

KIT YU KAREN CHAN, PH.D.

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Research Interests: Combining lab-experiments, field observations, and engineering techniques, my research focuses on ecology and functional morphology of meroplankton. Specifically, impacts of climate change on behaviors and physiological performance and their implications for population dynamics. As an educator, I am interested in developing instructional techniques that would improve students' quantitative skills and understanding of scientific process.

ACADEMIC POSITIONS:

2019 - present	Assistant Professor, Biology Department, Swarthmore College
Summer 2023	Visiting Assistant Professor, School of Fisheries and Aquatic Science, University of Washington
2018-2022	Adjunct Assistant Professor, Division of Life Science, Hong Kong University of Science and Technology
2014-2018	Assistant Professor, Division of Life Science, HKUST
2017-2018	Visiting Associate, Division of Biology and Biological Engineering, California Institute of Technology
Jul 2016	Visiting Fellow, South African Institute of Aquatic Biodiversity, South Africa
2014-2016	Guest Investigator, Applied Ocean Physics and Engineering, Woods Hole Oceanographic Institution (WHOI)
2012-2014	Postdoctoral Scholar of the Coastal Ocean Institute and Croucher Foundation Fellow, WHOI
Summer 11 & 13	Visiting Scientist, Sven Lovén Center of Marine Sciences and Research, University of Gothenburg, Sweden
2006-2012	Graduate Research Assistant, in the laboratory of Prof. Daniel Grünbaum, University of Washington

EDUCATION

2009-2012	PhD, School of Oceanography, University of Washington
2006-2009	MSc, School of Oceanography, University of Washington
2005-2006	Exchange student, Dept. Ecology and Evolution, University of California, Davis
2003-2006	BSc, 1 st class honors, Environmental Life Science, University of Hong Kong

RESEARCH GRANTS:

Total fund raised: \$2,111,382 (USD); 3 NSF grants since 2019 as Asst. Prof at Swarthmore	
2022-2024	National Science Foundation, Ocean Science, PI (co-PI: Gretchen Hofmann from UC-Santa Barbara) (USD \$45,000) ROA: Exploring mechanism of plasticity and tolerance in early stage marine invertebrates in response to marine heatwaves
2022-2025	National Science Foundation, Integrative Organismal Systems, PI (co-PIs: Carr Everbach from Swarthmore College & Mimi Koehl from UC-Berkeley) (USD\$527,423) Project: Collaborative Research: IOS:RUI: Hydrodynamic consequences of

- 2022-2023 spines on zooplankton: Functional morphology of horns and tails on barnacle nauplii
National Science Foundation, Integrative Organismal Systems, PI (USD\$10,000)
Project: Conference: SICB 2023 Symposium: Large-scale phenomena arising from small-scale biophysical processes
- 2022-2023 Company of Biologists, Scientific Meeting Grant (£1,500)
Project: SICB 2023 Symposium: Large-scale phenomena arising from small-scale biophysical processes
- 2018-2019 Chau Hoi Shuen Foundation Women in Science Program, co-PI with Mimi Koehl from UC-Berkeley (USD \$50,000)
How Body Form Affects the Hydrodynamics of Swimming and Feeding by Zooplankton
- 2018-2019 COTS Research Grant, Australian Museum Lizard Island Research Station, PI , (co-PI: Maria Byrne from University of Sydney) (AUD\$25, 472)
Swimming behaviors of larval Crown-of-Thorns-Seastars: implications for distribution and dispersal modeling
- 2017-2019 Hong Kong Research Grant Council, General Research Fund, PI, (co-PI: Gray Williams from University of Hong Kong) (HKD\$1,048,903)
From physiology to predictions in a changing world: an application of dynamic energy budget model to bivalve veligers
- 2016-2018 Environmental Conservation Grant, PI (HKD \$499,850)
Marine invertebrate larvae in Hong Kong waters: Development of sampling and photo identification guides for larval decapods and stomatopods
- 2016-2020 Hong Kong Research Grant Council, Early Career Scheme, PI (HKD \$ 816,634)
Effect of warming, acidification & hyposalinity on marine invertebrates larvae
- 2015-2018 Environmental Conservation Grant, Co-PI (HKD \$ 4,233,490)
Assessing the marine biodiversity and ecology of Tolo Harbour and Channel
- 2014-2017 National Science Foundation US, Biological Oceanography, co-PI with Houshuo Jiang from WHOI (USD \$395,000)
Functional Diversity and Performance of Ciliated Marine Invertebrate Larvae: measuring and modeling larval swimming, feeding and hydrodynamic signaling
- 2014-2016 HKUST, Initiation Grant, PI (HKD\$ 200,000)
Project: Effects of climate change stressors on performance of larval marine invertebrates
- 2014-2015 HKUST, Research Equipment Competition, PI (HKD\$ 356,360)
Project: Carbonate Chemistry analysis for coastal waters
- 2014-2016 Smithsonian Institution Competitive Grant Program for Science, co-PI with Rachel Collin from Smithsonian Tropical Research Institute (USD \$ 96,479)
Project: Effects of hypoxia on planktonic larval distribution in tropical Caribbean
- 2014 ASSEMBLE On-Site Assess Call, PI (2-week trip to Kristenberg, Sweden)
Project: Impact of ocean acidification on egg and sperm physiology
- 2012-2013 Royal Swedish Academy of Science SEK350,000, PI (approx. USD \$53,200)
Project: Impacts of changing ocean conditions on planktonic larval stage of marine invertebrates

