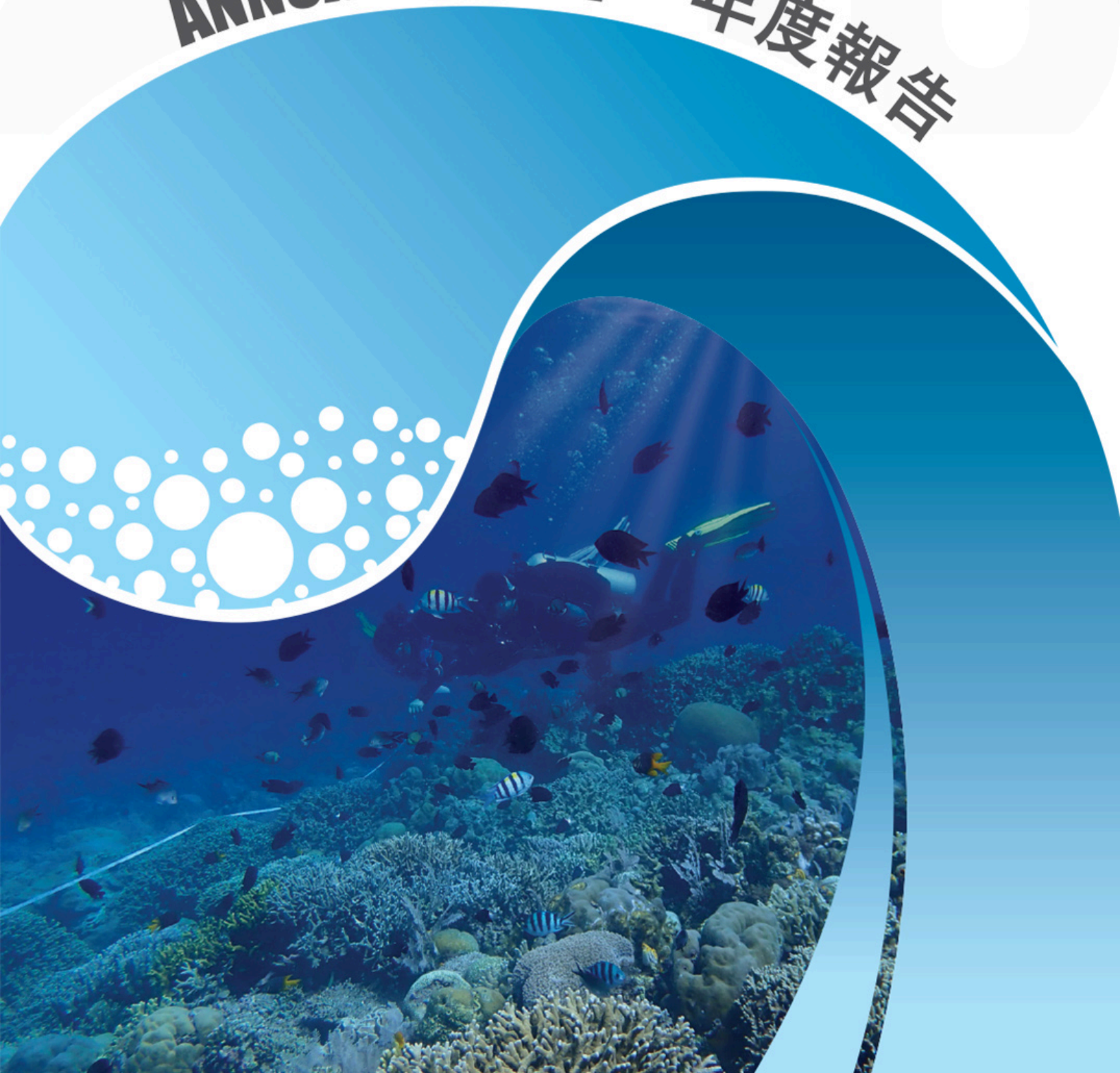
2018

海洋污染國家重點實驗室
State Key Laboratory of Marine Pollution

ANNUAL REPORT • 年度報告



Original Mission

The mission of the SKLMP is to protect the marine environment of Hong Kong and South China by identifying major threats such as algal toxins and contaminants of emerging environmental concern, and developing tools and technologies to address and solve these problems.

海洋污染國家重點實驗室的使命為通過明確威脅海洋環境的主要問題，如藻毒素和新興環境污染物等，並發展相關設備和技術致力於這些問題的解決，以保護香港和華南地區的海洋安全。

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Message from the Director

I would like to start my 2018 report by highlighting a number of developments in the State Key Laboratory of Marine Pollution, SKLMP (name changed from State Key Laboratory in Marine Pollution, as instructed by the Ministry of Science and Technology), which are important and relevant to our future development. First, the results of the 2017 Review were announced in July 2018. We are very happy that SKLMP was rated Outstanding (優秀). This outcome is both humbling and serves as a reminder that we need to work even harder to ensure that we at least maintain, and hopefully, continue to enhance our achievements for the next Review. Following the Review, the Chief Executive announced in the 2018 Policy Address the government's plan to double the maximum annual funding for each state key laboratory, from the existing $5 million to $10 million. This welcome funding increase was made against a background of an overall increase in research expenditure in Hong Kong. The increased funding provides a rare opportunity to raise the level of support for SKLMP members, perhaps allowing sustained funding for designated research themes in strategic areas. Our principle of providing seed money to help prepare members for major grant applications will remain one of our priorities.

To fit in with City University's overall campus planning and development, we agreed to move the main laboratory of SKLMP to a new location on the fifth floor of the Yeung Kin Man Academic Building in 2018. This relocation exercise was accompanied by the replacement of obsolete instruments and the acquisition of several new pieces of equipment, including a UPLC-MS/QTOF system and a GC-MS/MS system. The new SKLMP facility has laboratories for trace chemical analysis, molecular biological analysis, algal culture and cell culture, and a number of walk-in cold rooms and freezer rooms for sample storage.

I would like to take this opportunity to congratulate Prof. Jianping GAN of the Hong Kong University of Science and Technology, who has been instrumental in successfully establishing the Centre for Ocean Research (Hong Kong and Macau), with support from the Pilot National Laboratory for Marine Science and Technology (Qingdao) in 2019. Clearly, there will be plenty of room for collaboration between the SKLMP and the Centre. I am confident the synergy will help take research in marine science in Hong Kong to a new level and scale. In this connection, we welcome three new members to SKLMP: two from The Education University of Hong Kong and one from Hong Kong University of Science and Technology.

The First Graduate Symposium on Marine Environmental Research (GRAMMER) will be held in March 2019 to foster the exchange of knowledge and ideas among young researchers in the marine science and environmental research community and in particular, to promote interdisciplinary studies.

SKLMP is approaching its tenth anniversary, so it is good time to welcome more young members, continue to embrace innovative ideas, and contemplate new leadership.

Professor Paul Kwan Sing LAM
Director of the State Key Laboratory of Marine Pollution
31 December 2018

主任致辭

2018 年，海洋污染國家重點實驗室 (SKLMP) 取得了連串重要成果，這些與我們未來發展息息相關，讓我以此作為本年年度報告的開場介紹。首先，國家科技部在 2018 年 7 月公布了最新的國家重點實驗室評審結果，非常高興 SKLMP 獲評為優秀。對我們來說，不僅是一份榮譽，亦同時提醒我們往後工作時要更臻努力，於下一輪評審中保持現時水平之餘，期望能更進一步提升。（實驗室的英文名稱亦按科技部要求，更改為 State Key Laboratory of Marine Pollution）

此外，行政長官在 2018 年《施政報告》中建議，每個國家重點實驗室的每年資助由現時的 500 萬元提高至 1,000 萬元。在增加香港科研整體開支的前題下，增加資助能提高對 SKLMP 成員們的支持，比如可為策略性中的特定研究主題提供持續性資助。我們亦會提供種子基金，協助成員去準備及申請主要的研究資助計劃。

為配合香港城市大學的整體校園發展，我們的實驗室已於 2018 年成功遷往楊建文學術樓五樓。隨著是次搬遷，我們更換了部分舊款儀器及添購了先進新型儀器，包括 UPLC-QTOF 系統和 GC-MS/MS 系統。新設施備有痕量化學分析，分子生物學分析，藻類培養和細胞培養等實驗室，以及用於樣品儲存的步入式冷藏室和冷凍室。

我亦想藉此恭賀香港科技大學的甘劍平教授，在青島海洋科學與技術試點國家實驗室的支持下，於 2019 年成立了港澳海洋研究中心。我相信 SKLMP 和該中心會有無限合作空間，所產生的協同效應可令香港的海洋科學研究提升至新層次和規模。還有，我在此亦歡迎三位新加入的 SKLMP 成員，兩位來自香港教育大學及一位來自香港科技大學。

第一屆海洋與環境研究生研討會 (GRAMMER) 將於 2019 年 3 月舉行。此次研討會旨在促進從事海洋科學和環境研究的年輕研究員間的學術交流和分享，及致力推動跨學科研究。

SKLMP 成立邁向十週年，在這好時機下，我們期待有更多年輕成員加入，繼續積極推動創新理念，並探索新的領導方向。

林群聲

海洋污染國家重點實驗室主任

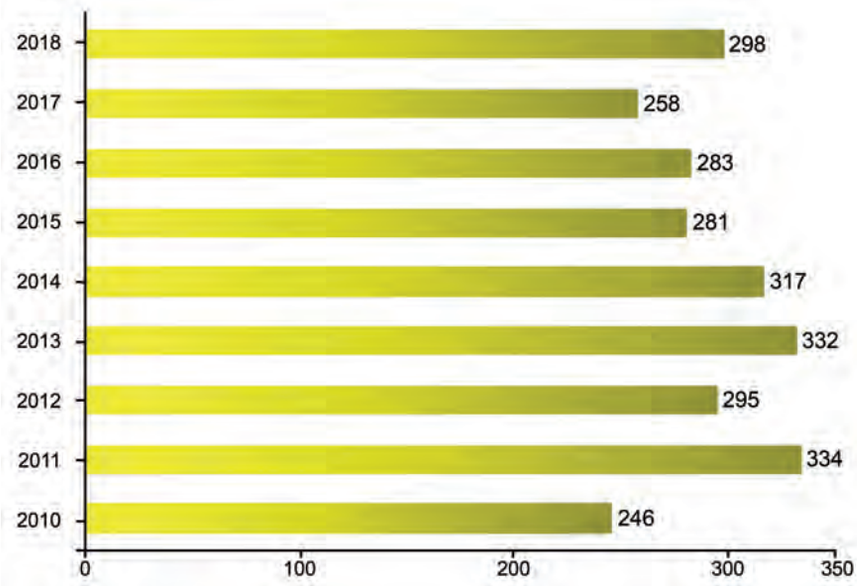
二零一八年十二月三十一日

Research Scopes in SKLMP 實驗室研究範疇

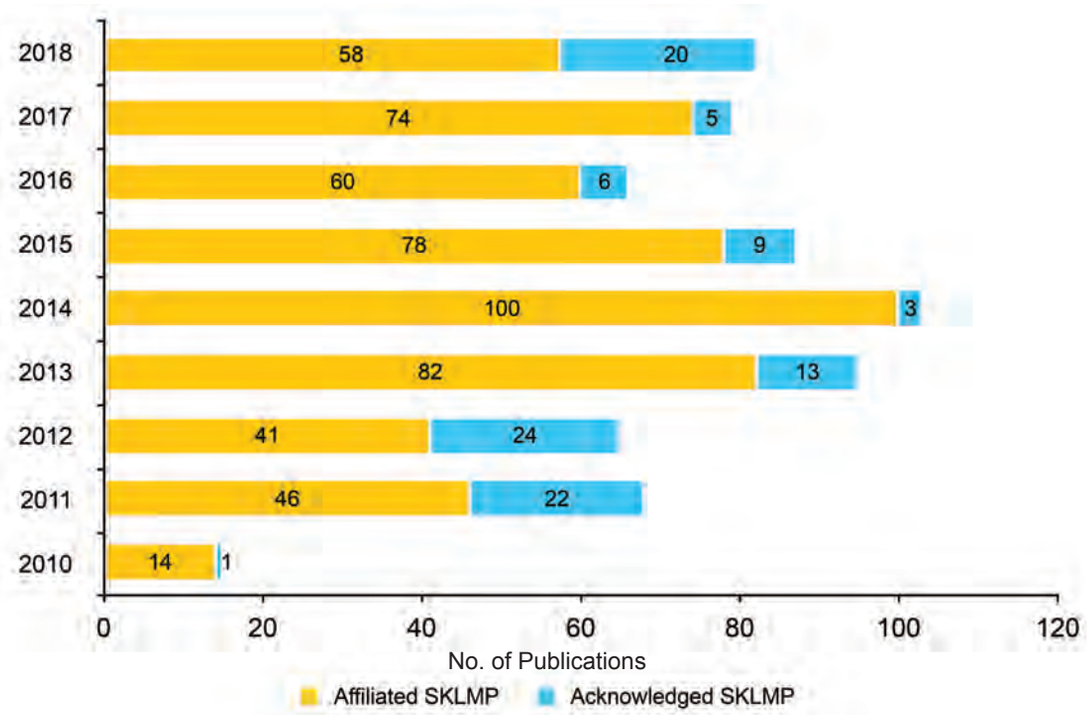
- **Pollution Monitoring Technology**
  污染檢測技術
- **Marine Ecosystem**
  海洋生態系統
- **Risk Assessment**
  風險評估
- **Pollution Control and Bioremediation**
  污染控制與生物修復

List of Peer-Reviewed Papers 論文專著

Number of SCI publications of SKLMP members (2010-2018)
2010-2018 年 SKLMP 成員的 SCI 論文數目

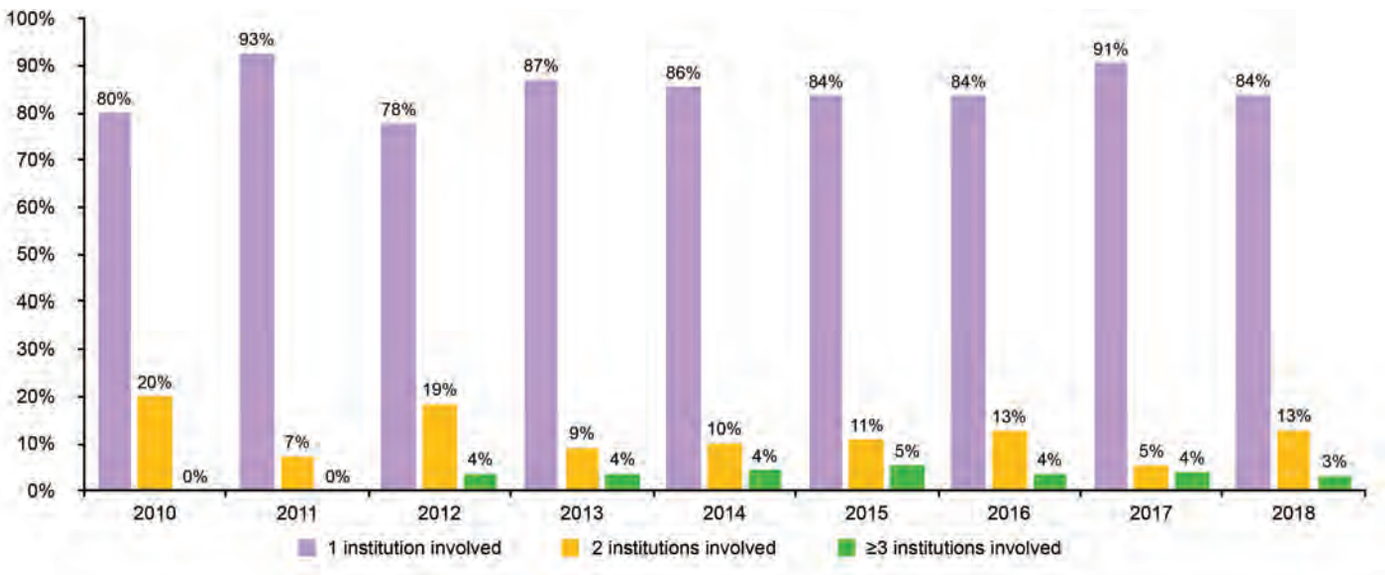


Number of SCI publications of SKLMP (2010-2018)
2010-2018 年 SKLMP 的 SCI 論文數目



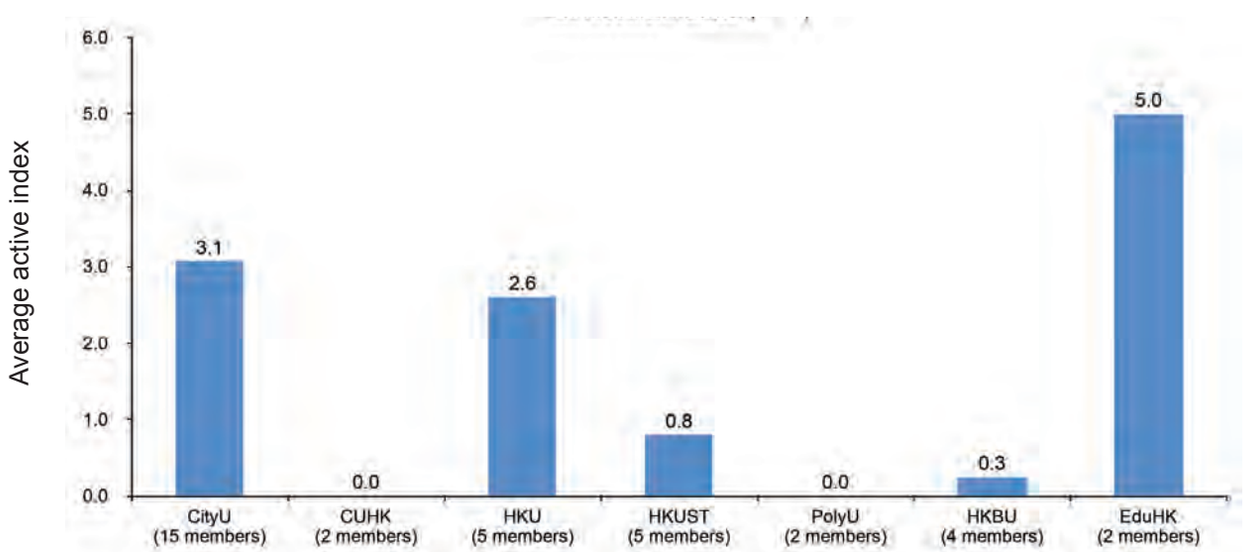
Degree of collaboration among member institutions based on SCI publications (2010-2018)

2010–2018 年成員院校合作發表 SCI 文章的情況



Average active index # of 7 institutions (2018)

成員院校的活躍指數（2018）



Average active index = SCI publications / members per institution

平均活躍指數＝ SCI 文章數目 ／ 院校成員人數

Research Output 研究成果

(I) Paper with the SKLMP included as the first affiliation
以 SKLMP 為第一作者單位的期刊論文

1. Chen, L., Guo, Y., Hu, C., **Lam, P. K. S., Lam, J. C. W.**, & Zhou, B. (2018).
Dysbiosis of gut microbiota by chronic coexposure to titanium dioxide nanoparticles and bisphenol A: Implications for host health in zebrafish.
Environmental Pollution, 234, 307-317.

