Collegio A Volta
Università di Pavia

FAB·T

Luis
Serrano Pubul

Centre for Genomic
Regulation, Barcelona

At 5.00 pm on
11th April 2023
in the College
Lecture Theatre

# Engineering a bacterium for lung therapy

19th Adriano Buzzati-Traverso Lecture

Engineering bacteria for treating human diseases presents new opportunities in therapeutics. Although lung diseases are among the top causes for mortality worldwide, there is no treatment for them based on a live biotherapeutic. We have engineered a genome-reduced human lung bacterium, Mycoplasma pneumoniae (MPN), as a novel treatment for lung diseases encompassing infections, fibrosis and cancer. We found that expression of biologicals by engineered MPN has a limited physiological impact in mice due to its low expression capacity. To solve these issues, we use our protein design software FoldX and ModelX to increase the effective expression in MPN, and the activity in mouse lungs. This rational design strategy of combining synthetic biology with protein design is quite powerful to foster bacterial therapy.

Image: Mycoplasma pneumoniae.
Courtesy of Microbix Biosystems

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