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.

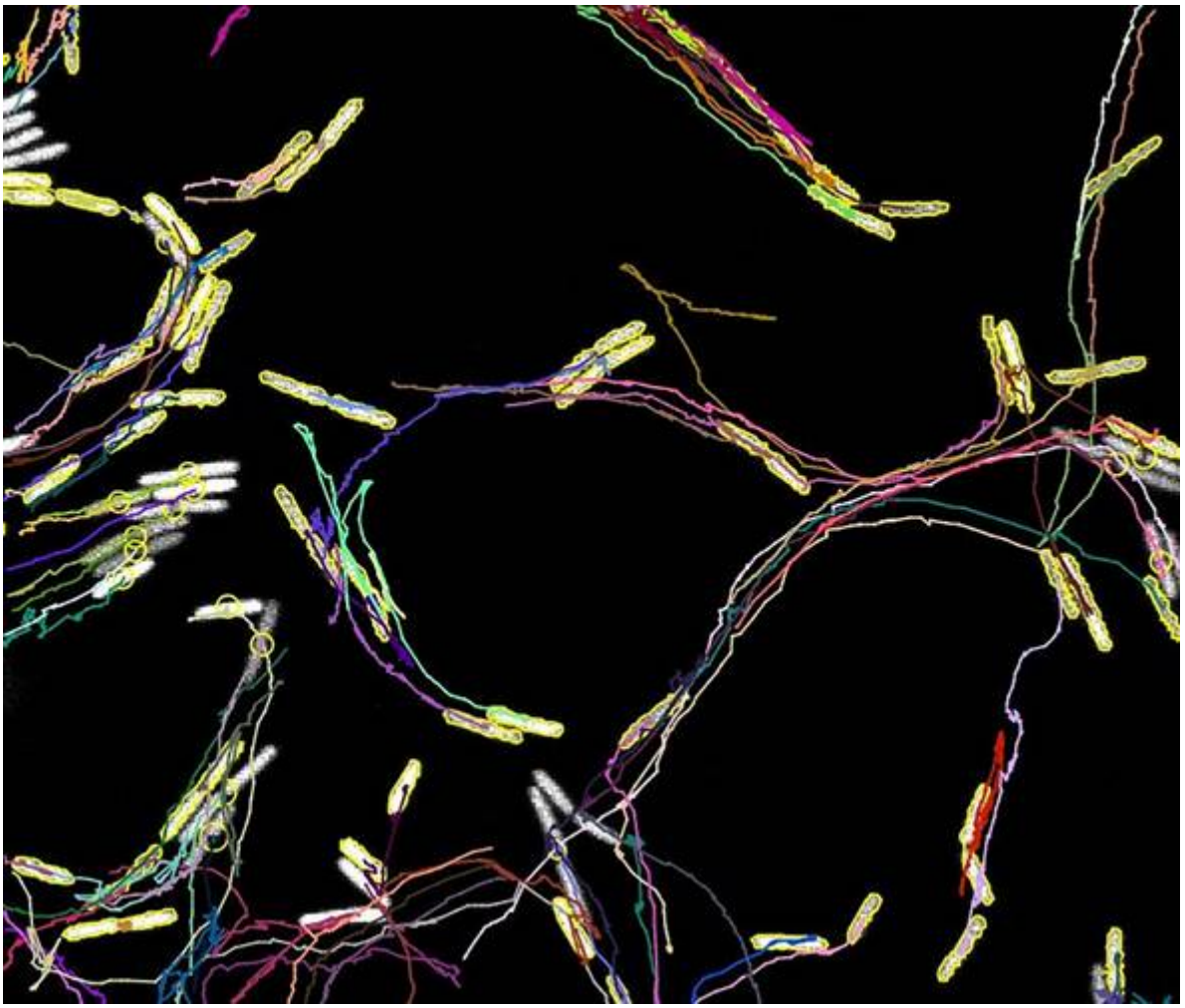

Foto: Se hace camino al andar. Celeste Dea. 1er puesto. Concurso fotográfico SAMIGE 20 años.

233 - invitados

CONTRIBUTIONS TO SYNTHETIC MICROBIOLOGY IN URUGUAY: PRESENT AND FUTURE

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Synthetic biology is a relatively young discipline, thriving in many parts of the world but with limited development in Uruguay. In our group at the Department of Biochemistry and Microbial Genomics at the Clemente Estable Biological Research Institute, we are making new contributions to the field of synthetic biology, researching and bringing this topic to the forefront. In 2019, we organized the “SMS: Symposium on Synthetic Microbiology,” funded by PEDECIBA, to present Uruguayan researchers and students with an up-to-date overview of the discipline, featuring global experts in the field. With support from ANII and SUM, we managed to have two researchers attend the course in person, who also participated in the synthetic biology panel at the XIII National Microbiologists Meeting.

In 2023, we organized the CABBIO-PEDECIBA course “Synthetic Microbiology 2.0: Creating Biological Systems de novo,” which had a strong practical component where students utilized characterized biological parts (iGEM and GoldenStandard), modified chassis through CRISPR/Cas recombineering, sought and identified new promoter sequences, and worked with biosensors generated by applying synthetic biology concepts. Academically, we have contributed new biological parts and new bacterial models for use in synthetic biology applications. We have advanced in the characterization of the psychrotolerant strain Pseudomonas sp. UYIF39, isolated from Antarctica, as a potential alternative chassis. We have evaluated various molecular tools and currently possess a functional toolbox in this microorganism. We have also contributed new biological parts applicable in the field of synthetic microbiology by identifying new transcriptional terminators and new broad-host-range promoter sequences through functional metagenomic approaches.

Currently, we are interested in designing bacterial biosensors for the environmental detection of the cyanotoxin microcystin. Using microcystin-degrading bacteria as input, along with the available molecular tools and chassis, we aim to search for gene elements that respond to the toxin to generate a transcriptional biosensor, allowing for more cost-effective, less labor-intensive, and more accessible monitoring. We must promote the discipline, create networks in Latin America, and invest in synthetic biology as a powerful tool with a significant impact on biotechnology and real applications in solving local and regional problems.

Palabras clave: palabras_clave