

## GERGŐ BITAY



National Academy of Scientist Education, 6<sup>th</sup> year

University of Szeged,  
Albert Szent-Györgyi Medical School, 5<sup>th</sup> year

#### YEAR OF BIRTH

1999

#### FORMER SZENT-GYÖRGYI PUPIL

yes

#### RESEARCH UNIT

University of Szeged

#### SZENT-GYÖRGYI MENTOR

Norbert Nagy

#### JUNIOR MENTOR

-

#### SPECIALIZATION

electrophysiology,  
farmacology

#### SECONDARY SCHOOL

Radnóti Miklós  
Experimental Grammar  
School, Szeged

#### NAME OF TEACHER

Béla Gál

#### LANGUAGES

English/advanced

#### IMPORTANCE, AIMS AND POSSIBLE OUTCOME OF RESEARCH

Our research group specialises in researching the electrophysiological and pharmacological properties of the heart. We mainly focus on the spontaneous activity of the heart,  $Ca^{2+}$  - homeostasis; sudden cardiac arrest related research on athletic heart syndrome models. In our laboratory we conduct research on rabbit and dog models, both on tissue samples (conventional microelectrode technique) and on individual cells (patch-clamp). My main research involves the spontaneous activity of the sinus node:  $Ca^{2+}$  - homeostasis, sodium-calcium exchanger, small-conductance calcium-activated potassium (SK) channels. SK channels have a significant role in neurons, and due to the fact that they create a direct connection between the intracellular calcium handling and the repolarisation of the cell membrane, their role in the cardiac tissue could also be important. However, there is no consensus in the literature on the extent of their contribution to cardiac repolarisation. Because both the  $Ca^{2+}$  - homeostasis and the repolarisation are related to arrhythmias, SK channels could potentially have a major role pathophysiologically and pharmacologically.

#### AMBITIONS AND CAREER GOALS

My ambition is to become a successful doctor and to continue with research. Furthermore, my goals are to earn a PhD and other degrees. The amount of knowledge given to us by the programme, the publications and the scientific conferences all contribute to achieve these goals.

#### HONORS AND PRIZES

2019 XXXIV. OTDK, Medical and Health Section, Theoretical Medicine Electrophysiology: Special Award  
2018 SZTE ÁOK TDK: Best presentation in the secondary-school section  
2017/2018 Biology OKTV 14<sup>th</sup> place  
2017 SZTE Szent-Györgyi Competition 3<sup>rd</sup> place

#### PUBLICATIONS

Kohajda, Zs., Tóth, N., Szlovák, J., Loewe, A., Bitay, G., Gazdag, P., Prorok, J., Jost, N., Levijoki, J., Pollesello, P., Papp, J. Gy., Varró, A., Nagy, N. (2020) Novel  $Na^{+}/Ca^{2+}$  Exchanger Inhibitor ORM-10962 Supports Coupled Function of Funny-Current and  $Na^{+}/Ca^{2+}$  Exchanger in Pacemaking of Rabbit Sinus Node Tissue. **Front in Pharmacol** 10: 1632.

Tóth, N., Szlovák, J., Kohajda, Zs., Bitay, G., Veress, R., Horváth, B., Papp, J. Gy., Varró, A., Nagy, N. (2021) The development of L-type  $Ca^{2+}$  current mediated alternans does not depend on the restitution slope in canine ventricular myocardium. **Sci Rep** 11: 16652.

Bitay, G., Tóth, N., Déri, Sz., Szlovák, J., Kohajda, Zs., Varró, A., Nagy, N. (2022) The Inhibition of the Small-Conductance  $Ca^{2+}$ -Activated Potassium Channels Decreases the Sinus Node Pacemaking during Beta-Adrenergic Activation. **Pharmaceuticals** 15: 313.