KASIA KEDZIERSKA

I am a PhD student at the University of Oxford. As a computational biologist, I use **Data Science** and **Machine Learning** to answer biological questions. Specifically, I study cancer of the uterus and chromatin organisation in disease progression. Last summer, I joined Computational Biology Department at Novo Nordisk Research Centre in Oxford as an intern, where I was working with NLP methods and knowledge graphs. Currently, I am looking into adapting my experience from the internship to build models for investigating cancer evolution.

RESEARCH EXPERIENCE

2021

Intern

Novo Nordisk Research Centre Oxford — Oxford, United Kingdom

- I used NLP based methods to screen biomedical artciles and identify potential therapeutic targets. I built R Shiny App to allow colleagues within the company to investigate results from our pipeline.

present | 2018

DPhil Candidate

Wellcome Centre for Human Genetics, Big Data Institute — University of Oxford, UK

- In my PhD project *Functional and evolutionary characterisation of chromatin organisation in endometrial cancer* I am looking at how chromatin organisation influences disease progression in cancer of the uterus.
- Mentored by D. Church and D. Woodcock
- Currently I'm working on building and refining ML models of cancer evolution.

2018 | 2017

Visiting Graduate Student

Ratan group — University of Virginia, USA

- Developed SONiCS - a tool for genotyping short tandem repeats (STRs) profiled using capture assays.
- Worked on the Master thesis - *Analysis of the mutational burden across gene sets in cancer*.

2017 | 2016

Visiting Graduate Student

Pemberton group — University of Virginia, USA

- Worked on Epigenetic regulation in prostate cancer.
- Performed experiments and analyzed data from RNA-seq, ATAC-seq, and ChIP-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.

View this CV online
kasia.codes/cv/

CONTACT

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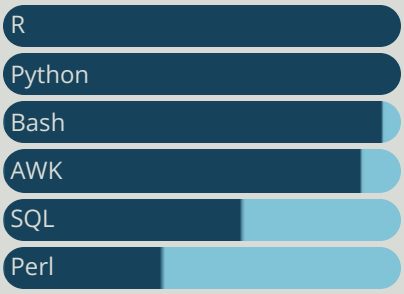
CODING SKILLS



R: `tidyverse`, `data.table`, `Shiny`, `plotly`, `tidymodels`, `caret` and others
Python: `NumPy`, `Pandas`, `SciPy`, `scikit-learn`, `keras`, `PyTorch`, `Seaborn`, `matplotlib` and more

LANGUAGES

*Made with the R package **pagedown**.*

Based on the Nick Strayer's CV package; modified source code for this CV is available here.

Last updated on 2022-11-24.

EDUCATION

present | 2018

DPhil. Candidate, Genomic Medicine and Statistics

Nuffield Department of Medicine, Brasenose College — University of Oxford, UK

• PhD fully funded by Wellcome Trust Four-year PhD Studentships in Science

2018 | 2015

M. Sc. Eng., Biotechnology

Warsaw University of Technology — Warsaw, Poland

• 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 — Warsaw, Poland

PUBLICATIONS

2022

Discordant prognosis of mismatch repair deficiency in colorectal and endometrial cancer reflects variation in antitumour immune response and immune escape

Mark A Glaire, Neil AJ Ryan, Marieke E Ijsselsteijn, **Katarzyna Kedzierska**, Sofia Obolenski, Reem Ali, Emma J Crosbie, Tjalling Bosse, Noel Fcc De Miranda, David N Church

The Journal of pathology

2021

Multi-omics analyses of early liver injury reveals cell-type-specific transcriptional and epigenomic shift

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

BMC Genomics

2020

The *MLH1* polymorphism rs1800734 and risk of endometrial cancer with microsatellite instability

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

Clinical Epigenetics

2020

Prognostic integrated image-based immune and molecular profiling in early-stage Endometrial Cancer

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

Cancer Immunology Research

2019

Dynamics of cardiomyocyte transcriptome and chromatin landscape demarcates key events of heart development

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

Genome Research

2018

Genomic analysis of DNA repair genes and androgen signaling in prostate cancer

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

BMC Cancer

2018

SONiCS: PCR stutter noise correction in genome-scale microsatellites

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

Bioinformatics

POSTERS, AND TALKS

2022 — **Systematic characterisation of chromatin modifiers in endometrial cancer**
European Association for Cancer Research 2022 Congress — Seville, Spain
• Poster presentation

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

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

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

AWARDS AND HONOURS

present | 2021 — **Senior Hulme Scholarship**
Brasenose College, University of Oxford — Oxford, UK
• Senior Hulme Scholarship is awarded by Brasenose College, University of Oxford to DPhil students whose academic performance is deemed to be exceptional.

2022 | 2021 — **Graduate Prize in the 'Outstanding work outside degree' category**
Nuffield Department of Medicine, University of Oxford — Oxford, UK
• Each year Nuffield Department of Medicine, based on nominations, awards selected PhD students based on their performance within and outside of their degree.

2019 | 2018 — **Best Master Thesis in Bioinformatics**
Polish Bioinformatics Society — Poland
• *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 — University of Virginia, VA, USA
• 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 — 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. Under my supervision, 3 teams of around 5 people each, created interactive and captivating visualisation. 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).
- Materials for the Introduction to Python are available on github

2019 **Introduction to R**

Wellcome Centre for Human Genetics — Oxford, United Kingdom

- 8 week course in Introduction to R, Data Manipulation, Data Visualisation and RNA-seq data analysis.
- Materials available on github/kzkedziersa/r_intro

2020 | 2019 **Introduction to Managing Code with Git**

Wellcome Centre for Human Genetics — Oxford, United Kingdom

- 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
- Materials for the course can be available on gitub.com/kzkedzierska/ATACseq_workshop

ATTENDED WORKSHOPS, SUMMER SCHOOLS

2019 **Machine Learning Summer School**

Imperial College London, University College London — London, United Kingdom

GRANTS

2022 | 2020 **Visegrad Grant to organize 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 organize 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.

NON PROFIT WORK

present | 2018

President

NGSchool Society

- The goal of the Society is to promote and support science, with emphasis on computational biology.
- President since 2019; Vice President 2018 - 2019, Founder