



Prof. dr hab. Joanna Mankiewicz-Boczek

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Position

Professor at:

1. European Regional Centre for Ecohydrology of the Polish Academy of Sciences (ERCE PAS), Łódź, Poland – main position, Head of Laboratory of Molecular Ecohydrology in ERCE PAS;
2. UNESCO Chair on Ecohydrology and Applied Ecology, Faculty of Biology and Environmental Protection, University of Lodz, Łódź, Poland – partially position

Education

- Prof dr hab. (Biological sciences, molecular biology and ecohydrology specialisation) Faculty of Biology and Environmental Protection, University of Lodz, 2014
- Dr hab. (ecotoxicology specialisation) Faculty of Biology and Environmental Protection, University of Lodz, 2008
- Ph.D. (molecular genetic specialisation) Faculty of Biology and Earth Science, University of Lodz, Poland, 2001
- M.Sc. (biochemical and genetic specialisation) Faculty of Biology and Earth Science, University of Lodz, Poland, 1997

Main research areas

- Water biomonitoring and ecotoxicology including genetic ecotoxicology
- Toxicity and genotoxicity of cyanobacteria and different cyanobacterial toxins - health aspects
- Interaction cyanobacteria, other bacteria
- Microorganisms in biodegradation process (e.g. nutrient removal)
- Biotechnology for ecology including the development and implementation of sedimentation biofiltration systems and barriers to remove nitrogen and phosphorus compounds from rural and urban areas

Professional experience:

- 2019 - May, 05-10, Poland, Kraków, 11th Int. Conf. on Toxic Cyanobacteria, local organizing committee
- 2019 - April 08-10, Poland, Poznań, co-organizing and participation in the Scientific Committee of the 9th National Conference of Bioindication „Practical use of bioindication systems for evaluation of toxicity of environment and chemical substances”, Chairman of the session 3 “Hazards in surface waters and drinking water distribution systems”
- 2018 - April 18-20, Poland, Kraków, co-organizing and participation in the Scientific Committee of the 8th National Conference of Bioindication „Practical use of bioindication