EDUCATION RESEARCH GRANT:

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- 2015-2017 HKUST Teaching Development Grant (HKD \$186,980)
Project: Enhancing Students' Self-efficacy through Inquiry – based assessment techniques

PUBLICATIONS (43 TOTAL, H-INDEX = 19)

- ^ Indicates students * Co-first author or co-corresponding authors
- 2023 ^Cunningham SK, ^Murillo K, KYK Chan, and JB Lamb (2023). Managing marine seascapes through community-based conservation. *Lessons in Conservation, Network of Conservation Educators and Practitioners, Center for Biodiversity and Conservation, American Museum of Natural History* 13 (1), 15-37.
- ^Fung CW, Chau KY, ^Tong DCS, ^Knox C, Tam SST, Tan SY, Loi, DSC, Leung Z, Xu Y, Lan Y, Qian PY, Chan KYK*, Wu AR* (co-corresponding authors) Parentage influence on gene expression under acidification revealed through single-embryo sequencing. *Molecular Ecology*. doi.org/10.1111/mec.17148
- Chan KYK, Wheeler, JD. Common interests without common expertise: Reflections on early-career experiences in cross-disciplinary research. *Integrative Organismal Biology*. doi.org/10.1093/icb/icad035
- Wheeler, JD, Chan KYK. The whole is greater than the sum of its parts: Large-scale phenomena arising from small-scale biophysical processes. *Integrative Organismal Biology*. doi.org/10.1093/icb/icad115
- 2022 ^Jones, BCL, ^Holt, LA, Chan, KYK. Effect of ocean acidification on the early development of the biofouling ascidian *Ciona robusta*. *Zoological Studies* 62: e4.
- Chan, KYK, ^Jorgensen, BK, Scoma, S. Thermal limits determination for zooplankton using a heat block. *Jove*. d e64762.
- Wong, E, Yau, C, Chan KYK. Seasonal and spatial dynamics of mesozooplankton community in a subtropical embayment. *Regional Studies of Marine Sciences*. 56:102724
- ^Ng, PL, ^Kinn-Gurzo, S, Chan, KYK. Microplastics impede larval urchin selective feeding and digestion. *Sci. Total Environ.* 838, 155770.
- 2021 ^Lo, HKA, ^Chua, VA, Chan, KYK. Near future ocean acidification modulates the impact of fluoxetine at environmental concentration on larval urchins. *Sci. Total Environ.* 801, 149709.
- Collin, R, Rebolledo, ASE, Chan, KYK. Thermal tolerance of early development predicts the realized thermal niche in marine ectotherms. *Funct. Ecol.* 35, 1679.
- ^Maboloc, EA, Chan, KYK. Parental whole life cycle exposure modulates progeny responses to ocean acidification in slipper limpets. *Global Change Biol.* 27: 3272.
- ^Branam, EN, Wong, JY, Chan, BKK, Chan, KYK. A tail's tale: Biomechanical roles of dorsal thoracic spine of barnacle nauplii. *Integr. Comp. Biol.* 61, 1095.
- Bednaršek, N, Calosi, P, Feely, RA, Ambrose, R, Byrne, M, Chan, KYK, . . . Weisberg, SB. Synthesis of thresholds of ocean acidification impacts on echinoderms. *Front. Mar. Sci.* 8(261). doi:10.3389/fmars.2021.602601
- ^Akkipedi, SMK., ^ Xu, M, Chan, KYK. Halogenated compound secreted by marine bacteria halts larval urchin development. *J. Exp. Mar. Ecol. Biol* 538, 151540.
- 2020 ^Wong JY, Chan BKK, Chan KYK. Swimming kinematics and hydrodynamics of barnacle larvae throughout development. *Proc Biol Sci.* 14; 287
- ^Liu, TX, ^Kinn-Gurzo, S., Chan, KYK. Resilience of invasive tubeworm (*Hydroides dirampha*) to warming and salinity stress and its implications for biofouling community dynamics. *Mar Biol.* 167:145.
- ^Wong J, Chan KYK, Chan B. Evolution of feeding shapes swimming kinematics of barnacle naupliar larvae: a comparison between trophic modes. *Integr. Org. Biol.* 2:obaa011

