

Kristóf A. Törkenczy
ktorkenczy@nygenome.org

2642 28th Street. 4F
Long Island City, NY 11102
phone: 971-407-6975

Current Position

New York Genome Center
Post-Doctoral Researcher
Advisor: Dr. Rahul Satija

New York, NY
2020-present

Education

Oregon Health & Science University (OHSU)
PhD, Molecular and Medical Genetics
Dissertation: *Single-cell approaches for deciphering complex tissue heterogeneity*
Advisor: Dr. Andrew Adey

Portland, OR
2014-2020

Eötvös Loránd University Budapest (ELTE)

M.Sc., Biophysics
Dissertation: *Modeling Speciation: resources versus habitats*
Advisor: Dr. Géza Meszéna

Budapest, HU
2012-2014

University of Edinburgh

M.Sc., Quantitative Genetics and Genome Analysis
Dissertation: *Could More Apparent Adaptive Evolution on the X Chromosome Reflect a Recent Population Bottleneck?* Advisor:
Dr. Brian Charlesworth

Edinburgh, UK
2011-2012

University of Copenhagen, Niels Bohr Institute

Erasmus Grant (physics, biological networks)

Copenhagen, DK
2009-2010

Eötvös Loránd University Budapest

B.Sc., Theoretical Physics
Dissertation: *Fitting the Radial Profile of Spiral Galaxies* Advisor:
Dr. Zsolt Frei

Budapest, HU
2007-2011

Academic/teaching experience

Saturday Academy Cancer Genetics Course, Instructor
Cancer Genetics Summer Course, Invited speaker
Molecular Med Tri-Con Single-Cell Short Course, Instructor

2017
2018
2018

Single-Cell Analysis Nano Course, Teaching assistant 2019

Awards and Grants

Erasmus Scholarship Erasmus Programme	2009-2010
BBSRC Masters Training Grant Biotechnology and Biological Sciences Research Council (UK)	2011-2012
Tartar Trust fellowship Oregon Health & Science University	2016
Helmsley Fellowship Helmsley Charitable Trust	2017
Research Leadership Scholarship Oregon Health & Science University	2017-2018
ASHG Reviewers' Choice Abstract American Society of Human Genetics	2018
OHSU Three Minute Thesis Challenge Winner Oregon Health & Science University	2018
OHSU Health&Wellness Mini-grant Oregon Health & Science University	2018
IABCR Travel Award Oregon Health & Science University	2019

Graduate Research Experience

New York Genome Center Post-Doctoral researcher, advisor: Dr. Rahul Satija	New York, NY 2020-present
--	------------------------------

research topic: Cross-species integration of multi tissue single-cell epigenetic landscapes

- Working on computational framework to integrate single-cell ATAC-seq datasets across tissues
- Identify and annotate shared and species-specific regulatory elements
- Validate finding using CRISPRi

research topic: Mapping epigenetic regulation of wild type and IDH mutant glioblastomas (Dr. Viviane Tabar and Dr. Kenny Yu collaboration)

- Working on computational framework to identify important regulatory TF networks across glioblastoma subtypes via single-cell RNA and single-cell ATAC integration

Oregon Health & Science University Graduate researcher, advisor: Dr. Andrew Adey	Portland, OR 2015-2020
--	---------------------------

research topic: Characterization of single-cell epigenetic landscape of triple negative breast cancer

- Developed computational framework for single-cell combinatorial indexed ATACseq analysis

- Describe and delineate the epigenetic drivers for drug persisting triple negative breast cancer cell populations

research topic: Detection of structural variation in single cells

- Built CNV detection pipeline for single-cell DNA sequencing data •
Characterized somatic variation in healthy and diseased tissues

Eötvös Loránd University Budapest

Budapest, HU

Masters researcher, advisor: Dr. Géza Meszéna

2012-2014

research topic: Speciation and adaptive dynamics

- Developed mathematical model for "mixed" speciation
- Simulated a two patch-two resource multi parametric model to test for criterion of speciation

Oregon Health & Science University

Portland, OR

Summer intern, advisor: Dr. Paul Spellman

summer 2013

research topic: searching for mutational signatures in data from patients with VHL disease associated familial clear cell carcinoma

University of Edinburgh

Edinburgh, UK

Masters researcher, advisor: Dr. Brian Charlesworth

2012

research topic: the faster X-effect and population bottlenecks

- Simulated the evolution of the site frequency spectrum of bi-allelic sites in bottlenecked populations
- Compared a X chromosome diversity to autosome diversity to look for signs of faster X chromosomal adaptive evolution.

Undergraduate Research Experience

Eötvös Loránd University Budapest

Budapest, HU

Undergraduate researcher with Pan-Starrs Research Team advisor: Dr. Zsolt Frei

2011

research topic: Pan-Starrs data analysis

- Fitted radial profiles of spiral galaxies via the Sersic profiles
- Worked on developing Sersic index based spiral galaxy classification scheme

Language and Programming Experience

Hungarian (native), English (near-native), Italian (advanced), Bash, C, Fortran, Matlab, Octave, PERL, Python, R

Related Professional Experience

Oregon Museum of Science and Industry Biology lab volunteer 2015-2020

Oregon Bioscience and Symposium Workshop (2017)

Cold Spring Harbor Laboratory Single-Cell Analysis course (2017)

Professional and Academic Associations

American Association for the Advancement of Science
American Society of Human Genetics
OHSU Graduate Student Organization (Vice President)
OHSU International Employee Resource Group (Co-chair)

Posters

Torkenczy AK, Meszena G. Modeling Speciation: resources versus habitats. Abstract. OHSU Program for Molecular and Cellular Biology Retreat. Welches, Oregon (2014).

