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Place of work: Palladin Institute of Biochemistry of the National Academy of Sciences of Ukraine
Position at the main place of work: Head of the Immunobiology laboratory at the Palladin Institute of Biochemistry of NAS of Ukraine
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EMPLOYMENT

2003-Present Head of the Immunobiology laboratory at the Palladin Institute of Biochemistry of NAS of Ukraine
2003-2018 Deputy Director on Scientific Affairs of the Palladin Institute of Biochemistry of NAS of Ukraine
1999-2003 Postdoctoral researcher. Molecular immunology department at the Palladin Institute of Biochemistry of the National Academy of Sciences of Ukraine
1995-1998 PhD Student. Institute of Bioorganic and Oil Chemistry of the National Academy of Sciences of Ukraine
1990-1995 Taras Shevchenko National University, Biological Faculty, General Microbiology and Immunology department. Master's Degree on Microbiology

DEGREES

2011 **Habilitation (Doctor of Sciences).** Institute of Molecular Biology and Genetics of the National Academy of Sciences of Ukraine.
Doctoral Thesis "Molecular mechanism of diphtheria toxin immune recognition"

- 1999** **PhD (Candidate's Degree).** Institute of Bioorganic and Oil Chemistry of the National Academy of Sciences of Ukraine
PhD Thesis “Antigenic structure of the proline-rich 536-566 region of the adhesion protein pertactine P.69 from *Bordetella pertussis*”
- 1995** **MSc in Microbiology.** Biological faculty, Taras Shevchenko National University, Kyiv (Ukraine)

AWARDS AND SCHOLARSHIPS

- 2015** State Prize of Ukraine in Science and Technology
- 2000-2002** Scholarship of the President of Ukraine for Young Scientists
- 2001** President's Award for Young Scientists
- 1993-1995** George Soros Scholarship for Young Scientists

TRAININGS

- 2015** DAAD Program “Support of democracy in Ukraine”, Germany
- 2010** International visitor leadership program “Technology transfer and Research Commercialization in the U.S.” US Department of State
- 2006** Special American Business Internship Training Program (SABIT) “Clinical and innovation management”. LA, USA.

RESEARCH EXPERIENCE

- 1993-present** Palladin Institute of Biochemistry of NAS of Ukraine
Dep. of Molecular Immunology
Head of the DEPARTMENT: Prof. Serhiy Komisarenko
Research topic: Immune recognition of diphtheria toxin
- 1995-1998** Institute of Bioorganic and Oil Chemistry
Dep. of Protein Structure and Function
Head of the DEPARTMENT: Prof . Yuriy Radavskiy
Research topic: : Immune recognition of pertussis antigens

TEACHING EXPERIENCE

- 2017-present** Professor at the Department of Microbiology and Immunology, Institute of Biology and Medicine, Taras Shevchenko National University, Kiev

- 2008-2017** Associated Professor at the Department of Basic Microbiology and Immunology, Biological Faculty, Taras Shevchenko National University, Kiev
- 2000-2008** Assistant Professor at the Department of Basic Microbiology and Immunology, Biological Faculty, Taras Shevchenko National University, Kiev
- 2000-2008** Associated Professor at Biological department, National University “Kyiv-Mohyla Academy”

RESEARCH TECHNIQUES

Immunoassays (ELISA, Western-blot), Protein techniques (recombinant protein expression, protein purification, SDS-PAGE gel electrophoresis, zymography, MALDI-Tof analyzes and protein identification), General techniques of molecular biology (DNA isolation, DNA cloning, agarose DNA gel electrophoresis, PCR and RT-PCR, gene analysis in silico), Imaging and optical techniques (Flow cytometry, Confocal Microscopy, DLS), Microbiological techniques (bacteria cultivation, screening, transformation), eukaryotic cell cultivation, transient transfection, molecular cloning, etc.

ADMINISTRATIVE RESPONSIBILITIES

As head of the Immunobiology laboratory at the Palladin Institute of Biochemistry of NAS of Ukraine I have responsibilities to coordinate all aspects of the lab researches, including scientific project and academician studies.

