KASIA KEDZIERSKA

For my PhD @ **University of Oxford**, I study cancer of the uterus and chromatin organisation in disease progression. My work includes data exploration, data visualisation and communicating results to non-technical audience. For example, I take advantage of **feature selection** and **dimensionality reduction** methods, generate hypothesis with **unsupervised learning** and test them with *in silico* and *in vitro* experiments. I model complex biological processes with a repertoire of ML models - from **Linear Models** to **Deep Learning**.

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. Currently, I'm using **RNNs** to investigate cancer evolution trajectories in endometrial cancer.
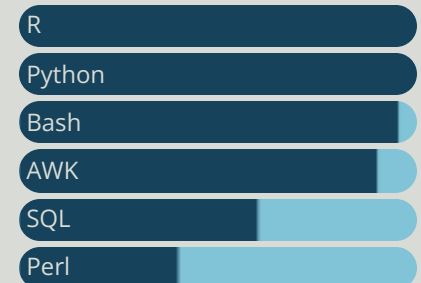
RESEARCH EXPERIENCE

2021

Intern
Novo Nordisk Research Centre Oxford 📍 Oxford, UK

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

**present
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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.
- Currently I'm working on building and refining ML models of cancer evolution.

**2018
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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
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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
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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.

View this CV online
🌐 kasia.codes/cv/

CONTACT

✉ kasia@well.ox.ac.uk
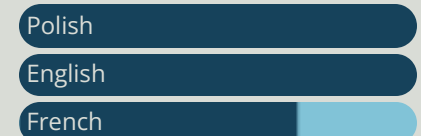
🐦 kzkedzierska

 github.com/kzkedzierska

🔗 kasia.codes

in kzkedzierska

CODING SKILLS

R
Python
Bash
AWK
SQL
Perl

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

LANGUAGES

Polish
English
French

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 2023-02-08.

🎓 EDUCATION

DPhil. Candidate, Genomic Medicine and Statistics

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

present | 2018

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

M. Sc. Eng., Biotechnology

Warsaw University of Technology — 📍 Warsaw, Poland

2018 | 2015

• 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.

B. Sc. Eng., Biotechnology

Warsaw University of Technology — 📍 Warsaw, Poland

2015 | 2011

📖 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
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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
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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
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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
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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. 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, UK

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

2020
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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
• Materials for the course can be available on gitub.com/kzkedzierska/ATACseq_workshop

🎓 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
|
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

2022
|
2018

● **President**

NGSchool Society

- The goal of the Society is to promote and support science, with emphasis on computational biology.
- President 2019-2022; Vice President 2018 - 2019, Founder