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**Date of Birth:** 4<sup>th</sup> November, 1992

**Marital status:** Married

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## Education

- 2016 - 2021**                      PhD in Genetics and Bioengineering  
International University of Sarajevo  
Faculty of Engineering and Natural Sciences  
Title: Combinatorial Treatment of Diffuse Large B-cell Lymphoma  
with Metformin and Novel Therapeutic Candidates
- 2015 - 2016**                      Master of Science (MSc) in Genetics and Bioengineering  
International University of Sarajevo  
Faculty of Engineering and Natural Sciences
- 2011 - 2015**                      Bachelor of Science (BSc) in Genetics and Bioengineering  
International University of Sarajevo  
Faculty of Engineering and Natural Sciences

## Professional and research experience:

- Sep 2023 – Present**                      **Manager**  
Research and Development Center  
Sarajevo, Bosnia and Herzegovina
- Mar 2023 - Present**                      **Senior Assistant**  
International University of Sarajevo  
Department of Genetics and Bioengineering  
Sarajevo, Bosnia and Herzegovina
- Feb 2021 – Mar 2023**                      **Assistant**  
International University of Sarajevo  
Department of Genetics and Bioengineering  
Sarajevo, Bosnia and Herzegovina

- January 2020**                      **Third CellFit Training School**  
 “Meet the rising stars of emerging therapies” From 3D Bioprinting to Extracellular Vesicle isolation and encapsulation for delivery”  
 COST Action CA16119  
 Unimont Campus  
 Ponte di Legno, Italija
- Dec 2019 – Feb 2021**                      **Lab Assistant**  
 Research and Development Center  
 International University of Sarajevo  
 Sarajevo, Bosnia and Herzegovina
- February 2019**                      **Second CellFit Training School**  
 “Adding a new dimension to cell culture – A practical full immersion course on 3D matrix, cell mechanosensing and *in vitro* culture, selection of right 3D matrix, working with TinkerCAD of 3D models, and 3D printing for matrix molds”  
 COST Action CA16119  
 Unimont Campus  
 Ponte di Legno, Italija
- July 2018 – Sep 2018**                      **Research assistant** at the project LORM project: Evaluation of effects of different compounds in the *in vitro* and *in vivo* oral mucositis models  
 Collaboration of *Monitor Medikal Araştırma ve Danışmanlık Ticaret Limited Şirketi*, Cumhuriyet Mahallesi, İstanbul, Turkey and  
*Pharmaceutical Company Bosnalijek*, Jukićeva 53, Sarajevo
- March 2017 – June 2018**                      **Cambridge Program Science teacher** (Physics, Chemistry and Biology)  
 The First Private Primary School “Isa-beg Ishaković”, Sarajevo, Bosnia and Herzegovina
- Feb 6 – March 8 2017**                      **Short-term scientific mission (STSM):** “Combinatorial treatment of Non-Hodgkin’s lymphomas with metformin and novel therapeutical candidates”  
 Lymphoma & Genomics group  
 Mentor: Eugenio Gaudio, PhD  
 Institute of Oncology Research  
 Bellinzona, Switzerland
- Sep 2016 – March 2017**                      **Scholarship assistant**  
 Courses: Cell Biology, Biochemistry I, Biochemistry II, General Microbiology, Molecular Biology, Techniques in Molecular Biology, Organic Chemistry

International University of Sarajevo  
Faculty of Engineering and Natural Sciences  
Department of Genetics and Bioengineering

**Feb 2015 – Mart 2015**      **Internship student** at Dr. Orhan Karahodza Trade & Consulting company  
Medical and Nursing Facilities: Planning, Procurement, and Management  
Mallorca, Spain

**Aug 2014 – Sep 2014**      **Internship student** at the Research Center for Bioengineering  
Department of Molecular Biology  
Karamanoğlu Mehmetbey Üniversitesi  
Karaman, Turkey

### Languages:

**First language:**

Bosnian

**Other languages:**

English      Fluent

German      Good

Spanish      Good

### Lab skills:

- Agarose gel electrophoresis
- Polyacrylamide gel electrophoresis
- Western blot
- ELISA
- Cell culture: adherent and suspension mammalian cells
- Drug screening
- Cell viability assays (MTT and CCK-8)
- Cell proliferation assay: BrdU
- DNA and RNA isolation
- Protein isolation
- Protein and nucleic acid quantification
- Bradford assay
- Quanti blue assay
- qPCR, RT-PCR
- Gram+/gram- bacteria staining
- Statistical analysis
- Critical thinking and problem solving