Also I am the Vice-Chief editor of the journal “Biotechnologia Acta” (former “Biotechnology (Ukr)”), which is a multidisciplinary peer-reviewed scientific journal, published by the National Academy of Sciences of Ukraine and Palladin Institute of Biochemistry of the National Academy of Sciences of Ukraine <http://biotechnology.kiev.ua/>

CURRENT SCIENTIFIC PROJECT

2020-2021 “Study of coronavirus SARS-CoV-2 protein immunogenic properties as a basis for COVID19 vaccine development” sponsored by National Research Foundation of Ukraine – Head of the Project (8 participants)

2015- 2019 “Development of means for inhibiting the mitogenic activity of heparin-binding EGF-like growth factor” sponsored by National Academy of Sciences of Ukraine – Head of the Project (6 participants)

2016 "Study of diphtheria toxin recombinant fragments as potential biopharmaceuticals in cancer therapy” sponsored by The President’s of Ukraine

grant of the State Fund for Fundamental Research (F66) – Head of the Project (6 participants)

2010-2014 “Study of the influence of mycobacterium proteins MRT63 and MRT83 on phagocytic cells” sponsored by National Academy of Sciences of Ukraine– Head of the Project (6 participants)

MAIN RESULTS

During 2010-2020 our researches were aimed at studying the molecular mechanisms of diphtheria toxin and its receptor HB-EGF action, as well as the development of new immunobiotechnological products. We proposed to use the fluorescent derivatives of B subunit as tools for identification of diphtheria toxin's receptor HB-EGF expression on the cell surface and for studying the diphtheria toxin interaction and penetration to the cell. The new method for detection of protective antibodies in serum was proposed. A number of scFv-antibodies specific to diphtheria toxin B subunit were acquired from the obtained phage-display library. Besides, we developed effective ELISA test-systems for diphtheria and tuberculosis diagnosis as well as proposed PLGA based particles for per os immunization.

We are currently developing a Ukrainian vaccine against COVID-19 based on recombinant coronavirus SARS-CoV-2 proteins and their conjugates with diphtheria toxoid CRM197.

LANGUAGES

English (B2), Polish (B1), Ukrainian, Russian

OTHER SKILLS AND PREFERENCES

Taking care about environmental protection

Love classical music and painting

Interesting in history and religion

Like traveling by kayak

RECENT PUBLICATIONS

1. Shatursky O.Y., Manoilov K.Y., Gorbatiuk O.B., Usenko M.O., Zhukova D.A., Vovk A.I., Kobzar O.L., Triakash I.O., Borisova T.A., Kolibo D.V., Komisarenko S.V. The geometry of diphtheria toxoid CRM197 channel assessed by thiazolium salts and nonelectrolytes // *Biophys J.* – 2021. N 120. – P. 1–15.
2. Molozhava O., Mazurenko V., Sobko I., Kolibo D. Milk analysis by flow cytometry to identify subclinical udder infection // *J Microbiol Biotech Food Sci.* – 2021. – Vol. 10, N 5. – P. e3257.
3. Siromolot A.A., Krynina O.I., Kolybo D.V., Komisarenko S.V. Antiproliferative and apoptotic effects of anti-human HB-EGF neutralizing polyclonal antibodies in vitro // *Exp. Oncol.* – 2020. – Vol. 42, N 1. – P. 25–30.
4. Krynina O.I., Manoilov K.Yu., Kolybo D.V., Komisarenko S.V. Role of the heparin-binding domain in intracellular trafficking of sHB-EGF // *Ukr. Biochem. J.* – 2019. – Vol. 91, N 4. – P. 26-32.
5. Krynina O.I., Korotkevych N.V., Labyntsev A.J., Romaniuk S.I., Kolybo D.V., Komisarenko S.V. Influence of human HB-EGF secreted form on cells with

different EGFR and ErbB4 quantity // Ukr. Biochem. J. – 2019. – Vol. 91, N 5. – P. 25-33.

6. Manoilov K.Y., Krynina O.I., Labyntsev A.Ju., Romaniuk S.I., Kolybo D.V. Necessity of translocation domain for realisation of cytostatic effect of non-toxic derivatives of diphtheria toxin // Biotechnologia Acta. – 2018. – Vol. 11, N 2. – P. 64-71.

7. Manoilov K.Y., Labyntsev A.Ju., Korotkevych N.V., Maksymovych I.S., Kolybo D.V., Komisarenko S.V. Particular features of diphtheria toxin internalization by resistant and sensitive mammalian cells // Cytology and Genetics. – 2018. – Vol. 52, N 5. – P. 353-359.

