ANNA GEORGINA KOPASZ

National Academy of Scientist Education, 1st Ph.D. year

University of Szeged,
Doctoral School of Multidisciplinary Medical Sciences
Ph.D. 1st year

YEAR OF BIRTH:

1998

FORMER SZENT-GYÖRGYI PUPIL:

yes

SZENT-GYÖRGYI MENTOR:

Gyula Timinszky

RESEARCH INTERESTS:

ADP-ribosylation,
DNA repair

UNIVERSITY DEGREE:

MSc in Biology

AS A SZENT-GYÖRGYI STUDENT:

Former Szent-Györgyi mentor: Lajos Mátés

SECONDARY SCHOOL:

Radnóti Miklós Experimental Grammar School, Szeged

NAME OF TEACHER:

Viktória Gál

LANGUAGES:

English/advanced

IMPORTANCE, AIMS AND POSSIBLE OUTCOME OF RESEARCH

Cancer is a leading cause of morbidity and mortality globally. However, most chemotherapeutics interfere with cell division or DNA synthesis killing not only the uncontrollably multiplying cancer cells but also the proliferating healthy cells – the latter accounting for their toxicity and serious side effects. This main disadvantage emphasizes the need for drugs that specifically destroy cancer cells, ideally, without harming the healthy ones.
ADP-ribosilation is a posttranslation modification appears immediately after DNA damage. PARP1 covalently attaches ADP-ribose units to histones on the site of DNA damage generating poly(ADP-ribose) chains. Poly(ADP-ribosyl)ation (PARylation) provides a scaffold for other repair proteins and contributes to chromatin remodeling to facilitate access to the damaged DNA.
Over 15 years ago, PARP inhibitors (PARPi) were shown to selectively kill HR-defective cancer cells. Neither the many mutations cause HR-defection nor the PARP inhibitor alone kills the cell, yet, their combination is lethal – a phenomenon called synthetic lethality. Our research group completed a genome-wide CRISPR knockout screen in combination with the PARP inhibitor olaparib to identify factors that sensitize cells to PARP inhibitors when deleted. We believe our research will provide a basis to develop new drugs which enhance the sensitivity of PARP inhibitors.

AMBITIONS AND CAREER GOALS

By earning my PhD degree, I would like to master the molecular background of DNA repair and learn new cell biological and microscopic techniques. broad range of molecular biological techniques and their biological bases. As a postdoctoral researcher, I hope I will have the chance to gain research experience abroad before I can establish my own research group.

HONORS AND PRIZES

2022 - 'Szent-Györgyi Student of Excellence 2022' award
2022/23, 2021/20, 2019/20 - New National Excellence Program Scholarship
2022 - EPAM Pro Talentis Corporate Scholarship
2022 - SZTE Talent Scholarship - gold grade
2021/22 - Scholarship for Educational Achievements given by the City Council of Szeged
2021/22 - National Higher Education Scholarship

PUBLICATIONS

Kopasz, A. G., Pusztai, D. Z., Karkas, R., Hudoba, L., Abdullah, K., Imre, G., Pankotai-Bodó, G., Migh, E., Nagy, A., Kriston, A., Germán, P., Drubi, A. B., Molnár, A., Fekete, I., Dani, V. É., Ocsovszki, I., Puskás, L. G., Horváth, P., Sükösd, F., Mátés, L. (2022) A versatile transposon-based technology to generate loss- and gain-of-function phenotypes in the mouse liver. **BMC Biology 20:** 74.