

Tumors (re)shape biotic interactions: evidence from the freshwater cnidarian Hydra

Justine BOUTRY¹, Juliette MISTRAL¹, Alexander KLIMOVICH², Jácint Tökölyi³, Laura FONTENILLE⁴, Beata Ujvari⁵, Mathieu Giraudeau⁶, and Frédéric Thomas⁷

¹CREEC

²Zoological Institute, Christian-Albrechts University Kiel, Am Botanischen Garten 7, 24118 Kiel, Germany

³University of Debrecen

⁴AZELEAD, 377 Rue du Professeur Blayac, 34080 Montpellier, France

⁵Deakin University

⁶Arizona State University

⁷CNRS

March 07, 2024

Abstract

While it is often assumed that oncogenic process in metazoans can influence biotic interactions, empirical evidence for that is lacking. Here, we use the cnidarian *Hydra oligactis* to experimentally explore the consequences of tumor associated phenotypic alterations for the hydra's predation efficiency, the relationship with commensal ciliates and the vulnerability to predators. Unexpectedly, the efficiency of hydra predation on prey was higher in tumorous polyps compared to non-tumorous ones. Commensal ciliates colonized preferentially tumorous hydras than non-tumorous ones, and had a higher replication rate on the former. Finally, in a choice experiment, tumorous hydras were preferentially eaten by a fish predator. This study, for the first time, provides evidence that neoplastic growth has the potential, through effect(s) on host phenotype, to alter biotic interactions within ecosystems and should thus be necessarily taken into account by ecologists.

Hosted file

Boutry_et_al_2021.docx available at <https://authorea.com/users/726946/articles/709105-tumors-re-shape-biotic-interactions-evidence-from-the-freshwater-cnidarian-hydra>



