Cody Cheuk Fung Wong

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M.Phil. graduate in Biology with a multi-disciplinary background in evolution, genomics, ecology, and bioinformatics. Strong interest in applying programming and data analytics to solve biological questions.

EDUCATION

The Chinese University of Hong Kong

M.Phil. in Biology (3.5/4.0 GPA)   2020 – 2023

City University of Hong Kong

B.Sc. in Environmental Science and Management | First Class Honors (3.5/4.0 GPA)   2015 – 2019

WORK EXPERIENCE

Marine Biogeochemistry Lab, The University of Hong Kong

Research Assistant   May 2023 – Mar 2024

- **Project**: "*From conservation to carbon neutral: Quantifying blue carbon in coastal sediments and their contribution to carbon budgets*".
  - Planned study design and fieldwork, led a team of 3 research assistants to complete the preliminary study and deployment stage of the project to quantify marine carbon capture capacity across 15 mangroves.
- **Project**: "*What lies beneath: Human and environmental health risk factors in our ocean - an experimental application of MarineGEO-Hong Kong*".
  - Performed devices retrieval, species identification and processing of marine biodiversity monitoring device – Autonomous Reef Monitoring Structures (ARMS) from 8 sites.
  - Designed and implemented a controlled mesocosm experiment to test the community resistance to human-induced stressors.
- Wrote *R* and *shell* scripts for preliminary analysis of coral population genomics in South China Sea.

ANewR Consulting Limited, Hong Kong

Graduate Environmental Consultant   Dec 2022 – Feb 2023

- Coordinated the development and maintenance of 3 environmental database management systems, designing dashboards and logic flow, developing scripts for system monitoring, liaising with external stakeholders to document user's requirements and provide technical support for system usage.
- Developed data pipeline automation for geospatial analysis of a noise monitoring project with *SQL* and *R*.
  - Resulting in 80% shorter analysis time and enhancing report quality.
- Produced 15 project deliverables, including reports, technical guides, and environmental assessments.
- Developed a 3D modelling widget on *ArcGIS JavaScript*, allowing new buildings creation and line of sight visualization for landscape and visual impact assessment in development planning.

School of Life Science, The Chinese University of Hong Kong

Junior Research Assistant   Aug 2019 – Jul 2020

- **Project**: "*Development of Environmental DNA Protocol for Detection and monitoring of Horseshoe Crabs*".
  - Developed, tested, and modified various eDNA protocols by field surveys, water sampling and lab work in 10+ mudflats, successfully detecting target species in **70%** of sites and increasing sensitivity by **100%**.
  - Carried out literature reviews and data analysis, prepared 5+ project deliverables, including publications, reports, and a presentation in a public seminar.
- Analyzed genomics data of hormones in mollusks and population genomics of oysters, utilizing *R*, *Python*, and *shell* scripting, bioinformatics tools and biomedical databases.

City University of Hong Kong

Student Research Assistant   Sep 2017 – Jul 2019
- Fieldwork, fish species identification and laboratory analysis to study fish ecology in 12 *Sargassum* habitats.

Student Research Assistant   Aug – Dec 2018
- Fieldwork, microplastic sorting and isolation to study microplastic pollution in 5+ sandy beaches.

RESEARCH EXPERIENCE

Evolution of Molting: Ecdysteroids Regulation in Myriapods and Fruit Fly (M.Phil. thesis)   2020 – 2023
- Characterized insect molting hormone by comparative bioinformatics analysis with novel genomes and hormonal assay, leading to the discovery of molting hormone in millipedes for the first time.
- Verified the function of molting hormone by hormonal treatment and gene expression profile of receptor genes, demonstrating the response to molting hormone in millipedes.
- Tested the regulation mechanism with microRNA target prediction, transfection, mutagenesis, and transgenic flies, identifying conserved miRNAs that regulate molting in the arthropods.

