

# Mucus of *Sacoglossa* sea slugs: Contribution of kleptoplast photosynthesis, biochemical characterization and adhesive properties

Diana Lopes<sup>1,2</sup>; Sónia Cruz<sup>1</sup>, Pedro Domingues<sup>2</sup>, Paulo Cartaxana<sup>1</sup>

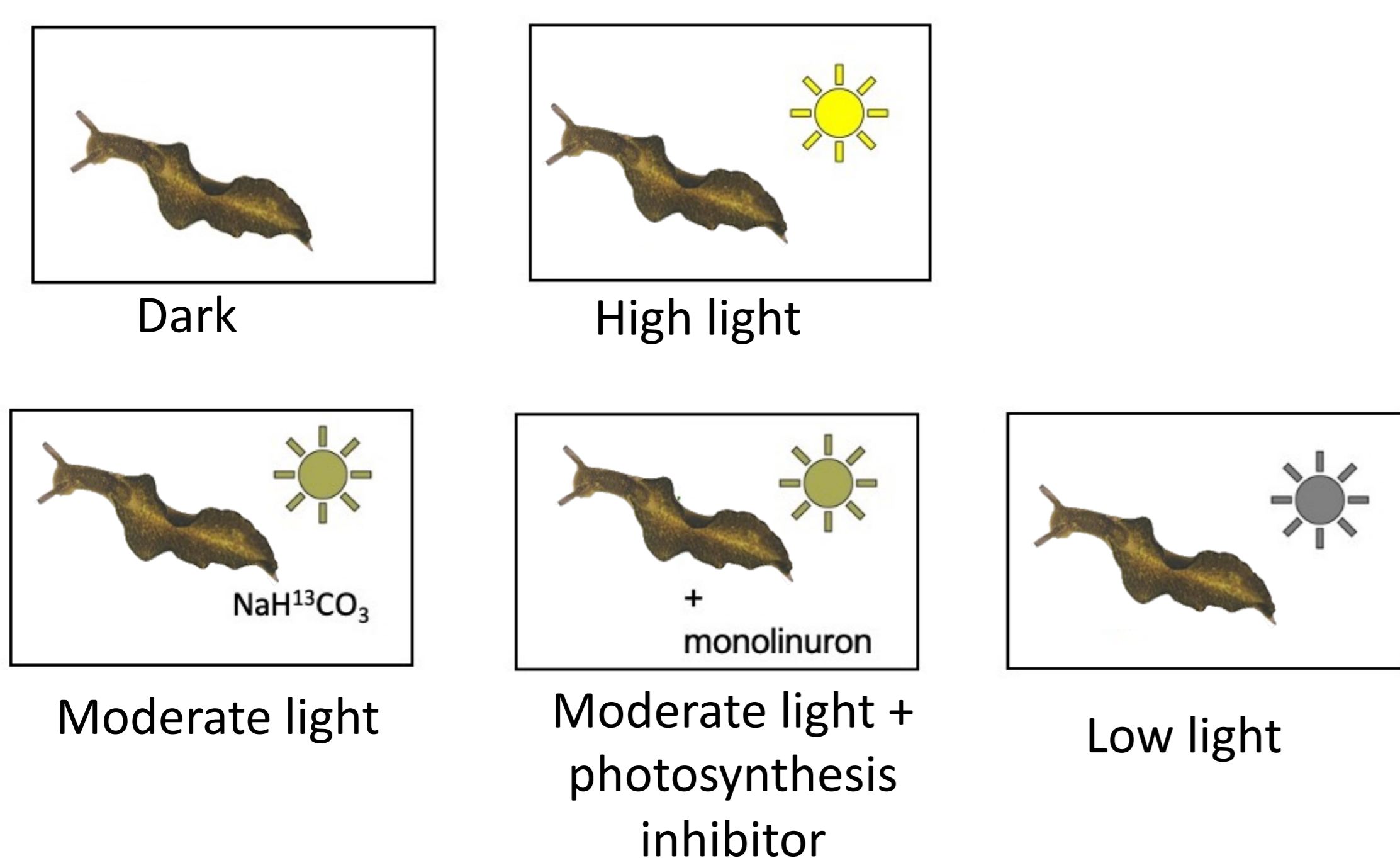
<sup>1</sup> CESAM & ECOMARE, Department of Biology, University of Aveiro, Portugal; <sup>2</sup> QOPNA & LAQV-REQUIMTE, Department of Chemistry, University of Aveiro, Portugal

## Background:

- *Sacoglossa* is a group of sap-sucking sea slugs that feed on macroalgae, some species retaining functional chloroplasts (kleptoplasts) [1]
- These sea slugs incorporate kleptoplast photosynthesis-derived metabolites in mucus secretions [2]
- Mucus is a coupling agent between the foot and the substratum, contributing to locomotion, protection and reproduction [3]
- Mucus is mainly composed of water and high molecular weight protein-polysaccharide complexes [3]
- Secreted mucus adheres firmly to wet surfaces with potential medical applications [4,5]