- ^Maboloc E, Batzel G, Grünbaum D, Chan KYK. Vertical distribution of echinoid larvae in pH stratified water columns. *Mar Biol.* 67:13.
- Chan, KYK, ^Tong, D. Temporal variability modulates pH impact on larval sea urchin development. *Cons Phys.* 8: coaa008
- 2019 Collin,R, Venera-Pontón, DE, Driskell, AC, Macdonald, KS, Chan, KYK, Boyle, MJ Documenting neotropical diversity of phoronids with DNA barcoding of planktonic larvae. *Invert. Biol.* 128: e12242.
- 2018 ^Wong, JY, Chan, KYK, Chan, BKK. Phylogenetic, ecological and biomechanical constraints on larval form: A comparative morphological analysis of barnacle nauplii. *PLoS ONE* 13(11): e0206973.
- Dorey, N, ^ Mabaloc, EA, Chan, KYK. Development of the sea urchin *Heliocidaris crassispina* from Hong Kong is robust to ocean acidification and copper contamination. *Aquat. Toxicol.* 2015:1
- Chan, KYK, Swelle, M., Bryne, M. Revisiting the larval dispersal black box in the Anthropocene. *ICES. J. Mar. Sci.* 75: 1841
- ^ Mak, KKY, Chan, KYK. Interactive effects of warming and hyposalinity stress on early life stages of the sea urchin *Heliocidaris crassispnia*. *Mar. Biol.* 165:57
- ^ Leung, J. , Chan, KYK. Microplastics reduce posterior regeneration rate of the polychaete *Perinereis aibuhitensis*. *Mar. Poll. Bull.* 129:782
- 2017 ^Lo, HK, Chan, KYK.. Negative and concentration-dependent effects of microplastic exposure on growth and development of *Crepidula onyx* amid selective feeding. *Env. Poll.* 233: 588
- ^ Mabaloc, EA, Chan, KYK. Resilience of the larval slipper limpet *Crepidula onyx* to direct and indirect-diet effects of ocean acidification. *Sci. Rep.* 7:12062
- ^ Pecquet, A, Dorey, N & Chan, KYK. Ocean acidification impact swimming and development of *Bugula neritina*. *Mar. Poll. Bull.* 124:903
- ^Zhang, SW, Chan, KYK, Shen Z, Cheung, SY, Landry, MR and Liu, HB..Feeding behavior of a cryptic marine ciliate on progametes of *Noctiluca scintillans*. *Protist.* doi.org/10.1016/j.protis.2016.08.005.
- 2016 Collin, R, Chan, KYK. Negligible safety factors for early development of the sea urchin *Lytechinus variegatus* in a tropical lagoon. *Ecol. Evol.* 6: 5623–5634.
- +Wheeler, JD, +Chan, KYK, Anderson, E, Mullineux, L. Ontogenetic changes in larval swimming and orientation of pre-competent sea urchin *Arbacia punctulata* in turbulence. *J. Exp. Biol.* 219:1303-1310. [Inside JEB Featured Article](#)
- 2015 Chan, KYK, Gracis, E, Dupont, ST. Swimming of urchin larvae unaffected by acidification-induced developmental delay. *Sci. Rep.* 5:9764.
- Chan, KYK, Grünbaum, D, Arnberg,M, Dupont, ST. Impacts of ocean acidification on survival, growth, and swimming behaviors differ between larval urchins and brittlestars. *ICES. Mar. Sci.* 73:951-961. [Invited contribution.](#)
- 2013 Chan, KYK., Jiang, HS, Padillia, DK. Swimming speed of larval snail does not correlated with size and ciliary beat frequency. *PLoS-One.* 8: e82764
- Chan, KYK, Grünbaum, D, Arnberg,M., Thorndyke, M., Dupont, ST. Ocean acidification induces budding in larval sea urchins. *Mar. Biol.* 160:2129-2135

- Durkin, CA, Bender, SJ, Chan, KYK, Gaessner, K, Grünbaum, D, Armbrust, V. Silicic acid supplied to coastal diatom communities influences cellular silicification and the potential export of carbon. *Limnol. Oceanogr.* 58:1707-1726
- 2012 Chan, KYK. 2012. Biomechanics of larval morphology affect swimming: insights from the sand dollars *Dendraster excentricus*. *Integr. Comp. Biol.* 52:458-469
- Chan, KYK, Yang, S, Maliska, ME, Grünbaum, D. Interdisciplinary, guided inquiry on estuarine transport using a computer model in high school classrooms. *Am. Biol. Teach.* 74:26-33
- 2011 Chan, KYK, Grünbaum, D, O Donnell, MJ. Effects of ocean acidification-induced morphological changes on larval swimming and feeding. *J. Exp. Biol.* 214: 3857-3867
- 2010 Chan, KYK, Grünbaum, D. Temperature and diet modified swimming behaviors of larval sand dollar. *Mar. Ecol. Prog Ser.* 415: 49-59
- 2008 Grünbaum, D, CHAN, KYK, Tobin, E and Nishizaki, MT. Non-linear advection–diffusion equations approximate swarming but not schooling populations. *Math. BioSci.* 204:38-48
- Høeg, JT, Achituv, Y, Chan, BKK, Chan, KYK, Jensen, PG and Pérez-Losada, M. Cypris morphology in the barnacles *Ibla* and *Paralepas* (Crustacea: Cirripedia Thoracica) implications for cirripede evolution. *J. Morph.* 270:241-255
- 2005 Chan, BKK., Chan, KYK and Leung, MC. Burrow architecture of ghost crab *Ocypode ceratophthalma* on a sandy shore of Hong Kong, *Hydrobiol.* 560:43-49

PUBLICATIONS IN REVIEW OR REVISION

- Crickenberger S, Lau JWT, Yeung ACY, Cheng MCF, ^Tso THH, Chan KYK, T.Y. Hui, C. Crane, R. Stafford, Williams GA. Fecundity is not the only answer: sexual selection, size-assortative mating and size dimorphism in a tropical nerite. *J. Animal. Zool.*
- ^ Jorgensen BK, Chan KYK. Diet modulates the upper thermal limit of planktonic larvae. *Biological Bulletin*
- Chan KYK, Li K, Hoffman, G. Riding the marine heatwave: Metrics and trends for the Santa Barbara Channel. *Limnology and Oceanography Letters.*
- ^Wong, JY, Chan, BKK, ^Rubien, J, Chan, KYK. Hydrodynamic functions of the taxon-defining frontal horns of barnacles. *eLife*

PRESENTATIONS

Quick summary: I have given over 30 conference presentations and over 12 invited symposium and departmental seminars.