2. Chen, L., Hu, C., Lai, N. L. S., Zhang, W., Hua, J., **Lam, P. K. S., Lam, J. C. W**., & Zhou, B. (2018).
Acute exposure to PBDEs at an environmentally realistic concentration causes abrupt changes in the gut microbiota and host health of zebrafish.
Environmental Pollution, 240, 17-26.

3. Chen, L., Hu, C., Tsui, M. M. P., Wan, T., Peterson, D. R., Shi, Q., **Lam, P. K. S., Au, D. W. T., Lam, J. C. W**., & Zhou, B. (2018).
Multigenerational disruption of the thyroid endocrine system in marine medaka after a life-cycle exposure to perfluorobutanesulfonate.
Environmental Science & Technology, 52(7), 4432-4439.

4. Chen, L., Zhang, W., Hua, J., Hu, C., Lai, N. L. S., **Qian, P. Y., Lam, P. K. S., Lam, J. C. W**., & Zhou, B. (2018).
Dysregulation of intestinal health by environmental pollutants: Involvement of the estrogen receptor and aryl hydrocarbon receptor.
Environmental Science & Technology, 52(4), 2323-2330.

5. Leung, P. T. Y., Yan, M., Lam, V. T. T., Yiu, S. K. F., Chen, C. Y., Murray, J. S., Harwood, D. T., Rhodes, L. L., **Lam, P. K. S**., & **Wai, T. C.** (2018).
Phylogeny, morphology and toxicity of benthic dinoflagellates of the genus *Fukuyoa* (Goniodomataceae, Dinophyceae) from a subtropical reef ecosystem in the South China Sea.
Harmful Algae, 74, 78-97.

6. Ruan, Y., **Lam, J. C. W.**, Zhang, X., & **Lam, P. K. S.** (2018).
Temporal changes and stereoisomeric compositions of 1,2,5,6,9, 10-hexabromocyclododecane and 1,2-dibromo-4-(1,2-dibromoethyl)cyclohexane in marine mammals from the South China Sea.
Environmental Science & Technology, 52(5), 2517-2526.

7. Ruan, Y., Zhang, X., **Qiu, J.-W., Leung, K. M. Y.**, **Lam, J. C. W**., & **Lam, P. K. S.** (2018).
Stereoisomer-specific trophodynamics of the chiral brominated flame retardants HBCD and TBECH in a marine food web, with implications for human exposure.
Environmental Science & Technology, 52(15), 8183-8193.

8. Wartenberg, R., Limbu, K., Feng, L., Wu, J., **Chan, L. L**., Telfer, T. C., & **Lam, P. K. S.** (2018).
The feasibility of integrating the noble scallop *Mimachlamys nobilis* with existing fish monoculture farms in the South China Sea: A bioeconomic assessment from Hong Kong.
Journal of Shellfish Research, 37(3), 635-650.

9. Ye, R. R., Peterson, D. R., Kitamura, S. I., Segner, H., Seemann, F., & **Au, D. W. T.** (2018).
Sex-specific immunomodulatory action of the environmental estrogen 17alpha-ethynylestradiol alongside with reproductive impairment in fish.
Aquatic Toxicology, 203, 95-106.

(II) Paper with the SKLMP included as one of the affiliations
以 SKLMP 為作者單位之一的期刊論文

1. **Leung, K. M. Y.** (2018).
Joining the dots between omics and environmental management.
Integrated Environmental Assessment and Management, 14(2), 169-173.

2. Asthana, P., Zhang, N., Kumar, G., Chine, V. B., Singh, K. K., Mak, Y. L., **Chan, L. L., Lam, P. K. S**., & Ma, C. H. E. (2018).
Pacific ciguatoxin Induces excitotoxicity and neurodegeneration in the motor cortex via caspase 3 activation: Implication for irreversible motor deficit.
Molecular Neurobiology, 55(8), 6769-6787.

3. Chen, L., **Lam, J. C. W**., Hu, C., Tsui, M. M. P., Wang, Q., Giesy, J. P., & **Lam, P. K. S.** (2018).
Perfluorobutanesulfonate exposure causes durable and transgenerational dysbiosis of gut microbiota in marine medaka.
Environmental Science & Technology Letters, 5(12), 731-738.

4. Chen, L., Tsui, M. M. P., Shi, Q., Hu, C., Wang, Q., Zhou, B., **Lam, P. K. S**., & **Lam, J. C. W.** (2018).
Accumulation of perfluorobutane sulfonate (PFBS) and impairment of visual function in the eyes of marine medaka after a life-cycle exposure.
Aquatic Toxicology, 201, 1-10.

5. Farzana, S., & **Tam, N. F. Y.** (2018).
A combined effect of polybrominated diphenyl ether and aquaculture effluent on growth and antioxidative response of mangrove plants.
Chemosphere, 201, 483-491.

6. Luo, Z., Wang, L., **Chan, L. L**., Lu, S., & Gu, H. (2018).
***Karlodinium zhouanum*, a new dinoflagellate species from China, and molecular phylogeny of *Karenia digitata* and *Karenia longicanalis* (Gymnodiniales, Dinophyceae).**
Phycologia, 57(4), 401-412.

7. Manno, S. H. C., Manno, F. A. M., Ahmed, I., Ahmed, R., Shu, L., Li, L., Xu, S., Xie, F., Li, V. W., Ho, J., **Cheng, S. H**., & Lau, C. (2018).
Spectroscopic examination of enamel staining by coffee indicates dentin erosion by sequestration of elements.
Talanta, 189, 550-559.

8. Ng, C. K. Y., **Lam, J. C. W**., Zhang, X. H., Gu, H. X., Li, T. H., Ye, M. B., Xia, Z. R., Zhang, F. Y., Duan, J. X., Wang, W. X., Lam, I. K. S., Balazs, G. H., **Lam, P. K. S**., & Murphy, M. B. (2018). **Levels of trace elements, methylmercury and polybrominated diphenyl ethers in foraging green turtles in the South China region and their conservation implications.** *Environmental Pollution, 234,* 735-742.

9. Zhang, K., Shi, H., Peng, J., Wang, Y., Xiong, X., Wu, C., & **Lam, P. K. S.** (2018). **Microplastic pollution in China's inland water systems: A review of findings, methods, characteristics, effects, and management.** *Science of the Total Environment, 630,* 1641-1653.

10. Wang, Q., Zhao, Z., Ruan, Y., Li, J., Sun, H., & Zhang, G. (2018). **Occurrence and distribution of perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) in natural forest soils: A nationwide study in China.** *Science of the Total Environment, 645,* 596-602.

11. Xiong, X., Zhang, K., Chen, X., Shi, H., Luo, Z., & Wu, C. (2018). **Sources and distribution of microplastics in China's largest inland lake - Qinghai Lake.** *Environmental Pollution, 235,* 899-906.

12. Sun, P. Y., Foley, H. B., Wu, L., Nguyen, C., Chaudhry, S., Bao, V. W. W., **Leung, K. M. Y**., & Edmands, S. (2018). **Long-term laboratory culture causes contrasting shifts in tolerance to two marine pollutants in copepods of the genus *Tigriopus*.** *Environmental Science and Pollution Research, 25(4),* 3183-3192.

13. Astudillo, J. C., Bonebrake, T. C., & **Leung, K. M. Y.** (2018). **Deterred but not preferred: Predation by native whelk *Reishia clavigera* on invasive bivalves.** *PLoS ONE, 13*(5), e0196578.

14. Chen, J., Wang, C., Pan, Y., Farzana, S. S., & **Tam, N. F. Y. (2018). Biochar accelerates microbial reductive debromination of 2,2',4, 4'-tetrabromodiphenyl ether (BDE-47) in anaerobic mangrove sediments.** *Journal of Hazardous Materials, 341,* 177-186.

15. Chi, Y., Li, F., **Tam, N. F. Y**., Liu, C., Ouyang, Y., Qi, X., Li, W. C., & Ye, Z. (2018). **Variations in grain cadmium and arsenic concentrations and screening for stable low-accumulating rice cultivars from multi-environment trials.** *Science of the Total Environment, 643,* 1314-1324.

16. Kong, E. Y., **Cheng, S. H.**, & **Yu, K. N.** (2018).
Induction of autophagy and interleukin 6 secretion in bystander cells: Metabolic cooperation for radiation-induced rescue effect?
Journal of Radiation Research, 59(2), 129-140.

17. Li, J., Chen, C.-B., Wang, D.-D., Li, C.-X., Zhang, F., Li, D.-B., Min, D., Li, W.-W., **Lam, P. K. S.**, & Yu, H.-Q. (2018).
Solar-Driven synchronous photoelectrochemical sulfur recovery and pollutant degradation.
ACS Sustainable Chemistry & Engineering, 6(8), 9591-9595.

18. Li, M.-Q., Wong, Y.-L., Lum, T.-S., Sze-Yin Leung, K., **Lam, P. K. S.**, & Xu, Z. (2018).
Dense thiol arrays for metal–organic frameworks: Boiling water stability, Hg removal beyond 2 ppb and facile crosslinking.
Journal of Materials Chemistry A, 6(30), 14566-14570.

19. Liu, X., Pan, J., Liu, Y., Li, M., & **Gu, J. D.** (2018).
Diversity and distribution of Archaea in global estuarine ecosystems.
Science of the Total Environment, 637-638, 349-358.

20. Liu, X., Shi, L., & **Gu, J. D.** (2018).
Microbial electrocatalysis: Redox mediators responsible for extracellular electron transfer.
Biotechnology Advances, 36(7), 1815-1827.

21. Liu, Y., Liu, G., Yuan, Z., Liu, H., & **Lam, P. K. S.** (2018).
Heavy metals (As, Hg and V) and stable isotope ratios (delta(13)C and delta(15)N) in fish from Yellow River Estuary, China.
Science of the Total Environment, 613-614, 462-471.

22. Liu, Z., **Gan, J. P.**, & Wu, X. (2018).
Coupled summer circulation and dynamics between a bay and the adjacent shelf around Hong Kong: Observational and modeling studies.
Journal of Geophysical Research: Oceans, 123(9), 6463-6480.

23. Lo, H. S., Xu, X., Wong, C. Y., & **Cheung, S. G.** (2018).
Comparisons of microplastic pollution between mudflats and sandy beaches in Hong Kong.
Environmental Pollution, 236, 208-217.

24. Pan, X. R., Li, W. W., Huang, L., Liu, H. Q., Wang, Y. K., Geng, Y. K., **Lam, P. K. S.**, & Yu, H.Q. (2018).
Recovery of high-concentration volatile fatty acids from wastewater using an acidogenesis-electrodialysis integrated system.
Bioresource Technology, 260, 61-67.

25. Tang, X. Y., Yang, Y., **Tam, N. F. Y.**, Tao, R., & Dai, Y. N. (2018).
Pesticides in three rural rivers in Guangzhou, China: Spatiotemporal distribution and ecological risk.
Environmental Science and Pollution Research, *26(4)*, 3569-3577.

26. Wang, Y., & **Tam, N. F. Y.** (2018).
Glutathione-ascorbate cycle Is an early warning indicator of toxicity of BDE-47 in mangroves.
Journal of Environmental Quality, 47(2), 212-220.

27. Xiong, X., Chen, X., Zhang, K., Mei, Z., Hao, Y., Zheng, J., Wu, C., Wang, K., Ruan, Y., **Lam, P. K. S.**, & Wang, D. (2018).
Microplastics in the intestinal tracts of East Asian finless porpoises *(Neophocaena asiaeorientalis sunameri)* from Yellow Sea and Bohai Sea of China.
Marine Pollution Bulletin, 136, 55-60.

28. Xu, S., Webb, S. E., Lau, T. C. K., & **Cheng, S. H.** (2018).
Matrix metalloproteinases (MMPs) mediate leukocyte recruitment during the inflammatory phase of zebrafish heart regeneration.
Scientific Report, 8(1), 7199.

29. Zhang, X., Liu, Y., & **Gu, J.-D.** (2018).
A global analysis on the distribution pattern of the bacteria coupling simultaneous methane oxidation to nitrite reduction.
International Biodeterioration & Biodegradation, 129, 123-132.

30. Zhou, C., Liu, G., Xu, Z., Sun, H., & **Lam, P. K. S.**, (2018).
Retention mechanisms of ash compositions on toxic elements (Sb, Se and Pb) during fluidized bed combustion.
Fuel, 213, 98-105.

31. Zhu, B., **Lam, J. C. W.**, & **Lam, P. K. S.** (2018).
Halogenated flame retardants (HFRs) in surface sediment from the Pearl River Delta region and Mirs Bay, South China.
Marine Pollution Bulletin, 129(2), 899-904.

32. Bao, V. W. W., Ho, K. K. Y., Lai, K. K. Y., Mak, Y. K. Y., Mak, E. P. Y., Zhou, G. J., Giesy, J. P., & **Leung, K. M. Y.** (2018).
Water-effect ratio of copper and its application on setting site-specific water quality criteria for protecting marine ecosystems of Hong Kong.
*Environmental Science and Pollution Research, 25:*3170–3182.

33. Xu, E. G., Chan, S. N., Choi, K. W., Lee, J. H. W., & **Leung, K. M. Y.** (2018).
Tracking major endocrine disruptors in coastal waters using an integrative approach coupling field-based study and hydrodynamic modeling.
Environmental Pollution, 233, 387-394.

34. Xu, W.-Z., **Cheung, S. G.**, Zhang, Z.-N., & Shin, P. K. S. (2018).
Dual isotope assessment of trophic dynamics of an intertidal infaunal community with seasonal shifts in food sources.
Marine Biology, 165(1), 21.

35. Genç, T. O., Po, B. H. K., Yılmaz, F., Lau, T.-C., **Wu, R. S. S., & Chiu, J. M. Y. (2018).**
Differences in metal profiles revealed by native mussels and artificial mussels in Sarıçay Stream, Turkey: Implications for pollution monitoring.
Marine and Freshwater Research, 69(9).

36. Shi, M., Zhang, C., Xia, I. F., Cheung, S. T., Wong, K. S., Wong, K. H.**, Au, D. W. T.**, Hinton, D. E., & Kwok, K. W. H. (2018).
Maternal dietary exposure to selenium nanoparticle led to malformation in offspring.
Ecotoxicology and Environmental Safety, 156, 34-40.

37. Wang, B., Yao, M., Zhou, J., Tan, S., Jin, H., Zhang, F., Mak, Y. L., Wu, J., **Chan, L. L.**, & Cai, Z. (2018).
Growth and toxin production of *Gambierdiscus* spp. can be regulated by quorum-sensing bacteria.
Toxins (Basel), 10(7), 257.

38. Wang, Y. F., Zhu, H. W., Wang, Y., Zhang, X. L., & **Tam, N. F. Y.** (2018).
Diversity and dynamics of microbial community structure in different mangrove, marine and freshwater sediments during anaerobic debromination of PBDEs.
Front Microbiol, 9, 952.

39. Wu, R. N., Meng, H., Wang, Y. F., & **Gu, J. D.** (2018).
Effects of reforestation on ammonia-oxidizing microbial community composition and abundance in subtropical acidic forest soils.
Applied Microbiology and Biotechnology, 102(12), 5309-5322.

40. Lai, R. W. S., Yeung, K. W. Y., Yung, M. M. N., Djurisic, A. B., Giesy, J. P., & **Leung, K. M. Y.** (2018).
Regulation of engineered nanomaterials: Current challenges, insights and future directions.
*Environmental Science and Pollution Research, 25:*3060–3077.

41. Lai, K. P., Li, J. W., Wang, S. Y., Wan, M. T., Chan, T. F., Lui, W. Y., **Au, D. W. T., Wu, R. S. S., & Kong, R. Y. C.** (2018).
Transcriptomic analysis reveals transgenerational effect of hypoxia on the neural control of testicular functions.
Aquatic Toxicology, 195, 41-48.

42. Liu, X., Li, M., Castelle, C. J., Probst, A. J., Zhou, Z., Pan, J., Liu, Y., Banfield, J. F., & **Gu, J. D.** (2018).
Insights into the ecology, evolution, and metabolism of the widespread Woesearchaeotal lineages.
Microbiome, 6(1), 102.

43. Lu, Z., **Gan, J. P., Dai, M. H.**, Liu, H., & Zhao, X. (2018).
Joint effects of extrinsic biophysical fluxes and intrinsic hydrodynamics on the formation of hypoxia west off the Pearl River Estuary.
Journal of Geophysical Research: Oceans, 123(9), 6241-6259.

44. Shen, X.-F., Hu, H., Ma, L.-L., **Lam, P. K. S.**, Yan, S.-K., Zhou, S.-B., & Zeng, R. J. (2018).
FAMEs production from *Scenedesmus obliquus* in autotrophic, heterotrophic and mixotrophic cultures under different nitrogen conditions.
Environmental Science: Water Research & Technology, 4(3), 461-468.

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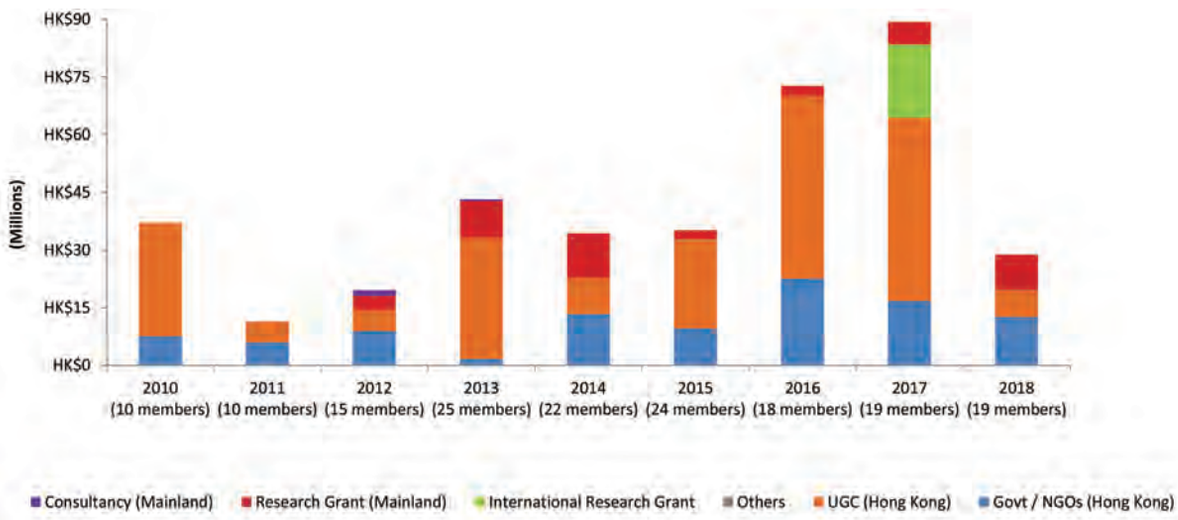
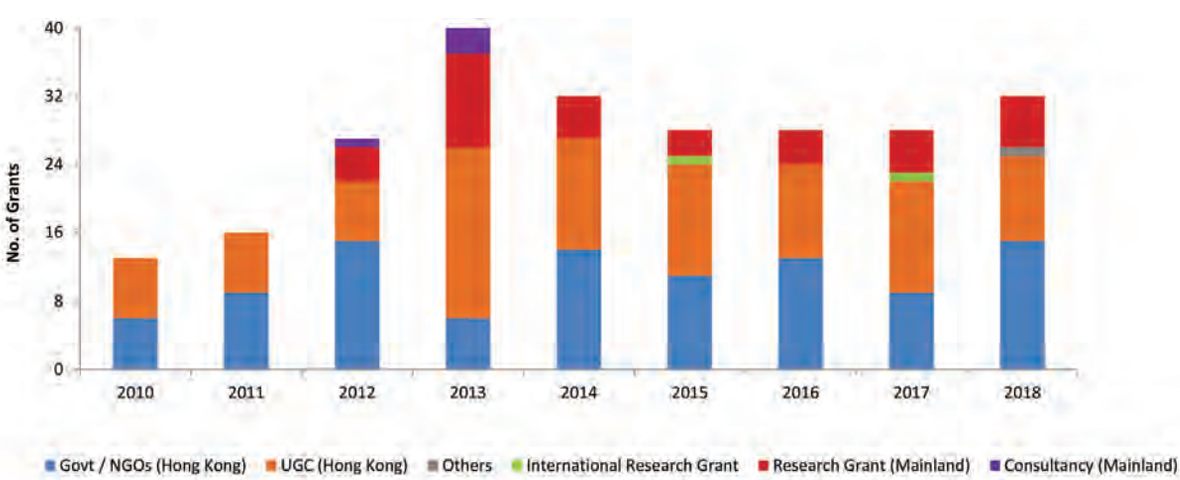
Overview of Research Grants 研究資助概況

Competitive External Research Grants 外部的研究資助

Amount of Competitive External Research Grants (2010-2018)
2010-2018 外部的研究資助總額



Number of Competitive External Research Grants (2010-2018)
2010-2018 外部的研究資助項目統計



* Research outputs information provided by members.

