



## Curriculum Vitae

Personal information **Krisztina Ella**

### Work experience

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#### **September 2018 - Present**

Semmelweis University Department of Physiology - Hungary

*Position:* assistant professor

*Description:* teaching of physiology for undergraduate students (practical courses, seminars and lectures); research, supervising the research activity of undergraduates and PhD students

#### **September 2015 - August 2018**

Semmelweis University Department of Physiology - Hungary

*Position:* assistant lecturer

*Description:* teaching of physiology for undergraduate students (practical courses, seminars and lectures); research, supervising the research activity of undergraduates and PhD students

#### **September 2009 - August 2015**

Semmelweis University Department of Physiology and Hungarian

Academy of Sciences - Hungary

*Position:* PhD student, research fellow

*Description:* teaching of physiology for undergraduate students (practical courses, seminars); research, supervising the research activity of undergraduates

### Education and training

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#### **September 2009 - February 2017 - PhD Student**

Semmelweis University, Doctoral School of Molecular Medicine, Budapest, Hungary

Cellular and Molecular Physiology Programme

***Ph.D. degree: 2017. February, summa cum laude***

Main subjects: immunology, cell biology, physiology, research methods in molecular biology

#### **September 2004 - June 2009 – Biologist**

Eötvös Loránd University, Faculty of Natural Sciences, Budapest, Hungary

**MSc in Biology: 2009 June**

Specialisation in Molecular Biology

Sub-specialisation in Biochemistry

Main subjects: genetics, molecular genetics, immunology, biochemistry, gene technology, cell biology, microbiology, anatomy, animal systematics, plant systematics, plant anatomy, chemistry, physics, mathematics, informatics.

## Additional information

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### Publications

1. Búr, Zsófia ; Vendl, Bernadett ; Sűdy, Ágnes R. ; Lumniczky, Zalán ; Szántó, Csongor G. ; Mócsai, Attila ; Káldi, Krisztina; Ella, Krisztina  
Time-restricted feeding alleviates arthritis symptoms augmented by high-fat diet  
FRONTIERS IN IMMUNOLOGY 16 Paper: 1512328 , 10 p. (2025)
2. Czárán, Domonkos ; Sasvári, Péter ; Lőrincz, Kende ; Ella, Krisztina ; Gellén, Virág ; Csépanyi-Kömi, Roland  
ARHGAP25: a novel player in the Pathomechanism of allergic contact hypersensitivity  
FRONTIERS IN IMMUNOLOGY 16 Paper: 1509713 , 17 p. (2025)
3. Czárán, Domonkos ; Sasvári, Péter ; Horváth, Ádám István ; Ella, Krisztina ; Sűdy, Ágnes Réka ; Borbely, Eva ; Rusznák, Kitti ; Czéh, Boldizsár ; Mócsai, Attila ; Helyes, Zsuzsanna et al.  
Lacking ARHGAP25 mitigates the symptoms of autoantibody-induced arthritis in mice  
FRONTIERS IN IMMUNOLOGY 14 Paper: 1182278 , 13 p. (2023)
4. Ella, Krisztina; Sűdy, Ágnes R.\* ; Búr, Zsófia ; Koós, Bence ; Kisiczki, Ármin S. ; Mócsai, Attila ; Káldi, Krisztina  
Time restricted feeding modifies leukocyte responsiveness and improves inflammation outcome  
FRONTIERS IN IMMUNOLOGY 13 Paper: 924541 , 16 p. (2022)
5. Sűdy, Ágnes Réka ; Ella, Krisztina ; Bódizs, Róbert ; Káldi, Krisztina  
Association of Social Jetlag With Sleep Quality and Autonomic Cardiac Control During Sleep in Young Healthy Men  
FRONTIERS IN NEUROSCIENCE 13 Paper: 950 , 10 p. (2019)
6. Ella, K ; Mocsai, A ; Kaldi, K  
Circadian regulation of neutrophils: Control by a cell-autonomous clock or systemic factors?  
EUROPEAN JOURNAL OF CLINICAL INVESTIGATION 48 : S2 Paper: e12965 , 9 p. (2018)
7. Gyongyosi, N ; Szoke, A ; Ella, K ; Kaldi, K  
The small G protein RAS2 is involved in the metabolic compensation of the circadian clock in the circadian model *Neurospora crassa*  
JOURNAL OF BIOLOGICAL CHEMISTRY 292 : 36 pp. 14929-14939. , 11 p. (2017)
8. Ella, K ; Csépanyi-Kömi, R ; Káldi, K  
Circadian regulation of human peripheral neutrophils  
BRAIN BEHAVIOR AND IMMUNITY 57 pp. 209-221. , 13 p. (2016)
9. Haraszti, RA ; Ella, K\* ; Gyongyosi, N ; Roenneberg, T ; Kaldi, K  
Social jetlag negatively correlates with academic performance in undergraduates