Invited department or public seminars

- Anthropogenic impacts on the early development of sea urchins. Oct 18 2023. Oregon Institute of Marine Biology (Invited by Prof. Richard Emlet)
- A spiny tale: Functional morphology of marine invertebrate larvae. May 17 2023. University of Delaware Microscopy Symposium (Invited by Dr. Robert Carlton)
- Form and Function: Marine invertebrate larvae in a changing ocean. Apr 26 2023. Biology Department. Grinnell College (Invited by Prof. Pascal Lafontant)
- Form and Function: Marine invertebrate larvae in a changing ocean. April 17 2023. Biology Department. Carleton College (Invited by Prof. Rou-Jia Sung)

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- Marine biology in the changing climate. Oct 10 2022. Delaware County Institute of Science, PA
(Invited by Dr. Geremea Fioravanti)
- A spiny story: hydrodynamics consequences of body extensions of zooplankton. March 9 2022.
Biology Department , St. Joseph's University, PA. (Invited by Prof. Jonathan Fingerut)
- Growing up in a sea of change. Nov 18 2021. Biology Department, Villanova University, PA.
(Invited by Prof. Michael Russell)
- Phenotypic plasticity in marine species as a response to climate change Feb 19, 2019. Department
of Ecology and Evolution, Stony Brook University, NY. (Invited by Prof. Jeffery Leviton and
Dianna Padilla)
- Growing up in the Anthropocene. Nov 11, 2019. Biology Seminar Series, University of Vermont.
(Invited by Prof. Melissa Pespeni)
- New Perspectives on the Response to Multiple Interacting Stressors in the Marine Environment. Jul
15-20, 2018. Ocean Global Change Biology Gordon Research Conference. Waterville Valley,
NH (Invited by Prof. Gretchen Hoffman, UCSB)
- Secret lives of plankton: diversity in Hong Kong Waters. Jul 29, 2017. Hong Kong Cultural Center.
Environmental Protection Department. HKSAR Government.
- Growing up in a sea of change. Life Science Seminar Series. Nov 24, 2016. Chinese University of
Hong Kong. (Invited by Prof. Jerome Hui)
- Underwater engineers: habitat changing aquatic organisms. Oct 8, 2016. Wetland Park. Hong Kong
- Growing up in a Changing World, Stories of larvae and a larval ecologist. Aug 11, 2016. South
African Institute of Aquatic Biodiversity. South Africa. (Invited by Prof. Francesca Porri)
- Going with the flow: Quantification of fluid-organisms interactions and their ecological
implication. Oct 23, 2014 Academia Sinica, Taipei. (Invited by Prof. Benny K. K. Chan)
- Growing up in a sea of change. Oct 24, 2014, Academia Sinica, Taipei. (Invited by Prof. George
T.F. Wong)
- Larvae in the changing ocean. Aug 24, 2014, Xiamen University, China.
- Marine invertebrate larvae in the changing ocean. May 9, 2013 Environmental, Earth and Ocean
Sciences Department, University of Massachusetts, Boston, MA. (Invited by Prof. Kim
Frashure).
- Larvae in the changing ocean: Integrating observational and modeling studies of larval
echinoderms. March 11, 2013 California State University Long Beach, CA. (Invited by Prof.
Bruno Pernet)
- Larvae in the changing ocean: Observational and modeling case studies of larval echinoderms.
March 7, 2013, Department of Ecology and Evolution, Stony Brook University, NY. (Invited
by Prof. Dianna Padilla)

Conference Oral presentations (* Indicated invited presentations)

Only those with KC as presenters are listed.

- *Chan KYK, Ko WH. 2024. Fertilization kinetics in a changing ocean at SICB Annual Meeting, Seattle,
WA
- Chan KYK, Wheeler JD. 2023. Large-scale phenomena arising from small-scale biophysical processes:
an introduction. SICB Annual Meeting, Austin TX.
- Chan, KYK, Byrne, M. 2022. Effect on salinity on larval swimming behavior of crown of thorn seastar at
SICB Annual Meeting, Phoenix, AZ

