Paulina Szymczak

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Education

- **University of Warsaw** — Warsaw, Poland
  Master of Science - Bioinformatics and Systems Biology — *October 2018 - September 2020*

  Courses: *Genome-scale technologies, Statistical Data Analysis, Algorithms and Data Structures, Machine Learning, Data Analysis and Visualisation, Computational Biology, Modeling of complex biological systems, Architecture of large projects in bioinformatics*

- **University of Wrocław** — Wrocław, Poland
  Bachelor of Science - Biotechnology — *October 2015 - June 2018*

Skills Summary

- **Languages**: Polish (native), English (C2, CPE certificate), Spanish (C1, Titulo de Bachiller)
- **Programming languages/technologies**: Python (Jupyter Notebook, NumPy, SciPy, Pandas, scikit-learn, Keras with TensorFlow), R (tidyr, dplyr, ggplot2, BioConductor), Git

Experience

- **Computational Oncology Group** — Poland
  Ewa Szczurek's lab — *March 2020 -*
  - **HydrAMP model**: Szymczak et al. (2021) HydrAMP: a deep generative model for antimicrobial peptide discovery. Manuscript in preparation.

- **Bioinformatics Data Scientist** — USA
  Data4Cure — *July 2020 - September 2021*
  - **scRNA-seq application**: Design and development of the application for single-cell RNA sequencing data.
  - **scRNA-seq data analysis**: Developing new data resources and reports based on scRNA-seq and multidimensional single cell data.

- **Bioinformatics internship** — Croatia
  The Mediterranean Institute for Life Sciences — *July 2019 - September 2019*
  - **QSAR research**: Prediction of structure-activity relationships for membrane-active cationic peptides.
  - **Mutator algorithm upgrade**: Construction of improved algorithms in Python for the design of selective peptide antibiotics.
  - **Bioinformatics tools**: Use of existing bioinformatics tools and databases to carry out drug design, drug discovery, protein structure alignment, protein structure prediction.

Projects

- **Intelligent Systems in Biology (ISMB/ECCB)**: 2nd Best Talk at Special Session in Representation Learning in Biology. (July '21)
- **Semi-supervised variational autoencoder for antimicrobial peptide generation**: Master's thesis. Conditional variational autoencoder model for generating novel peptide antimicrobial peptides with desired properties. Tech: Python, Keras, TensorFlow (September '20)
- **DNA methylation profiling in CD4+ and CD8+ T cells from Graves' disease patients**: Genome-wide analysis of DNA methylation: statistical, functional and differential analysis. Tech: R (dplyr, tidyr, limma, tidyverse) (February '19)
- **Winner of Bioninja Challenge Hackaton 2019**: Antimicrobial peptide prediction with GUI in Flask. Tech: Python, Keras, TensorFlow, pandas, BioPython, flask (October '19)