

Aleksander Szymczak

Microbiome researcher, astrobiology enthusiast, research trainee in [OMRF](#)

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 LinkedIn  ResearchGate  Github  Download Resume in PDF

Tech stack

Python, R, Data Science

Bash, Powershell

Next-Generation Sequencing, Microbial culturing

Illumina, Ion Torrent

Linux, macOS, Windows

Education

PhD Studies

Hirsfeld Institute of Immunology and Experimental Therapy

10/2018 - 05/2023

"Viral and bacterial components of the human microbiome: profiling in selected gastrointestinal disease states"

- Laboratory of Phage Molecular Biology, Supervisor: Prof. Krystyna Dąbrowska

Master of Science

University of Lodz, Faculty of Biology and Environmental protection

10/2016 - 07/2018

"Application of the next generation sequencing in the analysis of the bactericidal agent's effect on microbiota"

- Department of Molecular Microbiology, Supervisor: Prof. Paweł Stączek
-

Bachelor of Science

University of Lodz, Faculty of Biology and Environmental protection

10/2013 - 09/2016

"Strategies for bacterial survival in urinary tract infections"

- Department of Bacterial Biology, Supervisor: Prof. Agnieszka Torzewska

Work History

Research intern

Oklahoma Medical Research Foundation

06/2022 - Present

Role of autophagy in Sjogren's syndrome and Systemic Lupus Erythematosus (SLE)

- Christopher J. Lessard's Laboratory
-

Junior Researcher

Genomtec SA, Wrocław, Poland

10/2020 - 06/2022

BLAST analysis, Loop Mediated Isothermal Amplification (LAMP) and Real Time PCR molecular pathogen tests design and implementation

- Part of the team developing a mobile platform for genetic diagnostics at the point of patient care
-

Research Student Visitor

Stanford University School of Medicine

09/2021 - 10/2021

- Application of RNAseq in bacteriophage research
-

Principal Investigator

PRELUDIUM 16 - National Science Center grant

08/2019 - 06/2022

“Systemic translocation of bacteriophages as a part of human intestine microbiome”

Budget: \$55000 ~ 210 000 PLN

Grant number: 2018/31/N/NZ6/02584

- Illumina metagenomic shotgun sequencing, Real-Time PCR, Isolation of metagenomic DNA, ultracentrifugation
-

Laboratory Assistant

Research and Development Center in Regional Specialist Hospital in Wrocław

09/2019 - 10.2021

16S rRNA sequencing, Ion Torrent system maintenance, COVID-19 protein research

- Operating Ion Torrent PGM and Ion Torrent S5 Next Next-Generation Sequencing systems , library preparation and quantification
-

Intern

Mobility Programme of Undergraduate Students and PhD students - MOST

10.2017 - 09.2018

University of Wrocław

- Two semesters at Faculty of Biological Sciences and Faculty of Biotechnology, University of Wrocław, Poland
-

Laboratory Technician

Łukasiewicz Research Network - PORT Polish Center for Technology Development - Clean Room laboratory

2017 - 2018

Clean Room laboratory

- Maintenance of ppm standards in the air in laboratory as well as microbiological purity in the clean room area

Projects & Accomplishments

🏆 Laureate of international scholarship - Fulbright Biolab 2022/2023

🏆 Preludium 16 grant “Systemic translocation of bacteriophages as a part of human intestine microbiome”

Publications

📄 [IN REVIEW] Evolution of the T4 phage virion is driven by selection pressure from the environment of animal and human gastrointestinal tracts

Joanna Majewska, Paulina Miernikiewicz, **Aleksander Szymczak**, Zuzanna Kaźmierczak, Tomasz Goszczyński, Barbara Owczarek, Izabela Rybicka, Jarosław Ciekot, and Krystyna Dąbrowska.

📄 [IN REVIEW] Transfer between ecological niches within human body: how gut phageome expands to serum phageome

Aleksander Szymczak, Katarzyna Gembara, Stanisław Ferenc, Joanna Majewska, Paulina Miernikiewicz, Dominik Strapagiel, Jakub Lach, Jan Gnus, Paweł Stączek, Wojciech Witkiewicz, Krystyna Dąbrowska

📄 SARS-CoV-2 IgG Amongst Dental Workers During the COVID-19 Pandemic

Irena Dus-Illicka, Anna Szczygielska, Amadeusz Kuzniarski, **Aleksander Szymczak**, Lila Pawlik-Sobecka, Małgorzata Radwan-Oczko

International Dental Journal IF=2,512

📄 Hidden fraction of Polish population immune to SARS-CoV-2 in May 2021

Wiktoria Budziar, Katarzyna Gembara, Marek Harhala, **Aleksander Szymczak**, Natalia Jedruchniewicz, Krzysztof Baniecki, Aleksandra Pikies, Artur Nahorecki, Agnieszka Hoffmann, Amelia Kardaś, Alina Szewczyk-Dąbrowska, Tomasz Klimek, Zuzanna Kaźmierczak, Wojciech Witkiewicz, Kamil Barczyk, Krystyna Dąbrowska

