

## **Copycat sea slugs vary in toxicity and taste**

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Nudibranch Goniobranchus splendidus. Credit: Louise Forster

University of Queensland-led research found sea slugs that mimic the colours of other slugs to scare off predators do not have the same chemical defences as the species they are copying.



The study led by UQ Visual Ecology Lab member Dr. Anne Winters, is the first to detail <u>chemical</u> profiles and assess toxicity and distastefulness of nudibranchs, or sea slugs.

Queensland Brain Institute and School of Biological Sciences senior research fellow Dr. Karen Cheney said in many species, including nudibranchs, butterflies, some snakes and poison dart frogs, brilliant <u>colour patterns</u> warned predators their potential prey contained chemical defences.

"Sharing the same colour patterns between species could help predators learn to avoid the warning signal when species harbour equal levels of defence, known as Müllerian mimicry," she said.

"Whether Müllerian mimics use the same types of chemical defences is often unknown and whether their defences are equally toxic or distasteful is often untested."

The researchers focused on a group of red-spotted sea slugs along the Australian east coast, comparing them to other nudibranch species without the pattern.





Credit: University of Queensland

Dr. Cheney said to fish predators, the red-spotted groups all look similar.

"We found the red-spotted pattern has evolved multiple times, and that species displaying the same <u>pattern</u> were not closely related to each other," she said.

"With chemical analysis we showed that <u>species</u> possess different types of chemicals for defense."

Dr. Cheney said the researchers believe that these red-spotted nudibranchs are a special mimicry group with unequal chemical defences.

The study, involving researchers from UQ's School of Biological



Sciences, Queensland Brain Institute and School of Chemistry and Molecular Biosciences, the Western Australian Museum, the University of Western Australia, the University of Bristol and Deakin University, is published in the *Proceedings of the Royal Society B: Biological Sciences*.

**More information:** Anne E. Winters et al. Toxicity and taste: unequal chemical defences in a mimicry ring, *Proceedings of the Royal Society B: Biological Sciences* (2018). DOI: 10.1098/rspb.2018.0457

Provided by University of Queensland

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