Developmental and functional abnormalities of miRNA-214 knock out (using CRISPR-Cas9 technology) on medaka (*Oryzias latipes*) (B.Sc. Final Year Project)   2018 – 2019
- Demonstrated miR-214 regulates skeletogenesis by morphological and molecular phenotype.

Juvenile fish resources and nursery function of macroalgal beds in Hong Kong waters – a habitat-based study (Summer Research Internship Project)   2017
- Showed a higher diversity and abundance of juvenile fishes in *Sargassum* bed by fieldwork and species ID.

PROGRAMMING PROJECTS

Conductivity to Salinity Calculator, R   2024
- Converts a conductivity value of seawater to a value of the practical-salinity-scale 1978 (PSS-78) for given values of conductivity, temperature and pressure.

Novel microRNA annotation, R   2023
- Parse and extract results from a prediction program, align and map the extracted results, and check through a set of criteria, reducing analysis time by 90% and minimizing errors.

BLAST result parser, Excel   2021
- Parse, format and sort results from a database query algorithm for easier manual inspection of results.

PUBLICATIONS

1. Xie, Y., Huang, E. Y. Y., Nong, W., Law, S. T. S., Yu, Y., Cheung, K., Li, Y., **Wong, C. F.**, Yip, H. Y., Joyce, P. W. S., Chan, K. M., Chu, K. H., Russell, B. D., Falkenberg, L. J., & Hui, J. H. L. (2022). Population Genomics, Transcriptional Response to Heat Shock, and Gut Microbiota of the Hong Kong Oyster *Magallana hongkongensis*. *Journal of Marine Science and Engineering*, *10*(2), 237.
2. Nong, W., Yu, Y., Aase-Remedios, M. E., Xie, Y., So, W. L., Li, Y., **Wong, C. F.**, Baril, T., Law, S. T. S., Lai, S. Y., Haimovitz, J., Swale, T., Chen, S. S., Kai, Z. P., Sun, X., Wu, Z., Hayward, A., Ferrier, D. E. K., & Hui, J. H. L. (2022). Genome of the ramshorn snail *Biomphalaria straminea*—an obligate intermediate host of schistosomiasis. *GigaScience*, *11*, 1–13.
3. Lee, I. H., Ng, S.Y., Yip, H. Y., Qu, Z., Nong, W. Y., **Wong, C. F.**, Cheung, S. G., & Hui, J. H. L. (2020). An integrative approach to studying horseshoe crabs in Hong Kong: Field survey, Environmental DNA (eDNA) detection, and Citizen science platform. Book, Springer

AWARDS ($=CAD)

2020	CUHK Vice-Chancellor's Ph.D. Scholarship (~$14,000 award + ~$38,000 per year)
2018	Dean's List for Outstanding Academic Performance
2017	Summer Research Scholarship (~$2,800 stiped)

PRESENTATIONS

Lee, I. H., **Wong, C. F.**, & Hui, J. H. L. *School of Life Science Seminar*. "Development of environmental DNA (eDNA) protocol for detection of horseshoe crabs". (Hong Kong, Jan 2020)

TEACHING EXPERIENCE

Mentor of a final year project student on mollusk diversity, HKU   2023 – 2024
- Taught molecular laboratory techniques for species identification, such as DNA extraction and PCR.
- Guided student and provided feedback in developing testable hypothesis, study design, biodiversity metrics analysis and interpretation, and thesis writing.

Demonstrator, Methods in Environmental Science field course, HKU   2023
- Led a group of 30 students for fieldwork to evaluate water quality along HK harbor.
- Taught water sampling techniques, on-site water quality parameters analysis, and report writing.

Mentor of 3 research students on hormones and genetics of fruit flies, CUHK   2020 – 2022
- Taught molecular lab techniques for gene expression quantification such as RNA extraction and qPCR, transgenic flies' manipulation, and biochemical techniques such as enzyme immunoassay.
- Guided students and provided feedback in developing testable hypothesis, study design, data analysis and interpretation, and thesis writing.

