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.

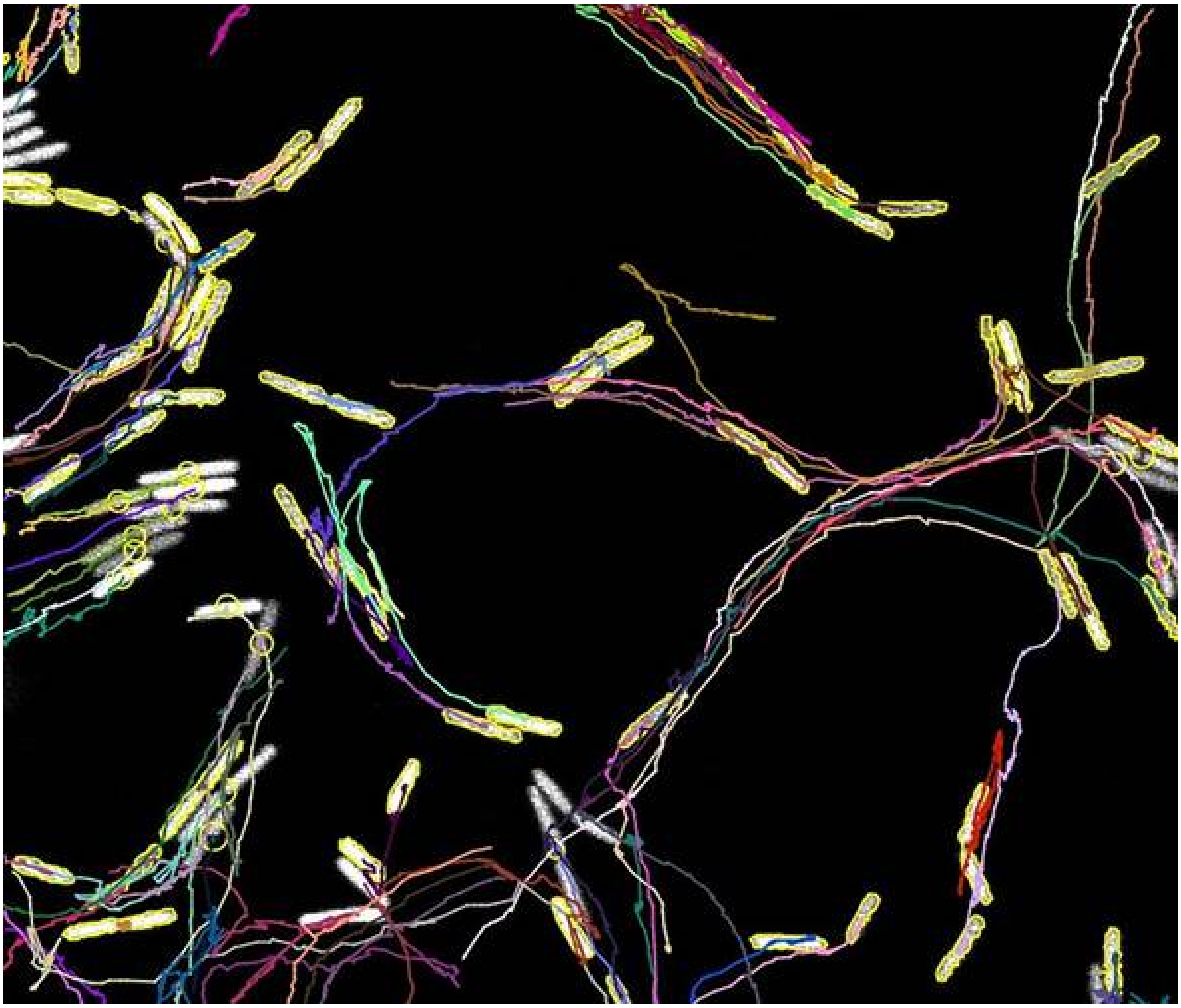

Foto: Se hace camino al andar. Celeste Dea. 1er puesto. Concurso fotográfico SAMIGE 20 años.

ON THE EVOLUTION OF CLOCK MECHANISMS IN FUNGAL SYSTEMS: FROM MOONLIGHTING FUNCTIONS TO THE TOPOLOGICAL PLASTICITY OF GENETIC CIRCUITS

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During the past decade our lab has been studying how light and time shape fungal physiology and organismal interactions. We have combined synthetic biology and genetic approaches to dissect the molecular mechanisms underpinning circadian clocks and light perception.
Thus, for example, we provided for the first-time evidence of the importance of clock regulation in the interaction between a phytopathogenic fungus and a plant host. However, the relevance of circadian clocks in fungal-fungal interactions remains largely unexplored. We have now characterized a functional clock in the biocontrol agent Trichoderma atroviride to assess its importance for its mycoparasitic action against the phytopathogen Botrytis cinerea. The results highlight the relevance of clock components, as well as dark/light conditions in the way organismal dynamics are established.
Notably, we have evidence (both in B. cinerea and T. atroviride) indicating that the main clock component (FRQ) exhibits extra-circadian roles, particularly in the cross-roads of development, and metabolism, impinging Nitrogen assimilation and secondary metabolism, raising interesting questions about the origin and evolution of clock components in fungi, and suggesting potential moonlighting function for these proteins.
At the same time, we have adopted transcriptional rewiring strategies to assess the plasticity of circadian genetic circuits, providing evidence that the evolutionary conserved topology of circadian oscillators, is only one (but the simplest) of the many possible ways eukaryotic clocks could have evolved.

Palabras clave: palabras_clave