculture of Hawaiian limpets (*Cellana spp*.)
Source of Grant: UROP
Total Dollar Value: $6,988.00
Dates of Grant: Nov 2017
Role: PI

Title of Grant: Opihi Aquaculture Year 5 & 6: Improving hatchery technology and production.
Source of Grant: OCEANIC INSTITUTE-CTR FOR TOP & SUB TROP AQUA (CTSA)
Total Dollar Value: $50,000.00
Dates of Grant: 09/13/2017
Role: PI

Title of Grant: Opihi Project Year 5 & 6: Improving hatchery technology and Production
Source of Grant: OCEANIC INSTITUTE-CTR FOR TOP & SUB TROP AQUA (CTSA)
Total Dollar Value: $98,098.00
Dates of Grant: 06/05/2017
Role: PI

Title of Grant: Aquaculture of Opihi YR2 (YR4)
Source of Grant: OCEANIC INSTITUTE-CTR FOR TOP & SUB TROP AQUA (CTSA
Total Dollar Value: $5,302.00
Dates of Grant: 05/19/2017
Role: PI

Title of Grant: Aquaculture of Opihi
Source of Grant: OCEANIC INSTITUTE-CTR FOR TOP & SUB TROP AQUA (CTSA)
Total Dollar Value: $20,128.00
Dates of Grant: 04/07/2017
Role: PI

Title of Grant: Aquaculture of Opihi
Source of Grant: OCEANIC INSTITUTE-CTR FOR TOP & SUB TROP AQUA (CTSA)
Total Dollar Value: $500.00
Dates of Grant: 02/07/2017
Role: PI

Title of Grant: Aquaculture of Opihi
Source of Grant: OCEANIC INSTITUTE-CTR FOR TOP & SUB TROP AQUA (CTSA)
Total Dollar Value: $18,582.00
Dates of Grant: 01/15/2016
Role: PI

Title of Grant: Investigation of Peptide Toxin Cyclotides as a Novel Approach to Insecticide Development
Source of Grant: Hatch Supplement Funding
Total Dollar Value: $54,000.00
Dates of Grant: FY 2016-2017
Role: PI

Title of Grant: Isolation, Sequence, Synthesis, and Pharmacological Analysis of a Novel Peptide from *Conus striatus*
Source of Grant: UROP
Total Dollar Value: $4,970.00
Dates of Grant: Nov 2014
Role: PI

Title of Grant: From Chemistry to Consumption: Exploiting the unique chemical constituency of hot peppers (*Capsicum spp*) to develop a novel Pacific Island crop.
Source of Grant: HI Dept. Ag.
Total Dollar Value: $20,000.00
Dates of Grant: Nov 2014
Role: PI

Title of Grant: Evaluating pesticides and contaminants' physical and biological availability in agricultural ecosystems (W2082 / project No. HAW00595-R): Development and evaluation of cyclotide molluscicides.
Source of Grant: HATCH
Total Dollar Value: $76,421.00
Dates of Grant: 2013-2015
Role: PI

Title of Grant: Discovery of new peptide pesticides
Source of Grant: USDA-HATCH
Total Dollar Value: $28,000.00
Dates of Grant: 2007-2014
Role: PI

Title of Grant: Mechanism of Selenoprotein Synthesis
Source of Grant: NIH (R01)
Total Dollar Value: $54,000.00
Dates of Grant: 04/01/2011- 03/31/2016
Role: Subcontract

Title of Grant: Post-Harvest Management of Slugs and snails potentially carrying Rat Lungworm (*Angiostronglus cantonensis*) in Hawaii
Source of Grant: USDA-NIFA
Total Dollar Value: $35,000.00
Dates of Grant: 09/01/2011- 08/31/2014
Role: Co-Director

Title of Grant: Comparative Study of Korean Natural Farming vs Conventional and Organic Farming

Source of Grant: RMA TRIX-PCR project.
Total Dollar Value: $12,000.00
Dates of Grant: 2014
Role: Co-Director