

XIX CONGRESO DE LA SOCIEDAD ARGENTINA DE MICROBIOLOGÍA GENERAL

22 al 25 de octubre del 2024

Centro cultural y Pabellón Argentina de la Universidad Nacional de Córdoba, Córdoba, ARGENTINA.



Foto: Se hace camino al andar. Celeste Dea. 1er puesto. Concurso fotográfico SAMIGE 20 años.

INTER-SPECIES VARIABILITY IN THE GUT MICROBIOME AND ITS IMPACT ON *Drosophila* FITNESS

Muñoz-Hernández, Jahir^{1,2}- Cavieres, Grisel³-Rezende, Enrico⁴-Rivera, Daniela S.¹.

1) Centro GEMA: Genómica, Ecología y Medio Ambiente, Facultad de Ciencias, Ingeniería y Tecnología, Universidad Mayor - Santiago - Chile.

2) Programa de doctorado en Ecología Integrativa-Universidad Mayor - Santiago - Chile.

3) Departamento de Zoología, Facultad de Ciencias Naturales y Oceanográficas, Universidad de Concepción - Concepción - Chile.

4) Departamento de Ecología, Facultad de Ciencias Biológicas, Center of Applied Ecology and Sustainability (CAPES), Pontificia Universidad Católica de Chile - Santiago - Chile.

Contacto: jahir.munoz@mayor.cl

Several studies have documented microbial patterns across ectothermic animal species, however, their relationship with host fitness remains unclear. If such an association exists, it could suggest that certain microbial groups may enhance fitness. This could have significant implications for various research fields, including insect pest control programs, by improving techniques centered on microbiome-host interaction. Furthermore, this could shed light on why some animal species thrive more than others in natural environments. In this study, we analyzed the variation in gut microbiome and fitness across four *Drosophila* species. Flies were captured during the summer in central Chile and identified according to their morphological characters. The microbiome was measured through 16S rRNA gene sequencing. Egg viability was used as a proxy for fitness, and was measured per unit time to estimate the timing and proportion of viable offspring. Significant differences were observed in the microbial composition, relative abundance, and alpha diversity among the fly species. Phylogenetically related fly species showed greater similarities in microbial composition, relative abundance, and diversity. Species such as *D. simulans* and *D. melanogaster* had higher viability rate compared to *D. hydei*. Notably, fly species with lower alpha diversity and a higher relative abundance of *Acetobacter cibinongensis*, *Leuconostoc pseudomesenteroides*, and *Wolbachia pipientis* exhibited the highest viability rates. These results align with previous findings on the beneficial effects of these bacteria on host reproduction. This study highlights the link between the microbiome and fitness in *Drosophila*, offering insights into the factors that may drive the success of certain animal species over others.

Palabras clave: *Drosophila* – gut microbiome – fitness – viability rate