- systems for evaluation of toxicity of environment and chemical substances”, Chairman of the session 3 “Bioindication of air pollution”
- 2017 - September, 26-28, Poland, Lodz, International Symposium Ecohydrology for the Circular Economy and Nature-Based Solutions towards mitigation/adaptation to Climate Change, Chairman of the session “ 4th symposium of Healthy Rivers and Sustainable Water Resource Management” - invited speaker
- 2017 - July, 4-6, Poland, Jagiellonian University, Faculty of Biochemistry, Biophysics and Biotechnology, Kraków, Poland, Int. Workshop „CyanoStop2017” - invited speaker
- 2017 - May, 30 and 1 June, Poland, Wrocław, co-organizing and participation in the Scientific Committee of the 7th National Conference of Bioindication „Practical use of bioindication systems for evaluation of toxicity of environment and chemical substances”, Chairman of the session 3 “Toxicity of chemical substances”
- 2016 - October, 23-28, China, Wuhan, 10th Int. Conf. on Toxic Cyanobacteria, Chairman of the session 7 “Secondary metabolites production and functions: biosynthesis, regulation, biological functions – Part 2”
- 2016 - April, 20-22, Poland, Szczecin, co-organizing the 6th National Conference of Bioindication „Practical use of bioindication systems for evaluation of toxicity of environment and chemical substances”
- 2015 - May, 27-29, Poland, Lublin, co-organizing the 5th National Conference of Bioindication „Practical use of bioindication systems for evaluation of toxicity of environment and chemical substances”
- 2015 - February 18-21, Seville, Spain, ECOST-MEETING-ES1105-180215-056221, CYANOCOST Combined WG-MC meetings “Key abiotic and biotic determinants of occurrence and toxicological impact of cyanobacterial blooms in a lowland dam reservoir of Sulejów, Poland” - invited speaker
- 2014 - November, 7-8, Poland, Poznań, II International Scientific Conference OXYGENALIA “Water the molecule of life”, invited speaker
- 2014 - May, 28-30, Poland, Olsztyn, co-organizing the 4nd Conference „Practical use of bioindication systems for evaluation of toxicity of environment and chemical substances”
- 2013 - September, 17-19, Poland, Łódź, The International Symposium “Ecohydrology, Biotechnology And Engineering: Towards Harmony Between the Biogeosphere and Society on the basis of Long-Term Ecosystem Research”, invited speaker
- 2013 - April, 11-12, Poland, Łódź, co-organizing the 3rd Ecotoxicological workshop „Practical use of bioindication systems for evaluation of toxicity of environment and chemical substances”
- 2012 - April, 19-20, Poland, Konstantynów Łódzki, co-organizing the 2nd Ecotoxicological workshop „Practical use of bioindication systems for evaluation of toxicity of environment and chemical substances”
- 2012 - August, Greece, Nea Moudania, Alexander Technological Education Institute of Thessaloniki, scientific visit for the implementation of research of fish diversity
- 2011 - October, 23-24, China, Chongqing, University of Chongqing, Faculty of Urban Construction & Environmental Engineering, scientific visit for the implementation of research “Mechanisms and Early Warning Techniques of Algal Blooms in the Tributaries of the Three Gorges Reservoir, China”
- 2011 - October, 20-22, China, Chongqing, University of Chongqing, co-organizing the 2nd Conference on Healthy Rivers and Sustainable Water Resources Management
- 2010 - September, 12-22, Poland, Łódź-Tresta, co-organizing the international workshop “Ecohydrology & Biotechnology for Sustainable Integrated Water Resources Management in HELP Basins”
- 2009 - September, 14-22, Poland, Łódź-Tresta, co-organizing the international workshop “Ecohydrology & Ecosystems Biotechnologies in Water Resources Management”,
- 2003 - Belgium, Liege, University of Liege, visiting scientist (PROJECT EC-EVK2-2002-00546, MIDI-CHIP-TOX- “Linking cyanobacterial diversity and cyanotoxins”)
- 2003 - Finland, Helsinki, University of Helsinki, visiting scientist (PROJECT EC-EVK2-2002-00546, MIDI-CHIP-TOX- “Linking cyanobacterial diversity and cyanotoxins”)
- 2002 - Belgium, Liege, University of Liege, visiting scientist (PROJECT EC-EVK2-2002-00546, MIDI-CHIP-TOX- “Linking cyanobacterial diversity and cyanotoxins”)

- 2001 - Hungary, Veszprem, University of Veszprem, Course of EuroLab "Pollution Surveillance and Control in Wetland Ecosystems"
- 1999 - Ireland, Dublin, Dublin City University, Course of FEBS „Animal Cell Culture Techniques for Biochemists”
- 1999 - Norway, Bergen, Department of Anatomy and Cell Biology, University of Bergen, visiting scientist

Research projects:

Granted by the Polish State Committee for Scientific Research, the National Science Centre (NSC) or the National Research and Development Centre (NRDC)