CHRONOBIOLOGY INTERNATIONAL 31 : 5 pp. 603-612. , 10 p. (2014)  
\*joint first-author

10. Gyöngyösi, N ; Nagy, D ; Makara, K ; Ella, K ; Káldi, K  
Reactive oxygen species can modulate circadian phase and period in  
*Neurospora crassa*  
FREE RADICAL BIOLOGY AND MEDICINE 58 pp. 134-143. , 10 p.  
(2013)

#### Projects

During 16 years of teaching medical physiology, I have had the opportunity to acquire a deep insight of the complex regulatory processes in the body. It has become clear that there is no cell or organ in which some function does not exhibit daily rhythmicity. Additionally, there is a detectable daily fluctuation in the onset or severity of symptoms in case of many diseases. Therefore, my main focus of interest is the complex regulatory mechanisms of rhythmic physiological and pathophysiological processes.

Circadian rhythms adapt life functions to cyclical changes of environmental factors, helping the organism to adapt to its surroundings. The biological timekeeping system - the circadian clock - dictates an approximate 24-hour periodicity. The cellular clock is an endogenous oscillator, which depends upon complex transcriptional translational feedback loops. The expression of 85% of our genes is rhythmic in at least one tissue type, influencing a wide range of physiological and pathological processes. The central clock is located in the suprachiasmatic nucleus (SCN), which synchronizes clocks in peripheral cells through neuronal and humoral pathways.

The main regulator of the SCN is light, but peripheral clocks can also be reset by metabolic effects (e.g., food intake and its timing). Metabolic processes and immune system activity have a characteristic circadian rhythm, that affects the temporal separation of anabolic and catabolic processes, the body's response to pathogens, and also influences the course and severity of metabolic, autoimmune, and inflammatory diseases.

When the environment and the body's clock are out of sync—due to exogenous reasons such as shift work, *jetlag*, or social *jetlag* (the difference in sleep phases between working days and free days), or endogenous causes such as the absence/malfunction of a clock component — circadian disturbances develop. These circadian rhythm disturbances are risk factors for several diseases, such as cardiovascular diseases, malignant transformations, metabolic syndrome, psychological disorders, and inflammatory diseases. As shift work and social *jetlag* affect a substantial portion of the population (approximately 70%), investigating the effects of the circadian rhythm and rhythm disorders is of paramount importance.

Within this topic, I am interested in examining the following questions:

1. Which neural, humoral, hormonal, and metabolic factors influence the function and the circadian rhythm of the immune system?
2. Which clock proteins control immune cell functions?
3. Which factors regulate the haemopoietic function of the bone marrow?
4. What kind of individual differences in the clock function of the immune system can be detected in human?
5. How does the circadian rhythm of the immune system change in different inflammatory, autoimmune, and metabolic diseases (e.g., rheumatoid arthritis, contact hypersensitivity, diabetes, metabolic syndrome) and in septic conditions?
6. Is a cell's own molecular clock necessary for the control of rhythmic processes, or is an intact central clock in the SCN sufficient?
7. How does the timing of nutrition/changes in nutrient composition affect the function of the liver, various adipose tissues, and the microbiome, and thus the inflammatory state of the body?
8. Identification of therapeutic targets, development of chronotherapeutic (time-dependent drug delivery) strategies, and individual therapeutic options for metabolic, autoimmune, and inflammatory diseases.

