



Prof. Volodymyr Lushchak

Professor at the Department of Biochemistry and Biotechnology,
Faculty of Natural Sciences;
Director of the educational and research center "Institute of Experimental Biology"
volodymyr.lushchak@cnu.edu.ua

Biography

Prof. Volodymyr Lushchak is a Professor at the Department of Biochemistry and Biotechnology, Faculty of Natural Sciences, and Director of the educational and research center "Institute of Experimental Biology". He received his PhD in Biochemistry from Moscow State University and his Doctor of Biological Sciences degree from Yuriy Fedkovych Chernivtsi National University. He has held visiting research and teaching positions at universities and research institutions in Germany, Sweden, Finland, the United Kingdom, Poland, Canada, Brazil, and Slovenia. He has supervised numerous researchers and postgraduate students and has contributed to the development of biochemistry and biotechnology education and research at Carpathian National University. He is a group leader in Stress Biology and Biochemistry, a research group investigating the biological mechanisms of post-traumatic stress disorder (PTSD), metabolic disorders, and aging. Professor Lushchak is an author of more than 250 scientific publications and has received national and international scientific awards.

Research

Professor Lushchak's research focuses on the molecular and biochemical mechanisms of oxidative stress, adaptation, and metabolic regulation. A major area of his work is understanding how redox processes and energy metabolism interact to maintain cellular and organismal homeostasis, particularly during aging, caloric restriction, metabolic disorders, and environmental stress. His group also investigates metabolic disturbances, brain metabolism, and neurodegeneration; roles of nutrition and the gut microbiota in health and disease; and biochemical responses to environmental stressors and toxicants. A major current research direction is the study of the biological mechanisms of post-traumatic stress disorder (PTSD), combining mouse models with studies of military personnel exposed to traumatic stress. This research aims to identify molecular mechanisms and potential biomarkers of stress-related disorders.

Team

Halyna Senchychyn, DSc, Professor in Biochemistry, halyna.semchshyn@cnu.edu.ua
Myroslava Vatashchuk, PhD in Biology, Researcher
Viktoriia Hurza, PhD in Biology, Researcher
Sviatoslav Plytus, PhD student
Halyna Cherevata, technician
Undergraduate students



Publications

1. Vatashchuk, M. V., Hurza, V. V., ... & Lushchak, V. I. (2025). Alpha-ketoglutarate supplementation differently modifies hematological parameters and oxidative stress in mice fed a standard diet and high-fat high-fructose diet. *Journal of physiology and biochemistry*, 81(4), 1037–1050.
<https://doi.org/10.1007/s13105-025-01115-5>
2. Dmytriv, T. R., Storey, K. B., & Lushchak, V. I. (2024). Intestinal barrier permeability: the influence of gut microbiota, nutrition, and exercise. *Frontiers in physiology*, 15, 1380713.
<https://doi.org/10.3389/fphys.2024.1380713>
3. Demianchuk, O., Vatashchuk, M., Gospodaryov, D., Hurza, V., & Lushchak, V. I. (2024). High-fat high-fructose diet and alpha-ketoglutarate affect mouse behavior that is accompanied by changes in oxidative stress response and energy metabolism in the cerebral cortex. *Biochimica et biophysica acta. General subjects*, 1868(1), 130521.
<https://doi.org/10.1016/j.bbagen.2023.130521>
4. Balatskyi, V. A., Dmytriv, T. R., Divnych, A., & Lushchak, V. I. (2025). Kefir enhances stress resilience and mitigates PTSD-related behavioral and hematological changes in mice. *Frontiers in physiology*, 16, 1682807. <https://doi.org/10.3389/fphys.2025.1682807>
5. Lushchak, V. I., & Storey, K. B. (2021). Oxidative stress concept updated: Definitions, classifications, and regulatory pathways implicated. *EXCLI journal*, 20, 956–967.
<https://doi.org/10.17179/excli2021-3596>
6. Bayliak, M. M., Sorochnynska, O. M.,... & Lushchak, V. I. (2021). Middle age as a turning point in mouse cerebral cortex energy and redox metabolism: Modulation by every-other-day fasting. *Experimental gerontology*, 145, 111182. <https://doi.org/10.1016/j.exger.2020.111182>

All publications:

[Scopus](#)