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# Bioluminescence in the Humboldt squid

Gabriela Galeazzo<sup>1</sup>, Karin Lohrmann<sup>2</sup>, Jeremy Mirza<sup>\*1,3</sup>, and Anderson Oliveira<sup>†1</sup>

<sup>1</sup>University of Sao Paulo (USP) – 05508-120 Sao Paulo, Brazil

<sup>2</sup>Universidad Catolica del Norte (UCN) – 1781421 Coquimbo, Chile

<sup>3</sup>Federal University of Sao Paulo (UNIFESP) – 09972-270 Diadema, Brazil

## Abstract

The Humboldt Squid, *Dosidiscus gigas* is a marine cephalopod that can be found in the Pacific Ocean, ranging from the coast of Chile to the Southern USA, and is one of the largest organisms known to produce bioluminescence. Whilst it is not the only species of the family Ommastrephidae to emit light, *D. gigas* has not yet been practically studied in regards to its mechanisms of light emission. A series of preliminary experiments have been carried out in our laboratory, and several interesting similarities have been noted between the in vitro light emission process obtained from extracts of *D. gigas* and the results reported for another squid of the family, *Sthenoteuthis oualaniensis*. Using extracts prepared from *D. gigas* photophores we were able to observe strong light emission using hydrogen peroxide and catalase. Moreover, the luminescence seems to be dependent on an insoluble photoprotein and not a luciferase enzyme. The total light emission observed by our equipment was proportional to the amount of protein present in the preparations, which is one of the defining characteristic of photoproteins. Therefore, by using a methodological approach similar to those used to successfully study symplectin in squids, we intend to purify and identify the photoprotein involved in light emission for *D. gigas*.

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\*Speaker

†Corresponding author: anderson.garbuglio@usp.br