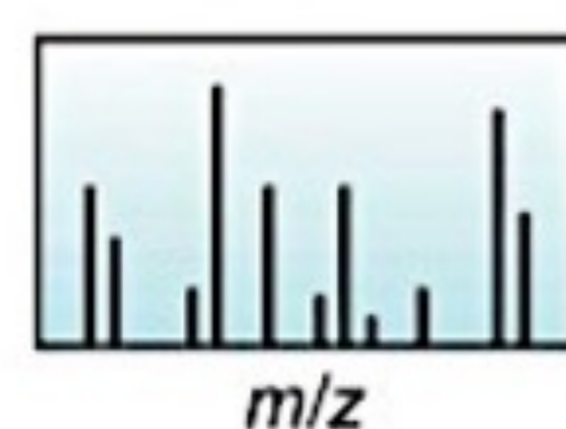
## Objectives:

### Contribution of photosynthesis for sea slug mucus production



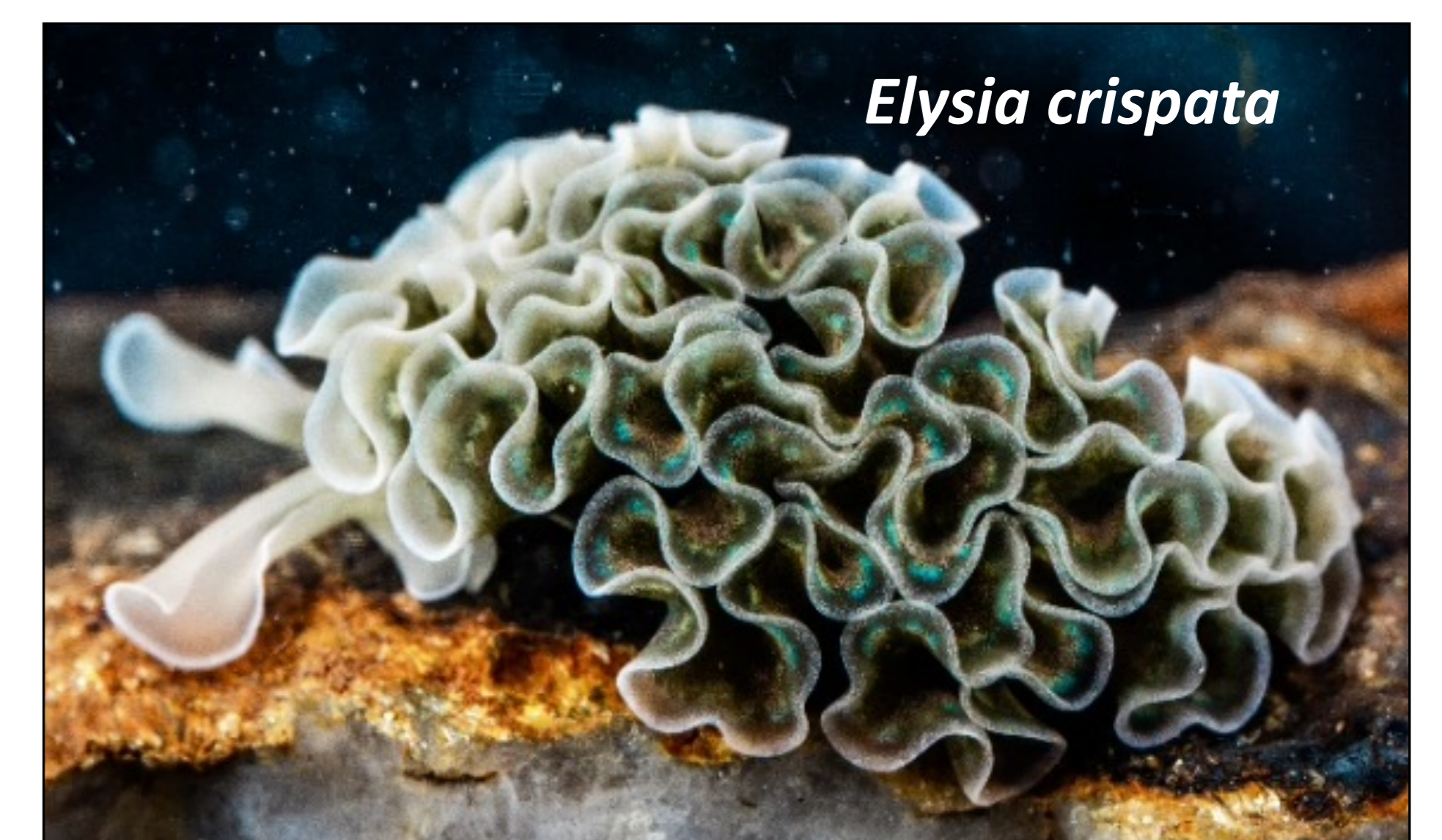
### Biochemical composition of sea slug mucus

