

MÁRTON SIMON CZIKKELY



National Scientists Academy, 5th year

University of Szeged,
Albert Szent-Györgyi Medical School, 5th year

YEAR OF BIRTH:

1997

FORMER SZENT-GYÖRGYI PUPIL:

yes

SZENT-GYÖRGYI MENTOR:

Csaba Pál

SPECIALIZATION:

genetic engineering,
experimental evolutionary
biology, antibiotic
resistance

SECONDARY SCHOOL:

Városmajori High School

NAME OF TEACHER:

Anna Jánossyné Solt

LANGUAGES:

English/advanced
Spanish/advanced
German/intermediate
Latin/intermediate
Persian/beginner

IMPORTANCE, AIMS AND POSSIBLE OUTCOME OF RESEARCH

Pathogens seem invariably to attempt to survive the immune system of the invaded host or the pressures of applied therapies. During this accommodation process, DNA-level changes and mutations occur in the cells. These invisible, but important evolutionary processes lead to one of our biggest clinical challenges: antimicrobial resistance. Thanks to scientific advances of recent decades, it has become possible to manipulate the DNA in a precise manner, which enables a rapid and targeted examination of these very mutations. This approach offers a breakthrough in the investigation of antimicrobial resistance. A technique developed in the laboratory of my mentor, Csaba Pál, makes the rapid examination and manipulation of evolution possible with unprecedented accuracy. In our current work, we use this technique also to predict the most important resistance processes against antibiotics under development.

AMBITIONS AND CAREER GOALS

My aim is to help the fight against antibiotic resistance – a major crisis in medicine – through the examination of its evolution in clinically important pathogens.

HONORS AND PRIZES

2018/19, 2019/20, 2020/21 - ÚNKP
2018/19, 2019/20, 2020/21 - Municipality of Szeged: University Scholarship
2020/21 - National Higher Educational Scholarship
2020 - University of Szeged: Scientific Students' Associations Conference (TDK)
1. prize in Cell Biology-Microbiology section
2019 - Stephen W. Kuffler Research Scholarship
2019 - University of Szeged: Scientific Students' Associations Conference (TDK)
2. prize in Biochemistry-Microbiology section
2018 - University of Szeged: Scientific Students' Associations Conference (TDK)
1. prize in Genetics and Molecular Biology Section

PUBLICATIONS

Wannier, T. M., Nyerges, A., Kuchwara, H. M., **Czikkely, M.**, Pál, C., Church G. M., et. al. (2020) Improved bacterial recombineering by parallelized protein discovery. *Proc Natl Acad Sci U S A* **117**: 13689-13698.

Szili, P.Š., Draskovits, G., Révész, T.Š, **Czikkely, M.**, Pál*, Á. Nyerges, Á.,* et al. (2019) Rapid evolution of reduced susceptibility against a balanced dual-targeting antibiotic through stepping-stone mutations. *Antimicrob Agents Chemother* **63**: 00207-19.