### Engagement in projects

Oct 2023 – Present      **PM particles and artificial intelligence: Unraveling the links between exposure to PM and health conditions in humans (pAIm)**  
**Engagement:** Experimental design and work, Data analysis  
The project is funded by the Ministry of Education, Science and Youth of Sarajevo Canton, number: 27-02-35-18976-1/23

Oct 2023 – Present      ***In vitro* evaluation of new therapeutics in lymphoma treatment**  
**Engagement:** Project organization; Experimental design and work, Data analysis

The project is funded by the Ministry of Education, Science and Youth of Sarajevo Canton

- 2021 – 2022 **Effect of metformin and novel anti-cancer agents on gene expression profiles in diffuse large B-cell lymphoma**  
**Engagement:** Project organization; Methodology; Experimental design and work, Data analysis
- 2016 – 2021 **Combinatorial treatment of diffuse large B-cell lymphoma with metformin and novel therapeutic candidates**  
**Engagement:** Project organization; Methodology; Experimental design and work, Data analysis
- 2019 – 2021 **Implications of metformin treatment on gene expression profiling in diffuse large B-cell lymphoma**  
**Engagement:** Project organization; Methodology; Experimental design and work, Data analysis  
**Funding:** The project was funded by the International Center for Genetic Engineering and Biotechnology
- 2016 – 2019 **Effects of metformin and thymoquinone on fitness of lymphoma and leukemia cells**  
**Engagement:** Experimental design and work, Data analysis  
**Funding:** The project was funded by the International Center for Genetic Engineering and Biotechnology, Trieste, Italy, Project number CRP/BIH15-05 and Ministry of Education, Science, Culture, and Sport in the Federation of Bosnia and Herzegovina: Mostar, Bosnia, and Herzegovina, Decision number 05-39-3471-1/13.
- 2020 **Characterization of solvents and optimization of stability and solubility of bioactive compounds used in lymphoma cell culture treatments**  
**Engagement:** Project organization; Methodology; Experimental design, Data analysis
- 2018 – 2019 **Evaluation of cytoprotective candidates and cisplatin-based treatment in non-small cell lung cancer model**  
**Engagement:** Experimental design and work, Data analysis
- 2018 – 2019 **Exploring the effects of natural compounds and repurposed drugs in healthy lung fibroblasts and non-small cell lung cancer**

**Engagement:** Experimental design and work, Data analysis

2018 – 2019

**Evaluation of curcumin effects on viability and proliferation of human leukemic cell lines**

**Engagement:** Experimental design and work, Data analysis

## Workshops and Webinars

Oct 2023

**Workshop organizer:** Protein expression analysis by Western blot: Hands-on technique  
Research and Development Center  
International University of Sarajevo

May 2023

**Educational Webinar (participant):** Streamline Your Cell Culture Workflow with Solutions from Merck

Sep 2016

**Workshop organizer:** Protein expression analysis by Western blot technique  
Research and Development Center  
International University of Sarajevo

