KASIA KEDZIERSKA

I'm an AI research scientist working at the intersection of computational biology and machine learning. My work includes developing methods for analyzing complex biological data, with a focus on single-cell and cancer biology. At Microsoft Research, I evaluated Foundation Models for single-cell applications; at the Allen Institute, I'm developing biologically grounded AI models in collaboration with scientists across research units. I'm especially interested in creating tools and models that support real-world applications in biology and healthcare.

RESEARCH EXPERIENCE

2024

Deep Learning Researcher @ DeepLife, Remote

I led an R&D project on Foundation Models in biology. I **mentored** and supervised **Master's student** through successful thesis defense.

present | 2024

AI Research Scientist @ Allen Institute, Seattle, Washington, USA

I'm building **AI models** designed to reflect real **biological complexity**, working with experimental scientists to address questions across neuroscience, cell biology, and beyond.

2023

Intern @ Microsoft Research New England, Cambridge, Massachusetts, USA

During the summer I investigated the potential of the **Foundation Models** in the space of single cell biology. I was mentored by Alex Lu, Ava Amini, and Lorin Crawford.

2021

Intern @ Novo Nordisk Research Centre Oxford, Oxford, United Kingdom

I worked with **NLP and knowledge graphs** to screen **biomedical articles** to identify and prioritise therapeutic targets. To increase the impact of the analysis and increase reach I built and deployed an **interactive dashboard** (using **R Shiny**) to allow colleagues within the company to investigate and visualise the results directly in real-time.

2024 | 2018

DPhil Researcher @ Wellcome Centre for Human Genetics, Big Data Institute, University of Oxford, UK

In my PhD project I looked at how **chromatin organization** influences **disease initiation and progression** in uterine cancer using multimodal data. I was also working on building and refining ML models of **cancer evolution**, specifically identyfing evolutionary trajectories in the cancer of the uterus.

View this CV online
kasia.codes/cv/

CONTACT

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CODING SKILLS

- Python
- R
- Bash
- AWK
- Perl

Python:
`PyTorch`, `keras/Tensorflow`, `scverse/scanpy`, `scikit-learn`, `NumPy`, `Pandas`, `Seaborn`, `matplotlib` and more

R:
`tidyverse`, `data.table`, `Shiny`, `plotly`, `tidymodels`, `caret` and others

High Performance / Cloud Computing:
`SLURM`, `Sun Grid Engine (SGE)`, `Microsoft Azure`, `Azure Blob Storage`, `AWS Cloud Storage` and more

LANGUAGES

- **Polish** (native)
- **English** (full professional)
- **French** (conversational)
- **Estonian** (beginner)

CV source code. Made with pagedown, based on nstrayer/cv.

Last updated on 2025-05-13.

2018 | 2017

Visiting Graduate Student @ Ratan group, University of Virginia, USA

I carried out the research for my Master thesis *Analysis of the mutational burden across gene sets in cancer* in which I modeled **somatic mutations** background distribution using **germline variation**. I also developed SONiCS - algorithm to genotype Short Tandem Repeats (STRs) using dense forward simulations of the polymerase chain reaction (PCR).

2017 | 2016

Visiting Graduate Student @ Pemberton group, University of Virginia, USA

Investigated **epigenetic regulation in prostate cancer** using mouse models of primary, invasive and metastatic tumors. I planned, carried out experimental wokrd and analysed results of RNA-seq, ChIP-seq and ATAC-seq assays.

2016 | 2015

Research Assistant @ Zebrafish Developmental Genomics, IIMCB, Warsaw, Poland

I worked on the project: *Elucidating gene regulatory network of zebrafish heart development using genomics.* I was responsible for both **computational and experimental** aspects of the project.

EDUCATION

2024 | 2018

DPhil in Genomic Medicine and Statistics @ Nuffield Department of Medicine, Brasenose College, University of Oxford

Fully funded by the Wellcome Trust Four-year PhD Studentships in Science

2018 | 2015

M. Sc. Eng., Biotechnology @ Warsaw University of Technology

Master thesis *Analysis of the mutational burden across gene sets in cancer* awarded the title of **The Best Master Thesis in Bioinformatics** defended in 2018.

2015 | 2011

B. Sc. Eng., Biotechnology @ Warsaw University of Technology

Biotechnology of drugs and cosmetics.

PUBLICATIONS

Full list of publication is available through my Google Scholar profile scholar.google.com/citations?user=Yv6poTwAAAAJ.