Torkenczy AK, Vitak AS, Adey AC., Highly Multiplexed Single Cell Genome Sequencing for Somatic CNV Characterization. Abstract. OHSU Research Week. Portland, Oregon (2016).

Torkenczy AK, Sinnamon JR, Linhoff MW, Vitak AS, Pliner HA, Trapnell C, Steemers FJ Mandel G, Adey AC. The accessible chromatin landscape of the hippocampus at single-cell resolution. Abstract. ASHG Annual Meeting. San Diego, California (2018).

Oral Presentations

Torkenczy AK, Deep profiling of somatic variation in pancreatic solid tumors at the single-cell level. Oral presentation. OHSU Research Week. Portland, Oregon (2017).

Torkenczy AK, Sequencing thousands of single-cell genomes with combinatorial indexing. Oral presentation. Molecular Med Tri-Con. San Francisco, California (2018).

Torkenczy AK, Integrated single-cell epigenetic analysis reveals cross-species functional conservation. Oral Presentation. CEGS Meeting. New York, New York (2021).

Publications/Creative work

* Co-first Author, equal contribution

A. Peer reviewed

Sinnamon JR*, **Torkenczy AK***, Linhoff MW, Vitak AS, Pliner HA, Trapnell C, Steemers FJ Mandel G, Adey AC. The accessible chromatin landscape of the murine hippocampus at single-cell resolution. *Genome Res.* (2019), co-first authorship

Vitak SA*, **Torkenczy KA***, Rosenkrantz JL, Fields AJ, Christiansen L, Wong MH, Carbone L, Steemers FJ, Adey AC. Sequencing thousands of single-cell genomes with combinatorial indexing. *Nat Methods.* **14**:302–308 (2017) doi:10.1038/nmeth.4154., co-first authorship

Daughtry BL, Rosenkrantz JL, Lazar NH, Fei SS, Redmayne N, **Torkenczy KA**, Adey A, Yan M, Gao L, Park B, Nevenon KA, Carbone L and Chavez SL. Single-cell sequencing of primate preimplantation embryos reveals chromosome elimination via cellular fragmentation and blastomere exclusion. *Genome Res.* **25** (2019), doi:10.1101/gr.239830.118.

Su Y, Pelz, C, Huang, T, **Torkenczy KA**, Wang X, Cherry A, Daniel CJ, Liang J, Nan X, Dai MS, Adey AC, Impey S, Sears RC. Post-translational modification localizes MYC to the nuclear pore basket to regulate a subset of target genes involved in cellular responses to environmental signals. *Genes & development*, **32**:21-22 (2018), 1398-1419.

Mulqueen RM, Pokholok D, Norberg SJ., **Torkenczy KA**, Fields AJ, Sun D, Sinnamon JR, Shendure J, Trapnell C, O'Roak BJ, Xia Z, Steemers FJ, Adey AC. (2018). Highly scalable generation of DNA methylation profiles in single cells. *Nature biotechnology*, **36**(5):428-431.

Thornton CA, Mulqueen RM, **Torkenczy KA**, Nishida A., Lowenstein EG, Fields AJ., Steemers FJ., Zhang W, McConnell HL, Woltjer RL, Mishra A, Wright KM & Adey AC. (2021). Spatially mapped single-cell chromatin accessibility. *Nature methods*, **12**(1274)

B. Preprint

Mulqueen RM, DeRosa AB, Thornton AC, Sayar Z, **Torkenczy AK***, Fields AJ, Wright KM, Nan X, Ramji R, Steemers FJ, O'roak BJ, Adey AC. Improved single-cell ATAC-seq reveals chromatin dynamics of in vitro corticogenesis. *bioRxiv*. (2019) (doi: <https://doi.org/10.1101/637256>)

Langer E, Farrell AS, Allen-Petersen BL, Daniel CJ, Kresse KM, English IA, Shah V, MacPherson K, Wang X, Pelz C, Turnidge M, Jenny ZP., Doha Z, Kendzersky ND, **Torkenczy AK**, Pelz KR, Fields A, Cohn GM, Dewson GS, Thoma MC, Amery TS, Agarwal A, Link JM, Sheppard BC, Adey AC, Sears RC, The Prolyl Isomerase PIN1 Plays a Critical Role in Fibroblast Differentiation States to Support Pancreatic Cancer. *Manuscript in review*

Torkenczy AK*, Langer E*, Fields AJ, Risom T, Turnidge M, Gray JW, Sears RC, Adey AC. Trametinib driven epigenetic adaptation of cells across multiple triple negative breast cancer cell lines. *Manuscript in review*, co-first authorship

Torkenczy AK, Dalgarno C, Jiang L, Hao Y, Satija R. Integrated single-cell epigenetic analysis reveals cross-species functional conservation. *Manuscript in preparation*