8. Siromolot A.A., Chudina T.O., Danilova I.S., Rekalova E.M., Kolybo D.V., Komisarenko S.V. Specificity and sensitivity of the new test for serological evaluation of tuberculosis using MPT83-MPT63 fusion antigen and factors affecting testing // The Ukrainian Biochemical Journal. – 2018. – Vol. 90, N 6. – P. 41-48.

9. Siromolot A.A., Oliinyk O.S., Kolybo D.V. Recognition of Mycobacterium tuberculosis antigens MPT63 and MPT83 with murine polyclonal and scFv antibodies // Biotechnologia Acta. – 2018. – Vol. 11, N 2. – P. 30-39.

10. Siromolot A.A., Kolybo D.V. Putative target cells for Mycobacterium tuberculosis antigens MPT63 and MPT83 // Research Journal of Pharmaceutical, Biological and Chemical Sciences. – 2018. – V 9, N 2. – P. 367-378.

11. Chudina T., Labyntsev A., Kolybo D., Komisarenko S. Adjuvant properties of nanoparticles of different chemical structure immobilized with recombinant diphtheria toxoid // Biotechnologia Acta. – 2017. – Vol. 10, N 4. – P. 14-24.

12. Manoilov K.Yu., Labyntsev A.J., Korotkevych N.V., Kolybo D.V. Enhancement of internalization of diphtheria toxin recombinant fragments in sensitive cells mediated by toxin's T-domain // Ukr. Biochem. J. – 2017. – Vol. 89, N 5. – P. 96-105.

13. Volodina T.T., Korotkevich N.V., Romaniuk S.I., Galkin O.Yu., Kolybo D.V., Komisarenko S.V. Implementation of Dietary Supplements with Effect of Decontamination and Improvement of Osteogenesis and Metabolism // Sci. innov. – 2017. – Vol. 13, N 6. – P. 41-53.

14. Манойлов К.Ю., Горбатюк О.Б., Усенко М.О., Шатурський О.Я., Борисова Т.О., Колибо Д.В., Комісаренко С.В. Характеризація очищеної рекомбінантної субодиниці В дифтерійного токсину як інструмента його дослідження // Доповіді НАН України. – 2017. № 2. – С. 88-99.

15. Chudina T.O., Labintsev A.J., Romaniuk S.I., Kolybo D.V., Komisarenko S.V. Changes of proHB-EGF expression after functional activation of the immune system cells // Ukr. Biochem. J. – 2017. – Vol. 89, N 6. – P. 31-38.

16. Siromolot A.A., Oliinyk O.S., Kolybo D.V., Gerilovych A.P. Improvement and optimization of antigenic composition for serodiagnosis of tuberculosis // Journal for Veterinary Medicine, Biotechnology and Biosafety. – 2016. – Vol. 2, N 4. – P. 11-15.

17. Siromolot A.A., Redchuk T.A., Solodiankin O.S., Kolybo D.V., Gerilovich A.P., Komisarenko S.V. The Trial of Experimental Test System for the Specific Diagnostics of Cattle Tuberculosis // Biotechnologia Acta. – 2016. – Vol. 9, N 4. – P. 14-18.

18. Siromolot A.A., Oliinyk O.S., Kolybo D.V., Komisarenko S.V. Mycobacterium

tuberculosis antigens MPT63 and MPT83 increase phagocytic activity of murine peritoneal macrophages // Ukr. Biochem. J. – 2016. – Vol. 88, N 5. – P. 62-70.

19. Ezechuk Yu.V., Kolybo D.V. Nobel Laureate Ilya I. Metchnikoff (1845-1916). Life story and scientific heritage. // Ukr. Biochem. J. – 2016. – Vol. 88, N 6. – P. 98-109.

20. Manoilov K.Yu., Labyntsev A.Ju., Korotkevych N.V., Kolibo D.V., Komisarenko S.V. Interaction of recombinant diphtheria toxoids with cellular receptors in vitro // Biotechnologia Acta. – 2016. – Vol. 9, N 3. – P. 44-51.

21. Манойлов К.Ю., Горбатюк О.Б., Шатурський О.Я., Борисова Т.О., Колибо Д.В., Комісаренко С.В. Охарактеризування очищеного рекомбінантного протеїну CRM197, експресованого в *E. coli*, як інструмента дослідження дифтерійного токсину // Доп. НАН України. – 2016. № 9. – С. 124-133.