Number of members in 2010-2012:	CityU (13), CUHK (3), HKU (5), HKUST (6), PolyU (1), HKBU (2), XMU (1)
Number of members in 2013:	CityU (18), CUHK (2), HKU (5), HKUST (5), PolyU (1), HKBU (7), XMU (1)
Number of members in 2014:	CityU (18), CUHK (2), HKU (5), HKUST (5), PolyU (1), HKBU (5), XMU (1)
Number of members in 2015:	CityU (17), CUHK (1), HKU (6), HKUST (5), PolyU (1), HKBU (4), XMU (1)
Number of members in 2016:	CityU (16), CUHK (1), HKU (5), HKUST (5), PolyU (1), HKBU (4), EdUHK (2), XMU (1)
Number of members in 2017:	CityU (14), CUHK (3), HKU (5), HKUST (5), PolyU (2), HKBU (4), EdUHK (2), XMU (1)
Number of members in 2018:	CityU (14), CUHK (3), HKU (4), HKUST (6), PolyU (2), HKBU (3), EdUHK (4), XMU (1)

1CNY=1.2HKD (2018)

Grants from Hong Kong 香港科研資助

Government / Non-governmental Organization 政府部門 / 公益項目

	Project Title * 項目名稱	Grant Type 資助類型	Investigators # 項目負責人 (**PI** or **PC^** / Co-PI or Co-I)	Amount 金額 (HKD)
	2018			
1	Provision of Consultancy Services for Benthic Habtat Mapping for Tung Ping Chau Marine Park (AFCD/SQ/154/17) 為東平洲海岸公園底栖栖息地提供測繪服務（AFCD/SQ/154/17）	Agriculture, Fisheries and Conservation Department 漁農自然護理署	**Chan, L.L.**	1,400,000
2	Provision of Consultancy Services for Monitoring of Marine Water Quality and Coral Health at Three Locations in Port Shelter due to Typhoon Mangkhut-Damaged Sai Kung Sewage Treatment Plant 因西貢污水處理廠受颱風山竹損壞，在牛尾海提供海水水質及珊瑚健康監測的顧問服務	Agriculture, Fisheries and Conservation Department 漁農自然護理署	**Chan, L.L.**	48,000
3	"Shui Hau Magnification" : Understanding Human Disturbance on Horseshoe Crabs 環保基金 「水口放大鏡」— 調查人為干擾對馬蹄蟹的影響	Environment and Conservation Fund 環境及自然保育基金	Cheung, S.G.	753,885
4	Provision of Services for Field Trial of Horseshoe Crab Monitoring in Hong Kong Using Environmental DNA Technique 利用環境 DNA 技術監測馬蹄蟹的野外試驗計劃	Agriculture, Fisheries and Conservation Department 漁農自然護理署	Cheung, S.G.	1,399,999
5	Juvenile Horseshoe Crab Rearing Programme 2018/2019 幼年馬蹄蟹飼養計劃 2018/2019	Ocean Park Conservation Foundation Hong Kong 香港海洋公園保育基金	**Cheung, S.G.**	242,000
6	The Application of Multiple Bioindicators on Marine Pollution Monitoring 多重生物指標於海洋污染監測中的應用	Environment and Conservation Fund 環境及自然保育基金	**Fang, J.K.H.** Wu, R.S.S. Kwok, K.W.H.	495,000
7	Impact of Microplastics on the Chinese Horseshoe Crab *Tachypleus tridentatus* in Hong Kong Western Waters 微米塑膠對香港西部水域的中國鱟 *(Tachypleus tridentatsus)* 之影響	Marine Ecology Enhancement Fund, Airport Authority, Hong Kong 香港機場管理局改善海洋生態基金	**Fang, J.K.H.** Cheung, S.G.	499,000
8	Second Pilot Trial of Eco-shoreline at the Taishan Receptor Site 第二期台山生態海堤測試研究	Civil Engineering and Development Department 土木工程拓展署	**Leung, K.M.Y.**	1,400,000
9	Species Identification and Data Analysis of Epibenthic Communities in Hong Kong Marine Waters 香港海域底棲動物群落物種鑑定及數據分析	Environmental Protection Department 環境保護署	**Leung, K.M.Y.**	218,000

*Project name is subject to Chinese translation
#Person with underline is SKLMP member
^Words with **bold** is either PI or PC

10	Provision of Service to Conduct a Study on Juvenile Fish Resources at Marine Parks and Marine Reserve in Hong Kong (AFCD/SQ/213/17) 香港海岸公園及海岸保護區的幼魚生物多樣性及資源調查 (AFCD/SQ/213/17)	Agriculture, Fisheries and Conservation Department 漁農自然護理署	Leung, P.T.Y. Lam, P.K.S. Leung, K.M.Y. Liu, M. Shao, K.T. Wai, T.C. Yan, M.	1,396,407
11	Thermal and Salinity Thresholds of Bleaching in Hong Kong Corals 香港珊瑚白化的溫度與鹽度閾值	Environment and Conservation Fund 環境及自然保育基金	**Qiu, J.W.**	909,600
12	Site Trials of Eco-shoreline on Seawalls at Sai Kung, Lung Kwu Tan and Ma Liu Shui 香港生態海堤測試研究（包括：西貢，龍鼓灘及馬料水的海岸）	Civil Engineering and Development Department 土木工程拓展署	**Leung, K.M.Y.**	2,702,500
13	Juvenile Horseshoe Crab Rearing Programme 2017/2018 幼年馬蹄蟹飼養計劃 2017/2018	Ocean Park Conservation Foundation Internal Fund 香港海洋公園保育基金	**Cheung, S.G.**	86,500
14	Development of Environmental DNA (eDNA) Protocol for Detection of Horseshoe Crabs 開發用於檢測鱟（馬蹄蟹）環境 DNA （eDNA） 的實驗方案	Environment and Conservation Fund 環境及自然保育基金	**Hui J.H.L.** Cheung, S.G.	499,680
	Subtotal			HKD 12,050,571

*Project name is subject to Chinese translation
#Person with underline is SKLMP member
^Words with **bold** is either PI or PC

University Grants Committee 大學教育資助委員會

	Project Title * 項目名稱	Grant Type 資助類型	Investigators # 項目負責人 (**PI** or **PC^** / Co-PI or Co-I)	**Amount 金額 (HKD)**
	2018			
1	Bleaching in Subtropical Corals of the Northern South China Sea: Differential Susceptibility to Environmental Stressors and Molecular Mechanisms 北南中國海珊瑚白化： 對環境脅迫的不同敏感性以及分子機制	General Research Fund 優配研究金	**Qiu, J.W.**	688,500
2	Biokinetics and Bioimaging of Metal Nanoparticles in Estuarine Oysters 金屬納米顆粒在牡蠣的生物動力學和成像	General Research Fund 優配研究金	**Wang, W.X.**	1,021,248
3	Design of Plasmonic Poor Metal Based Photocatalyst with High Light Utilization and Quantum Efficiency for Nitric Oxides Abatement 設計具有高光利用和量子效率的等離子貧金屬光催化劑用於氮氧化物降解	General Research Fund 優配研究金	**Ho, W.K.K.**	522,898
4	Unraveling the Epigenetic Pathways Underlying Transgenerational Vertbral Deformity Induced by Benzo[a]pyrene Using Unique Transgenic Medaka Bone Model 用獨特的雙轉基因青鱂骨模型闡明苯丙芘誘導跨代脊椎畸形的表光遺傳學通路	General Research Fund 優配研究金	**Au, D.W.T.** Winkler, C. Ge, Z.	600,000
5	L-lactate Released by Optogenetic Activation of Astrocytes Rescues Decision-making Deficit in Visceral Hypersensitive Rats 光遺傳激活星形膠質細胞釋放 L- 乳酸促進慢性內臟高敏感大鼠決策行為障礙的恢復	NSFC/RGC Joint Research Scheme 國家自然科學基金委員會與香港研究資助局聯合科研基金項目	**Li, Y.** Chan, R.H.M.	1,250,000
6	Understanding the Mechanisms for Shell Strength in Hong Kong Oysters: Will the Toughest Survive Climate Change? 對香港牡蠣殼強度的機制探討：要多堅韌才足以應對氣候變化？	General Research Fund 優配研究金	**Thiyagarajan V.**	522,898
7	Environmental Fate, Source and Transport of Waterborne and Semi-volatile Emerging Contaminants in Subtropical Hong Kong Coastal Environment 香港亞熱帶沿海環境中水源性和半揮發性新興污染物的環境歸趨、來源與遷移	Early Career Scheme 傑出青年學者計劃	**Lam, J.C.W.**	550,557
8	Integrated Chemical-biological Processes to Enhance Remediation of Estuarine Sediments Contaminated with Polybrominated Diphenylethers (PBDEs) 化學－生物聯合技術修復沉積物中 PBDEs 的研究	General Research Fund 優配研究金	**Tam, N.F.Y.** Kong, R.Y.C.	348,598
9	Microzooplankton Grazing on Unicellular Cyanobacterial Diazotroph (UCD) 微型浮游動物對單細胞固氮藍藻的攝食	General Research Fund 優配研究金	**Liu, H.B.**	682,544
10	Isolation and Characterization of Stanniocalcin-1 Receptor in Fish Gills of Japanese Eels 日本鰻魚魚鰓的”斯坦利鈣氏”受體的分離和表徵	General Research Fund 優配研究金	**Wong, C.K.C.**	750,000
	Subtotal			HKD 6,937,243

*Project name is subject to Chinese translation
#Person with underline is SKLMP member
^Words with **bold** is either PI or PC

Others 其他

	Project Title * 項目名稱	Grant Type 資助類型	Investigators # 項目負責人 (**PI** or **PC^** / Co-PI or Co-I)	**Amount 金額 (HKD)**
	2018			
1	Using Proteomics to Identify and Compare the Byssus Proteins Expressed in Response to Predation Risk 利用蛋白質組學技術鑑定和比較在捕食危機時足絲蛋白的表達	CityU Strategic Research Grant	**Cheung, S.G.**	100,000
	Subtotal			HKD 100,000

Grants from Mainland China 內地科研資助

Research Grant 科研項目

	Project Title * 項目名稱	Grant Type 資助類型	Investigators # 項目負責人 (**PI** or **PC^** / Co-PI or Co-I)	**Amount 金額 (CNY)**
	2018			
1	MicroRNAs Mediated Transgenerational Skeletal Deformity Induced by Ancestral Exposure to Benzo[a] Pyrene (JCYJ20170818094137791) 苯並 [a] 芘誘導 microRNAs 介導的青鱂魚跨代骨骼畸形 (JCYJ20170818094137791)	Shenzhen Science and Technology Program 深圳科技計劃	**Au, D.W.T.** Seemann, F. Zhang, G. Wu, J.J.	500,000
2	The Role of Allelopathic Interactions in the Bloom Formation Mechanism of Karenia mikimotoi, (JCYJ20170818103413138) 化感作用在米氏凱倫藻赤潮優勢種形成過程中的作用研究 (JCYJ20170818103413138)	Shenzhen Science and Technology Program 深圳科技計劃	**Chan, L.L.**	500,000
3	Evolution and Adaptation of Life in Cold Seep Systems 冷泉系統生物演化及適應機制	National Key R & D Program of China 中華人民共和國科學技術部 國家重點研發計劃	**Qiu, J.W.**	2,800,000
4	Biodiversity and Conservation Assessment in Different Hydrothermal Vents of the u-shaped Ocean Ridge Region u 形區洋中脊熱液區不同生態系統生物多樣性特徵、保護價值評估	China Ocean Mineral Resources R & D Association 中國大洋礦產資源研究開發協會	Qiu, J.W.	3,800,000
5	Conventional and Emerging Chiral Halogenated Flame Retardants in Marine and Estuarine Food Webs in Subtropical Hong Kong Waters: Accumulation Profiles, Trophic Transfer, and Source Identification 亞熱帶香港水域海洋與河口食物網中傳統與新興鹵化阻燃劑研究：富集特徵、營養轉移及源辨識	Ministry of Science and Technology, PRC 中華人民共和國科學技術部	**Lam, P.K.S.**	960,000
6	Responses of Oysters to Major Pollutants in the Pearl River Estuary 珠江口牡蠣生物標誌物對近海主要污染物的回應機制	NSFC 國家自然科學基金	**Wang, W.X.**	640,000
	Subtotal			CNY 9,200,000

*Project name is subject to Chinese translation
#Person with underline is SKLMP member
^Words with **bold** is either PI or PC

Awards, Recognitions and Patents 獎項、讚譽和專利

Awards 獎項

Member	Award Description	Country	Award Date	Awardee(s)
Prof. Kenneth M.Y. LEUNG	A Top 1% Cited Scientist The Clarivate Analytics' Essential Science Indicators	International	2018	Kenneth M.Y. LEUNG
	A Justice of the Peace The Hong Kong SAR Government	Hong Kong	2018	Kenneth M.Y. LEUNG
	One of the Top 100 Asian Scientists The 2018 Edition by Asian Scientist Magazine	International	2018	Kenneth M.Y. LEUNG
Dr. Keith W.K. HO	2018 Annual List of Highly Cited Researchers (Cross-Field), Compiled by Clarivate Analytics, Formerly Known as the Intellectual Property & Science Business of Thomson Reuters	International	Nov 2018	Keith W.K. HO
	Gold Medal "Novel Air Purifiers Using New Graphitic Carbon Nitride Photocatalyst Material" International Invention Innovation Competition	Canada	Sep 2018	Keith W.K. HO
	Research Output Prize Faculty Dean's Research Prize, EdUHK	Hong Kong	Sep 2018	Keith W.K. HO
Dr. Apple P.Y. CHUI	Vice-Chancellor's Exemplary Teaching Award 2017 Teaching Award in the Chinese University of Hong Kong	Hong Kong	15 Nov 2018	Apple P.Y. CHUI
	Exemplary Teaching Award in General Education 2017 Teaching Award in the Chinese University of Hong Kong	Hong Kong	4 May 2018	Apple P.Y. CHUI
Dr. S.G. CHEUNG	The Outstanding Academic Papers by Students (OAPS)		Apr 2018	Apple W.Y. NG

Organization and Implementation of Individual Research Areas
自主研究課題情況與效果

Funding support from CityU 城大內部撥款資助項目

SKLMP Postgraduate Scholarship (PGS) SKLMP 研究生獎學金

In order to nurture young scientists and develop strategic and in-depth research in the field of marine pollution, the SKLMP has decided to provide financial support to our members to recruit excellent postgraduates

	Project Title * 項目名稱	Investigators # 項目負責人 (**PI** or **PC^** / Co-PI or Co-I)	Amount 金額 (HKD)
	Nov 2017 – Oct 2019		
1	Generation of transgenic marine medaka lines to enable high-resolution reconstruction of the beating heart 構建轉基因海水青鱂用於重建高解析度跳動心臟	**Cheng, S.H. (CityU)** Wong, C.K.C. (HKBU) Yao, X. (CityU) Li, T. (TianjinU)	100,000

Director Discretionary Fund (DDF) 主任資助基金

The fund is allocated by the SKLMP Director to support exploratory projects for encouraging innovation and new initiatives

	Project Title * 項目名稱	Investigators # 項目負責人 (**PI** or **PC^** / Co-PI or Co-I)	Amount 金額 (HKD)
	Nov 2017 – Oct 2018		
1	Biomarker Diagnostics of Metal Pollution in Hong Kong's Waters 香港水域金屬污染的生物標誌物診斷	**Wang, W.X. (HKUST)**	200,000

*Project name is subject to Chinese translation
#Person with underline is SKLMP member
^Words with **bold** is either PI or PC

Funding support from the Innovation and Technology Commission
創新科技署國家重點實驗室專項基金資助項目

SKLMP 2017 Seed Collaborative Research Fund (SCRF) SKLMP 種子協作研究基金

The fund aims to promote excellent, collaborative and interdisciplinary research programs among members from the six collaborating universities

	Project Title * 項目名稱	Investigators # 項目負責人 (**PI** or **PC^** / Co-PI or Co-I)	**Amount 金額 (HKD)**
	Nov 2017 - Oct 2020		
1	Ocean acidification threatens Chinese oysters: Can some species adapt within this century? 海洋酸化威脅到中國的生蠔：可以有一些物種適應本世紀內嗎？	**Thiyagarajan, V. (HKU)** Qiu, J.W. (HKBU) Qian, P.Y. (HKUST) Cheung, S.G. (CityU) Dai, M.H. (XMU)	240,000
2	How phosphate concentration affect the nitrogen uptake of phytoplankton? 磷酸鹽濃度影響浮游植物的氮吸收的機理研究	**Liu, H.B. (HKUST)** Chan, L.L. (CityU)	240,000
3	Neurotoxicity studies of selected marine biotoxins via neurometabolomic profiling and neurobehavioral assessment on marine medaka (Oryzais melastigma) and zebrafish (Danio rerio) 利用青鱂魚及斑馬魚作為腦神經代謝分析和神經行為評估平台進行對幾種海洋生物毒素的神經毒性的研究	**Lam, M.H.W. (CityU)** Lam, J.C.W. (EdUHK)	240,000
4	Targeting Astrocytes-neuronal L-lactate Signaling Pathway for Rescuing decision-making deficit in Chronic Ciguatera Poisoning 靶向星形膠質－神經元 L- 型乳酸信號通路治療慢性雪卡中毒相關的決策行為障礙	**Li, Y. (CityU)** Chan, L.L. (CityU)	240,000
	Jan 2018 - Dec 2020		
5	Microplastics augment the transfer of Bisphenol A and Bisphenol A analogues to marine fish 微塑料增加雙酚 A 和雙酚 A 類似物的轉移到海洋魚類	**Lai, B.K.P. (CityU)** Cheung, S.G. (CityU) Wong, C.K.C. (HKBU)	240,000