Teaching Assistant, Environmental Impact Assessment lab course, CUHK   2020 – 2022
- Led groups of 30 students on field trips to developmental sites and nature reserves.
- Demonstrated techniques for evaluating Landscape and Visual impact such as identifying landscape resources, zone of visual influence and sensitive receivers, and assessing impact significance.
- Guided and provided feedback on project design, assessments, reports, and presentations.

Tutor, Homework Tutoring Class, CMA Secondary School, HK   2015 – 2017
- Created an inclusive learning environment for a group of 30 students of racial minority, new immigrants, and disadvantaged socioeconomic status with an emphasis of encouragement and constructive feedback.

PROFESSIONAL DEVELOPMENT

2023	*Training Workshop on PacBio Sequel Ile*, Earth BioGenome Project Hong Kong
2023	*100 Days of Code: The Complete Python Pro Bootcamp*, Udemy, online
2022	*Data Science with Python*, Venturenix LAB, Hong Kong
2020	*Publication Ethics, Observing Intellectual Property and Copyright Law during Research*, Centre for Learning Enhancement and Research, CUHK
2018	*Exchange program in Bioinformatics*, University of Bologna, Italy
2017	*Summer Research Internship*, State Key Laboratory of Marine Pollution, CityU HK

SKILLS & CERTIFICATIONS

Lab Techniques   DNA/RNA/eDNA extraction, library preparation for NGS sequencing, PCR, qPCR, RT-qPCR,

	metabarcoding, cloning, cell culture, DNA plasmid, bacterial transformation, luciferase assays, mutagenesis, enzyme immunoassay, confocal microscopy, *in situ* hybridization, autoanalyzer, flow injection analysis, stable isotope analysis, animal handling and husbandry (transgenic fish, *Drosophila* and other arthropods), microplastic extraction
Bioinformatics	sequence analysis, DNA constructs design, gene annotation (BLAST, phylogenetic analysis), transcriptome analysis (identifying DEGs, pathway enrichment analysis [gene ontology]), data visualization (e.g. ggplot2, heatmap), microRNA target prediction, population genomics (GATK, PLINK, VCFtools, STRUCTURE), biomedical databases (e.g. NCBI Genbank, UniProt)
Programming	R, Python, JavaScript, Linux, SQL, VBA, Powershell
Software	MS Excel, ArcGIS, QGIS, WordPress
Scientific diving	PADI Open Water Diver with 30+ logged scientific dives, experience includes coral fragmentation, water and sediment sampling, underwater transect, experimental devices deployment/retrieval, monitoring and ecological survey in coral habitats
First Aid	Certificate in First Aid and CPR/AED

OUTREACH & ENGAGEMENT

Team member, MarineGEO team, HKU   2023
- Organized 10+ outreach activities with 100+ participants from different sectors to showcase scientific methodologies to monitor marine biodiversity.

Seasonal Content Creator, @sugar_your_brain   2023
- Discussed, drafted contents and prepared illustrations for a life science outreach Instagram account.

Content Creator, Horseshoe Crabs Conservation Citizen Science Platform, CUHK   2019 – 2020
- Developed the platform on **WordPress**, drafted contents such as fun facts, conservation importance and field notes, engaging over 2,000 community members.

Science Educator, Shui Hau Magnification, CityU HK   2018
- Led field trips to mudflats for public about human disturbance on horseshoe crabs and microplastic pollution.

INTERESTS

Muay Thai	I have been training Thai boxing for 4 years in Hong Kong and Thailand. I have 3 amateur fight records and won a WBC Amateur Muay Thai fight.
Cycling	I have completed a 1,000 km round Taiwan island cycling and a 3-day cycling trip round the largest freshwater lake in Japan next to Mount Fuji.
Travelling	I've studied in Italy and traveled through Europe, bikepacked in Taiwan and Japan, trained in Thailand, meeting fun people on Couchsurfing along the way.
Science	I love science education videos and podcasts, especially on other fields of science such as physics and engineering. My favorite shows are *The Infinite Monkey Cage* and *Be Smart*.