

Names: Maureen Howard and Dr. Heather Bracken-Grissom

University Affiliation: Institute of Environment and Department of Biology, Florida International University, North Miami, USA

Theme 5: Role of marine genetic resources in the diversity, functioning and services of marine ecosystems; open session

Poster Title: [Leveraging genetics to discover promising sensory systems in marine animals: extraocular photoreception and its implications for bioinspiration](#)

Presentation Date(s):

- Tuesday, 03 Jun, 18:00–20:00 (CEST), Display time Tuesday, 03 Jun, 17:00–Thursday, 05 Jun, 20:00| Poster area "La Baleine", P417
- Wednesday, 04 Jun, 18:00–20:00 (CEST), Display time Tuesday, 03 Jun, 17:00–Thursday, 05 Jun, 20:00| Poster area "La Baleine", P417
- Thursday, 05 Jun, 18:00–20:00 (CEST), Display time Tuesday, 03 Jun, 17:00–Thursday, 05 Jun, 20:00| Poster area "La Baleine", P417

Photo Credits – *photo rights belong to the original photographers*

- ***Aplysia californica***: Genny Anderson
- ***Asterias amurensis***: Nathan Bott
- ***Euprymna scolopes***: Charlie Lyon
- ***Sepia officinalis***: Giuseppe Mazza
- ***Janicella spinicauda***: Danté Fenoli
- ***Lachnolaimus maximus***: Fabrice Dudenhofer/Coral Reef Bank
- ***Octopus bimaculoides***: Tom Kleindinst/Woods Hole Oceanographic Institution
- ***Nautilus pompilius***: Monterey Bay Aquarium Foundation

References (explicitly cited on poster via superscript)

1. Cronin, T. W., Johnsen, S., Marshall, J., & Warrant, E. J. (2014). *Visual ecology*. Princeton University Press.
2. Porter, M. L., Blasic, J. R., Bok, M. J., Cameron, E. G., Pringle, T., Cronin, T. W., & Robinson, P. R. (2012). Shedding new light on opsin evolution. *Proceedings of the Royal Society B: Biological Sciences*, 279(1726), 3-14.
3. Lickey, M. E., & Zack, S. (1973). Extraocular photoreceptors can entrain the circadian rhythm in the abdominal ganglion of *Aplysia*. *Journal of comparative physiology*, 84(4), 361-366.
4. Yoshida, M., & Ohtsuki, H. (1968). The phototactic behavior of the starfish, *Asterias amurensis* Lutken. *The Biological Bulletin*, 134(3), 516-532.
5. Tong, D., Rozas, N. S., Oakley, T. H., Mitchell, J., Colley, N. J., & McFall-Ngai, M. J. (2009). Evidence for light perception in a bioluminescent organ. *Proceedings of the National Academy of Sciences*, 106(24), 9836-9841.
6. Mäthger, L. M., Roberts, S. B., & Hanlon, R. T. (2010). Evidence for distributed light sensing in the skin of cuttlefish, *Sepia officinalis*. *Biology letters*, 6(5), 600-603.
7. Frisch, K. V. (1911). Beiträge zur Physiologie der Pigmentzellen in der Fischhaut. *Pflüger's Archiv für die gesamte Physiologie des Menschen und der Tiere*, 138(7), 319-387.
8. DeLeo, D. M., & Bracken-Grissom, H. D. (2020). Illuminating the impact of diel vertical migration on visual gene expression in deep-sea shrimp. *Molecular Ecology*, 29(18), 3494-3510.
9. Schweikert, L. E., Bagge, L. E., Naughton, L. F., Bolin, J. R., Wheeler, B. R., Grace, M. S., ... & Johnsen, S. (2023). Dynamic light filtering over dermal opsin as a sensory feedback system in fish color change. *Nature Communications*, 14(1), 4642.
10. Chang, W., & Hale, M. E. (2025). Neural responses to light stimulation in the octopus arm. *Journal of Experimental Biology*, 228(7), jeb250111.
11. Yoshida, M. A., Ogura, A., Ikeo, K., Shigeno, S., Moritaki, T., Winters, G. C., ... & Moroz, L. L. (2015). Molecular evidence for convergence and parallelism in evolution of complex brains of cephalopod molluscs: insights from visual systems. *Integrative and Comparative Biology*, 55(6), 1070-1083.

Note: Additional research is still ongoing to incorporate all terrestrial and aquatic animals, results in corresponding publication/ works may differ from the content shown in this poster.

Papers Found and Utilized from Literature Review

Available upon request