My research also investigates the effects of human circadian rhythm disturbances (shift work, *jetlag*, social *jetlag*, sleep disturbances) at the organizational level:

1. How are cognitive functions and academic performance affected by circadian rhythm disturbances?
2. How does sleep quality/EEG change in case of circadian rhythm disturbances?
3. How does heart rate variability/cardiovascular risk change in case of circadian rhythm disturbances?

#### Memberships

##### Memberships:

2015- Member of the Hungarian Physiological Society  
2020- Member of the Society for Research on Biological Rhythms  
2022- Member of European Biological Rhythms Society  
2022 - Secretary of the Doctoral School of Molecular Medicine at Semmelweis University  
2022- Semmelweis University School of PhD Studies - Member of the Quality control and Evaluation Board  
2022- Semmelweis University School of PhD Studies - Member of the Educational and Credit Board  
2022- National Academy of Scientist Education - Junior Mentor  
2023- Frontiers in Cell and Developmental Biology - Review Editor

##### Expert/reviewer activity:

###### *Publications:*

BBA - Molecular Basis of Disease  
Archives of Dermatological Research  
Frontiers in Cell and Developmental Biology

Frontiers in Immunology  
Frontiers in Nutrition  
Frontiers in Physiology  
Chronobiology International  
Bratislava Medical Journal  
Immunity, Inflammation and Disease

*Grant Applications:*

-Marsden Fund - Royal Society of New Zealand  
-New National Excellence Programme (Hungary)

*PhD Dissertations, Theses:*

-Semmelweis University  
-Budapest University of Technology and Economics

**Awards:**

**2026**

*Outstanding Employee Award*  
Semmelweis University

**2023**

*Bolyai János Research Scholarship*  
Hungarian Academy of Sciences

**2023–2025**

*New National Excellence Program Bolyai+ Higher Education Young Teacher, Researcher Scholarship*  
Ministry for Innovation and Technology (Hungary)

**2021–2022**

*Faculty Excellence Merit Award*  
Semmelweis University, Faculty of Medicine

**2020**

*Rector's Commendation*  
Semmelweis University

**2020**

*New National Excellence Program – Postdoctoral Fellowship*  
Ministry for Innovation and Technology (Hungary)

**2019**

*Semmelweis Scientific and Innovation Fund for Research and Development (1-year grant)*  
Semmelweis Scientific and Innovation Fund for Research and Development

**2019–2020**

*Faculty Excellence Merit Award*  
Semmelweis University, Faculty of Medicine

**2019**

*Teaching Merit Award*  
Semmelweis University, Faculty of Medicine

**2016**

*Veritas et Virtus Foundation – First Prize (in memory of Zsolt Farkas Jr.)*  
Veritas et Virtus Foundation





## Other Relevant Information

### Teaching experience:

2010 - Conducting medical physiology practical courses at the Department of Physiology, Semmelweis University. Supervision of undergraduate students' work. (german, hungarian)

2016 - Leading medical physiology seminars at the Department of Physiology, Semmelweis University. (german, hungarian)

2017 - Semmelweis University

- Lecturer in the Ph.D. course entitled "Phagocytes"
- Lecturer in the Ph.D. course entitled "Experimental Cell Physiology."

2020 - Semmelweis University

- Lecturer in Medical Physiology (german, hungarian)

2020 - Semmelweis University

- Supervisor accreditation in the Cellular and Molecular Physiology Programme of the Molecular Medicine Doctoral School.
- Supervision of PhD students' work.

2022 - Semmelweis University

- Lecturer in Medical and Dental Physiology (german, hungarian)