



University of Stuttgart

Stuttgart Research Center Systems Biology (SRC SB)

## Systems Biology Seminar Talk

„Providing complex biological  
outputs by engineering  
division of labor in bacteria “

**Prof. Juan Nogales**

*Centro Nacional de Biotecnología  
(CSIC) Madrid, Spain*



### Abstract:

Microbes do not live in isolation but in microbial communities. The relevance of microbial communities is increasing due to growing awareness of their influence on a huge number of environmental, health and industrial processes. Hence, being able to control and engineer the output of both natural and synthetic communities would be of great interest. However, in vivo microbial consortia development is extremely difficult and costly because it implies replicating suitable environments in the wet-lab. Computational approaches thus emerge as alternative to study and engineer microbial communities. In this talk it will be discussed the use of computational approaches toward the design of complex biological phenotypes in the context of microbial consortia. Furthermore, it would be shown the application of this technology in unconventional biotechnological applications, e.g. living architecture.

### CV:

Dr Juan Nogales is the head of System Biotechnology Group at Centro Nacional de Biotecnología-CSIC in Madrid (Spain). He studied Biology and Biochemistry at the University of Extremadura and received his Ph.D. in Biochemistry and Molecular Biology from the University Complutense of Madrid (Spain). His Postdoc training was performed at University of Iceland (Iceland) and University of California, San Diego (USA), where he delved into systems biology approaches to whole understanding microbial metabolism and its biotechnological potential. His current research spans multidisciplinary approaches including Systems and Synthetic Biology, whose common goal is the full understanding of microbial living systems, from molecular characterisation of their fundamental components (e.g., gene, metabolites) and their interrelationships, to systems properties (e.g., phenotype, metabolic robustness/versatility). He possesses a broad experience in metabolic reconstructions and metabolic engineering. Moving forward from cells to microbial communities, his group is developing new protocols for synthetic microbial ecosystems design and engineering.

**Thursday**  
**February 11, 2021**  
*11 a.m. – 12 a.m.*

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