Reprogramming plastid identity

Plastids are the quintessential organelles of plant life. They are unique in their capacity to differentiate into functionally specialized plastid types in response to developmental and environmental stimuli. I am interested in unraveling and manipulating the mechanisms underlying plastid differentiation to develop novel plants using synthetic biology principles. Particularly, I aim to understand the mechanism driving the differentiation of chloroplasts into chromoplasts, which are plastids specialized in accumulating high levels of health-promoting carotenoid pigments. Contrary to prevailing beliefs, recent results reveal carotenoid-related signals as primary regulators of this process, thereby indicating that chromoplast differentiation is predominantly regulated via metabolic control. These findings foreshadow new prospects for studying the differentiation of plastid identity and developing agricultural and industrial applications.

Briardo Llorente

CSIRO Synthetic Biology Future Science Fellow

Born in Argentina, Briardo has worked extensively internationally, having spent time in Spain, Denmark, and in the USA. He completed his PhD at the University of Buenos Aires and worked as a visiting researcher at the University of Aarhus in Denmark and the Salk Institute in California. Then, he held a position as a Marie Curie Fellow at the Center for Research in Agricultural Genomics (GRAG) in Barcelona.

Briardo recently joined Macquarie University as a CSIRO Synthetic Biology Future Science Fellow. He is particularly interested in developing organisms with new biological functions and using synthetic biology to study evolution.

Link to Briardo’s Google Scholar profile