STARFISH AS A NEW SOURCE OF KINASE MODULATORS FOR PLANT CARE AND ANIMAL HEALTH

Rozenn Trepos*† , Laura Morel[1], and Edouard Coudert[1]

[1]Centre Mondial de l'Innovation Roullier – Groupe Roullier – France

Abstract

The STARSKI project features a multidisciplinary consortium combining public institutions (MNHN-Station Marine de Concarneau, ISOMer – UR2160, LBI2M - KISSf, UAR Biosit-ImPACcell) and private partners (Centre Mondial de l'Innovation Roullier) addressing the ecological and economic challenges posed by two abundant starfish species in France, *Asterias rubens* and *Marthasterias glacialis*. This large, unexploited biomass is currently treated as waste despite its richness in bioactive metabolites (Xia et al. 2020) that offer potential applications through the discovery of potent and specific protein kinase modulators. Protein kinases are involved in the regulation of key cellular processes such as metabolism, cell migration, and cycle progression. They are highly conserved in eukaryotes (ranging from plants to animal cells, e.g., GSK-3, JAKs) and play a crucial role in intracellular communication (Theivendren et al. 2021). Understanding, controlling, and modulating kinase action in these processes offers significant opportunities to address challenges in animal production by improving health and feed utilization, and meeting today's urgent needs to reduce antibiotic use and feed-related losses (such as greenhouse gas emissions, nutrient inefficiency, and feed misuse). Similarly, kinases play a critical role in regulating plant fitness by modulating cellular responses, thereby increasing plants' ability to grow and tolerate both abiotic and biotic stresses (Yun et al. 2023). Access to new kinase modulators could open possibilities for developing targeted solutions for more sustainable and resilient agriculture. Preliminary results include the development of an eco-extraction process and significant opportunities in plant nutrition and animal production.
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Keywords: Bioactive metabolites, Protein kinases, Animal nutrition, Animal Health, Biotic and Abiotic stress in Plant, Ecoextraction process, Environmental sustainability

*Speaker

†Corresponding author: rozenn.trepos@roullier.com