

Systems and Synthetic Biology

Session Organizers:

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For the last seventy years the science of biology has made good progress towards identifying and characterizing the molecular components that define living systems. However, less attention has been paid to the physical problems that biological systems solve in order to continue to exist and to any design principles that might frame the organization of molecular components into higher-level systems and viable organisms. Still less attention has been paid to how foundational technologies might enable the widespread and systematic engineering of new biological systems for useful purposes.

This session will introduce the recent and emerging fields of systems and synthetic biology, respectively. In systems biology we will discover how the parts that make up living systems work together to encode functional organisms. In synthetic biology we will explore how our scientific knowledge can now be applied to develop novel biological parts, devices, and systems and produce useful biological technologies. Topics for discussion will include the top technical challenges facing our research, the importance of foundational technologies, and the impact that advances in biology and biological engineering might have on our world.