

Beyond plants: how reproductive strategies could shape invasiveness and disease spread in freshwater snails

Micaela MÜLLER BAIGORRIA^{1,2} (micaela.muller431@gmail.com), Elodie CHAPUIS², Nicolás BONEL¹, Pilar ALDA¹

¹ GEE, CERZOS (Universidad Nacional del Sur/CONICET), Bahía Blanca, Argentina ; ² MIVEGEC (IRD/CNRS/Université de Montpellier), Montpellier, France

Reproductive strategies profoundly influence evolutionary outcomes and ecological processes. Here, we extend key concepts from plant reproductive biology to the animal kingdom by focusing on freshwater snails—specifically lymnaeids—as a model system. We investigate how variation in mating systems, including self-fertilization and outcrossing, shapes both colonization processes and disease transmission.

Using an integrative framework that combines observational data, population genetics, and phylogenetic analysis, we examine how these reproductive modes influence both the establishment success and long-term persistence of snail populations. Self-fertilization, in particular, offers reproductive assurance in newly colonized or disturbed habitats where mates are scarce or environmental conditions are unstable. This strategy enables rapid population growth from a single founder, thereby facilitating expansion. However, a species that reproduces by self-fertilization for many generations shows a genomic degradation and a reduced genetic diversity that translates into a low adaptive potential, which is why self-fertilization is considered to be an evolutionary dead. In other words, all these detrimental genetic and genomic effects are predicted to drive selfing lineages to extinction on the long term.

However, a group of lymnaeid snails (the genus *Galba*), comprising selfing snails and dating back over 20 million years, stands as a notable exception. Its persistence challenges traditional assumptions and suggests that, under specific ecological conditions—such as amphibious lifestyles and reduced interspecific competition—long-term selfing may remain evolutionarily viable.

We also examine how reproductive strategies intersect with epidemiological dynamics. Selfing populations, characterized by low genetic variation, may facilitate parasite transmission by sustaining genetically uniform host populations. These insights underscore the broader ecological and public health implications of reproductive strategies, particularly in the context of snail-borne zoonoses. By bridging concepts across kingdoms, our work emphasizes the importance of reproductive diversity and invites a rethinking of long-held assumptions about the evolutionary fate of selfing lineages.

V International Conference on APOMIXIS 2025

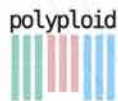
Montpellier, France | 16-19 SEPT.



BOOK OF ABSTRACTS

Program - Abstracts
List of posters
List of participants

Conference venue:
MERCURE
Montpellier Centre Comédie



These projects have received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska Curie grant agreement No 101019716.



montpellier
Méditerranée
Métropole

V International Conference on
APOMIXIS
Montpellier, France | 16-19 SEPT. **2025**



COMMITTEES

ORGANIZING COMMITTEE

Institut de Recherche pour le Développement
(IRD), France

Daphné AUTRAN

Olivier LEBLANC

Maïa LEJBOWICZ

SCIENTIFIC COMMITTEE

Daphné AUTRAN - IRD, France

Lucia COLOMBO - University of Milan, Italy

Thomas DRESSELHAUS - University of Regensburg, Germany

Laurine GILLES - CIRAD, France

Stewart GILLMOR - CINVESTAV, Mexico

Elvira HÖRANDL - Georg-August-Universität Göttingen, Germany

Olivier LEBLANC - IRD, France

Juan Pablo ORTIZ - IICAR, University of Rosario-CONICET, Argentina

Nada ŠURBANOVSKI - NIAB, UK

ADMINISTRATIVE SECRETARIAT

Registration, accommodation - Sponsorship

Alpha Visa Congrès / APOMIXIS 2025

624 rue des Grèzes

34070 Montpellier - France

Tel: +33 4 67 03 03 00

E-mail: apomixis@alphavisa.com

Web: www.alphavisa.com/apomixis/2025

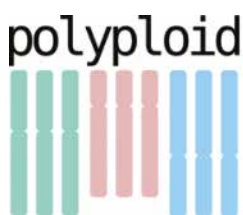
We greatly acknowledge our sponsors below:



Funded by
the European Union



- **MAD**
Mechanisms of Apomictic Developments
<https://apomixis.eu/>



These projects have received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreements No 872417 and No 101007438.

- **POLYPLOID**
The polyploidy paradigm and its role in plant breeding
<https://polyploid.eu/>



- **IRD**
French National Research Institute for Sustainable Development
<https://en.ird.fr/>



- **DIADE**
Diversity - Adaptation - Development of plants
<http://diade.ird.fr/>



**PÔLE AGRICULTURE
ENVIRONNEMENT
BIODIVERSITÉ**
UNIVERSITÉ DE MONTPELLIER

- **AEB**
Agriculture-Environment-Biodiversity Division
<https://www.umontpellier.fr/en/>



Montpellier
Méditerranée
Métropole

- **MONTPELLIER 3M**
Montpellier Méditerranée Métropole
<https://www.montpellier3m.fr/> - <https://www.montpellier.fr/en>