#### Polysaccharides

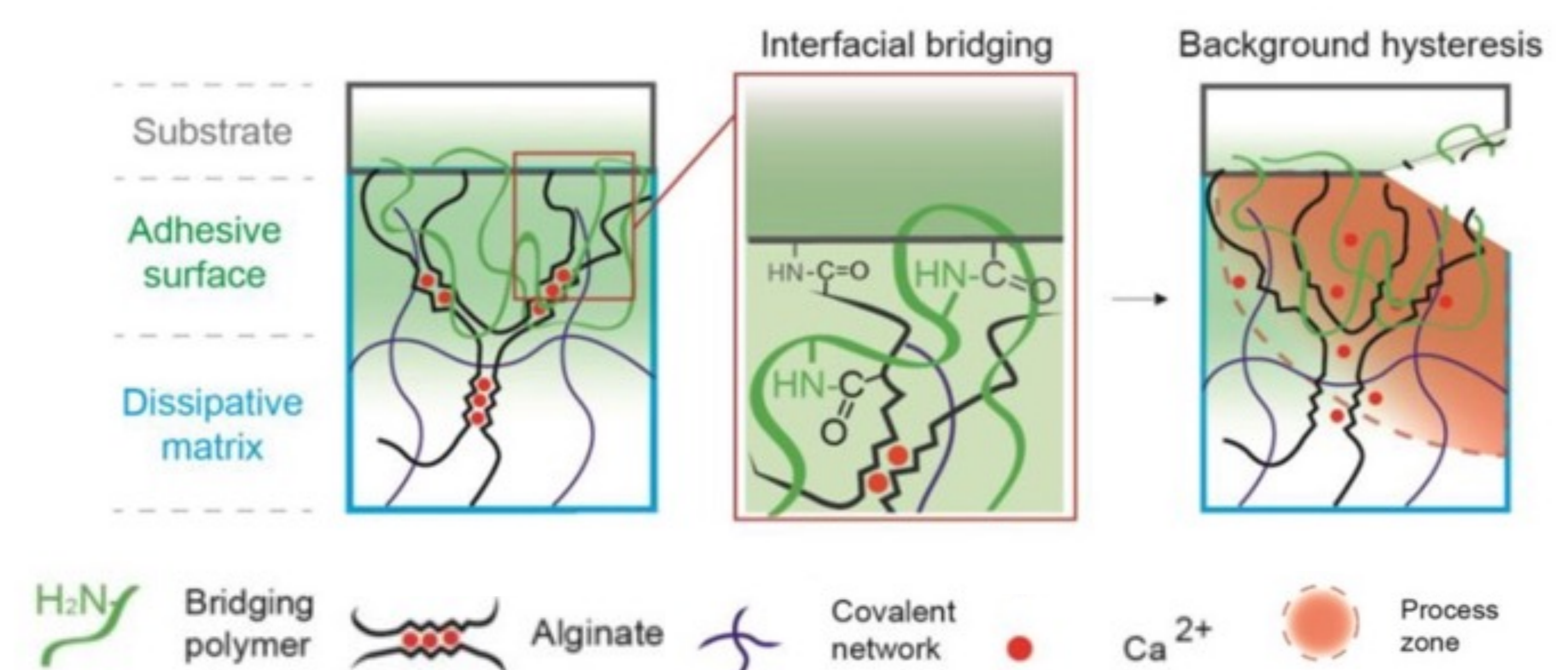


#### Proteins

### Target species



### Adhesive properties of sea slug mucus



Adapted from Li, et al (2017) [5]

## Expected Outputs:

- Determine the role of kleptoplast photosynthesis on sea slug mucus production
- Characterize the biochemical composition and the adhesive properties of sea slug mucus
- Assess potential biomedical applications of sea slug mucus, including surgical adhesives, wound dressings, and tissue repair

## Acknowledgments:

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## References:

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- [4] Wilks, A. M., Rabice, S. R., Garbacz, H. S., Harro, C. C., & Smith, A. M. Double-network gels and the toughness of terrestrial slug glue. *Journal of Experimental Biology* 218(19), 3128-3137 (2015)
- [5] Li, J., Celiz, A. D., Yang, J., Yang, Q., Wamala, I., Whyte, W., Seo, B. R., Vasilyev, N. V., Vlassak J. J., Suo Z., & Mooney, D. J. Tough adhesives for diverse wet surfaces. *Science* 357, 378-381 (2017)