

KASIA KEDZIERSKA

For my PhD @ **University of Oxford**, I studied cancer of the uterus and chromatin organisation in disease progression. Over the summer, I joined the **bioML team** at the [Microsoft Research New England](#) as an intern where I worked on **Foundation Models** in single-cell biology.

Previously, I worked with **NLP** methods and knowledge graphs during my internship @ [Novo Nordisk Research Centre in Oxford](#). Using **Transfer Learning** and **YOLO model** I built a framework to identify sea pens from a video footage of an ocean floor @ [Turing Data Study Group](#).

With extensive domain knowledge in **Computational Biology** complemented by my experience in **Data Science & Machine Learning** I am eager to drive advancements at the crossroads of these disciplines.

RESEARCH EXPERIENCE

- 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.
- present | 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 identifying evolutionary trajectories in the cancer of the uterus.
- 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**

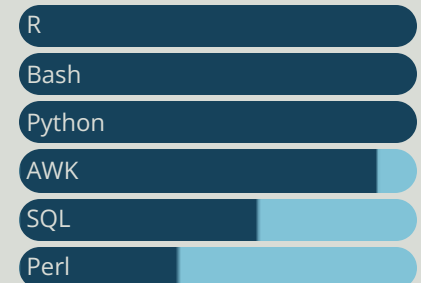
Investigated **epigenetic regulation in prostate cancer** using mouse models of primary, invasive and metastatic tumors. I planned, carried out experimental work and analysed results of RNA-seq, ChIP-seq and ATAC-seq assays.

View this CV online
[kasia.codes/cv/](#)

CONTACT

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CODING SKILLS



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



CV source code. Made with [pagedown](#), based on [nstrayer/cv](#).

Last updated on 2023-11-06.

2016
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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

present
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2018

- **DPhil in Genomic Medicine and Statistics @ [Nuffield Department of Medicine, Brasenose College](#)**

PhD fully funded by the [Wellcome Trust Four-year PhD Studentships in Science](#)

2018
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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
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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.

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

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. A. J. 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

- 2023 ● **Chromatin modifiers in endometrial cancer, Poster @ Biology of Genomes 2023, Cold Spring Harbor, NY, USA**
- 2022 ● **Systematic characterisation of chromatin modifiers in endometrial cancer, Poster @ European Association for Cancer Research 2022 Congress, Seville, Spain**
- 2019 ● **Analysis of the mutational burden across gene sets in cancer, Invited talk @ 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 available at github.com/kzkdziarska/ngs22_unsupervised.

- 2021 ● **Data visualization in bioinformatics - hackathon mentor @ Online hackathon [NGSprint](#), Discord**

I led the hackathon in data visualisation with emphasis on computational biology. Teaching materials are available at github.com/kzkdziarska/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 R @ Wellcome Centre for Human Genetics, Oxford, UK**
- 8 week course in Introduction to R, Data Manipulation, Data Visualisation and RNA-seq data analysis.
- 2019 ● **Introduction to Managing Code with Git @ Wellcome Centre for Human Genetics, Oxford, UK**
- I led a 2-hour introduction to working with Git. Materials, including slides and exercises are 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 challenge @ [Turing Data Study Group](#) @ [The Alan Turing Institute](#), London, UK**
- 2019 ● **[Machine Learning Summer School](#) @ Imperial College London, University College London, London, UK**



GRANTS

- 2022
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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 attending the school to the minimum and record the lectures for broader access.



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.