- 2020-2023 - Isolation, identification and characterization of algicidal bacteria as a potential factor controlling the occurrence of freshwater toxic cyanobacterial blooms, ALGICYDY, NCS 2019/33/B/NZ8/02093, coordinator
- 2017-2021 - Development and implementation of innovative biotechnological products for agriculture and wastewater management in order to reduce water pollution, AZOSTOP, NRDC, TANGO2/339929/NCBR/2017, sub-coordinator, manager
- 2016-2019 - Use of artificial neural networks and methods in the field of pattern recognition for a complex catchment analysis of the impact of anthropogenic chemical and microbiological pollution on water resources, NEURON, NSC 2015/19/B/ST10/02167
- 2016 - Development and implementation of lake reclamation and surface water protection method based on natural biological technologies employing beneficial microorganisms, NCRD GEKON2/03/267948/21/2016
- 2014-2017 - Ecological dynamics of cyanophages and their host in polish water bodies, UMO-2013/11/N/NZ8/00607, project supervisor
- 2013-2016 - Application of reporter cell biosensors in ecotoxicology of cyanobacteria: new targets for bioactivity, UMO-2012/07/B/NZ8/03991, coordinator
- 2013-2016 - Assessment of the interaction between hepatotoxic cyanobacterium *Microcystis aeruginosa* and pathogenic bacteria of the genus *Aeromonas*, UMO-2012/07/N/NZ8/00599, project supervisor
- 2013-2016 - Do fish adapt to cyanobacterial blooms?, UMO-2012/05/B/NZ9/00980
- 2012-2016 - Microbial activators in denitrification deposits used for the treatment of nitrate pollution for the implementation of the Water Framework Directive and the Nitrates Directive, NRDC, PBS1/A8/0/2012, sub-coordinator
- 2010-2013 - Explanation of cause-effect relationships between the occurrence of toxinogenic cyanobacterial blooms, and abiotic and biotic factors with particular emphasis on the role of viruses and bacteria, N N305 096439, coordinator
- 2009-2010 - Ecology and toxicity of cyanobacteria *Cylindrospermopsis raciborskii* and *Aphanizomenon gracile*, potential producers of cylindrospermopsin, in selected lakes of Wester Poland, N304 020437
- 2006-2009 - Phenotypic diversity and toxicity of invasive cyanobacteria occurred with *Planktothrix agardhii* (Gom.) Anagn. et Komarek blooms in hypertrophy lakes of Wielkopolska, N304 051 31/1855
- 2005-2007 - The ecotoxicological analyses of surface water; 2PO5F 056 28
- 2004-2007 - Application of molecular methods for monitoring of hepatotoxic strains of cyanobacteria in drinking and recreational water of Poland, 2PO4F 044 27, coordinator
- 2003-2006 - The risk of health estimation by cyanotoxins in drinking water using cytotoxicity and genotoxicity tests, 0546/PO5/2003/25, coordinator
- 2001-2004 - Elimination of cyanobacterial toxins during treatment process, 7T09D 01321
- 2000-2001- Estimation of toxicity of microcystins produced by cyanobacterial, coordinator

Other

- Polish Aid Programme for the year 2010 (944/2010), 2011 (23/2011) and 2012 (64/2012) "Implementation of Ecohydrology - a transdisciplinary science - for integrated water management and sustainable development in Ethiopia"

Project supported by the European Union

- 2012-2016 ESSEM COST Action ES1105 Cyanobacterial blooms and toxins in water resources: Occurrence, impacts and management (CYANOCOST), MC Substitute
- 2007-2009 NanoInteract– Development of a platform and toolkit for understanding interaction between nanoparticles and the living world, Project EC - No 033231
- 2006-2011 SWITCH - Sustainable Water Management Improves Tomorrow's Cities' Health Project EC – 018530-2
- 2002-2005 - PROJECT EC-EVK1-2001-00182, TOXIC - “Barriers against cyanotoxins in drinking water”
- 2003-2005 - SOCRATES/ERASMUS „Master of Inland Water Quality Assessment” (29369-IC-1-2002-1-SE-ERASMUS-PROGUC-1)
- 2002-2003 - PROJECT EC-EVK2-2002-00546, MIDI-CHIP-TOX - “Linking cyanobacterial diversity and cyanotoxins”

Publications

Co-author of **90 publications**

including: four chapters in *Handbook of Cyanobacterial Monitoring and Cyanotoxin Analysis* [eds.: J. Meriluoto, L. Spoof and G.A. Codd]. John Wiley & Sons, Ltd, The Atrium, Chichester, UK. 2017. and three chapters in *Molecular tools for the detection and quantification of toxic cyanobacteria* [eds.: R. Kurmayer, K. Sivonen, A. Wilmotte and N. Salmaso]. John Wiley & Sons, Ltd, The Atrium, Chichester, UK. 2017.