- Chan, KYK, Wong, JY, Wong, E, Xu, K, Koehl, M. 2020. Hydrodynamics of barnacle nauplii shape evolution of body form at SICB Annual Meeting, Austin, TX.
- Chan, KYK. 2019 Size does matter: Respiratory response of twin urchin embryos to acidification *crassispina* at SICB Annual Meeting, Tampa, FL
- Chan, KYK, Ngo, J. 2017. Is it mom's or dad's fault? Effects of ocean acidification on gametes and fertilization success of the tropical sea urchin *Heliocidaris crassispina* at SICB Annual Meeting, New Orleans, LA.
- * Chan, KYK, Dupont S. 2016. Ocean acidification induce changes in larval urchins behaviours: implications for transport. International Symposium on the Ocean in a High-CO₂ World at Hobart, Australia.
- Chan, KYK, Collin R. 2016. Effect of acclimation on physiological and behavioral responses of larval urchins to warming at SICB Annual Meeting, Portland, OR
- *Chan, KYK 2015. Effect of ocean acidification on larval swimming and implications for dispersal. Annual Meeting of American Fisheries Society, Portland, OR
- Chan, KYK., 2015. Sublethal Impacts of ocean acidification on larval urchins: Inter- and Intraspecific comparisons and implications for population dynamics at BeCOME. Hong Kong.
- Chan, KYK., Garcia,E, Dupont, S. 2014. Effects of ocean acidification on larval green urchin swimming in flow at Ocean Sciences Meeting. Honolulu, HI
- Chan, KYK, Stern, S., Anderson,J. 2014 Communicating ocean and climate change: role of and benefits for scientists in the community of practice at Ocean Sciences Meeting. Honolulu, HI.
- Chan, KYK, Padilla,DK, Jiang, HS. 2014. Organismal-, ciliary- motion and resulting fluid disturbances of freely swimming veligers at SICB Annual Meeting, Austin, TX
- Chan, KYK, Grünbaum, D. 2013. Assessing effects of starvation-induced morphological variations on swimming of larval sand dollars with a novel biomechanical model and video motion analysis at SICB Annual Meeting, San Francisco, CA.
- Lewis, C., Chan, KYK, Dupont, S. 2012. Physiological responses of invertebrate sperm to contaminated, high CO₂ ocean: mechanisms and consequences? Third International Symposium on the Ocean in a High CO₂ World. Monterey, California.
- *Chan, KYK., Grünbaum, D, O'Donnell, MJ, Thorndyke, M,Dupont, ST. 2012. Ocean acidification impacts on early life history stages of echinoids. 2nd ICES/PICES Conference for Early Career Scientists Oceans of Changes. Majorca, Spain.
- Chan, KYK., Grünbaum, D, O'Donnell, MJ, Thorndyke, M.,Dupont, ST. 2012. Effects of ocean acidification on physiological and swimming performance of larval echinoids at Ocean Sciences Meeting, Salt Lake City, Utah.
- Chan, KYK., Clay, TW,Grünbaum, D. 2012. Physical constraints on larval swimming and their implications for dispersal at Society for Integrative and Comparative Biology Annual Meeting, Charleston, South Carolina
- Bowman, J, Chan, KYK, Durkin, C, Hennon, G, Smith, D, Sullivan, B. 2011. Is diversity related to service provision across an Ecosystem? An estuarine case study at World Conference on Marine Biodiversity, Aberdeen, Scotland.
- Chan, KYK, Grünbaum, D, O'Donnell, MJ. 2011. Effects of ocean acidification on swimming performance of in larval sand dollars at Society for Integrative and Comparative Biology Annual Meeting, Salt Lake City, Utah.

- Chan, KYK, Grünbaum, D, O'Donnell, MJ. 2010. Effects of ocean acidification on larval swimming behaviors of sand dollar, *Dendraster excentricus* at Ocean Sciences Meeting, Portland, Oregon.
- Chan, KYK, Grünbaum, D. 2010. Larvae of sand dollar behaviorally compensate for temperature constraints on swimming at Society for Integrative and Comparative Biology Annual Meeting, Seattle, Washington
- Chan, KYK, 2007. Responses of geoduck larvae to halocline and food patches at Annual Meeting of National Shellfisheries Association Pacific Coast Section, Welches, Oregon.

Science education presentations

- Chan, KYK, Rocap, G. 2012. Scientific process in practice, an activity based seminar for beginning oceanography majors at Ocean Sciences Meeting, Salt Lake City, Utah.
- Chan, KYK. 2012. Scientific process in practice, an activity based seminar for beginning science majors at Society for Integrative and Comparative Biology Annual Meeting, Charleston, South Carolina
- Chan, KYK, Branch, MC, Yang, S. 2011. Using Computer Models for Guided Inquiry: A Case Study of Biological and Physical Interactions in Estuaries. NSTA Seattle Area Conference on Science Education. Seattle, Washington.
- Chan, KYK, Grünbaum, D. 2011. Hydrodynamic model of estuary flow and biology in a high school marine science classroom at Society for Integrative and Comparative Biology Annual Meeting, Salt Lake City, Utah.

TEACHING EXPERIENCE

Quick summary: Over 10 years of experience as the instructor of records at four institutions, 14 different course titles in ocean sciences and biology for undergraduate and graduate students, in large lecture (>120 students), lab course, seminar, flipped, and MOCC formats.

Teaching at Friday Harbor Labs

Summer 2023 FSH539 Larval Ecology

Teaching at Swarthmore College

Fall 2023 BIOL 028 Global Change Biology

January term 2021 BIOL/ENVS 042 Global Climate Change Science and Communication
(co-taught)

Spring 2020,2021,2022 BIOL 002 Organismal and Population Biology (team taught)

Fall 2019 and Spring 2022 BIOL 139 Global Ocean Change Biology

Spring 2019, Fall 2020 BIOL 039 Marine Biology
and 2021

Teaching at The Hong Kong University of Science and Technology

Fall 2018 LIFS 2060 Biodiversity.

