VALENTINA MADÁR

+36 30/212-0965
madar.valentina@brc.hu
madar.tina@gmail.com

EDUCATION

2014-2018
SECONDARY SCHOOL, SZENT ISTVÁN GIMNÁZIUM BUDAPEST
Advanced biology graduation

2018-2021
BIOLOGY BSC, UNIVERSITY OF SZEGED, FACULTY OF SCIENCES AND INFORMATICS
BSc Diploma

2020-2021
SPORTS TRAINER, B-FORM KFT. SZEGED
kayak and canoe

2021-
BIOLOGY MSC, UNIVERSITY OF SZEGED, FACULTY OF SCIENCES AND INFORMATICS

WORK EXPERIENCE

2018 - PRESENT
SPORTS TRAINER, SZEGEDI VÍZISPORT EGYESÜLET
Responsibilities:
Canoepolo team coordination,
Water tour management,
2022: Dragon boat team coordination

Results as a coach:
2019: Canoepolo National Championship U17 3rd place,
Vienna International Canoepolo Tournament 3rd place
2020: Canoepolo National Championship U17 2nd place
2021: Canoepolo National Championship U18 1st place
Prague International Canoepolo Tournament 2nd place
Vienna International Canoepolo Tournament 3rd place

2018 - 2020
MEMBER OF THE VOCATIONAL COLLEGE COMMITTEE, SZTE MÓRA FERENC VOCATIONAL COLLEGE
Responsibilities: conference organization

2020 - PRESENT

PARTICIPATION IN RESEARCH PROJECT, INSTITUTE OF PLANT BIOLOGY, BIOLOGICAL RESEARCH CENTRE, SZEGED

Supervisor: András Viczián
Research project: Functional analisys of light signaling in Arabidopsis

LANGUAGES

- English (complex B2)
- German

SCIENTIFIC RESULTS, AWARDS

- 2020 november, Scientific Student Conference, Plant Biology Section, 1st place
- 2021 march, Presentation at the IV. Móra Carpathian Basin Vocational College Conference, Szeged
- 2021 may, National Scientific Student Conference, Biology Section, Plant physiology department 2nd place
- 2022 april, Presentation at the XXII. Eötvös Conference, Budapest
- 2022 may, Presentation at the Spring Wind Conference, Pécs
- 2022 may, Poster at the Straub days, BRC Szeged

SCHOLARSHIPS

- 2021/22 NEW PROGRAM OF NATIONAL EXCELLENCE
  Master's Degree in Higher Education Student Research Scholarship
- 2022 Stephen W. Kuffler TDK Scholarship

RESEARCH OBJECTIVES

I implement my research at the Institute of Plant Biology of the Szeged Biological Research Center as a member of the Photo and Chronobiology Research Group. The intention of our projects is to map plant light sensing and to study its physiological effects at the molecular level.
To detect red (λ_{max} = 660 nm) and far red (λ_{max} = 730 nm) light, an entire family of receptors, called phytochromes (phy), developed during evolution. In Arabidopsis thaliana, which is widely used as a model plant, five phytochrome proteins have been identified as A, B, C, D, and E. Phytochrome A (phyA) is dominant in dark and low light. This determines scotomorphogenesis and promotes germination. As the seedling is exposed to light, phyA is degraded and phytochrome B (phyB) plays a dominant role. This plays a crucial role in, among other things, photomorphogenesis in light, shade avoidance, and flowering.
Previous results from my research group have shown that these phytochromes undergo post-translational modifications and that these modifications play a role in the efficiency of the signaling they initiate. One such post-translational modification is phosphorylation, in which several amino acids of

the receptor protein are involved. In our work, we generate transgenic Arabidopsis plant lines that express variants containing phyA or phyB mutations at the target amino acids of phosphorylation but not endogenous ones. These plants are grown under light conditions where the phytochrome system is active and their morphological changes are monitored. From our measurements we infer the physiological effect of the given phosphorylation pattern.
The results so far show that phosphorylation weakens phytochrome-induced signaling and dephosphorylation enhances it. Furthermore, it has become known that the phosphorylation of these phosphorylated amino acids does not play an equal role in receptor protein signaling. There are positions that can decisively influence the efficiency of light sensing and there are also those whose phosphorylation state does not affect the photomorphogenesis of plants.
In the future, we will develop transgenic phytochrome variants to investigate the significance of these positions to obtain a more complete picture of the physiological effects of phytochrome phosphorylation.