

# ÁKOS KOVÁCS



National Academy of Scientist Education, Ph.D. 1<sup>st</sup> year

University of Szeged  
 Doctoral School of Theoretical Medicine  
 Ph.D. 1<sup>st</sup> year

## YEAR OF BIRTH

1999

## FORMER SZENT-GYÖRGYI PUPIL

yes

## RESEARCH UNIT

University of Szeged

## SZENT-GYÖRGYI MENTOR

Imre Miklós Boros

## JUNIOR MENTOR

Balázs Vedelek

## SPECIALIZATION

molecularbiology,  
 genetics

## SECONDARY SCHOOL

Temesvári Pelbárt  
 Franciscan HighSchool,  
 Esztergom

## NAME OF TEACHER

Andrea Keppel Erdős  
 Katalin Szontagh

## LANGUAGES

English/intermediate  
 German/intermediate

## IMPORTANCE, AIMS AND POSSIBLE OUTCOME OF RESEARCH

Early recognition is one of the most important factors in successful treatment of cancer, which ideally can be achieved through non-invasive or minimally invasive way. In case of bladder cancer, tumour cells appear in the urine, from which DNA could be purified and analysed to detect mutations specific to cancer. Mutation hotspots are in oncogenes and among them in the promoter of the telomerase reverse transcriptase, which is responsible for DNA elongation at the ends of chromosomes. The telomerase is active in embryonic cells but inactive in somatic cells, therefore the telomeres of the latter are progressively shortening, with each cell division, until they are critically shortened, that results senescence. In tumours, however the telomerase is often re-activated, therefore these cells become immortalised, so they can endlessly divide. In most cases telomerase reactivation is due to mutations at hotspots in its promoter. Our aim is to study telomerase promoter mutations in order to get answers for the following questions: Under what circumstances do the mutations appear? At which stage of carcinogenesis / tumour progression do telomerase promoter mutations appear? Is there any correlation with mutation types, appearance and bladder cancer subtypes? How do the mutations affect the course of the disease? Our long-term goal is to develop a PCR-based, simple and cost-efficient rapid test to detect the presence of potentially cancerous cells from urine targeting telomerase promoter mutation and other tumour markers.

## AMBITIONS AND CAREER GOALS

I would like to improve my knowledge continuously in order to become as good researcher and physician as I can. With my work I hope to contribute to the advance of society that I consider the most important goal one can aim at.

## HONORS AND PRIZES

2021 University of Szeged: Scientific Students' Associations Conference (TDK) 3. prize in Cell Biology-Microbiology-Molecular Biology section

## PUBLICATIONS

Vedelek, B., Kovács, Á., Boros, I. M. (2021) Evolutionary mode for the functional preservation of fast-evolving Drosophila telomere capping proteins. **Open Biol** 11: 210261.