Spring 2017 ENVS3003 Global Change Science.

Fall 2016,2017, SUST 1000 Introduction to Sustainability
Spring 2017

Fall 2014, 2015, 2016 ENVS3004 Ocean Sciences. Course Coordinator.

Fall 2015, 2016,2018
Summer 2016

LIFS 3160 Ecology. Course coordinator in 2016
SCIE 1050 Science of Gastronomy

Teaching at the University of Washington

Spring 2012 Field Methods in Oceanography
 Spring 2011 Scientific Process in Practice, an activity based seminar

Teaching Assistantship at the University of Washington

Summer 2009, 2010 Larval Biology, Graduate level course in Friday Harbor Labs
 Course instructor: Prof. Richard Stratmann, Prof. Richard Emlet, Prof.
 Daniel Grunbaum
 Fall 2007 Introduction to Biological Oceanography
 Course instructor: Prof. Jody Deming

MENORING EXPERIENCE

Quick summary: I have mentored 3 postdocs, directly supervised 3 Ph.D. students (all currently employed as postdocs), 3 master's students, 4 visiting international postgraduates and served on multiple thesis committee. I have supervised independent research of over 45 undergraduates, yielding presentations at professional conferences and peer-reviewed articles.

Postdoctoral scholars mentoring

2023- Dr. William Ballantine
 2015-2016 Dr. Narimame Dorey
 Jan 2015 Dr. Paul Patrick
 (Visiting from South African Institute of Aquatic Biodiversity)

Postgraduate Supervision

2018 Visiting PG Intern. Jan Schinete (University of Strathclyde, co-supervision)
 Project title: HiLo Imaging and Mesolens
 Visiting PG Intern. Tasha Say (University of Queensland)
 Project title: Effect of microbiomes on swimming behavior of sponge larvae
 Visiting PG Intern. Jake Lawlor (University of Western Washington)
 Project title: Effect of acidification on behavior of larval oysters

2017 MPhil in Life Science. Yeung Lap Yin
 Working thesis title: Dynamic energy budget of larval mussel
 MPhil in Life Science. Liu Tingxuan
 Thesis title: Effects of climate change stressors on the early development of
 polychaete *Hydroides dirampha*

2016 PhD in Life Science. Lo Hau Kwan.
 Thesis title: Impacts of emerging pollutants on early developmental stages of
 marine invertebrates
 MPhil in Life Science. Ng Pui Lam
 Thesis title: Effect of microplastics in Hong Kong waters
 PhD in Biodiversity from Academia Sinca, Taiwan. Wong Jin Yung (co-supervisor)
 Project title: Functional morphology of barnacle nauplii

2015 PhD in Marine Environment Science. Elizaldy Acebu Mabaloc
 Thesis title: Ocean acidification impact on ecology and evolution of slipper limpets

Visiting PG intern. Antonie Pecquet. (University of La Rochelle, France)
Project title: Effect of ocean acidification and metal pollution on *Bugula nertina*

Undergraduate Supervision

At Swarthmore College

Honors thesis

- 2022 – present Ruby Novogrosky '25
Honors thesis title: Effect of marine heatwaves on trophic transfer
Mary Grace Capossela' 25
Honors thesis title: Effect of marine heatwaves on maternal investments
- 2019-2021 Emily Branam' 21
Honors thesis title: Biomechanics of the of barnacle nauplii tail spines
Veronica Chua' 21
Honors thesis title: Interactive effects of ocean acidification and fluoxetine on larval behaviors

Independent Research Projects

- 2023-2024 Michelle Chen '25
Project title: Role of behaviors on cyrpid attachment
Jazczenya Gonzeles ' 25
Project title: cAMP production and motility of sea urchin sperms
Helga Conclaves '26 and Alexandar Thomas '24
Project title: Nanoparticle impacts on early urchin development
Slate Ludby' 24
Presidential Sustainability Fellowship: Environmental monitoring of Crum Creek
- 2022-2023 Brinton Vandegrift'23
Neuroscience thesis : Effect of ocean acidification on the predatory response of larval echinoids
Benjamin Jorgensen' 23
Project title: Dietary impact on upper thermal limits of larval sea urchins
Jazczenya Gonzeles ' 25
Project title: cAMP production and motility of sea urchin sperms
- 2021-2022 Mia Kwan'22
Project title: Effect of light on settlement behavior of *Exaptisa padilla*
Moey Rojas'22
Project title: Effect of temporal variability on ocean acidification responses of larval echinoderms
Liam Ash' 22 (Spring 2022)
Project title: Effect of heatwave on sperm performance of sea urchins
Alexandra Thomas'24
Project title: Effect of heat wave on sea urchin fertilization kinetics
Brinton Vandegrift'23
Neuroscience thesis : Effect of ocean acidification on the predatory response of larval echinoids