PLoS One IF=3,24

📄 Antibodies specific to SARS-CoV-2 proteins N, S and E in COVID-19 patients in the normal population and in historical samples

Aleksander Szymczak, Natalia Jedruchniewicz, Alessandro Torelli, Agata Kaczmarzyk-Radka, Rosa Coluccio, Marlena Klak, Andrzej Konieczny, Stanisław Ferenc, Witkiewicz Wojciech, Krystyna Dąbrowska

Journal General Virology IF=4,87

📄 Laboratory Medicine in SARS-CoV-2 Diagnostics. Lessons Learned from a Pandemic

Dus-Ilnicka Irena, **Aleksander Szymczak**, Malgorzata Malodobra-Mazur, Miron Tokarski

Healthcare IF=3,16

📄 Application of 16S rRNA gene sequencing in *Helicobacter pylori* detection

Aleksander Szymczak, Stanisław Ferenc, Joanna Majewska, Paulina Miernikiewicz, Jan Gnus, Wojciech Witkiewicz, Krystyna Dąbrowska

PeerJ IF=3,06

📄 Safety Studies of Pneumococcal Endolysins Cpl-1 and Pal


Marek Harhala, Daniel Nelson, Paulina Miernikiewicz, Ryan Heselpoth, Beata Brzezicka, Joanna Majewska, Sara Linden, Xiaoran Shang, **Aleksander Szymczak**, Dorota Lecion, Karolina Marek-Bukowiec, Marlena Klak, Bartosz Wojciechowicz, Karolina Lahutta, Andrzej Konieczny, Krystyna Dąbrowska

Viruses IF=3,81

📄 Induction of Phage-Specific Antibodies by Two Therapeutic Staphylococcal Bacteriophages Administered per os


Joanna Majewska, Zuzanna Kazmierczak, Karolina Lahutta, Dorota Lecion, **Aleksander Szymczak**, Paulina Miernikiewicz, Jakub Drapala, Marek Harhala, Karolina Marek-Bukowiec,

Scientific Conferences

 Evolution of the T4 phage virion is driven by selection pressure from the gastrointestinal tract environment


Majewska J, Miernikiewicz P, **Szymczak A**, Kaźmierczak Z , Dabrowska K

Viruses of Microbes 2022, Abstract book p. 191

 Transfer between ecological niches within human body: how gut phageome expands to serum phageome


Szymczak A, Gnus J, Ferenc S, Miernikiewicz P, Majewska J, Gembara K, Strapagiel D, Stączek P, Dąbrowska K

Viruses of Microbes 2022, Abstract book p. 191

 Biofilm the 9th Passenger of Nostromo - Targeting amyloids to prevent biofouling in space,


Kuska M, Łopucki K, Okoń R, Pilska-Piotrowska M, Latos K, Kowalczyk A, **Szymczak A**, Górecki I, Janiec J, Zajkowski T, Rothshild L

Life and Space Conference 2021, Abstract Book p. 52, 29.09 - 1.10 2021

 Correlation between SNPs in human genomes and bacterial and viral complexity of human microbiome

Szymczak A, Gembara K, Ferenc S, Strapagiel D, Majewska J, Miernikiewicz P, Lach, J, Gnus J, Stączek P, Witkiewicz W, Dąbrowska K

EMBL Symposium: New Approaches and Concepts in Microbiology, 7-9.06.2021, Online Abstract Book

 Comparison of human stomach microbiome and virome fractions

Szymczak A, Ferenc S, Miernikiewicz P, Majewska J, Gnus J, Witkiewicz W, Dąbrowska K

📄 Microbiome comparison of *Helicobacter pylori* infected and non-infected patients

Szymczak A, Majewska J, Ferenc S, Miernikiewicz P, Witkiewicz W, Dąbrowska K

8th International Weigl Conference, 26-28.06.2019, Łódź, Abstract Book p. 130

📄 Gut microbiome composition in mice after 100 days of oral treatment with staphylococcal bacteriophage A3R

Szymczak A, Majewska J, Marek-Bukowiec K, Lecion D, Miernikiewicz P, Kęska W, Kołodziej M, Górski A, Dąbrowska K

EMBO Viruses of Microbes 2018, 9-13.07.2018, Wrocław, Abstract Book, p.389 0

Training Courses

- R Programming" Course Certificate (2020)
- Getting and Cleaning Data in R" Course Certificate (2020)
- Reproducible Research" Course Certificate (2020)
- The Data Scientist's Toolbox" Course Certificate (2020)
- Exploratory Data Analysis" Course Certificate (2020)
- Omics Data Science - Bioinformatics and Biomedical Big Data Analysis (2019-2020)
- Introduction to NGS data analysis, Ideas4Biology (2019)
- Good Laboratory Practice Principles and Procedures. Requirements for personnel in an Accredited Laboratory according to the PN-EN ISO 17025 (2015)
- The University of North Carolina at Chapel Hill's open online course: Epidemiology: The Basic Science of Public Health (2013)

Social activities

- Oklahoma City Astronomy Club
- Polish Astrobiology Society
- Space Generation Advisory Council

- International Association for the Exchange of Students for Technical Experience (IAESTE) Member