*Project name is subject to Chinese translation
#Person with underline is SKLMP member
^Words with **bold** is either PI or PC

SKLMP 2018 Internal Research Fund (IRF)

SKLMP 內部研究經費

IRF is a seed grant allocated to SKLMP CityU members of SKLMP for attracting large outside grants and bringing members together within CityU

	Project Title * 項目名稱	Investigators # 項目負責人 (**PI** or **PC^** / Co-PI or Co-I)	**Amount 金額 (HKD)**
	Mar 2018 – Feb 2021		
1	Development of an immune-stimulating antimicrobial peptide feeding regime for the hybrid grouper 開發一套針對雜交石斑魚具有免疫促進的抗菌多肽餵養體系	**Au D.W.T. (CityU)** Seemann F. (CityU) Chan L.L. (CityU) Lam Y.W. (CITYU) Wu R.S.S. (EdUHK) Wang K.J. (XMU)	300,000
2	High-resolution reconstruction of the beating marine medaka heart 高分辨率重建構造海洋青鱂魚心臟	**Cheng S.H. (CITYU)** Wong C.K.C. (HKBU)	300,000
3	Towards understanding population stress response in aquatic organisms: studies on rescue effect induced by ionizing radiation 水生生物群體應激反應：電離輻射誘導之拯救效應	**Yu P.K.N. (CITYU)** Wang W.X. (HKUST)	300,000
	Apr 2018 – Mar 2021		
4	Interactive effects of hypoxia- and flutamide-induced endocrine disruption in marine medaka: an ecotoxicogenomic approach for environmental risk assessment 對缺氧和氟他胺誘導的海洋青鱂魚內分泌紊亂的交互作用的研究：一種環境風險評估的生態毒理學方法	**Kong R.Y.C. (CITYU)** Wu R.S.S. (EdUHK)	300,000

*Project name is subject to Chinese translation
#Person with underline is SKLMP member
^Words with **bold** is either PI or PC

Nov 2017 – Oct 2019 (On going)

Generation of transgenic marine medaka lines to enable high-resolution reconstruction of the beating heart
構建轉基因海水青鱂用於重建高解析度跳動心臟

S.H. CHENG, Chris K.C. WONG, X. YAO
Funding Amount: HK$100,000

Ms Li has arrived at CityU and has undertaken the mandatory course work specified by CityU SGS and the qualifying panel. She has nonetheless been exposed to the following published work in terms of being an observer on the experimental techniques used.

Research Output
Papers with the SKLMP as the one of the affiliations 以 SKLMP 為作者單位之一的期刊論文

1. Xu, S., Webb, S.E., Lau, T.C.K., & Cheng, S.H. (2018). Matrix metalloproteinases (MMPs) mediate leukocyte recruitment during the inflammatory phase of zebrafish heart regeneration. *Scientific reports, 8*(1), 7199.

2. Kong, E.Y., Cheng, S.H., & Yu, K.N. (2018). Induction of autophagy and interleukin 6 secretion in bystander cells: Metabolic cooperation for radiation-induced rescue effect? *Journal of radiation research, 59*(2), 129-140.

3. Manno, S. H., Manno, F. A., Ahmed, I., Ahmed, R., Shu, L., Li, L., Xu S., Xie F., Li V. W., Ho J., Cheng, S. H. (2018). Spectroscopic examination of enamel staining by coffee indicates dentin erosion by sequestration of elements. *Talanta, 189,* 550-559.

Nov 2017 – Oct 2018 (Completed)

Biomarker diagnostics of metal pollution in Hong Kong's waters
香港水域金屬污染的生物標誌物診斷

W.X. WANG
Funding Amount: HK$200,000

The Pearl River Estuary (PRE) is the third largest estuary in China, and estuarine organisms are under potential metal stress at various biological levels. With recent stricter regulation on effluent discharges, we evaluated the evolving metal profiles of this contaminated estuary. We measured the bioaccumulation of metals (Ag, As, Cd, Cr, Cu, Ni, Pb and Zn) and the respective biomarker responses in an estuarine oyster *Crassostrea hongkongensis* widely distributed along the estuary. We documented a shifted metal bioaccumulation in oyster tissues, i.e., from previously Cd, Cr, Cu, Ni, and Zn to mainly Ag, Cd, Cu and Zn. Along with the metal bioaccumulation, a suite of biomarkers including metal detoxification, antioxidant defense, oxidative stress and cellular response were analyzed. Through correlation and stepwise linear regression analyses, we revealed strong association between Cu, Ni and Zn with the measured oxidant and detoxification responses (superoxide dismutase, lipid peroxidation, glutathione, lysosomal membrane destabilization and metallothionein). Cu, Ni and Zn contamination still accounted for the major origin of stress in oysters from the PRE. These metals along with Ag should be continuously monitored with necessary control measures and remediation in the PRE region.

Jun 2016 – Jun 2018 (Completed)

Identification and assessment of emerging halogenated organic pollutants in marine ecosystem

海洋生態系統中新興鹵系有機污染物的識別與評估

James C.W. LAM

Funding Amount: HK$400,000

Coastal environment of Pearl River Delta (PRD) regions has been undergoing strong modifications due to rapid economic growth and industrialization. These may increase the demand for chemicals used in various applications. A well-known example is polybrominated diphenyl ethers (PBDEs) which had been used for several decades. Recently, many studies reported that there are several PBDE replacements for these persistent organic pollutants such as DBDPE, TBECH and HBCD which were detected in different environmental compartments including marine ecosystem. Over the past few years, we have successfully developed analytical methods for quantification of both PBDEs and its replacements in different environmental samples. This method was then applied to analyze the sediment from the estuaries in the PRD region and Mirs Bay from the South China. Their levels, spatial distribution, congener profiles and possible sources were investigated. DBDPE was the predominant contaminant (1.520–1714 ng/g dw) in the study area exceeding those of PBDEs (8.090–595.8 ng/g dw), implying that DBDPE has become the predominant halogenated flame retardant (HFRs) in this region in recent years. Other important HFRs including HBCD and TBECH were investigated in the blubber of two species of marine mammals, finless porpoises *(Neophocaena phocaenoides)* and Indo-Pacific humpback dolphins *(Sousa chinensis),* from the South China Sea between 2005 and 2015. The concentrations of ΣHBCD in samples of porpoise (*n* = 59) and dolphin (*n* = 32) ranged from 97.2 to 6,260 ng/g lipid weight (lw) and from 447 to 45,800 ng/g lw, respectively, while those of ΣTBECH were both roughly 2 orders of magnitude lower. A significant increasing trend of ΣHBCD was found in dolphin blubber over the past decade. The diastereomeric profiles exhibited an absolute predominance of α-HBCD (mostly >90%), while the proportions of four TBECH diastereomers in the samples appeared similar. A preferential enrichment of the (−)-enantiomers of α-, β-, and γ-HBCD was found in most blubber samples. Interestingly, significant racemic deviations were also observed for α-, γ-, and δ-TBECH enantiomeric pairs. The estimated hazard quotient indicates that there is a potential risk to dolphins due to HBCD exposure. A follow-up study investigated the levels of HBCD and TBECH in sediments and 30 marine species in a marine food web for elucidation of their trophic transfer. Elevated biomagnification of each diastereomer from prey species to marine mammals was observed. For HBCD, biota samples showed a shift from γ- to α-HBCD when compared with sediments and technical mixtures; trophic magnification potential of (−)-α- and (+)-α-HBCD were observed in the food web, with trophic magnification factors (TMFs) of 11.8 and 8.7, respectively. For TBECH, the relative abundance of γ- and δ-TBECH exhibited an increasing trend from abiotic matrices to biota samples; trophic magnification was observed for each diastereomer, with TMFs ranging from 1.9 to 3.5. The enantioselective bioaccumulation of the first eluting enantiomer of δ-TBECH in organisms at higher TLs was consistently observed across samples. In addition to marine mammals, we also determine PBDE levels of foraging green turtles (*Chelonia mydas*) in South China, including Hong Kong, Guangdong and Taiwan. Measured PBDE levels were also 27-fold and 50-fold greater than those reported in Australia and Japan. These results warrant further investigation of potential toxicological risks to green turtles in South China and their source rookeries in Malaysia, Micronesia, Indonesia, Marshall Islands, Japan and Taiwan. Overall, the results acquired can help to better understand the current status and potential risk of these important environmental contaminants to the marine ecosystem.

Research Output

Papers with the SKLMP as the first affiliation 以 SKLMP 為第一作者單位之期刊論文

1. Chen, L., Guo, Y., Hu, C., Lam, P. K. S., Lam, J. C. W., & Zhou, B. (2018). Dysbiosis of gut microbiota by chronic coexposure to titanium dioxide nanoparticles and bisphenol A: Implications for host health in zebrafish. *Environmental Pollution*, *234*, 307-317.

2. Chen, L., Zhang, W., Hua, J., Hu, C., Lai N. L. S., Qian, P. Y., Lam P.K.S., Lam, J.C.W., Zhou, B. (2018). Dysregulation of intestinal health by environmental pollutants: involvement of the estrogen receptor and aryl hydrocarbon receptor. *Environmental Science & Technology*, *52*(4), 2323-2330.

3. Ruan, Y., Lam, J. C. W., Zhang, X., & Lam, P. K. S. (2018). Temporal changes and stereoisomeric compositions of 1, 2, 5, 6, 9, 10-hexabromocyclododecane and 1, 2-dibromo-4-(1, 2-dibromoethyl) cyclohexane in marine mammals from the South China Sea. *Environmental Science & Technology*, *52*(5), 2517-2526.

4. Chen, L., Hu, C., Tsui, M. M. P., Wan, T., Peterson, D. R., Shi, Q., Lam, P. K. S., & Au, D. W. T.,& Zhou, B. (2018). Multigenerational disruption of the thyroid endocrine system in marine medaka after a life-cycle exposure to perfluorobutanesulfonate. *Environmental Science & Technology*, *52*(7), 4432-4439.

5. Chen, L., Zhang, W., Hua, J., Hu, C., Lai, N. L. S., Qian, P. Y., Lam, P. K. S., & Lam, J. C. W., & Zhou, B. (2018). Acute exposure to PBDEs at an environmentally realistic concentration causes abrupt changes in the gut microbiota and host health of zebrafish. *Environmental Pollution*, *240*, 17-26.

6. Ruan, Y., Zhang, X., Qiu, J.-W., Leung, K. M. Y., Lam, J. C. W., & Lam, P. K. S. (2018). Stereoisomer-specific trophody namics of the chiral brominated flame retardants HBCD and TBECH in a marine food web, with implications for human exposure. *Environmental Science & Technology*, *52*(15), 8183-8193.

Papers with the SKLMP as the one of the affiliations 以 SKLMP 為作者單位之一的期刊論文

1. Ng, C. K. Y., Lam, J. C. W., Zhang, X. H., Gu, H. X., Li, T. H., Ye, M. B., Xia, Z. R., Zhang, F. Y., Duan, J. X., Wang, W. X., Lam, I. K. S., Balazs, G. H., Lam, P. K. S., & Murphy, M. B. (2018). Levels of trace elements, methylmercury and polybrominated diphenyl ethers in foraging green turtles in the South China region and their conservation implications. *Environmental Pollution*, *234*, 735-742.

2. Chen, L., Tsui, M. M. P., Shi, Q., Hu, C., Wang, Q., Zhou, B., Lam, P. K. S., & Lam, J. C. W. (2018). Accumulation of perfluorobutane sulfonate (PFBS) and impairment of visual function in the eyes of marine medaka after a life-cycle exposure. *Aquatic Toxicology*, 201: 1-10

Jun 2016 – Dec 2017 (Completed)

Functional responses of marine ecosystem to hypoxia
海洋生態系統對缺氧的功能性響應

Rudolf S.S. WU, Nora F.Y. TAM, Paul K.S. SHIN, S.G. CHEUNG,
Doris W.T. AU, Put O. ANG, Jill M.Y. CHIU
Funding Amount: HK$400,000

Highlight of Results and Achievements

For the first time in science, we demonstrated that hypoxia can:

- Increase Chl a and Chl b
- Cause a short-term decrease in redox potential
- Reduce C fixation
- Increase N fixation and TN
- Increase P fixation and TP
- Reduce S fixation

Using shotgun metagenomics and Illumina Miseq sequencing of 16S rRNA, we have further demonstrated that the the observed changes above are associated with relevant changes in profiles and diversity of functional genes that mediate the C,N,P and S cycles. Our results showed that the microbial groups are highly resilient, and a remarkable uncoupling between microbial composition and biogeochemical processes is demonstrated.

Overall summary

We have successfully completed all of the experiments and data analysis specified in our proposal. Overall, our study demonstrated, for the first time in science, that essential ecosystem functions (including primary productivity, redox reactions, C, N, P and S cycling) are impaired by hypoxia. These important functional changes are associated with significant changes in species composition and functional groups of bacterial and protistan communities, as well as functional groups of the meiofaunal communities.

Research Output

Papers with the SKLMP as the one of the affiliations 以 SKLMP 為作者單位之一的期刊論文

1. Lai, K.P., Li, J.W., Wang, S.Y., Wan, M.T., Chan, T.F., Lui, W.Y., Au, D. W. T., Wu, R.S. S., & Kong, R.Y.C. (2018). Transcriptomic analysis reveals transgenerational effect of hypoxia on the neural control of testicular functions. *Aquatic Toxicology*, 195, 41-48.

Nov 2017 – Oct 2020 (On going)

Microplastics augment the transfer of bisphenol A and bisphenol A analogues to marine fish

微塑料增加雙酚 A 和雙酚 A 類似物的轉移到海洋魚類

Ball K.P. LAI, S.G. CHEUNG, Chris K.C. WONG

Funding Amount: HK$240,000

Scope of investigation undertaken

This aims of project is to investigate the environmental concentration of bisphenol A (BPA) and its analogs associated with microplastics found in Hong Kong shores. Previous studies by other researchers have showed that microplastics are commonly found in both coastal water and sediment among local areas (Lo et al. 2018, Tsang et al. 2017). Due to the small surface area to volume ratio as well as the adsorptive feature of microplastics, it is very likely that various chemicals such as POPs and endocrine disruptor chemicals could be transfer from the environment to marine organisms through ingestion of microplastics (Gallo et al. 2018). In this progress report, we provide details on the concentration of BPA and three of its analogs, bisphenol B (BPB), bisphenol F (BPF) and bisphenol S (BPS), associated with microplastics present in local coastal sediment. In order to determine the microplastics-associated pollutant level among different regions, sample collection was conducted in 11 sampling sites, including 6 sites in Western region including Ha Pak Nai (HPN), Tai Pai Tsui Pier, Ma Wan (MW), Shui Hau Wan, Lantau (SH), Tsing Lung Wan (TLW), Tai O, Lantau (TO) and Yi O, Lantau (YO); 4 sites in Eastern region including Luk Keng Tsuen, Lantau (LK), Sha Tsui, Pak Sha Wan (PSW), Ma Hang, Stanley Bay (SB) and Shek Pai Wan, Lamma Island (SPW); and one site in Southern region, Tung Wan, Cheung Chau (CC) of Hong Kong.

Results achieved

Variety of microplastics found in Hong Kong

To study the amount of BPA and its analogs associated with microplastics, sorting of microplastics from the sediment samples and further characterization were performed in prior to chemical extraction. Quantification result shows that the abundance of microplastics, with a size of 250 μm to 5 mm, ranged from 64 to 254 pieces in different sampling sites. In terms of composition, fragment was most commonly found (56.3 to 93.3%) in all samples, except in SB and YO, which were both dominated by foam (94.7% and 76.9%, respectively). Pellet was present in all samples, albeit with a minor contribution (0.5 to 9.1%). Apart from these three categories, other types of microplastics, such as fibre and microbead, were also found in 6 of the 11 sampling sites, including CC, HPN, MW, SH, SPW and TO.

Environmental concentration of BPA and its analogs associated with microplastics

Then we validate the efficiency of chemical extraction and accuracy of chemical analysis using HPLC-MS. Our result showed that only BPA was found in the extracts from microplastics, whereas other three BPA analogues were found at a concentration below LOD. The observed concentrations of microplastics-associated BPA and BPB are expected, being consistent with the high level of BPA yet undetectable level of BPB found in surface water among Asian countries (Yamazaki et al. 2015). However, such a low concentration of BPF and BPS associated with microplastics collected from in local shores do not match with the high level of these two BPA analogues detected in Asian waters (Yamazaki et al. 2015). In terms of microplastics-associated BPA, it has been detected in all samples (100% detection) among 8 out of 11 sampling sites. For the other three sites, SB, PSW and YO, the microplastics-associated BPA was found to be lower than LOD in 1 to 3 out of 5 samples (40 – 80% detection). Overall, the lowest detectable level was 38.75 ng of BPA per unit gram of microplastics from SPW, while the highest detectable level was 5222.49 ng of BPA per unit gram of microplastics from TO. Due to the great standard deviation (Figure 2), no significant differences are observed between the BPA concentrations at different sampling sites (p = 0.6040, one-way ANOVA). Nevertheless, considering the region of sampling sites, the concentration of BPA associated with microplastics found in Western region appears to be relatively higher than those in Eastern or Southern region.

Nov 2017 – Oct 2020 (On going)

Ocean acidification threatens Chinese oysters: Can some species adapt within this century?

海洋酸化威脅到中國的生蠔：在本世紀內會有物種可以適應嗎？

V. THIYAGARAJAN, J.W. QIU, P.Y. QIAN, S.G. CHEUNG, M.H. DAI
Funding Amount: HK$240,000

China is producing >80% of world oysters, however this precious shellfish resource is under threat from unprecedented climate change stressors such as ocean acidification. Therefore, we have investigated the impact of ocean acidification on several commercially important edible oyster species found along the entire coastal areas of China. The results informed oyster growers to develop adequate mitigation strategies to alleviate some of the potential climate change impacts on oyster aquaculture in China.

Research Output

Papers with the SKLMP as the one of the affiliations 以 SKLMP 為作者單位之一的期刊論文

1. Meng, Y., Guo, Z., Fitzer, S. C., Upadhyay, A., Chan, B. S., Li, C., Cusack M., Yao, H., Yeung, K. W. K., & Thiyagarajan, V. (2018). Ocean acidification reduces hardness and stiffness of the Portuguese oyster shell with impaired microstructure: A hierarchical analysis. *Biogeosciences*, *15*(22), 6833-6846.

Nov 2017 – Oct 2020 (On going)

How phosphate concentration affect the nitrogen uptake of phytoplankton?