- Benjamin Jorgensen' 24 (Spring 2022)
Project title: Effect of heatwave on sperm performance of sea urchins
- Abdullah Ali'25
Project title: Kinematics and limb coordination of brittlestars
- 2020-2021 Jazcenyia Gonzeles ' 25 (Spring 2022)
Project title: Effect of heatwave on egg quality of sea urchins
- Mia Kwan'22 (Spring & Summer 2021)
Project title: Effect of light and flow on settlement behavior of *Actinia equina*
- Vivian Guo'24 (Summer 2021)
Project title: Effect of ocean acidification on fluctuating asymmetry and swimming of larval echinoids
- Brinton Vandegrift'23 (Summer 2021)
Project title: Effect of ocean acidification on the predatory response of larval echinoids
- David Ye'23 (Summer 2020)
Project title: Latitudinal pattern in microevolution rates of thermal tolerance of marine organisms
- Bailey Jones'22 (Spring 2021)
- Lauren Holt'21 (Spring 2021)
Project title: Effect of ocean acidification on the early development of *Ciona robusta*
- Maya Zimmerman'21 (Spring 2021)
ENVS Capstone Project title: Dust in the wind: Analyzing the change in aerosol properties and surface ocean chlorophyll-a responses to the 2005, 2014, and 2020 Saharan Air Layers
- 2019-2020 Seneca Kinn-Gurzo'21
Project title: Interactive effect of salinity and temperature on the tube worm *Hydrodies dirampha*
- Jeffery Mun' 20
Project title: Swimming behavior and biomechanics of *Hydractinia echinata* larvae
- Meagan Currie'20
Project title: Effect of ocean acidification on fertilization kinetics of sea urchins
- At the Hong Kong University of Science and Technology
HKUST Final Year Project (Senior thesis)
- 2018-2019 Cheung Ho Tin (Toby)
Project title: Limpet's preference on surface smoothness and its strength of attachment
- Eva Lam
Project title: Effect of turbulence on growth and development of larval sea urchins
- Jacky Tang
Project title: Effect of warming on gaping behaviors of native clams
- 2017-2018 Cheng Hok Chi Edwin

- Project title: Biomechanical role of rostral spine on larval decapods
Lo Hiu Ting Jessica
- 2016-2017 Project title: Effect of temperature and salinity on larval development of red crabs
Julia Leung
Project title: Effect of microplastics on segment regeneration of polychaete worms
(Paper published in Marine Pollution Bulletin)
Yeung Lap Yin
Project title: Larval crab in Port Shelter: seasonal variation and identification
Kelvin Chu
Project title: Effect of the anthropogenic noise on the growth of Hong Kong purple sea urchin larvae
Joshua Ng
Project title: Larval development of a Haminoidea gastropod
Rinaldi Gotama
Project title: Effects of physical disturbance on epibenthic community dynamics in Port Shelter
- 2015-2016 Chan Lok Kwan.
Project title: Gyrotaxis in larval sea urchin – a possibility of active orientation
(Results included in Oral presentation at Microscale Ocean Biophysics Meeting, Oct 31 - Nov 4 2016, Eilat, Israel)
Lo Hau Kwan.
Project title: Effect of ingestion of microplastics on the growth and development of larval and juvenile *Crepidula onyx*
(Paper published in Environmental Pollution)
Li Tak Hou.
Project title: The effects of ocean acidification on survival, growth and swimming performance of *Tigriopus japonicus*
Chan Tsum Yuet.
Project title: Phototaxis of zooplanktons towards different light frequencies
Ng Pui Lam.
Project title: Ingesting microplastics extracted from toothpaste has limited impacts on larval sea urchin, *Heliocidaris crassispina*
Yueng Hui Ching.
Project title: Impacts of polystyrene microbeads ingestion on larval sea urchin, *Heliocidaris crassispina*
- 2014-2015 Wong Hoi Nai.
Project title: Thermal tolerance of *Daphnia magna* under acute and chronic exposure to high temperature
(Best Student Posters for BISC Program)
- Capstone Project (Desktop research)*
- 2018-2019 Yip Yiu Kwong
Project title: Biomechanics of marine invertebrate larvae
- 2016-2017 Wong Wai Chun Marco

	Project title: Defining Beauty: Geometric Morphometric Analysis of Miss Hong Kong
2015-2016	Wong Cheuk Yin. Project title: Thermal Tolerance of Marine Invertebrates: Latitude difference and Adaptation Potentials
<i>Undergraduate Research Opportunities Program (Independent studies)</i>	
2015-2017	Ivana Surdja Project title: Development of alkalinity titration approach to quantify calcification
Spring 2016	Vasishak Anirudh Project title: Role of carbonate chemistry on the growth of <i>Crepidula onyx</i>
Summer 2016	Jessamyn Chiu Project title: Role of temporal fluctuation on stress response of the tidepool copepod
	Preston Chu Project title: Effect of ocean acidification on ingestion rate of larval <i>Crepidula onyx</i>
<i>Summer Internship Program at the Hong Kong Science Museum</i>	
Summer 2017	Helen Wong; Heidi Pong; Li Hok Lam; Norris Li; Claris Cheung

FELLOWSHIPS AND AWARDS

2012-2014	Croucher Foundation Fellowship for Post-doctoral Research
2012	Woods Hole Oceanographic Institution Postdoctoral Scholarship
2011-2012	University of Washington College of Environment Travel Fund
2011-2012	Boeing International Fellowship
2010-2011	Huckabay Teaching Fellowship
2009-2010	Clarence H. Campbell Endowed Lauren Donaldson Scholarship
2006-2009	Sir Edward Youde Memorial Fellowship for Overseas Studies
2008-2009	Stephen and Ruth Wainwright Endowed Fellowship

PROFESSIONAL SERVICES

Quick summary: I have been active in promoting interdisciplinary research and broadening participation in STEM through involvement in professional societies, conference organization, and editorial work.

