

# PROKOP SUSANNE

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**Nationality:** Hungarian, German

**Born:** 04.14.1992. Birkenhead, UK

## Education:

Semmelweis University, Budapest

Major: Medicine

Currently enrolled in the *eleventh* semester.

Pazmany Peter Catholic University, Budapest

Major: Computer Programming, Bionics



## Relevant Coursework

Physiology \*

Anatomy, Neuroanatomy

Biochemistry \*

Pathology

Computer Programming

Immunology \*

Biophysics

Medical Microbiology

Epigenetics

Calculus

Genetics \*

Genomics

Pharmacology

Biostatistics

Linear Algebra

*\*Best student of the year (first place in the thematic competition at Semmelweis University)*

## Research Experience

2015-summer: Research at the Department of Pharmacology  
Vanderbilt University, Nashville, Tennessee, USA  
Laboratory of Vsevolod V. Gurevich

- Designing receptor specific arrestins
- Building research collaboration between *Gurevich laboratory* (Vanderbilt University) and *Hunyady laboratory* (Semmelweis University)

2014-summer: Research at the Department of Biological Sciences  
Vanderbilt University, Nashville, Tennessee, USA  
Laboratory of Todd Graham  
Protein transport and membrane biogenesis

2012-present: Undergraduate Research at the Department of Physiology  
Semmelweis University, Molecular Endocrinology Laboratory  
Dimerization and signaling of G-protein coupled receptors

2011-present: Undergraduate Research at the Department of Medical Chemistry  
Semmelweis University, Molecular Genetic Laboratory  
Genetic background of Type 1 and Type 2 diabetes and its association with depression

## Technical Skills

- Real Time PCR, Primerdesign
- Capillary Electrophoresis
- Resonance energy transfer methods (FRET, BRET)
- DNA, RNA purification
- Yeast culture, transformation
- Programming in C++, Python
- Western Blot
- Tissue Culture
- Confocal Microscopy
- Bacterial protein purification
- Yeast mutagenesis

## Awards:

International Young Physicists' Tournament:

Representation of the Hungarian team: 2008: Trogir, Croatia  
2009: Tian Jin, China

International Conference of Young Scientists:

2<sup>nd</sup> place in Physics section: 2010: Bali, Indonesia

2011: Certificate of Merit from the Hungarian Education Minister

## Posters

*Polymorphisms in regulatory regions of the WFS1 gene are putative risk factors of diabetes mellitus*

Zsuzsanna Elek<sup>1</sup>, Nóra Németh<sup>1</sup>, Susanne Prokop<sup>1</sup>, Anikó Somogyi<sup>2</sup>, Mária Sasvári-Székely<sup>1</sup>, Zsolt Rónai<sup>1</sup>

The complex life of mRNA EMBO | EMBL Symposium, 7-10. 10. 2012.  
Heidelberg, Germany

*SNAP-25 gene polymorphisms are putative risk factors of impulsivity endophenotype*

Prokop Susanne<sup>1</sup>, Németh Nóra<sup>1</sup>, Kovács-Nagy Réka<sup>1</sup>, Székely Anna, Rónai Zsolt<sup>1</sup>, Sasvári-Székely Mária<sup>1</sup>

15th Hungarian Congress of Neuropsychopharmacology, 4- 6 October 2012  
Tihany, Hungary

*Analysis of the WFS1 gene promoter polymorphisms as putative risk factors of diabetes mellitus*

Zsuzsanna Elek<sup>1</sup>, Nóra Németh<sup>1</sup>, Susanne Prokop<sup>1</sup>, Anikó Somogyi<sup>2</sup>, Mária Sasvári-Székely<sup>1</sup>, Zsolt Rónai<sup>1</sup>

European Human Genetics Conference  
Paris, France 2013. 06. 8-11.