磷酸鹽濃度影響浮游植物的氮吸收的機理研究

H.B. LIU, Leo L. CHAN
Funding Amount: HK$240,000

In the past year, we have started the experiments after several months' preparation. We have recruited one MPhil student who is working on the nitrogen uptake experiment using stable isotope technique. We have got some preliminary results. Below is one example.

In this experiment done in June, the uptake rates of nitrate and ammonium were measured in situ and phosphorus enrichment experiments were conducted in two contrasting waters (river-impacted vs upwelling region) in coastal area influenced by the Pearl River discharge, in order to examine effect of phosphorus availability on the phytoplankton uptake of different nitrogen species in phosphorus-deficient waters. Our results showed that phosphorus availability modulated the uptake of nitrate and ammonium and *f*-ratio. In waters with influence of river plume, where P was deficient, nitrate uptake rates and *f*-ratio were low ($6{,}60\times10^{4}$ h^{-1} for nitrate uptake rate and 0.04 for *f*-ratio), although nitrate concentration was high (up to 35 μM). In addition, in phosphate enrichment experiments, the nitrate uptake rate was significantly improved while ammonium uptake rates remained unchanged in response to phosphate addition. As a result, *f*-ratio increased considerably. These results suggested that nitrate uptake for phytoplankton was preferentially limited by phosphorus under phosphorus-deficient conditions, compared to ammonium, resulting in low *f*-ratio. We will repeat this experiment again and then conduct some lab experiments to look at the difference among different algal groups.

Dec 2017 – Nov 2020 (On going)

Neurotoxicity studies of selected marine biotoxins via neurometabolomic profiling and neurobehavioral assessment on marine medaka (*Oryzais melastigma*) and zebrafish (*Danio rerio*)

利用青鱗魚及斑馬魚作為腦神經代謝分析和神經行為評估平台進行對幾種海洋生物毒素的神經毒性的研究

Michael H.W. LAM, James C.W. LAM
Funding Amount: HK$240,000

In this reporting period, we studied the neurometabolomic perturbation on 3-month-old marine medaka (*Oryzais melastigma*) caused by brevetoxin PbTx-1, the most potent brevetoxin variant. PbTx-1 is known to activate voltage-gated sodium channels (VGSCs) in neurons via binding to site 5 of their α-subunit. This molecular neurotoxic mechanism is very similar to that of ciguatoxins (CTXs). In our study, we developed a strategy to construct multivariate biomarkers for exposure to neurotoxic agents via correlating changes to the profiles of a suite of neurotransmitters and their metabolites in the central nervous system (CNS) of exposed test organism. Marine medaka were exposed to waterborne brevetoxin PbTx-1 at two sublethal dose levels (0.5 and 2.5 μg-PbTx-1 L^{-1}) for a duration of 12 hours before concentrations of 43 selected neurotransmitters and metabolites in their CNS were quantified via dansyl chloride derivatization and LC-MS/MS determination. Principle component analysis (PCA), projection on latent structure-discriminate analysis (PLS-DA) and orthogonal projection on latent structure-discriminate analysis (OPLS-DA) were employed to analyse the resultant profiling data. Neurotransmitters and metabolites related to VGSCs and *N*-methyl-D-aspartic acid receptors (NMDARs) activation, as well as cholinergic neurotransmission, were found to contribute significantly to class separation in the corresponding OPLS-DA models. Shared and Unique Structures Plot (SUS-plot) was adopted to correlate OPLS-DA models at different exposure dosages and to extract consistently regulated variables to construct the exposure biomarkers in the form of multivariate predictive scores. These multivariate biomarkers for male and female medaka fish were able to predict acute sub-lethal exposure to PbTx-1 with good sensitivity and specificity (male fish: sensitivity 94.7%, specificity 80.0%; female fish: sensitivity 91.4%, specificity 83.3%). Neurotransmitter profiles in the CNS of medaka fish that should have recovered from exposure to PbTx-1 have also been determined to reveal long-term neurological impacts to the affected organism even after the exposure has been discontinued.

Nov 2017 – Oct 2020 (On going)

Targeting astrocytes-neuronal L-lactate signaling pathway for rescuing decision-making deficit in chronic ciguatera poisoning

靶向星形膠質－神經元 L－型乳酸信號通路治療慢性雪卡中毒相關的決策行為障礙

Y. LI, Leo L. CHAN

Funding Amount: HK$240,000

Ciguatera poisoning is the most frequently reported seafood-toxin illness that manifests in complex and long-lived neurological symptoms which are more severe in repeated exposure. However, very few studies have been conducted in animal models to investigate the nature of central nervous system damage and the underlying mechanisms for behavioral deficits after exposure to ciguatoxin. Previously, we showed a single dose of Pacific ciguatoxin-1 (P-CTX-1) induced severe visceral pain, and anterior cingulate cortex (ACC) synaptic plasticity. Reactive astrogliosis was identified supporting the concept that neuron and astroglia signals may play roles in ciguatera poisoning. However, the induction of LTP was occluded in acute P-CTX-1 rats suggesting emotional and cognitive dysfunctions in ciguatera poisoning. By examining a rat model with chronic repeated exposure to sub-clinic dosage of P-CTX-1, we observed development of anxiety and decision making deficits in rats after one-month exposure to the toxins. Nonetheless, the underlying molecular mechanisms are poorly understood.

The brain requires continuous supply of oxygen and energy-yielding substrates involving glucose. A growing body of evidence suggests that L-lactate, byproduct of astrocytic glycolysis, plays a critical role in cognition processing. Astrocytes respond to all forms of CNS damage and disease by undergoing cellular, molecular and functional changes. Our preliminary data showed markedly reactive astrogliosis occurs in ACC in chronic P-CTX-1 rats. We hypothesized that impaired L-lactate release casually involved in cognitive deficit in chronic ciguatera poisoning. We find failure of L-lactate release in an activity-dependent manner in chronic ciguatera poisoning. Theta burst stimulation (TBS) which used to elicit LTP can reliably induce increase in lactate concentration in control rats, but not in P-CTX-1 rats. Further, P-CTX-1 rats exhibited significant lower lactate level immediately after the cognitive behavioral task (rat gambling task RGT). Next, exogenous L-lactate infusion into ACC repairs the impairments of LTP and decision-making performance in P-CTX-1 rats.

Using multi-electrodes recording in both BLA and ACC of freely behaving rats, spike-field coherence (SFC) analysis revealed chronic ciguatera poisoning led to disruption of ACC spike timing to BLA local theta oscillation. Cross-correlation analysis revealed that ciguatera poisoning was associated with suppressed synchronization between the BLA and ACC, indicating reduced neuronal communications between these two regions under chronic ciguatera poisoning.

Disruption of the flow of L-lactate from astrocytes to neurons severely impairs the local and broad spatial scales of interaction of ACC neuronal network, disturbs functionally coherent assemblies and damages the decision making ability in chronic ciguatera poisoning.

Feb 2018 – Jan 2021 (Ongoing)

Development of an immune-stimulating antimicrobial peptide feeding regime for the hybrid grouper

開發一套針對雜交石斑魚具有免疫促進的抗菌多肽餵養體系

Doris W.T. AU, F. SEEMANN, Leo L. CHAN, Y.W. LAM; S.S. WU, K.J. WANG
Funding Amount: HK$300,000

The hybrid grouper (*Epinephelus* sp. x sp.) is a commercial important aquaculture species in Hong Kong and South China. The project aimed at the reduction of antibiotic use in grouper aquaculture and enhancement of juvenile survival. Three major grouper antimicrobial peptides (AMPs): β-defensin, piscidin (ecPis-3) and hepcidin (EC-hepcidin1) were suggested to be tested for their immune-stimulatory potency under a prophylactic feeding regime and under different pathogen challenge scenarios, including bacteria *Edwardsiella tarda* (edwardselliosis), red grouper necrosis virus (RGNNV) and the parasite *Cryptocaryon irritans* (white spot disease) (Objective 1).

EC-hepcidin has been established and developed by Prof Wang K.J. Milestones to be completed in the first year comprised the recombinant protein production of two other selected AMPs (β-defensin, piscidine-3) and AMP feeding trials with subsequent challenge with the pathogenic *Edwardsiella tarda* bacteria.

Recombinant AMP protein production:
Synthetic peptide production is commercially available, but remains at a high cost. To reduce the budget of AMPs feeding experiments, it is necessary to generate recombinant AMPs using the BL21 cells (*Escherichia coli*). Three plasmids (pET Biotin His6mCherry LIC; pET28:GFP, pETmRuby2 LIC) were used for each AMP: beta-defensin and piscidin3 protein expression in BL21 cells. Genes were inserted into plasmids through restriction enzyme cutting for pET:GFP (HindIII) or ligation independent cloning for pET Ruby2 and pETmCHerry (LIC; https://www.addgene.org/protocols/lic/). In the end, a set of 3 plasmids was done for each gene. Transformation of plasmids into BL21 competent cells followed the protocol (https://www.addgene.org/protocols/bacterial-transformation/). AMP insert was combined to vector with fluorescent tag (mCherry, mRuby and GFP) to stabilize the short AMP protein (ca. 200 base pairs only) and to aid in vvisualization of protein expression. Bacteria growth and protein harvest as well as Western blot for protein quantification followed the procedures in Pan et al. (2012).

Problem encountered: While the bacterial production of ecPis-3 is close to completion. Recombinant production of β-defensin was not successful due to improper protein folding after production through the bacteria, which would affect its functionality as an AMP and render it not desirable for mass production and feeding application.

Host Resistance Assay and AMP feeding trials:
Host resistance assays were conducted on juvenile hybrid grouper using the *E. tarda* (3 replicate run, LC50 = 1.8x108cfu/ml). *In vitro* test for ecPisc3 was also completed using the MIC assay. The effectiveness of ecPisc 3 administration for bacterial infection is being tested. The proteomics profiles will be measured for skin mucus and plasma in experimental fish. The levels of AMPs and other major immune proteins will be quantified and correlated with post-pathogen challenge fish survival. The parasite *Cryptocaryon irritans* is not available for experiment due to problem in getting approval and transportation of parasite from Mainland.

Essential information regarding the optimal AMPs feeding regime as immune-stimulating feed additive in the hybrid grouper will be gained. The findings will also provide new insights into the immunomodulatory and antimicrobial capacities of fish AMPs. This novel study will potentially contribute to a significant reduction of antibiotics administration in aquaculture.

Feb 2018 – Jan 2021 (Ongoing)

High-resolution reconstruction of the beating marine medaka heart
高分辨率重建構造海洋青鱂魚心臟

S.H. CHENG, Chris K.C. WONG
Funding Amount: HK$300,000

We have recruited a PRg student Tian Li to work on this project. She is trying to pick up molecular biology techniques and knowledge to complement her background in Pharmacy. Nonetheless, the IRF funding has been used to support the following publications.

Research Output
Papers with the SKLMP as the one of the affiliations 以 SKLMP 為作者單位之一的期刊論文

1. Xu, S., Webb, S.E., Lau, T.C.K., & Cheng, S.H. (2018). Matrix metalloproteinases (MMPs) mediate leukocyte recruitment during the inflammatory phase of zebrafish heart regeneration. *Scientific Reports*, *8*(1), 7199.

2. Kong, E.Y., Cheng, S.H., & Yu, K.N. (2018). Induction of autophagy and interleukin 6 secretion in bystander cells: metabolic cooperation for radiation-induced rescue effect? *Journal of Radiation Research*, *59*(2), 129-140.

3. Manno, S. H., Manno, F. A., Ahmed, I., Ahmed, R., Shu, L., Li, L., Xu S., Xie F., Li V. W., Ho J., Cheng, S. H. (2018). Spectroscopic examination of enamel staining by coffee indicates dentin erosion by sequestration of elements. *Talanta*, *189*, 550-559.

Feb 2018 – Jan 2021 (Ongoing)

Towards understanding population stress response in aquatic organisms: Studies on rescue effect induced by ionizing radiation

水生生物群體應激反應：電離輻射誘導之拯救效應

Peter K.N. YU, W.X. WANG
Funding Amount: HK$300,000

The present project studies the radiation-induced rescue effect (RIRE) caused by ionizing radiation (such as X-ray photons and alpha particles). RIRE refers to the phenomenon that irradiated cells/organisms derive benefits from feedback signals released from bystander unirradiated cells/organisms. The project aims to (1) study the dose responses of RIRE in zebrafish embryos and embryonic zebrafish fibroblast (ZF4) cells induced by alpha particles and X-ray photons; and (2) study the involvement of underlying mechanisms (including but not limited to the NF-κB pathway) in the rescue effect induced by different doses of alpha particles and X-ray photons.

As a first step, we have started studies on RIRE in a number of cell lines, including HCT116p53, MCF7, CNE2 and HeLa cells, together with the ZF4 cells. More different cells lines than originally proposed have been included because there is increasing evidence that RIRE depends on the cell types. Occurrence of RIRE was confirmed in previous studies, so inclusion of this cell line is for reference and comparison. Experiments are being carried out using X-ray photons with different doses. Data are being collected and analyzed, and no conclusions can be made at the moment. The more cells lines studied have led to longer investigation time.

Feb 2018 – Jan 2021 (Ongoing)

Interactive effects of hypoxia- and flutamide-induced endocrine disruption in marine medaka: An ecotoxicogenomic approach for environmental risk assessment

對缺氧和氟他胺誘導的海洋青鱂魚內分泌紊亂的交互作用的研究：一種環境風險評估的生態毒理學方法

Richard Y.C. KONG, Rudolf S.S. WU

Funding Amount: HK$300,000

Endocrine disrupting chemicals (EDCs) are a heterogenous group of synthetic or natural compounds that are widespread in the aquatic environment and are known to adversely affect sexual development and reproductive functions in fishes. Recent studies indicate that the anti-androgenic class of EDCs such as flutamide can interfere in a major way with the androgen signaling pathway in mammals and fish, producing testicular toxicity effects that include impairment of sperm motility, decreased sperm counts, reduced testosterone levels, and abnormal testis. Using the marine medaka (*Oryzias melastigma*) as a fish model, the anti-androgenic effects of flutamide on reproductive functions in male fish of two different age groups (3- and 4-month old) were examined by treating the fish with 3.2 mg/L flutamide for 2 weeks. Sperm motility and concentration were significantly reduced in flutamide-treated 4-month-old male fish (but not in 3-month-old male fish) when compared to the respective untreated controls. Histological examination of the testes revealed significant reduction in testes lobule width and the number of cysts in 4-month old male fish treated with flutamide, indicating impaired spermatogenesis. Further examination revealed the number of spermatocytes and spermatids were significantly reduced in the cysts of the testes of both flutamide-treated 3- and 4-month old male fish. Intriguingly, the number of spermatogonia was comparatively higher in the testes of 4-month old fish, which suggested a greater impairment in spermatogonia differentiation into spermatocytes. Examination of genes associated with steroidogenesis, spermatogenesis, and cell proliferation/apoptosis in testes of flutamide-treated and control fish by qRT-PCR showed that mRNAs of 17β-HSD1, 17β-HSD7, 3β-HSD, CYP11A, ARα and ERβ – were upregulated in 3-month old fish, while 17β-HSD3 and ERβ were downregulated in 4-month old fish. Interestingly, Foxl2 and VASA mRNAs were also downregulated in 4-month old fish, suggesting a disruption in steroidogenesis and spermatogenic activities by flutamide in 4-month old male fish. Overall, flutamide appears to exert more severe anti-androgenic effects on older male fish (4-month old) than the younger 3-month fish, and studies to better understand the molecular mechanisms underlying such differential effects are currently underway.

Governance Structure and Nurturing of Talents
隊伍建設與人才培養

Team Building and Management 團隊建設與管理

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Director of the State Key Laboratory of Marine Environment Science 近海海洋環境科學國家重點實驗室主任

Co-opted Members in 2018
2018 年新增成員

Dr. Keith Wing Kei HO 何詠基博士

Dr. Keith HO is the Associate Professor and deputy Head of the Department of Science and Environmental Studies at The Education University of Hong Kong. He received his BSc and PhD in Chemistry from CUHK, and was awarded the post-doctoral fellowships in Hong Kong and Canada. He has been working in the areas of environmental pollution control, photocatalysis and design of nanomaterials for environmental purification for 17 years. He achieved 1 ECS, 1 GRF & 4 ITF projects with over ten million dollars as Principle Investigator in the past eight years. He has published >110 SCI journals which are totally cited 12000 times and his h-index = 52. Since 2013, He published 10 articles in the leading international journals, *Applied Catalysis B: Environmental* which ranked the first in the JCR Field area of Engineering (Environmental). More than ten patents in US, Europe. China and Hong Kong have been granted from his research in the environmental purification and disinfection technology. Dr. Ho was the awardee of the Research Grants Council Early Career Award from UGC and the President's Award for Outstanding Performance in Research from his university. Since 2014, he was appointed as Visiting Professor in Institute of Earth Environment, Chinese Academy of Sciences, China.

何詠基博士，香港教育大學科學與環境學系副教授及副系主任。何博士畢業於香港中文大學化學系，其後分別於香港及加拿大從事博士後研究。何博士一直致力於在環境污染控制，主攻納米納米光催化材料技術及其應用於環境淨化之研究，過去 8 年，何博士獲得了超過 1000 萬港元的政府研究撥款，包括 ECS、 GRF 及 4 個 ITF 項目 ，其多項研究結果，已在超過 110 篇國際知名期刊發表，累積被其他文獻所引用超過 12000 次，並已在美國、歐洲、中國和香港獲得超過 10 項專利。2014 年，何博士獲中國科學院地球環境研究所委任為客座教授。同年，何博士獲得由香港政府研究資助局頒發的 2013/14「傑出青年學者獎」，以表揚他在研究方面的傑出成就。2015 年，何博士獲得由香港教育學院頒發「傑出研究表現校長獎項—青年學者卓越研究」。

Dr. Chi Chiu CHEANG 蔣志超博士

Dr. CHEANG is the Assistant Professor of the Department of Science and Environmental Studies at The Education University of Hong Kong. Dr. CHEANG received his bachelor, masteral and doctoral degrees from the Chinese Univeristy of Hong Kong. His research expertise includes the ecology, taxonomy, phylogenetic inference and phylogeographic studies of marine algae and invertebrate such as scleractinian corals and crustacean. He has recently expanded his research interest to various pedagogical theories and skills in the science and environmental educations. He was the programme leader of the Bachelor of Art (Education for Sustainability) between 2016 and 2018, and is now the academic coordinator of General Education in the Education University of Hong Kong. Dr. CHEANG has published 19 SCI/SSCI papers; and obtained nine research grants/projects in the capacity of principal investigator. He is currently the member of Royal Society of Biology and Phycological Society of America.