## Publications

1. Sezer, A., Mahmutovic L., Akcesme, B. *In silico* study of polyphenols as potential inhibitors of MALT-1 protein in Non-Hodgkin lymphoma. Medical Oncology. Accepted on 11<sup>th</sup> November, 2023. Manuscript Number: MEDO-D-23-02073R1.
2. Dedic, M., Omeragic, E., Becic, E., Bilajac, E., Mahmutovic, L., Glamoclija, U., Imamovic, B. HPLC method for determination of thymoquinone in growth cell medium. Acta Chemica Slovenica. Accepted in November. Manuscript Number: CS ID NO: 5107
3. Bilajac E., Glamoclija U., Osmanovic A., Mahmutovic L., Sezer A., Roca S., Spirtovic-Halilovic S., Salihovic M., Hromić-Jahjefendić A., Veljovic E., Analysis of Antitumor Potential of Xanthene Compounds in Lymphoma Cells. Croatica Chemica Acta, 96 (1), 59-68. <https://doi.org/10.5562/cca4007>, August 2013.
4. Bilajac E., Mahmutovic L., Glamoclija U., Osmanovic A., Hromić-Jahjefendić A., Tambuwala M., Suljagic M. Curcumin Decreases Viability and Inhibits Proliferation of Imatinib-Sensitive and Imatinib-Resistant Chronic Myeloid Leukemia Cell Lines. Metabolites, 13(1), 58; <https://doi.org/10.3390/metabo13010058>, January 2023.
5. Bilajac E., Mahmutovic L., Lundstrom K., Glamoclija U., Šutković J., Sezer A, Hromić-Jahjefendić A. Viral Agents as Potential Drivers of Diffuse Large B-Cell Lymphoma Tumorigenesis. Viruses, 14(10):2105, doi: 10.3390/v14102105, September 2022.
6. Glamoclija, U., Mahmutovic, L., Bilajac E., Soljic, V., Vukojevic, K., Suljagic M. Metformin and Thymoquinone Synergistically Inhibit Proliferation of Imatinib-Resistant Human Leukemic Cells. Frontiers in Pharmacology, 13:867133, April 2022.

7. Kumasin, A., Mahutovic, L., Hromic-Jahjefendic, A. Testing temperature and pH stability of the catalase enzyme in the presence of inhibitor. *Periodicals of Engineering and Natural Sciences*, 10 (2), 18-29, February 2022.
8. Mahmutović L., Bilajac E., Hromić-Jahjefendić A. Meet the Insidious Players: Review of Viral Infections in Head and Neck Cancer Etiology with an Update on Clinical Trials. *Microorganisms*, 9 (5), 1001, May 2021.
9. Adilovic A., Mahmutović L., Huseinbegović E., Suljagic M. Characterization of solvents and optimization of stability and solubility of bioactive compounds used in lymphoma cell culture treatments. *Periodicals of Engineering and Natural Sciences*, 8 (4), 2553-2563, December 2020.
10. Sutkovic J., Mahmutovic L., Huseinbegovic E., Adilovic M., Sinanovic F., Akcesme Berat F. Ethical, legal and social implications of genetically modified organism in the shadow of advanced genetic tools. *Periodicals of Engineering and Natural Sciences*, 8 (4), 2118-2128, October 2020.
11. Mahmutovic, L., Bego, T., Sterner, M., Gremesberger, G., Ahlqvist, E., Velija Asimi, Z., Prnjavorac, B., Hamad, N., Causevic, A., Groop, L., Semiz, S. Association of *IRS1* genetic variants with glucose control and insulin resistance in type 2 diabetic patients from Bosnia and Herzegovina. *Drug Metabolism and Personalized Therapy*, 34(1), 38-41, March 2019.
12. Mahmutovic, L., Akcesme, B., Durakovic, C., Akcesme, F., Maric, A., Adilovic, M., Hamad, N., Wjst, M., Feeney, O. and Semiz, S. Perceptions of students in health and molecular life sciences regarding pharmacogenomics and personalized medicine. *Human Genomics*, 12(1) Nov. 2018.
13. Mahmutovic, L. The Gut-Brain Axis in Foetal-Maternal Relationship. *Southeast Europe Journal of Soft Computing*, 7(1) March 2018.
14. Halilovic, L., Bego, T., Causevic, A., Hamad, N., Velija Asimi Z., Semiz, S. Association of *IRS1* Genetic Variation with Type 2 Diabetes and Insulin Resistance in Patients from Bosnia and Herzegovina, *The FEBS Journal*, 283 (S1), Sept. 2016.
15. Hamad, N., Bego, T., Causevic, A., Halilovic, L., Velija Asimi Z., Semiz, S., Effects of *ADRA2A* genetic variants on Type 2 diabetes-related traits, *The FEBS Journal*, 283 (S1), Sept. 2016.