2023-2026	Member at Large, Society for Integrative and Comparative Biology
2022-present	Associate editor, Integrative Organismal Biology
2022-present	Guest Editor, Integrative and Comparative Biology for a special collection celebrating Prof. John Pearse
2022-2023	Society Wide Symposium Organizer, Large-scale biological phenomena arising from small-scale biophysical processes. Society for Integrative and Comparative Biology.
2020-2023	Program Officer, Division of Invertebrate Zoology, Society for Integrative and Comparative Biology
2020-present	Member at Large, American Microscopical Society
2020- present	Review Editor, Frontiers in Marine Science

2019-2020	Guest Editor, Science of the Total Environment
2018-present	Academic Editor, PeerJ — the Journal of Life and Environmental Sciences
2018- 2019	Convener and co-Chair, Gordon Research Conference on Urbanization, Water and Food Security (co-chair with Bryan Brooks from Baylor University; incoming chairs are Prof. Kenneth M.Y. Leung from City University of Hong Kong and Prof. Ceri Lewis of University of Exeter)
	Organizing committee, Crustacean Society Annual Meeting
2018	Ad hoc review for the National Science Foundation (Biological Oceanography) Ocean acidification and echinoderm expert panel, Southern California Coastal Water Research Project
2017	Discussion leader, Gordon Conference on Marine Molecular Ecology Ad hoc review for the National Science Foundation (3 Programs) Scientific Advisory Committee, Ocean Park Conservation Fund Hong Kong Nomination Committee, Division of Invertebrate Zoology, SICB
2016	Guest editor, Regional Studies of Marine Science Ad hoc review for the National Science Foundation (2 Programs) Discussion leader, Interdisciplinary Symposium on Ocean acidification and climate change
2015	International evaluation committee of the French National Research Agency (ANR) Organizing committee, International Conference on Biodiversity, Ecology and Conservation of Marine Ecosystems 2015 (BECOME 2015)
2013-2016	Editor, Invertebrate Zoology Section, Digital Library, SICB Student/ Postdoc representative for Division of Invertebrate Zoology, SICB

Journal Reviewer

Nature Climate Change	Royal Society Proceedings B.	Global Change Biology
Nature Physics	Royal Society Interface	Marine Ecology Progress Series
Nature Scientific Reports	Limnology and Oceanography	Royal Society Open
Marine Biology	Frontiers in Marine Sciences	PLos-One
Water	Journal of Experimental Marine	Integrative and Comparative
eLife	Biology and Ecology	Biology

ON-CAMPUS SERVICES

Aside from traditional committee work, I am active in promoting evidence-based science teaching and serve on assessments and academic committees. My on campus panelist work on teaching and grant application are not listed.

At Swarthmore College

2023-present	Rubin Scholar Mentor (Program for FLI and URM students)
2019-2022	Health Science Advisory Committee
2023-present	
2022-present	Department liaison to the Academic Assessment Committee

At the Hong Kong University of Science and Technology

2017–2018	Undergraduate Coordinator, Environmental Science Program
2017-2019	Steering Committee, Sustainability Education
2015-2018	Curriculum Committee, Division of Life Science
2014-2018	UG Committee, Environmental Science Program
Fall 2016	Finance Committee, Division of Life Science
Spring 2016	Division of Life Science Rep, University Rankings Committee
Fall 2015	Ad hoc search committee, Teaching Associate, School of Science
2014-2015	Seminar Committee, Division of Life Science

COMMUNITY OUTREACH

I have been involved in ocean science communication for over a decade, starting as docents at the Seattle aquarium and member of COSEE. My more recent roles as a faculty are listed below.

2023-2024	Instructor, Teacher as Scholar Program. Communication of Climate Change
2020	Teaching Assistant, National Network on Ocean and Climate Change Interpretation Crash Course
2018-2019	Convener and scientific advisor , Ocean X STEM (Whole-school ocean literary program for local elementary school)
2017-2018	Collaborator, Miffy and the Ocean, Children’s Gallery Exhibit at the Hong Kong Science Museum (Exhibit and demonstration design, student intern and staff training) Scientific consultant, Discover Ocean Drifter Program, World Wide Fund Hong Kong (Teacher training and student workshops)
2016-2018	Member, HKUST Media Expert List
2015- 2018	Faculty host, School of Science Summer Camp (Lab tour , Hands on activities, Seminar)
2014-2018	Speaker, School of Science Promotional Talks for Target Schools (3-4 talks in local high school every year) Speaker, Discovering Science @ HKUST Speaker, Science Booster Day @ HKUST Science Editor, Science Focus magazine
2016-2017	Co-chairperson of Organizing Committee, WiSE Camp 2016 Mentor, HKUST 25 th Anniversary “Innovating Today, Imagining Tomorrow” Mentorship Program Speaker, Meet a Faculty Sharing Session (May 2016)

Other Community Service:

2014- 2019	Steering Committee, Hong Kong Outstanding Students Award, Youth Arc Foundation
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