蔣博士是香港教育大學科學與環境學系助理教授。蔣博士畢業於香港中文大學，并獲得碩士及博士學位。他是海洋生態學家和教育家，他的研究專長包括海洋藻類和無脊椎動物（如石珊瑚和甲殼綱動物）的生態學、分類學、系統發育學和系統地理學等研究。最近他的研究興趣擴大到科學和環境教育中的各種教學理論和技能。他於 2016 年至 2018 年期間曾擔任文學士（可持續發展教育）課程主任，現為香港教育大學通識教育的學術統籌。蔣博士發表了 19 篇 SCI / SSCI 論文；並以主要研究人員的身份獲得了 9 項研究經費。他目前是英國皇家生物學會和美國藻類學會會員。

Dr. Jinping CHENG 程金平博士

Dr. CHENG is the Lecturer of the Department of Ocean Science at The Hong Kong University of Science and Technology. She received her doctoral degree from City University of Hong Kong. Her research interests includes pharmacology and toxicology; marine pollution; developmental biology; and nanotoxicology. Dr. CHENG has published 32 SCI papers and her h-index is 17 (Scopus, accessed on 22 Jan. 2019).

程博士是香港科技大學海洋科學系講師。她博士畢業于香港城市大學。程博士的研究興趣包括藥物毒理學、海洋污染、發育生物學、和納米毒理學。她發表了 32 篇 SCI 論文，h- 指數為 17（Scopus，查閱於 2019 年 1 月 22 日）。

Position Held in International Academic Institutions and Journals
國際學術機構和國際學術期刊的任職情況

Positions of Members in International Academic Organizations and Government Advisory Committee
SKLMP 成員在國際學術組織及政府諮詢委員會的任職情況

	Member	Position	Organization	Duration
1	Prof. Paul K.S. LAM	Member	Management Committee and Steering Committee of the Marine Ecology Enhancement Fund, Hong Kong Airport Authority	Since 2016
		Member	Scientific Committee on Oceanic Research	Since 2013
		Member	Expert Panel of Hong Kong Poison Control Network, HKSAR Government	Since 2007
		Member	Red Tide / harmful Algal Bloom Expert Advisory Group, HKSAR Government	Since 2004
2	Prof. Kenneth M.Y. LEUNG	Member	The International Scientific Advisory Committee (2018 – 2023) of the Chinese Research Academy of Environmental Sciences, China	2018 - 2023
3	Prof. J.P. GAN	Panel Member of International GODAE Coastal Oceans and Shelf Seas Task Team	Asia Oceania Geosciences Society	Since 2011
		Scientific Advisor	Hong Kong Observatory	Since 2008
4	Dr. Keith W.K. HO	Associate Head	Department of Science and Environmental Science, EdUHK	Since 2016
		Visiting Professor	Xi'an Jiaotong University, China	Since 2018
		Visiting Professor	Institute of Earth Environment, Chinese Academy of Sciences, China	Since 2014
		Visiting Professor	South Central University for Nationalities, China	2016 - 2018
5	Dr. James K.H. FANG	Adjunct Fellow	Global Change Institute, Australia	Since Nov 2018
6	Prof. S.H. CHENG	Chair of Technology Committee	Nano and Advanced Materials Inc	2011 - 2020
7	Dr. S.G. CHEUNG	Member	廣西北部灣海洋生物多樣性養護重點實驗室學術委員會	Dec 2017- Dec 2020
		Member	The Ramsar Wetland Conservation Committee, The Conservancy Association	Since 1998
8	Prof. J.W. QIU	Member	Environment and Conservation Fund Research Project Vetting Subcommittee	2014 - Present
		Member	Marine Ecology Enhancement Fund (MEEF), Airport Authority Hong Kong	2016 - 2019
		Member	Country and Marine Parks Board, AFCD	2015 - 2019
		Member	WWF's Management Committee for the Mai Po and Inner Deep Bay Ramsar Site	2014 - Present
		Member	Dumping at Sea Appeal Board Panel	2016 - 2019

Positions of Members in International Academic Journals

SKLMP 成員在國際學術期刊的任職情況

	Member	Position	Name of Academic Journal	Duration
1	Prof. W.X. WANG	Associate Editor	Environmental Pollution	
		Editor	Environmental Toxicology and Chemistry	
2	Prof. Peter K.N. YU	Editor	Open Physics Journal	Aug 2015 - Present
		Advisory Editorial Board Member	Nuclear Technology & Radiation Protection Journal	Sep 2010 - Present
		Editorial Board Member	Journal of Environmental Radioactivity	May 2005 - Present
3	Prof. J.P. GAN	Associate Editor	J. Applied of Oceanography	2008 - Present
		Editor	Acta Oceanologica Sinica	2012 - Present
4	Prof. X.D. LI	Associate Editor	Environmental Science and Technology	2012 - Present
5	Dr. Keith W.K. HO	Editorial Board	International Journal of Photoenergy	2013 - Present
		Editorial Board	Journal of Environmental Pollution and Management (Scholarena)	2016 - Present
		Editorial Board	International Journal of Nanoparticles & Nanotechnology	2018 - Present
		Senior Editorial Board Members	General Chemistry	2017 - Present
		Associate Editor	Journal of Research in Science Mathematics and Technology Education	2016 - Present
6	Prof. J.W. QIU	Board Member	Frontiers in Marine Sciences	
7	Prof. Michael H.W. LAM	Editorial Board Member	Scientific Reports	Since 2014
8	Prof. Paul K.S. LAM	Member	Editorial Advisory Board, Environmental Science & Technology	
		Member	Editorial Board of Advances in Environmental Research	
		Member	Editorial Board of Environmental Chemistry	
		Subject Editor	Ecosystem Health and Sustainability	
		Associate Editor	Journal of Environmental Sciences	

Nurturing of Talents 人才培養

Research Students 研究生

	Member	Student	Degree	Status
1	Prof. J.W. QIU	Jack Chi Ho IP	PhD	Ongoing
		Yanjie ZHANG	PhD	Ongoing
		Ting XU	PhD	Ongoing
		Zhi WANG	PhD	Ongoing
		Yip Hung YEUNG	MPhil	Ongoing
2	Prof. Paul K.S. LAM	Xin LI	PhD	Ongoing
		Zhen WU	PhD	Ongoing
		Rongben WU	PhD	Ongoing
		Jing LI	PhD	Ongoing
		Jiarui GU	PhD	Ongoing
		Huiju LIN	Joint PhD Student*	Ongoing
		Xinrong PAN	Joint PhD Student*	Ongoing
		Ruoyu HU	Joint PhD Student*	Ongoing
		Meng GE	Joint PhD Student*	Ongoing
		Yinhua CUI	Joint PhD Student*	Ongoing
		Jie LI	Joint PhD Student*	Ongoing
		Linlin MA	Joint PhD Student*	Ongoing
		Shanshan WANG	Joint PhD Student*	Ongoing
		Shuo CUI	Joint PhD Student*	Ongoing
		Jing JIN	Joint PhD Student*	Ongoing
		Xue LI	Joint PhD Student*	Ongoing
		Yue QIU	Joint PhD Student*	Ongoing
		Li WANG	Joint PhD Student*	Ongoing
		Li ZHOU	Joint PhD Student*	Ongoing
3	Prof. Michael H.W. LAM	Man Shan YAU	PhD	Ongoing
		Ka Ki YUEN	PhD	Ongoing
4	Prof. Kenneth M.Y. LEUNG	Ronia SHAM	PhD	Ongoing
		Racliffe LAI	PhD	Ongoing
		Katie YEUNG	PhD	Ongoing
		Qi HUANG	PhD	Ongoing
5	Prof. J.P. GAN	Junlu LI	PhD	Ongoing
		Dou LI	PhD	Ongoing
		Yao TANG	MPhil	Ongoing
		Aaron Wai Pang TSANG	MPhil	Ongoing
		Kelvin Tsz Kwan WONG	MPhil	Ongoing
6	Dr. Keith W.K. HO	Xing QIN	PhD	Ongoing
7	Dr. James K.H. FANG	Matthew Ming Lok LEUNG	MPhil	Ongoing
8	Prof. S.H. CHENG	Tian LU	PhD	Ongoing
9	Dr. Richard Y.C. KONG	Muhammad SAMMA	PhD	Ongoing
		Nathan TAM	PhD	Ongoing
10	Dr. S.G. CHEUNG	Hoi Shing LO	PhD	Ongoing
		Hoi Man LUI	PhD	Ongoing
		Xiaoyu XU	PhD	Ongoing
11	Dr. Leo L. CHAN	Walter DELLISANTI	HK PhD Fellowship Student	Ongoing
		Thomas Wai Hin LEE	PhD	Ongoing
		Likun WEI	PhD	Ongoing
		Zhen WU	PhD	Ongoing
		Ken Ki Chun YIP	PhD	Ongoing

Review of Major Achievement
重大成就回顧

On July 3, 2018, the Innovation and Technology Commission announced the reassessment results of the twelve Partner State Key Laboratories in Hong Kong. We were pleased that the State Key Laboratory of Marine Pollution (SKLMP) received an excellent rating in this evaluation.

The rigorous assessment involved on-site visits and reviews by external panels comprised of government officials from the Ministry of Science and Technology of China and a number of local and overseas experts.

The success of the SKLMP is owed to the cooperation and participation of all our members' in preparation for the review, as well as the long-standing support and guidance from the Academic Committee members and the International Advisory Committee members.

In future, the SKLMP will continue to work on high-impact foundational research on marine pollution and to develop collaborative projects with various research institutes. We are determined to become a world leading research center in this discipline.

2018 年 7 月 3 日，創新科技署公佈了香港 12 所夥伴國家重點實驗室的評估結果，海洋污染國家重點實驗室於本次評估中被評為優秀，我們很高興獲得此成績。

本次評估工作艱巨，我們需要接受科學技術部官員及多位海內外專家的現場考察及評審。實驗室能獲此佳績實在有賴實驗室所有成員在籌備和評估工作期間的配合和參與，以及學術委員會和國際顧問委員會長期以來對我們工作的支持和指導。

未來，實驗室會繼續致力於開展具有高影響力的海洋污染基礎研究，與各科研院所及機構開展合作項目，向前邁進以成為這一學科世界領先的研究中心。

For giving the Partner State Key Laboratories in Hong Kong higher flexibility in collaborating with different research and development institutions, the Ministry of Science and Technology has approved the renaming of State Key Laboratories. The "Partner State Key Laboratory in Marine Pollution" was renamed "State Key Laboratory of Marine Pollution" (SKLMP). We are honoured to receive the plaque from Mr. Wang Zhigang, the Minister of Science and Technology.

為了讓香港的國家重點實驗室夥伴實驗室更彈性與內地不同科研單位開展合作，國家科學技術部批准夥伴實驗室正名為國家重點實驗室。本實驗室（夥伴實驗室）正名為海洋污染國家重點實驗室。在 2018 年 9 月 20 日舉行的授牌儀式上，我們非常高興從國家科學技術部王志剛部長手中接過牌匾。

To fit in with City University's overall campus planning and development, the main laboratory of SKLMP has been moved to a new location on the fifth floor of the Yeung Kin Man Academic Building in 2018. Taking the opportunity, some obsolete instruments were replaced and several new pieces of equipment, including a UPLC-MS/QTOF system and a GC-MS/MS system were acquired.

The new SKLMP facility has purpose-built laboratories for trace chemical analysis, molecular biological analysis, algal culture and cell culture, and a number of walk-in cold rooms and freezer rooms for sample storage.

為配合香港城市大學的校園整體規劃與發展，海洋污染國家重點實驗室 (SKLMP) 總部於 2018 年搬遷至楊健文學術樓五樓的新址。藉此機會，一些過時的儀器得以升級更換，並採購了幾台新設備，其中包括超高效液相色譜－四級杆串聯飛行時間高分辨質譜聯用系統 (UPLC-MS/QTOF) 和氣相色譜－三重四極杆質譜聯用系統 (GC-MS/MS)。

SKLMP 新址擁有專門用於痕量化學分析、分子生物學分析、藻類培養和細胞培養等各類實驗室，以及多個用於樣品儲存的步入式冷藏室和冷凍室。

Academic Exchange and Cooperation 學術交流與合作

Meetings and Conference
會議及講座

February

From February 1-2 2018, the Sino-Thai Ocean Cooperation Conference was successfully held at the City University of Hong Kong Shenzhen Research Institute. More than 20 Chinese and Thai experts and scholars were in attendance. They reviewed the "Five-year Plan for Cooperation in Marine Areas (2014-18)" and drafted a new plan for the next five years (2019-2023) according to the current development of the Thailand-China Joint Laboratory for Climate and Marine Ecosystem.

Prof. Weidong YU, Associate Director of the Thailand-China Joint Laboratory and researcher at the National Marine Environmental Forecasting Center, was very grateful to have the support from the State Key Laboratory of Marine Pollution (City University of Hong Kong) and the Shenzhen Key Laboratory for the Sustainable Use of Marine Biodiversity.

Dr. Leo Lai CHAN said, “It is a great honor for me to represent the laboratory in organizing and participating in this seminar. I hope that in the future we can make full use of the opportunities afforded by the One Belt One Road national policies to develop practical cooperation between the various units of the Ministry of Natural Resources and those in the field in Thailand to make a contribution to the marine environment.”

To date, the Shenzhen Laboratory has participated in the special application for the Ministry of Science and Technology of the National Marine Environment Monitoring Center investigation of scientific and technological foundational resources.

2018 年 2 月 1 日 – 2 日，中泰海洋合作會議研討會在香港城市大學深圳研究院順利召開，來自中泰雙方的二十餘位專家學者參加了會議。會議主要回顧並審查了《中泰海洋領域合作五年規劃（2014 – 2018）》，並根據目前中泰氣候與海洋生態系統實驗室的建設和發展，起草了未來五年（2019 – 2023）的新規劃。

中泰聯合實驗室副主任、國家海洋環境預報中心于衛東研究員指出這次研討會具有承上啟下的作用，並且非常感謝香港城市大學海洋污染國家重點實驗室與深圳市海洋生物多樣性可持續利用重點實驗室對研討會的順利舉辦的大力支持。

陳荔博士說：“我代表實驗室對能夠協助舉辦并參加此次研討會感到非常榮幸，希望將來我們可以充分利用一帶一路的國家政策，抓住機遇與自然資源部的各單位以及泰方展開各種關於海洋領域的務實合作，為海洋環境做出一份貢獻”。

目前，深圳實驗室已經參與了國家海洋環境監測中心的科技部科技基礎資源調查專項申請。

March

From 1 to 2 March 2018, the SKLMP 2017 Annual and Academic Committee Meeting was successfully held in City University of Hong Kong.

海洋污染國家重點實驗室 2017 年年度會議於 2018 年 3 月 1 日 - 3 月 2 日在香港城市大學成功召開

May

On 7 May 2018, the "Seminar on Underwater Habitat Stereoscopic Surveying and Mapping Technology" was held successfully in Dapeng, Shenzhen. This seminar was jointly organized by the State Key Laboratory of Marine Pollution,City University of Hong Kong and the Shenzhen Key Laboratory for Sustainable Use of Marine Biodiversity, the City University of Hong Kong Shenzhen Research Institute. More than thirty local and overseas experts and scholars attended the seminar.

The conference focused on underwater three-dimensional surveying and mapping technology. Alexander SCHERBATYUK, Director of the Russian Institute of Marine Technical Problems, presented on the application of autonomous underwater vehicles (AUV) in marine biodiversity investigations in the Far Eastern State Marine Reserve. Dr. Leo Lai CHAN, Associate Director of the State Key Laboratory of Marine Pollution, City University of Hong Kong introduced projects on three-dimensional mapping of underwater habitats in Hong Kong Marine Parks by using unmanned aerial vehicles (UAV), diver-operated video systems (DOV), and other integrated intelligent collaboration systems based on the survey of coral fish in Hong Kong, as well as the necessity of virtual reality in coral community ecosystem to protect coral reefs.

2018 年 5 月 7 日，由香港城市大學海洋污染國家重點實驗室與香港城市大學深圳研究院深圳市海洋生物多樣性可持續利用重點實驗室聯合舉辦的“水下棲息地實景生境立體測繪技術研討會”在深圳市大鵬順利召開。來自國內外的三十餘名專家學者參與了這次研討會。

會上主要圍繞水下立體測繪技術召開討論，俄羅斯海洋技術問題研究所所長 Alexander SCHERBATYUK 重點介紹了遠東國家海洋保護區海洋生物多樣性調查中水下自主航行器（AUV）的應用。我室副主任陳荔博士重點介紹了在全港珊瑚魚調查的基礎上，利用空中無人機（UAV），潛水員操作視頻系統（DOV）等綜合智慧協作系統對香港海岸公園水下棲息地立體生境實境的測繪工作以及製作珊瑚群落生態系統虛擬實境對保護珊瑚礁的必要性。

June

City University of Hong Kong and the First Institute of Oceanography, MNR plan to establish the Advanced Technologies for Ocean Observation and Innovation Joint Center to promote the efficient aggregation and integration of innovation elements in the Great Bay area of Guangdong, Hong Kong and Macau. This establishment is also in response to the country's promotion of the integration of science and technology between the Mainland and Hong Kong, to accelerate the integration and development of science and technology in the Great Bay Area. This allows Hong Kong full utilization of its inherent advantages in the "Belt and Road" region in Southeast Asia and support the integration of the city into the overall development of the country.

On 8 June 2018, the seminar on promoting the establishment of the joint center, sponsored by the Shenzhen Key Laboratory for the Sustainable Use of Marine Biodiversity, City University of Hong Kong Shenzhen Research Institute, was held successfully at the Shenzhen Research Institute of City University of Hong Kong. Prof. Jian LU, Vice President (Research & Technology) of City University of Hong Kong, Mr. Fangli QIAO, Party Secretary of the First Institute of Oceanography, MNR and other experts attended the meeting. The various parties discussed the plan of the joint center.

為響應國家推動內地與香港科技融合的號召，加快粵港澳大灣區額科技融合發展，香港城市大學與自然資源部第一海洋研究所擬建立海洋觀測與創新先進技術聯合中心，促進創新要素在粵港澳大灣區的高效聚集融合，同時也充分發揮香港在東南亞“一帶一路”地區的固有優勢，支持香港融入國家發展大局。

在此背景下，2018 年 6 月 8 日，由香港城市大學深圳研究院深圳海洋生物多樣性可持續利用重點實驗室主辦的推動建立聯合中心研討會在香港城市大學深圳研究院順利召開。香港城市大學副校長（研究及科技）呂堅教授、自然資源部第一海洋研究所黨委書記喬方利等專家參加了此次會議。會議上雙方就聯合中心的方案進行了討論。

The First Scientific Dive Training organized by State Key Laboratory of Marine Pollution, City University of Hong Kong, Hong Kong Underwater Association, Shenzhen Key Laboratory for the Sustainable Use of Marine Biodiversity and Shenzhen Shanhai Lanji Sports Culture Development Co., Ltd. was held successfully in Dapeng, Shenzhen from 17– 21 June, 2018. The primary purpose of this training is to provide scientific diving skills training and to explore the possibility and problems in the establishment of a scientific diving system. At the same time, it is hoped that through the popularization of safety in scientific diving, Chinese scientific researchers could strengthen the ability to understand and explore the complicated marine environment and raise the awareness of underwater operations safety, so as to enhance the ability of the underwater research, ocean investigation and exploration, and promote the development of underwater science and technology in Greater China.

