Sociedad Argentina de Microbiología General

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.

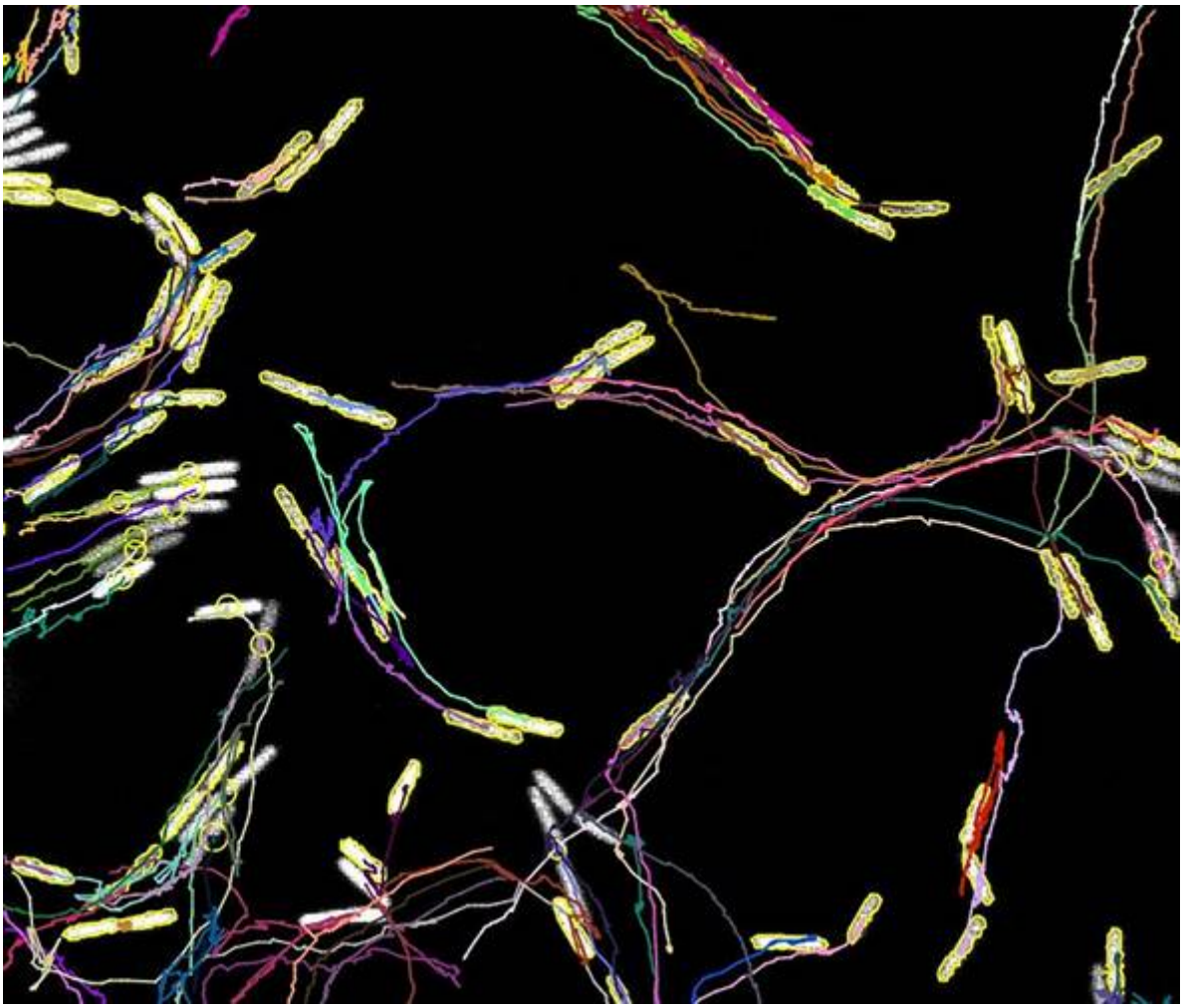

Foto: Se hace camino al andar. Celeste Dea. 1er puesto. Concurso fotográfico SAMIGE 20 años.

247 - invitados

AZOSPIRILLUM 4.0: THE SILENT PARTNER IN MODERN AGRICULTURE'S REVOLUTION

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Azospirillum can promote the growth of a great variety of plants, an ability harnessed by the industry to create bioproducts aimed to enhance the yield of economically relevant crops. The bacteria's rhizospheric and endophytic lifestyles are governed by several mechanisms, leading to efficient niche colonization. These mechanisms include cell aggregation and biofilm formation, motility, chemotaxis, phytohormone and other signaling molecules production, and cell-to-cell communication, in turn, involved in regulating *Azospirillum* interactions with the surrounding microbial community. *Azospirillum* can improve plant growth, due to the production of several phytohormones such as auxins, mainly indole-3-acetic acid, as well as cytokinins, gibberellins, abscisic acid, and polyamines, among many other mechanisms. This PGPR induces root morphological changes through both IAA-dependent and IAA-independent mechanisms and flagellin is a key molecule involved in IAA-independent mechanisms. *Azospirillum* can alter root architecture by promoting the development and elongation of lateral roots and root hairs and inhibiting the elongation of the primary root thereby presumably increasing the root surface and this impact on the field performance of crops as maize, for which recent results confirm the feasibility of replace among 10-25% N-fertilizer applied on field by seed inoculation with these bacteria. Although *Azospirillum* has been extensively used as an inoculant, data on the actual prevalence of this PGPR in plants, soils, or seeds after inoculation are scarce. Omics approaches and advanced methodologies capable of identifying *Azospirillum* at the strain level, such as qPCR, FISH, or CRISPR, will allow progress in monitoring this ubiquitous bacterium widely used as biofertilizer in the context of sustainable agriculture.

Palabras clave: palabras_clave