*Investigation of the dimerization of G-protein coupled receptors with a new BRET titration method*

<sup>1</sup>Szalai Bence, <sup>2</sup>Hoffmann Péter, <sup>1</sup>Prokop Susanne, <sup>1,2</sup>Várnai Péter, <sup>1,2</sup>Hunyady László  
Annual Conference of Hungarian Society of Physiology, 2013

*Improved methodical approach for quantitative BRET analysis of G protein coupled receptor dimerization*

<sup>1</sup>Szalai Bence, <sup>1</sup>Prokop Susanne, <sup>1,2</sup>Várnai Péter, <sup>1,2</sup>Hunyady László  
Meeting of the Federation of European Physiological Societies,  
2014, Budapest

*Improved methodical approach for quantitative BRET analysis of G protein coupled receptor dimerization*

<sup>1</sup>Szalai Bence, <sup>1</sup>Prokop Susanne, <sup>1,2</sup>Várnai Péter, <sup>1,2</sup>Hunyady László

Meeting of the Federation of European Physiological Societies, 2014, Budapest

*Co-evolution and co-expression based analysis and prediction of G Protein-coupled receptor heterodimerization*

Bence Szalai, Susanne Prokop, Miklós Cserző, Péter Várnai, László Hunyady, 2015  
RECOMB 2015, 19th Annual International Conference of Research in Computational Molecular Biology, Warsaw, 2015.04.11-15.

## **International courses:**

2011: Summer practice at Lubinus Klinik, Traumatology Department:  
Kiel, Germany

2013: Autumn School on Computational Aspects of Gene Regulation,  
European Mathematical Society, Bedlewo, Poland

2014: Member of the Vanderbilt International Summer Research Academy

## **Presentations**

*New ways of measuring viscosity-The curiosities of rotating bodies on liquid*  
International Conference of Young Scientists, Bali, Indonesia, 2010

*Analysis of the WFS1 gene promoter polymorphisms as putative risk factors of diabetes mellitus*  
Hungarian Student Research Conference, 2013, III. place

*Dimerization of vasopressin receptors*  
Simmelweis Student Research Conference, 2014, I. place

*The role of the WFS1 gene in type two diabetes*  
Simmelweis Student Research Conference, 2014, I. place

*Protein trafficking in the secretory and endocytic pathways- the role of Drs2 flippase activity*  
Vanderbilt University, 2014

*Studying G Protein Coupled Receptor dimerization, using co-evolution based bioinformatical methods*  
Simmelweis Student Research Conference 2015, I. place

*The role of phospholipid flippases in the regulation of protein transport in budding yeast*  
Simmelweis International Students` Conference , 2015, Basic Sciences

*Studying G Protein Coupled Receptor dimerization, using co-evolution based bioinformatical methods*  
Hungarian National Student Research Conference 2015, I. place, Presentation Award

## **Publication**

*Improved methodical approach for quantitative BRET analysis of G protein coupled receptor dimerization*

<sup>1</sup>Szalai Bence, <sup>1</sup>Hoffmann Péter, <sup>1</sup>Prokop Susanne, <sup>1,2</sup>Várnai Péter, <sup>1,2</sup>Hunyady László  
PLOS ONE, 2014

## **Languages**

*Hungarian*: native language

*German*: native language

*English*: Euro English Language Examination at C1 level: Proficient User

## **Research Interests**

I have been working in the Molecular Endocrinology Laboratory of Professor Hunyady for 4 years, where our research focuses on the signaling and regulation of G-Protein Coupled Receptors (GPCRs).

Growing evidence indicates that particular receptors form dimeric structures in the plasmamembrane.. Despite the numerous experimental methods, the reliable investigation of the phenomenon is still challenging. First of all, we have developed a Resonance Energy Transfer based method to determine specific interactions between receptors. Secondly, our goal is to predict dimerization, using different bioinformatical tools.

Dimerization of different receptors can remarkably influence their physiological and pharmacological functions. We have previously shown, that direct interaction between receptors can increase their affinity to arrestin-proteins. Arrestin molecules are regulating the signaling of GPCRs, by preventing further activation and promoting internalization. In order to investigate the receptor-arrestin interface, we have established international collaboration with one of the greatest experts of the „arrestin field”.

All in all, increasing our knowledge about receptor dimerization and its functional effects will largely enhance our chances of exploiting the full pharmacological potential of GPCRs.