Fourteen open water diver certified scientific researchers, from the National Marine Environment Forecasting Center, the Second Institute of Oceanography, MNR, the China Coral Reef Survey Project, The University of Hong Kong, City University of Hong Kong, Ningbo University, Sun Yat-sen University and Zhejiang University participated in the 5-day closed training actively. After the training was completed, the first batch of trainees could receive a scientific diver certificate issued by the Confédération Mondiale des Activités Subaquatiques (CMAS). This is also the first time the certification body issued scientific diver qualifications in Asia.

The event also publicized a report on the Shenzhen Evening News, which greatly improved the public's understanding of scientific diving and scientific diving certification system.

由香港城市大學海洋污染國家重點實驗室、香港潛水總會、深圳海洋生物多樣性可持續利用重點實驗室以及深圳市山海藍極體育文化發展有限公司主辦的第一屆科學潛水培訓於 2018 年 6 月 17 至 21 日在深圳大鵬順利召開。此次培訓的主要目的是提供使用科學潛水技能培訓及探討科學潛水體系建立的可能性和存在的問題。同時希望通過科學安全潛水的普及教育，加強我國科研人員對海洋複雜環境的認知探索的能力和提高水下作業安全意識，從而能夠增強我國水下研究，海洋調查和勘察的能力，促進大中華區水下科技的發展。

來自國家海洋環境預報中心，自然資源部第二海洋研究所，中國珊瑚礁普查項目，香港大學，香港城市大學，寧波大學，中山大學和浙江大學的十四名已獲得開放水域潛水員認證的科研人員積極參加了此次為期 5 天的封閉式培訓。培訓結束後，首批學員獲得國際水中運動聯合會（CMAS）頒發的科學潛水員證書，這也是該聯合會首次在亞洲頒發科學潛水員資格。

此次活動也在深圳晚報上進行了報告宣傳，大大提高了公眾對科學潛水以及科學潛水認證體系的認識。

July

The 2018 Summer School on Marine Environment and Fishery Resources under Global Change held from 5–14 July 2018, Keelung (Taiwan) was jointly organized by the State Key Laboratory of Marine Pollution (SKLMP), City University of Hong Kong, the State Key Laboratory of Marine Environment Science (MEL), Xiamen University, the State Key Joint Laboratory of Environment Simulation and Pollution Control (ESPC), Peking University and the National Taiwan Ocean University (NTOU).

The SKLMP has co-organized several summer schools with her partner institutions in previous years. It was the seventh summer school this year. More than 500 participants have attended this summer school series over the years.

This year, we have invited 17 local and overseas leading scientists and experts in marine research to provide lectures for more than 30 postgraduates. The lectures covered 4 areas, they were 1) Microbial Ecology; 2) Marine Pollution; 3) Environmental Impact Assessment and Human Health Risk Assessment; 4) Interaction of Ocean, Earth and Atmospheric Interface. In addition to lectures, there were poster presentation, group oral presentation and field trip. By the diversity of the teaching methods and the interaction between speakers and participants, students could understand more clearly the recent development and study in environmental science and pollution.

2018 年 7 月 5 日至 14 日，香港城市大學海洋污染國家重點實驗室、厦門大學近海海洋環境科學國家重點實驗室、北京大學環境模擬與污染控制國家重點實驗室和國立臺灣海洋大學於台灣基隆市聯合舉辦了“The 2018 Summer School on Marine Environment and Fishery Resources under Global Change”全球變化條件下的海洋環境與漁業資源夏令營。

香港城市大學海洋污染國家重點實驗室過去幾年聯合其他大學舉辦了多次夏季課程，過去共有 500 多人次參加，獲得了一致好評。

本次暑期課程邀請了 17 位海內外從事海洋研究的專家學者，為超過 30 名研究生，圍繞四個主題：1） 微生物生態學； 2）海洋污染； 3） 環境影響評估與人類健康風險評估及 4） 海洋、陸地和大氣介面的相互作用進行講學。除此，課程還包括海報展示、小組討論和實地考察活動，讓學生透過多元化及互動的教學模式， 加深對課題的理解，以及對於環境科學與污染研究最新發展的認識。

September

Lab Scientists Teach Scientific Diving Training Course of the Intergovernmental Oceanographic Commission in Thailand

On 17-21 September 2018, Scientific Diving Training and Benthic Algae Separation Classification Course of Intergovernmental Oceanographic Commission (IOC) - Sub-Commission for the Western Pacific (WESTPAC) was successfully held in the Phuket Marine Biological Center (PMBC), Thailand, jointly sponsored by the United Nations Educational, Scientific and Cultural Organization (UNESCO), State Key Laboratory of Marine Pollution, City University of Hong Kong (SKLMP), the University of Malaya, State Key Laboratory of Satellites Ocean Environment Dynamics (SOED), Second Institute of Oceanography and the Sea Dweller Union. 23 participants from marine scientific research and environmental monitoring institutions in Thailand, Malaysia, Vietnam, Philippines, and Indonesia took an active part in the training course.

The training course included benthic algae sample processing, separation and classification. Dr. Po Teen LIM from the University of Malaya, and Prof. Douding LU from the Marine Ecology and Environment Laboratory, Second Institute of Oceanography, and Dr. Pengbin WANG from Second Institute of Oceanography, were responsible for teaching. The training content was divided into theoretical teaching, experimental observation and practice. Through the training, participants were able to master the basic knowledge and skills of sampling of benthic dinoflagellates, isolation, cultivation of algae strains, and classification observation. The latter part of the course involved scientific diving training. Dr. Leo Lai CHAN, Associate Director of State Key Laboratory of Marine Pollution, City University of Hong Kong, and the scienctific diving team were responsible for teaching a cohort of eight students.

This was the first time that the lab had held scientific diving training course in ASEAN countries, which had been well received by the participating countries. Dr. Chan said that it was a great honor to use this course to promote the skills, concepts and means of scientific diving, as well as the latest underwater scientific instruments (such as CISME-Coral in situ Monitor) throughout Asia. He was also very happy to make in-depth exchanges with underwater researchers of the frontier of marine research and protection from Southeast Asian countries, in order to enhance the connections and friendships with them.

2018 年 9 月 17-21 日，由泰國 UNESCO 國家委員會，香港城市大學海洋污染國家重點實驗室，馬來亞大學，海洋二所衛星海洋環境動力學國家重點實驗室（SOED），潛者聯盟等聯合支持舉辦的政府間海洋學委員會（IOC）- 西太平洋委員會（WESTPAC）底棲藻類分離分類與科學潛水培訓班在泰國普吉海洋生物研究中心（PMBC）順利召開。來自泰國、馬來西亞、越南、菲律賓、印度尼西亞等國海洋科研及環境監測機構 23 名學員積極參與了此次培訓班。

培訓課程包括了兩個平行課程：一是底棲藻類樣品的處理及分離分類培訓課，共有 15 名學員，馬來亞大學的 Dr. Po Teen LIM 及海洋二所海洋生態與環境實驗室的陸斗定研究員和王鵬斌助理研究員負責授課。培訓內容分為理論授課與實驗觀察實踐。學員通過培訓初步掌握了底棲甲藻的採樣、藻株分離培養以及分類觀察的基本知識和技能。二是科學潛水培訓課，共有 8 名學生，我室副主任陳荔博士以及科學潛水小組負責授課。

這是我室首次在東盟國家舉辦科學潛水培訓，受到了參與國人員的好評。陳荔博士表示，非常榮幸可以透過這種課程把科學潛水的技能、觀念和手段，以及最新的水下科學儀器（比如 CISME - 珊瑚原位監測儀）在整個亞洲進行推廣，同時非常高興能與來自東南亞各國的海洋研究和海洋保護第一線水下研究員進行了深入的交流，增進了彼此的聯繫和友誼。

Visits and Cooperation
訪問與合作

March

In order to develop underwater virtual reality, scientific diving training center and marine innovative technology, Dr. Leo Lai CHAN visited Deqing, Jiande and Hangzhou from 16 to 21 March, 2018. During the period, he attended the annual meeting of the State Key Laboratory of Satellite Ocean Environment Dynamics, Second Institute of Oceanography, MNR and met experts for exploring how to implement underwater habitats, underwater ancient cities, and underwater caves for its mapping and virtual reality technology.

為發展水下虛擬實境，科學技術潛水訓練中心及海洋創新技術，陳荔博士於 2018 年 3 月 16 至 21 日期間，走訪了浙江德清、建德及杭州等地，出席了自然資源部第二海洋研究所衛星海洋環境動力學重點實驗室學術年會，與專家們探討水下棲息地、水下古城及水下洞穴的實境測繪及虛擬現實技術的執行方案。

April

WESTPAC Training Workshop on“Applying analytical method for detecting Ciguatoxins (CTXs) in fish” was organised by the Vietnam Academy of Science and Technology, Institute of Oceanography on 5 - 9 April 2018. The meeting was funded by the UNESCO/Japanese Funds-in-Trust for Scientific Programmes on Global Challenges in Asia and the Pacific Region. Dr. Leo Lai CHAN, Dr. Jiajun WU and Ms. Xiaowan LIU were invited to attend this workshop.

The workshop exchanged current research on cignatoxic fish, ciguatoxin analysis and shared experiences in combating Ciguatera fish poisoning (CFP) problems .

In May, under the arrangement of Dr. Dao Viet HA, Vice Director of Institute of Oceanography of Vietnam Academy of Sciences and Technology, Dr. Chan and his research team with the researchers from Mainland China and Malaysian conducted underwater algae survey in Vietnam waters. on some of the algae linked to recent CFP outbreaks in Vietnam.

2018 年 4 月 5 日至 9 日，越南科學技術研究院海洋研究所召開了“利用分析化學方法檢測魚體內雪卡毒素”的西太平洋培訓研討會。會議由教科文組織 / 日本關於亞洲及太平洋區域科技項目的信託基金給與資金支持。陳荔博士、吳佳俊博士和劉曉灣受邀參加此次培訓研討會。

通過這次培訓研討會，我們交流學習了雪卡毒素及含毒魚的科學知識，分享在對抗雪卡毒魚類中毒（CFP）問題方面的共同經驗，同時也提高了分析雪卡毒素的技能。

同年 5 月，在越南科學技術研究院海洋研究所副所長 Dr. Dao Viet HA 安排下，陳荔博士與其研究團隊聯合馬來西亞和國內的研究人員，在越南雪卡毒素高發海域進行了相關底棲藻類的調查，相信部分藻類與當地 CFP 事件有密切關係。

May

In order to promote the development of marine science and technology, as well as the application of ocean observation technology, Graduate School at Shenzhen, Tsinghua University held the “International Workshop on Ocean Observing and Marine Ecological Management” on 22 May, 2018. Dr. Donald M. ANDERSON, Senior Scientist at the Woods Hole Oceanographic Institution, Prof. Jian LU, Vice President (Research & Technology) of City University of Hong Kong, and Dr. Leo Lai CHAN, Associate Director of the State Key Laboratory of Marine Pollution, were invited to attend this meeting. They had in depth discussion on the topics of the role of in-situ monitoring and observation techniques of marine biology and ocean chemistry in marine ecological prediction, management of eutrophication and red tide, application of ocean optical technology in microplastics detection, research progress in marine unmanned observation vessels and submarine observation networks, and the application of new materials to ocean studies. In addition, they exchanged their opinions on the development of marine innovation technology in the Guangdong-Hong Kong-Macao Greater Bay Area and its role in the development strategy of One Belt and One Road.

為推動海洋科技發展，促進海洋觀測技術的應用，2018 年 5 月 22 日，清華大學深圳研究生院召開了“海洋觀測技術研討會”。美國伍茲霍爾海洋研究所高級科學家 Dr. Donald M. Anderson，香港城市大學副校長（研究及科技）呂堅教授，海洋污染國家重點實驗室副主任陳荔博士以及多位海內外海洋專家學者均受邀出席了本次會議。

會議就海洋生物與海洋化學原位監測觀測技術在海洋生態預報、富營養化和赤潮管理中的作用、海洋光學技術在微塑料檢測中的應用、海洋無人觀測船與海底觀測網的研究進展以及新材料在海洋中的應用等議題進行了熱烈的研討。同時，會議還對海洋創新科技在粵港澳大灣區的發展及其在國家一帶一路發展戰略中的作用等方面進行了討論交流。

Dr. Leo Lai CHAN and Dr. Jiajun WU were invited to attend the Forum on Dongguan-Hong Kong- Macau scientific and technological cooperation and personnel exchanges in Dongguan. Dr. Chan provided a talk on scientific diving at the meeting. He hoped to establish an underwater science and technology alliance, actively promote the establishment of a scientific diving training and certification system in China, in order to improve our underwater research capacity, strengthen the awareness of underwater diving safety and promote global cooperation.

2018 年 5 月 28 日陳荔博士和吳佳俊博士受邀出席了東莞市莞港澳科技人才交流合作座談會。在會議上，陳博士針對科學潛水做了主題報告，並且希望成立水下科學技術聯盟，積極推動建立具有我國自主知識產權的科學潛水培訓及認證體系，提高我國水下科學研究能力，加強水下作業安全意識，促進全球合作。

June

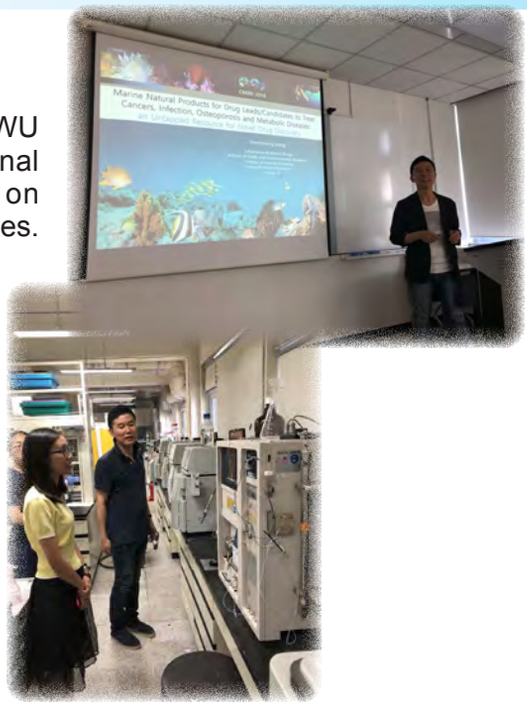
From 29 June to 1 July, 2018, Dr. Leo Lai CHAN, Associate Director of the State Key Laboratory of Marine Pollution, visited the Department of Marine and Coastal Resources and the Intergovernmental Oceanographic Commission (UNESCO/IOC) of the United Nations Educational, Scientific and Cultural Organization (UNESCO) Sub-Commission for the Western Pacific Commission (WESTPAC).

We agreed to promote the development of scientific diving program in Asian countries and will co-organize the “Scientific Diving Training Workshop for Benthic Dinoflagellates sampling and processing” at Phuket Marine Biological Center (PMBC) in September 2018. On 2 July, Dr. Chan has delivered a talk in PMBC. It was hoped that the interactions will strengthen academic exchanges between the two sides and lead to more cooperation in the future.

2018 年 6 月 29 日至 7 月 1 日，我室副主任陳荔博士前往泰國海洋與海岸資源部及聯合國政府間海洋委員會（UNESCO/IOC）西太平洋委員會（WESTPAC）進行公幹訪問，希望可以推動亞洲科學潛水的發展。

雙方在訪問期間達成了共識，加強學術交流和合作。7 月 2 日，陳荔博士在普吉海洋生物研究中心（PMBC）就科學潛水做了專題報告。

July



From 19 to 21 July 2018, Dr. Leo Lai CHAN and Dr. Jiajun WU were invited by Prof. Heonjoong KANG to visit Seoul National University. We exchanged our recent research progress on natural resources and had in-depth discussions on related issues. It laid a good foundation for the collaboration between the two institutions on the genetic resources and natural products discovery for marine pharmacology.

2018 年 7 月 19 日至 21 日，陳荔博士和吳佳俊博士受韓國首爾國立大學 Prof. Heonjoong Kang 邀請前往進行訪問，雙方在近期海洋天然資源方面的研究進展作出報告，並在相關議題上進行了深入的交流和探討，促進雙方日後在遺傳資源和天然產物發現海洋藥理學方面的合作打下了良好基礎。

On 26 July, 2018, Dr. Leo Lai CHAN, Associate Director of State Key Laboratory of Marine Pollution, City University of Hong Kong (SKLMP), was invited to visit Shenzhen Smart Ocean Technology Co., Ltd. Dr. Chan and Smart Ocean Technology expressed their common interests in the application and development of marine science technology and reached a cooperation intention to improve scientific diving and underwater scientific research safety.

2018 年 7 月 26 日，我室陳荔博士受邀參觀了深圳市智慧海洋科技有限公司。雙方表示在海洋科技應用及發展方面具有共同的興趣，并在提高科學潛水及水中科研安全方面達成合作意向。

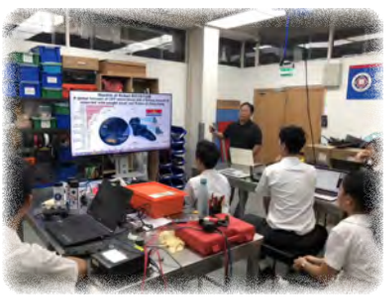
September

Dr. Leo Lai CHAN, Associate Director of State Key Laboratory of Marine Pollution, City University of Hong Kong (SKLMP), and the underwater robotic team visited Billion Technology Limited in Dongguan on 4 September, 2018. They discussed about the development and application of underwater robotics, which laid a good foundation for the joint development of underwater robotics and the promotion of underwater scientific research in the future.

2018 年 9 月 4 日，陳荔博士以及香港城市大學水下機器人小組前往東莞市彼聯機械科技有限公司進行了參觀和訪問。雙方水下機器人的研發展開了討論，為日後共同研發水下機器人，推動水下科學研究奠定了良好的基礎。

October

On 5 October, 2018, Dr. Leo Lai CHAN, Associate Director of State Key Laboratory of Marine Pollution, City University of Hong Kong (SKLMP), visited the Macau Pui Ching Middle School at the invitation of Prof. Kin Chung HO of Polar Research Center of Hong Kong. Dr. Chan shared with teachers and students the marine innovation technology (MIT) and the Spin Kid Project, which was promoted by him and his research team.



2018 年 10 月 5 日，陳荔博士應香港極地研究中心主任何建宗教授之邀，前往參觀了澳門培正中學。期間，陳博士與師生分享了其研究團隊推動的海洋教育之海洋創新技術以及哪吒計劃。

From October 26th to November 4th, 2018, Dr. Leo Lai CHAN, Associate Director of State Key Laboratory of Marine Pollution, City University of Hong Kong (SKLMP) and the scientific diving team went to Coral Eyes at Bangka Island for a 10-day scientific diving training course. Dr. Yeping YUAN from Zhejiang University, Dr. Qian LIU from the Second Institute of Oceanography, MNR, and other young marine scientific researchers from different countries participated in the course.

For the purpose of training a new generation of marine scientists, the course included academic lectures and underwater diving training. Unlike in the past, the course had carried out scientific dive training with different themes / specialties, such as tropical coral reef monitoring training. In order to obtain the qualification, participants in the course had to complete and pass the final assessment.