Co-author of **more than 150 presentations at conferences** (including more than 100 international conferences)

Co-author of **several expertise** related to the assessment of **the quality of surface and drinking water**

Selected publications from last 10 years:

- Font Nájera A., Serwecińska L., Szklarek S., **Mankiewicz-Boczek J. 2020.** Characterization and comparison of microbial communities in sequential sedimentation-biofiltration systems for reduction of nutrient loads in urban rivers. *Ecological Engineering* 149 <https://doi.org/10.1016/j.ecoleng.2020.105796>
- Jaslulska A., **Mankiewicz-Boczek J. 2019.** Cyanophages specific to cyanobacteria from the genus *Microcystis*. *Ecology & Hydrobiology* doi.org/10.1016/j.ecohyd.2019.06.001 20: 83-90
- Mantzouki E. et al. **2018.** Temperature effects explain continental scale distribution of cyanobacterial toxins. *Toxins* 10, 156; doi:10.3390/toxins10040156.
- Rzymiski P., Poniedziałek B., **Mankiewicz-Boczek J.**, Faassen E.J., Jurczak T., Gągała-Borowska I., Ballot A., Lürling M., Kokociński M. **2017.** Polyphasic toxicological screening of *Cylindrospermopsis raciborskii* and *Aphanizomenon gracile* isolated in Poland. *Algal Research* 24: 72-80.
- **Mankiewicz-Boczek J.**, Bednarek A., Gągała-Borowska I., Serwecińska L., Zaborowski A., Kolate E., Pawełczyk J., Żaczek A., Dziadek J., Zalewski M. **2017.** The removal of nitrogen compounds from farming wastewater – The effect of different carbon substrates and different microbial activators. *Ecological Engineering* 105: 341-354.
- **Mankiewicz-Boczek J.**, Jaskulska A., Gągała I., Pawełczyk J., Serwecińska L., Dziadek J. **2016.** Cyanophages infection of *Microcystis* bloom in lowland dam reservoir of Sulejów, Poland. *Microbial Ecology*, 71(2): 315-325.
- **Mankiewicz-Boczek, J.**, Gągała I., Jurczak T., Jaskulska A., Pawełczyk J., Dziadek J. **2015.** Bacteria homologous to *Aeromonas* capable of microcystin degradation. *Open Life Sciences* 10: 106–116.
- **Mankiewicz-Boczek J.**, Karwacia I., Ratajewski M., Gągała I., Jurczak T., Zalewski M., Pułaski Ł. **2015.** Application of cellular biosensors for detection of atypical toxic bioactivity in microcystin-containing cyanobacterial extracts. *Aquatic Toxicology* 168: 1-10.
- Szklarek S., Stolarska M., Wagner I., **Mankiewicz-Boczek J. 2015.** The microbiotest battery as an important component in the assessment of snowmelt toxicity in urban watercourses – preliminary studies. *Environmental Monitoring and Assessment* 187: 16.