2025

Zero-shot evaluation reveals limitations of single-cell foundation models @ Genome Biology

K. Z. Kedzierska, L. Crawford, A. P. Amini, A. X. Lu

2023

Assessing the limits of zero-shot foundation models in single-cell biology @ bioRxiv

K. Z. Kedzierska, L. Crawford, A. P. Amini, A. X. Lu ✨ **This work was featured in** The New York Times ✨

2023

Data Study Group Final Report: CEFAS - Automated identification of sea pens using OpenCV and machine learning @ Zenodo

In alphabetical order: M. Asthana, R. Blackwell, S. Davis, A. Downie, J. Forsyth, **K. Kedzierska**, R. Mestre, Z. Reza, J. Ribeiro, P. Palola, Y. Said

2023 **Functional analysis reveals driver cooperativity and novel mechanisms in endometrial carcinogenesis @ EMBO Molecular Medicine**

M. Brown, A. Leon, **K. Kedzierska**, C. Moore, H. L. Belnoue-Davis, S. Flach, J. P. Lydon, F. J. DeMayo, A. Lewis, T. Bosse, I. Tomlinson, D. N. Church

2022 **Discordant prognosis of mismatch repair deficiency in colorectal and endometrial cancer reflects variation in antitumour immune response and immune escape @ The Journal of pathology**

M. A. Glaire, N. AJ. Ryan, M. E. Ijsselsteijn, **K. Kedzierska**, S. Obolenski, R. Ali, E. J. Crosbie, T. Bosse, N. F. D. Miranda, D. N. Church

2021 **Multi-omics analyses of early liver injury reveals cell-type-specific transcriptional and epigenomic shift @ BMC Genomics**

M. Migdal, E. Tralle, K. A. Nahia, L. Bugajski, **K. Z. Kedzierska**, F. Garbicz, K. Piwocka, C. L. Winata, M. Pawlak

2020 **The *MLH1* polymorphism rs1800734 and risk of endometrial cancer with microsatellite instability @ Clinical Epigenetics**

H. Russell, **K. Kedzierska**, D. D. Buchanan, R. Thomas, E. Tham, M. Mints, A. Keränen, G. G. Giles, M. C. Southey, R. L. Milne, I. Tomlinson, D. Church, A. B. Spurdle, T. A. O'Mara and A. Lewis

2020 **Prognostic integrated image-based immune and molecular profiling in early-stage Endometrial Cancer @ Cancer Immunology Research**

N. Horeweg, M. de Bruyn, R. A. Nout, E. Stelloo, **K. Kedzierska**, A. León-Castillo, A. Plat, K. D. Mertz, M. Osse, I. M. Jürgenliemk-Schulz, L. C.H.W. Lutgens, J. J. Jobsen, E. M. van der Steen-Banasik, V. T. Smit, C. L. Creutzberg, T. Bosse, H. W. Nijman, V. H. Koelzer and D. N. Church

2019 **Dynamics of cardiomyocyte transcriptome and chromatin landscape demarcates key events of heart development @ Genome Research**

M. Pawlak, **K. Z. Kedzierska**, M. Migdal, K. A. Nahia, J. A. Ramilowski, L. Bugajski, K. Hashimoto, A. Marconi, K. Piwocka, P. Carninci and C. L. Winata

2018 **Genomic analysis of DNA repair genes and androgen signaling in prostate cancer @ BMC Cancer**

K. Jividen, **K. Z. Kedzierska**, C.-S. Yang, K. Szlachta, A. Ratan and B. M. Paschal

2018 **SONiCS: PCR stutter noise correction in genome-scale microsatellites @ Bioinformatics**

K. Z. Kedzierska, L. Gerber, D. Cagnazzi, M. Krützen, A. Ratan, L. Kistler

💬 POSTERS, AND TALKS

2024 **AI in Single-Cell Biology Workshop @ Chan Zuckerberg Initiative, Redwood City, CA, USA**

2023 **Chromatin modfiers in endometrial cancer, Poster @ Biology of Genomes 2023, Cold Spring Harbor, NY, USA**

2022 **Systematic characterisation of chromatin modifiers in endometrial cancer, Poster @ EACR 2022 Congress, Seville, Spain**

2019 Invited talk**: Analysis of the mutational burden across gene sets in cancer @ Polish Bioinformatics Society Symposium, Cracow, Poland**

2018 **Differential mutation analysis across gene sets in cancers, Poster @ Biology of Genomes 2018, Cold Spring Harbor, NY, USA**

2017 **Epigenetic regulation of prostate cancer, Talk @ Visiting Graduate Traineeship Program Grantees Symposium, Charlottesville, VA, USA**

AWARDS

2023 **JXTX + CSHL 2023 Biology of Genomes Scholarship @ JXTX Foundation, Cold Spring Harbor Laboratory**

Awarded to outstanding graduate students in genomics and data sciences.