2018 年 10 月 26 日至 11 月 4 日，我室陳荔博士及其科學潛水小組前往珊瑚眼開展為期 10 天的科學潛水訓練課程。浙江大學袁野平博士，自然資源部第二海洋研究所劉倩博士，以及其他國家的年輕海洋科學研究員們共同參加了課程。

以訓練新一代海洋科學家為目的，課程內容包括學術知識學習以及水下潛水訓練。與以往不同的是，課程開展了不同主題 / 專長科學潛水訓練，例如熱帶珊瑚礁監測的訓練。通過學習后，學員進行了考試，合格才能獲發證書。

November

The 5th APEC Blue Economy Forum was successfully held in Ningbo on 13-14 November, 2018. Dr. Leo Lai CHAN, Associate Director of State Key Laboratory of Marine Pollution, City University of Hong Kong (SKLMP) was invited to attend. The second Li Dak Sum Yip Yio Chin Kenneth Li International Symposium on Marine Biopharmaceutical and Healthy Food Research was also successfully held in Ningbo on 14-17 November. Dr. Chan also participated in the symposium and made report. From blue economy to blue medicine, Dr. Chan expressed the hope that blue civic education could be promoted, and he would continue to make contribute to the health of the ocean and humans.

2018 年 11 月 13-14 日第五屆 APEC 藍色經濟論壇在寧波順利舉辦。我室陳荔博士應邀出席。與此同時，第二屆李達三葉耀珍伉儷李本俊國際海洋生物醫藥與健康食品論壇于 11 月 14-17 日在寧波也順利召開。陳荔博士參加并做相關報告。從藍色經濟到藍色藥物，陳荔博士表示希望可以推廣藍色公民教育，為海洋與人類的健康出一份力量。

From 22 to 25 November 2018, the “Ocean Underwater Diving Innovation & Development” International Forum was held in Zhanjiang of Guangdong. The forum is one of the sub-forums of the “China Marine Economy Expo 2018", whose purpose was to summarize and exchange the latest experiences and research results of diving and related industries and to promote further progress. Some experts and scholars in related fields from France, Canada and China were invited to attend this event, including "Dr. Leo Lai CHAN, Associate" Director of SKLMP.

Dr. Chan reported Scientific Diving for "Diving, Opportunities and Discoveries" at the main forum. The importance of scientific diving is to use diving technology to collect underwater data and conduct scientific investigation. Being an “investigator” for marine scientific research makes significant contributions to underwater scientific research and education.

2018 年 11 月 22-25 日，“海洋 潛水 創新發展”國際論壇在廣東省湛江市盛大舉行。此次論壇是“2018 年中國海洋經濟博覽會”分論壇之一，目的在於總結、交流潛水及相關行業最新經驗和研究成果，推動其實現進一步進展。我室副主任陳荔博士和來自法國、加拿大以及國內相關領域的專家學者、業界精英應邀出行了此次盛會。

陳荔博士在主論壇作主題報告—科學潛水：潛水、機遇與發現，表明科學潛水的重要意義是利用潛水技術進行水下數據收集和科學調查，做海洋科研的“偵查員”，為水下科學研究與教育的進步做出重要的貢獻。

Scholars and Students
學者與學生交流

2018 PhD Students

GE Meng 葛夢
University of Science and Technology of China 中國科學技術大學

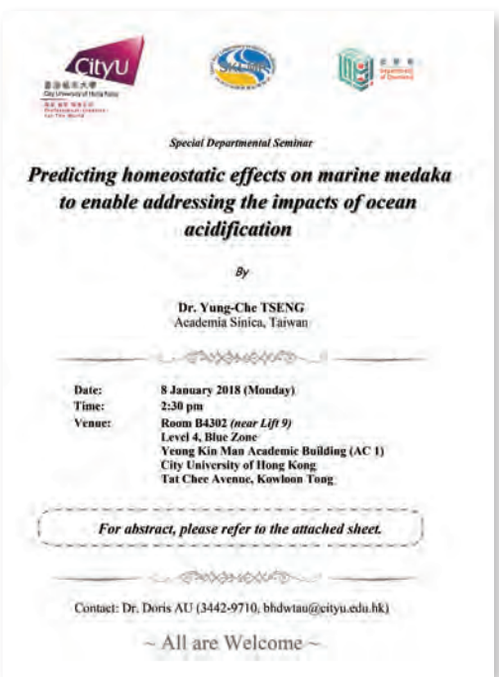
WANG Shanshan 王珊珊
University of Science and Technology of China 中國科學技術大學

JIN Jing 金晶
University of Science and Technology of China 中國科學技術大學

2018 Visiting Students

QIN Sitong 秦嗣通
Ocean University of China 中國海洋大學

Seminars and Workshops
講座與工作坊



Special Departmental Seminar

Predicting homeostatic effects on marine medaka to enable addressing the impacts of ocean acidification

By

Dr. Yung-Che TSENG
Academia Sinica, Taiwan

Date: 8 January 2018 (Monday)
Time: 2:30 pm
Venue: Room B4302 *(near Lift 9)*
Level 4, Blue Zone
Yeung Kin Man Academic Building (AC 1)
City University of Hong Kong
Tat Chee Avenue, Kowloon Tong

For abstract, please refer to the attached sheet.

Contact: Dr. Doris AU (3442-9710, bhdwtau@cityu.edu.hk)

~ All are Welcome ~

State Key Laboratory in Marine Pollution
Present a seminar

"Marine Invertebrates and their Associated-Microorganisms, Untapped Resources for Novel Drug Leads to Treat Metabolic Diseases and Osteoporosis"

Prof Heonjoong Kang

The Center for Marine Natural Products and Drug Discovery,
School of Earth and Environmental Sciences and
Interdisciplinary Program in Genetic Engineering,
Seoul National University

Date : 29 August 2018
Time: 3:00pm to 5:00pm
Venue: Chu Wong Yin Fong Classroom (P4704), 4/F, Yeung Kin Man Academic Building

Abstract

Obesity- and bone-related diseases such as diabetes, atherosclerosis, and osteoporosis are becoming more and more of a threat to public health. Mimicking physical workout, precise blocking of the physiological processes or in combination will eventually lead to innovative drugs for treatment of the diseases.

Marine invertebrates, such as sponges, have been known to be the richest source of bioactive natural products. Nearly 30% of marine natural products discovered so far have been isolated from sponges alone. Marine sponges contain diverse microorganisms such as archaea, bacteria, cyanobacteria, algae, phytoplankton and fungi in the inner tissues up to 50% of dry weight. Recently microbial symbionts of sponges were demonstrated to be the real producers of bioactive natural products isolated from marine sponges and can be regarded as an untapped resource for innovative drug discovery. We established diverse libraries of marine invertebrates and their symbiotic microorganisms for facilitating discovery of novel bioactive compounds.

The CMDD has a powerful drug lead discovery platform including a robotic system equipped with a variety of biochemical instruments along with LC-tandem MS, NMR, synthetic and animal facilities. We utilized both molecular and empirical approaches to discover novel drug leads from marine natural products to treat metabolic and bone diseases. The molecular approaches were target-based high throughput screenings with nuclear receptors, kinases/phosphatases and ion-channels, which regulate many aspects of metabolism, inflammation, and muscle fiber transformation. In the other hand, we adopted phenotypic screening methods to identify bioactive compounds with novel underlying mechanisms to treat the diseases.

Our approaches led to identification of novel compounds as ligands of the nuclear receptors, blockers of ion channels, modulators of bone remodeling pathways. Pharmacological treatment of mice with bioactive compounds totally reversed drug-induced and high fat diet-induced hepatic steatosis in vivo. They ameliorated diabetes and protected mice from obesity in diet-induced and genetically disposed models. The compounds also gave potent anti-atherogenic effect in mice models. In addition, we developed potent ligands for nuclear receptors in combination with molecular modeling and medicinal chemistry. The ligands improved physical endurance performance 2-3 folds, which eventually led to anti-obesitic and anti-diabetic effect with challenge of high fat-diet. The compounds gave the physiological effect through inducting muscle fiber transformation, insulin sensitivity, and increasing β-oxidation in vivo. Finally one of the bone remodeling modulators with dual activity in both osteoclast and osteoblast differentiation in vitro showed good efficacy in an animal disease model of bone formation. These results clearly demonstrate that bioactive compounds from marine sources and their synthetic derivatives have potential for drug candidates to treat human diseases such as obesity, diabetes, fatty liver, atherosclerosis, and osteoporosis.

Enquiries:
Dr Lee Chan (3442-4125,)
Ms Irene Wong (3442-4707,)

All are welcome!

Delegation 參訪機構

Date	Name of Institution
4 - Jan - 18	Embassy of the United States of America, U.S. National Science Foundation (China Office) 美國駐華大使館美國國家科學基金委員會中國辦公室
31 - Jan - 18	Jiangnan University 江南大學
17 - Mar - 18	Policy Research Office of Shenzhen Municipal Committee of the Communist Party of China 中共深圳市委政策研究室
1 - Jun - 18	Hong Kong Science and Technology Parks Corporation (HKSTP) 香港科技園
28 - Nov - 18	Ocean University of China 青島海洋大學

Attendance at International Conference & Titles of Presentations

出席的國際會議與報告標題

Prof. Shuk Han CHENG

Autophagy in zebrafish heart regeneration

The 4th UK Autophagy Network Meeting

18-19 Apr 2018, UK

Participant

Inflammatory responses in zebrafish heart regeneration

The Inaugural joint Conference on Clinical and Translational Cardiology

26-27 May 2018

Invited Speaker

Prof. Jianping GAN

Vorticity (circulation) dynamics on hypoxia formation in the Pearl River Estuary

Sediment Dynamics of Estuaries and Muddy Coasts

2-3 Nov 2018, National Ocean Science and Technology Lab

Invited Speaker

Coupled physical-biogeochemical study of eutrophication/hypoxia in the Pearl River Estuary off Hong Kong

Ocean Deoxygenation Conference

3-7 Sep 2018, GEOMAR, Kiel

Keynote Speaker

Role of hydrodynamics and sediment on the eutrophication and hypoxia off Pearl River Estuary

9th International Conference on Asian Marine Geology

15 Jul 2018, Shanghai, China

Speaker

Dr. Keith Wing Kei HO

Surface vacancy induced enhancement for visible-light-driven photocatalytic abatement of nitric oxides

Joint International Network in Geoscience Meeting (AJM2018)

Oct 2018, Xi'an, Chin

Invited Speaker and Session Chair

Novel p–n junction Ag3PO4/(BiO)2CO3 photocatalyst with highly efficient visible light photocatalytic activity for NO removal in air

International Conference on Nanoscience, Nanotechnology and Advanced Materials

Aug 2018, Nagoya, Japan

Speaker

Surface vacancy induced enhancement for visible-light-driven photocatalytic abatement of nitric oxides

The Chinese Symposium on Photocatalytic Materials 2018

Jul 2018, Wuhan, China

Invited Speaker

Surface vacancy induced enhancement for visible-light-driven photocatalytic abatement of nitric oxides

2018 International Symposium on Resource Chemistry

May 2018, Shanghai, China

Invited Speaker

Prof. Michael Hon Wah LAM

Perturbation of neurotransmitter profile in the central nervous system of zebrafish (Danio rerio) in relation to neurobehavioral changes induced by a neuroactive environmental contaminant - fluoxetine

2nd Annual Congress on Environmental Pollution & Health Hazard
Oct 2018, Osaka, Japan
Oral Presentation

Stability issue of selected 2-, 3- and 4-ring parent and mono-hydroxylated polycyclic aromatic hydrocarbons in municipal sewage, a factor affecting their use as population exposure markers for wastewater-based epidemiology

2nd Annual Congress on Environmental Pollution & Health Hazard
Oct 2018, Osaka, Japan
Oral Presentation

Prof. Paul Kwan Sing LAM

Persistence or toxicity: which is the most important?

15th International Symposium on Persistent Toxic Substance
7- 9 Nov 2018, Basel, Switzerland
Plenary Talk Chair

PFOS monitoring in water under the Stockholm Convention's global monitoring plan

15th International Symposium on Persistent Toxic Substance
7- 9 Nov 2018, Basel, Switzerland
Plenary Talk Chair

Environmental assessment of emerging chemicals of concern with special reference to chiral contaminants

4th International Conference on Environmental Pollution and Health
18 - 20 May 2018, Tianjin, China
Keynote Speaker

Prof. Kenneth Mei Yee LEUNG

Joining the dots between omics and environmental management

4th Conference on Environmental Pollution and Health (Session: Omics Advances in Ecotoxicology)
18 - 20 May 2018, Nankai University, Tianjin, China
Invited Keynote Speaker

Trawling ban drives the recovery of benthic ecosystem and associated fisheries resources in the marine environment of Hong Kong

4th Korea - China Symposium on Environmental Health and
Ecological Safety cum Yellow Sea Ecosystem (YES) Symposium 2018
18 - 21 Jul 2018, Seoul National University, Seoul, Korea
Invited Keynote Speaker

Joining the dots between omics and environmental management

The BK21 Environmental Health Workshop: Advancing Toxicology and Omics for Environmental Health Management
14 Sep 2018, Seoul National University, Seoul, Korea
Invited Lecturer

Dr. Tak Cheung WAI

Biodiversity, distribution and toxicity of benthic dinoflagellates in a subtropical reef ecosystem: the first comprehensive study in Hong Kong

The 18th International Conference on Harmful Algae (ICHA)

21 - 26 Oct 2018, Nantes, France

Oral and Poster

The effect of temperature on physiology and toxicity of the benthic dinoflagellates Coolia spp. isolated from Hong Kong waters.

The 18th International Conference on Harmful Algae (ICHA)

21 - 26 Oct 2018, Nantes, France

Poster

Communal Platforms and Databases 共享平台與數據庫

On 25 June 2018, Hong Kong's first scientific research buoy, SKLMP 1, was successfully deployed in the southwestern area of the Soko Island. It was also the first scientific buoy created through cooperation of marine science and technology related institutes from Hong Kong and the Mainland China.

The data collected by scientific buoy will help researchers to identify the factors that contribute to eutrophication and hypoxia and provide analytical tools and strategies to alleviate or even reverse eutrophication and hypoxia to ensure the sustainability of marine environment in Hong Kong. This deployment is of great scientific significance for the marine environmental protection.

2018 年 6 月 25 日，香港首個科研浮標，也是香港與內地海洋科技界合作的首個科研浮標—海洋國重 1 在大鴉州西南面順利投放。

科研浮標收集到的數據，將有助於研究人員辨別出造成富營養化和缺氧現象增加的因素， 並為緩解甚至逆轉富營養化和缺氧現象提供分析工具和科學策略，確保香港海洋環境的整體可持續性，所以此次任務對海洋環境保護具有重大的科學意義。

The first research vessel of SKLMP, the Diving Dragon, was delivered on 3 August, 2018. The research vessel supports ongoing research including the first scientific research buoy, SKLMP 1, and the Hong Kong reef fish survey.

海洋污染國家重點實驗室的第一艘科研用船潛龍號于 2018 年 8 月 3 日首次下海開始執行科研任務。潛龍號目前承擔的科研任務主要包括對科研浮標－海洋國重 1 號進行常規的檢查和維護及參與全港珊瑚魚調查項目。

Communal Platform

Member	Communal Platform	Access Level	Description of the Platform
Dr. Richard Yuen Chong KONG	Genomic and transcriptomic databases for marine medaka fish	open to public	Genome-wide molecular data

Database

Member	Database	Database URL	Access Level	Application and Citation
Prof. Jianping GAN	3-D physical and biogeochemical data of the CMOMS (China Sea Multi-scale Ocean Modeling System)	https://odmp.ust.hk/cmoms/	Researcher	Application: Submit data application on-line Acknowledgement: The data of CMOMS (China Sea Multi-scale Ocean Modeling System) is obtained from Department of Ocean Science of the Hong Kong University of Science and Technology at https://odmp.ust.hk/cmoms/. Citation: Gan J., Z. Liu and L. Liang, 2016. Numerical modeling of intrinsically and extrinsically forced seasonal circulation in the China Seas: A kinematic study, J. Geophys. Res. (Oceans), doi: 10.1002/2016JC011800.
Dr. Richard Yuen Chong KONG	Brain, liver and gonad transcriptomes of male and female medaka fish	https://www.ncbi.nlm.nih.gov/sra/?term=SRP041838 https://www.ncbi.nlm.nih.gov/sra/?term=SRP065579	Open	
	Medaka Testis (response to hypoxia)	https://www.ncbi.nlm.nih.gov/sra/?term=SRP074531	Open	
	Medaka Ovary (response to hypoxia)	https://www.ncbi.nlm.nih.gov sra/?term=SRP063643	Open	

Social Education and Community Service
公眾教育與社會服務

In addition to the development of scientific research equipment and technologies to address major issues that threaten the marine environment, the State Key Laboratory of Marine Pollution (SKLMP) also prioritizes on promoting public education. By supporting and assisting government institutions and environmental groups in public events, the public has more opportunities to see the beauty of the underwater world and marine ecology. This enhances public awareness of the protection of marine biodiversity and the sustainable use of precious marine resources.

海洋污染國家重點實驗室除了發展科研設備和技術以解決威脅海洋環境的主要問題外，也重視推動公眾教育。透過支持和協助政府機構及環保團體舉辦各項公眾活動，讓大眾有更多機會見識美麗的海底世界和海洋生態，以加強市民對保護海洋生物多樣性和可持續利用珍貴海洋資源的意識。

On January 13, 2018, we assisted World Wildlife Fund (WWF) to host a film screening and discussion on chasing coral at City University of Hong Kong (CityU) to let the public knows that coral reefs around the world are disappearing at an unprecedented rate.

於 2018 年 1 月 13 日我們協助世界自然基金於香港城市大學舉辦了名為 追逐珊瑚電影放映會及座談會讓社會大眾知道世界各地的珊瑚礁正以前所未有的速度消失。

On May 26, 2018, we assisted the Agriculture, Fisheries and Conservation Department (AFCD) to hold the Hong Kong Underwater Photo and Video Competition Kick-off Ceremony cum Flag Presentation and Underwater Photography Workshop at CityU to promote the beauty of underwater marine life and habitats in Hong Kong; and raising public awareness of importance in conservation of our marine environmental in Hong Kong.

於2018手5月26日，實驗室協助漁農自然護理署於香港城市大學舉行了香港潛攝大賽2018　動禮暨授旗儀式及水底攝影工作坊，以宣傳香港美麗的海洋生態及海洋生物，加強公眾對海洋環境保育的意識。

On June 16 and 23, 2018, we assisted the AFCD to hold a ghost net clean up and safety workshop at CityU and Dr. Leo Lai CHAN, Associate Director of the SKLMP also provided a talk. Abandoned fish nets result in indiscriminate strangling of wildlife underwater. As individuals are exposed to the risk of entanglement when during removal of the abandoned nets, it is necessary to receive relevant training and skills to handle ghost nets safely and properly.

於2018手6月16及23日，實驗室協助漁農自然護理署於香港城市大學舉行了水底廢棄漁網清理工作坊，實驗室副主任陳荔博士並作出了報告。棄置魚網令海洋生物誤墮死亡陷阱無辜被牽連，但清理水下棄置魚網是一項高危任務，必須授受相關訓練，懂得如何處理，才能保障自身安全。

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