**Publications currently under review (updated 14<sup>th</sup> December 2023):**

1. Mahmutović, L., Huseinbegović, E., Bilajac, E., Glamočlija, U., Suljagić, M. Metformin exerts anticancer activities and regulates gene expression in diffuse large B-cell lymphoma. *Blood Science Journal*. Manuscript Number: BLS-23-058R1
2. Mahmutović L., Sezer, A., Bilajac, E., Hromić-Jahjefendić A., Uverskyb Glamočlija, V.N., U. Polyphenol Stability and Bioavailability in Cell Culture Medium: Challenges, Limitations and Future Directions. *International Journal of Biological Macromolecules*, Elsevier. Manuscript Number: IJBIOMAC-D-23-12090
3. Bilajac, E., Glamočlija, U., Osmanović, A., Mahmutović, L., Sezer, A., Roca, S., Špirtović-Halilović, S., Salihović, M., Hromić-Jahjefendić, A., Veljović E. Xanthene Derivatives Show Weak Antitumor Activities in Lymphoma Cells and Stimulate Akt Activation. *Croatica Chemica Acta*. Manuscript Number: MS ID NO: 4007

## Conferences and Congresses:

1. E. Bilajac, L. Mahmutovic, U. Glamoclija, M. Suljagic, Evaluation of curcumin effects on viability and proliferation of human leukemic cell lines, 4th international symposium on phytochemicals in medicine and food, Beijing China, December 5, 2020.
2. Glamoclija U, Mahmutovic L, Babic B, Suljagic M. Hormetic effects of thymoquinone in leukemia and lymphoma cells. Natural Products in Drug Discovery and Human Health (NatProdDDH) – PSE Meeting, Lisbon, July 2019.
3. Mahmutovic L, Bego T, Sterner M, Ahlqvist E, Velija Asimi Z, Prnjavorac B, Hamad N, Causevic A, Groop L, Semiz S., IRS1 Genetic Variants Associated with Glucose Control and Insulin Resistance in Type 2 Diabetes Mellitus Patients from Bosnia and Herzegovina, The Second Congress of Diabetes and Endocrinology in BH with International Participation, Sarajevo, Bosnia and Herzegovina, April 19-22, 2018.
4. Omerhodzic I, Mahmutovic E, Mahmutovic L, Dzurlic A, Bilalovic N., Survival Prognosis in Glioblastoma Patients in Relation to ATRX, IDH and P53 Expression, WFNS 2019 International Meeting, Belgrade, Serbia, March 21-21, 2019.
5. Halilovic L, Glamoclija U, Gaudio E, Suljagic M, Metformin inhibition of survival signaling in human leukemic cells, MuTaLig COST ACTION CA15135 Annual meeting, Valletta, Malta, October 18-19, 2018.
6. Mahmutovic L, Bego T, Sterner M, Ahlqvist E, Velija Asimi Z, Prnjavorac B, Hamad N, Causevic A, Groop L, Semiz S., IRS1 Genetic Variants Associated with Glucose Control and Insulin Resistance in Type 2 Diabetes Mellitus Patients from Bosnia and Herzegovina, 54th EASD Congress, Berlin, Germany, October 01-05, 2018.
7. S. Semiz, L. Halilovic, B. Akcesme, C. Durakovic, F.B. Akcesme, M. Adilovic, N. Hamad, A. Maric, F. Serdarevic, Bioethical Issues in Personalized Medicine and Pharmacogenomics: Students' Awareness and Attitudes, European Human Genetics Conference (ESHG), Copenhagen, Denmark, May 27-30, 2017.
8. S. Semiz, L. Halilovic, B. Akcesme, F.B. Akcesme, M. Adilovic, F. Serdarevic, Bioethical Perspectives in Pharmacogenomics and Precision Medicine: Physicians' Views and Attitudes, 12th World Conference on BIOETHICS, MEDICAL ETHICS & HEALTH LAW, Limassol, Cyprus, March 21-23, 2017.
9. Halilovic, L., Bego, T., Causevic, A., Hamad, N., Velija Asimi Z., Semiz, S. Association of IRS1 Genetic Variation with Type 2 Diabetes and Insulin Resistance in Patients from Bosnia and Herzegovina, 41st FEBS (the Federation of European Biochemical Societies) Congress, Kuşadası, Turkey, September 03-08, 2016.
10. Hamad, N., Bego, T., Causevic, A., Halilovic, L., Velija Asimi Z., Semiz, S., Effects of ADRA2A genetic variants on Type 2 diabetes-related traits, 41st FEBS (the Federation of European Biochemical Societies) Congress, Kuşadası, Turkey, September 03-08, 2016.