2022 **Graduate Prize in the 'Outstanding work outside degree' category @ Nuffield Department of Medicine, University of Oxford**

Each year Nuffield Department of Medicine, based on nominations, awards selected PhD students based on their performance within and outside of their degree.

2023 | 2021 **Senior Hulme Scholarship @ Brasenose College, University of Oxford**

Senior Hulme Scholarship is awarded by Brasenose College, University of Oxford to DPhil students whose academic performance is deemed to be exceptional.

2019 | 2018 **Best Master Thesis in Bioinformatics @ Polish Bioinformatics Society**

Analysis of the mutational burden across gene sets in cancer - Best Master Thesis defended in Bioinformatics in 2018 in Poland.

2017 | 2016 **Visiting Graduate Traineeship Program, now known as BioLAB @ Fulbright Poland**

The Visiting Research Graduate Traineeship Program offered 12-month research traineeships for outstanding, qualified students from the life sciences at selected institutions in the United States.

2015 **Grasz o Staz @ PwC Poland**

"Grasz o Staz" competition was a national, prestigious and highly competitive (1:25 success rate) scholarship program in Poland organized by PwC.

TEACHING EXPERIENCE

2022 **Unsupervised learning @ NGSchool2022: Machine Learning in Computational Biology, Jablonna, Poland**

I co-led, with Kaspar Märtens, lecture and tutorial sessions on unsupervised learning and its use cases in computational biology. All materials are availble at github.com/kzkedzierska/ngs22_unsupervised.

2021 **Data visualization in bioinformatics - hackathon mentor @ Online hackathon NGSprint, Discord**

I led the hackathon in data viusalisation with emphasis on computational biology. Teaching materials are available at github.com/kzkedzierska/NGSprint_data_viz.

2020 **Online tutorials: Python for Data Science and Introduction to Python @ NGSeminars, YouTube**

I led two Python tutorials: Introduction to Python kasia.codes/talk/intro_to_python/ and Python for Data Science kasia.codes/talk/py4ds/.

2019 **Unsupervised learning, Introduction to Python @ #NGSchool2019: Machine Learning for Biomedicine, Ostróda, Poland**

Tutor for the Introduction to Python (3 h workshop) and for the Unsupervised learning (1,5 h lecture).

2019 **Introduction to Managing Code with Git, Introduction to R @ Wellcome Centre for Human Genetics, Oxford, UK**

Led an 8-week course on R covering data manipulation, visualization, and RNA-seq analysis. Also delivered a 2-hour introductory Git workshop, with materials available at kasia.codes/talk/into_to_git/.

2017 **ATAC-seq workshop @ #NGSchool2017: Single-cell Sequencing, Jachranka, Poland**

Invited speaker

ATTENDED WORKSHOPS, SUMMER SCHOOLS

2022 **Sea pen identification from video footage, Turing Data Study Group @ Alan Turing Institute, London, UK**

2019 **Machine Learning Summer School @ Imperial College London, University College London, London, UK**

€ GRANTS

2022 | 2020

Visegrad Grant to organise NGSchool2022 @ Visegrad Fund

32,190 EUR awarded towards organising affordable training and conference focusing on ML application in Computational Biology. During this project I managed an international team of volunteers and led the organisation of summer school, conference, online seminars and hackathon.

2019

Visegrad Grant to organise NGSchool2019 @ Visegrad Fund

23,500 EUR awarded towards organising #NGSchool2019 allowed to keep the cost of attenting the school to the minimum and record the lectures for broader access.

2023 | 2018

Scientific grant as part of Wellcome Trust funded DPhil @ Wellcome Trust

30,000 GBP towards research expenses for the PhD project which allowed me to design and led pilot experiments, managing the grant for successful execution of research objectives.

NON PROFIT WORK

2022 | 2018

President @ NGSchool Society

The goal of the Society is to promote and support science, with emphasis on computational biology.

2016 | 2015

President @ Warsaw Society of Biotechnology

Symbioza's aim is to integrate biotechnology community in Poland starting from the youngest generations, and promotion and popularization of biotechnology.