- **Mankiewicz-Boczek J.**, Gągała I., Jurczak T., Urbaniak M., Negussie Y., Zalewski M. **2014**. Incidence of microcystin-producing cyanobacteria in Lake Tana, the largest waterbody in Ethiopia. *African Journal of Ecology*. 53: 54-63.
- Gągała I., Izydorczyk K., Jurczak T., Pawełczyk J., Dziadek J., Wojtal-Frankiewicz A., Jóźwik A., Jaskulska A., **Mankiewicz-Boczek J.** **2013**. Role of Environmental Factors and Toxic Genotypes in The Regulation of Microcystins-Producing Cyanobacterial Blooms. *Microbial. Ecol.* 67(2): 465-479.
- **Mankiewicz-Boczek J.**, Imsiridou A., Kaczkowski K., Tsiora A., Karaiskova N., Łapińska M., Minos G., Zalewski M. **2013**. Genetic diversity of perch populations in three lowland reservoirs (Central Poland): perspective for fish sustainable management. *Pol. J. Ecol.* 61(2): 385-390.
- **Mankiewicz-Boczek J.** **2012**. Application of molecular tools in Ecohydrology. *Ecohydrol. Hydrol.* 12(2): 165-170.
- **Mankiewicz-Boczek J.**, Kobos J., Gągała J., Izydorczyk K., Toruńska A. POLAND: Management and Regulation of Toxic Cyanobacteria. In: Chorus I. [ed.] Current approaches to Cyanotoxin risk assessment, risk management and regulations in different countries. Federal Environmental Agency, Germany, **2012**, TEXTE 63, pp. 109-114.
- **Mankiewicz-Boczek J.**, Kokociński M., Gągała I., Pawełczyk J., Jurczak T., Dziadek J. **2012**. Preliminary Molecular Identification of Cylindrospermopsin-producing Cyanobacteria in Two Polish Lakes (Central Europe). *FEMS Microbiology Letters* 326: 173-179.
- Gągała I., **Mankiewicz-Boczek J.** **2012**. The Natural Degradation of Microcystins (Cyanobacterial Hepatotoxins) in Freshwaters - Future for the Modern Treatment Systems and Water Quality Improvement. *Pol. J. Environ. Stud.* 21(5): 1125-1139.
- **Mankiewicz-Boczek J.**, Palus J., Gągała I., Izydorczyk K., Jurczak T., Dziubałtowska E., Stępnik M., Arkusz J., Komorowska M., Skowron A., Zalewski M. **2011**. Effects of microcystins-containing cyanobacteria from a temperate ecosystem on human lymphocytes culture and their potential for adverse human health effects. *Harmful Algae*, 10: 356-365.
- **Mankiewicz-Boczek J.**, Gągała I., Kokociński M., Jurczak T., Stefaniak K. **2011**. Perennial toxigenic *Planktothrix agardhii* bloom in selected lakes of Western Poland. *Environmental Toxicology* 26(1): 10–20.
- Kokociński M., Stefaniak K., **Mankiewicz-Boczek J.**, Izydorczyk K., Soininen J. **2010**. The ecology of invasive cyanobacterium *Cylindrospermopsis raciborskii* (Nostocales, Cyanophyta) in two hypereutrophic lakes dominated by *Planktothrix agardhii* (Oscillatoriales, Cyanophyta). *European Journal of Phycology* 45(4): 365-374.
- Wagner I, Izydorczyk K, Kiedrzyńska E, **Mankiewicz-Boczek J**, Jurczak T, Bednarek A., Wojtal-Frankiewicz A., Frankiewicz P., Ratajski S., Kaczkowski Z., Zalewski M. **2009**. Ecohydrological system solutions to enhance ecosystem services: the Pilica River Demonstration Project. *Ecohydrology & Hydrobiology* 9(1): 13-39.
- Kokociński M., Dziga D., Spoof L., Stefaniak K., Jurczak T., **Mankiewicz Boczek J.**, Meriluoto J. **2009**. First report of the cyanobacterial toxin cylindrospermopsin in shallow, eutrophic lakes in western Poland. *Chemosphere* 74: 669-675.

Organizational memberships and other activity

- 2019-2022 The Polish Committee of the UNESCO Hydrological Program
- Commission on Ethics, The Lodz Branch of the Polish Academy of Sciences
- Science for Environmental Policy - Advisory Group for newsletter http://ec.europa.eu/environment/integration/research/newsalert/advisory_group.htm
- Reviewer (Review Editor) at Frontiers Aquatic Microbiology - Frontiers in Marine Science and Frontiers in Microbiology
- 2015-2019 Biotechnology Research Committee of the Polish Academy of Sciences

Patents and License

- 2020 - Patent PL 235 338 B1 Modular Organic Manure Plate
- 2018 - Patent PL 231 378 B1 Organic Manure Plate
- 2018 - License agreement - P.0404407 Denitrification deposit for pollution reduction
- 2017 - License agreement - bacterial strain *Pseudomonas fluorescens* DN2602 with denitrification properties