DANAI GEORGIA TOPOUZA

PERSONAL DETAILS

Email:		dtopouza@gmail.com | danai.topouza@mail.mcgill.ca
Languages:	English	University of Cambridge Proficiency in English (May 2011), University of Michigan Proficiency in English (May 2011), TOEFL iBT (Sept. 2012), CELPIP General (Nov. 2018)
	French	DELF B1 Certification (May 2011)
	Greek	Native

PERSONAL STATEMENT

I am a PhD student in the Functional Genomics Laboratory at McGill University. I am interested in studying complex human traits and biological processes using bioinformatics and data mining approaches. My current project investigates human brain development using longitudinal single-cell data from fetal brain tissue. My previous work identified integrated gene expression networks, microRNA networks, and regulatory variants that are associated with poor chemotherapy response in ovarian cancer patients.

Practical skills:

Programming languages	R, Python, Matlab, Linux (bash), git, Java, C
Bioinformatics	Single-cell RNA-seq analysis, NGS data analysis, microarray data analysis, genomics data analysis, multi-omics data integration, bioinformatics databases, HPC environments, molecular dynamics software
Machine learning	Data mining best practices, supervised and unsupervised learning algorithms

EDUCATION

Doctor of Philosophy **2021 - Present**

Department of Human Genetics, McGill University, Montreal, QC

Supervisor: Dr. Claudia Kleinman

Thesis: *Analysis of human brain development using longitudinal single-cell RNA-sequencing profiles of the fetal brain*

Master of Science **2017 – 2019**

Experimental Medicine, Specialization in Bioinformatics

Department of Biomedical and Molecular Sciences, Queen's University, Kingston, ON

Supervisor: Dr. Qingling Duan

Thesis: *Integrated biological networks associated with platinum-based chemotherapy response in high-grade serous ovarian cancer*

Bachelor of Science (Honours) **2013 – 2017**

Biology major, Computer Science minor

Department of Biology and School of Computing, Queen's University, Kingston, ON

Supervisor: Dr. Paul G. Young

Thesis: *Copper-induced stress response and programmed cell death in* Saccharomyces cerevisiae

RESEARCH EXPERIENCE

PhD Student **Jul. 2021 – Present**

Functional Genomics Laboratory, Lady Davis Institute for Medical Research

Department of Human Genetics, McGill University, Montreal, QC

Supervisor: Dr. Claudia Kleinman

Project: *Preprocessing and analysis of single-cell RNA-seq data from normal fetal tissues at multiple timepoints to investigate human brain development*

Bioinformatics Research Associate **Jan. 2020 – Apr. 2021**
Computational Genomics Laboratory
Department of Biomedical and Molecular Sciences, Queen's University, Kingston, ON
Supervisor: Dr. Qingling Duan
Projects: *DNA methylation analysis in hepatocellular carcinoma, RNA-seq analysis in chronic myeloid leukemia, phenome-wide association studies (PheWAS) in the CHILD Study Cohort*
Responsibilities: Contributing to literature review and analyses for grant applications, maintaining lab server and website

MSc Candidate **Sept. 2017 – Sept. 2019**
Computational Genomics Laboratory
Department of Biomedical and Molecular Sciences, Queen's University, Kingston, ON
Supervisor: Dr. Qingling Duan
Project: *Novel regulatory and transcriptomic networks associated with chemotherapy response in ovarian cancer*

Undergraduate Research Thesis **Sept. 2016 – Apr. 2017**
Department of Biology, Queen's University, Kingston, ON
Supervisor: Dr. Paul G. Young
Project (BIOL 537, undergraduate 12-unit thesis): *Characterizing transcriptomic changes during programmed cell death in* S. cerevisiae

QGEM Dry Lab Executive **May 2016 – Oct. 2016**
Queen's International Genetically Engineered Machine (iGEM) Team
Department of Biomedical and Molecular Sciences, Queen's University, Kingston, ON
Head of the Dry Lab research team
Project: *Modeling the non-ribosomal peptide synthetase adenylation domain and identifying mutations that alter amino acid binding specificity*

Research Assistant **Oct. 2015 – Jul. 2016**
Department of Biology, Queen's University, Kingston, ON
Supervisors: Dr. Tomas Babak (Queen's University, Kingston), Dr. Brian DeVeale (University of California, San Francisco)
Project: *Statistical analysis and data visualization for a genome-wide association study on schizophrenia*

Lab Assistant Internship **Jun. 2015 – Jul. 2015**
IVF facility, Interbalkan Medical Center, Thessaloniki, Greece
Supervisor: Dr. Ioannis Tziafetas, MD
Responsibilities: Laboratory organization and maintenance

TEACHING EXPERIENCE

Guest Lecturer **12, 18 Aug. 2020**
Department of Biomedical and Molecular Sciences, Queen's University, Kingston, ON
BMIF 803: Biomedical Data Mining and Applications, part of the Masters in Biomedical Informatics (MBI) diploma program

Teaching Assistant **Sept. 2015 – Dec. 2018**
Queen's University, Kingston, ON
BMED 370: Genetics and Genomics (Winter 2018, Fall 2018)
BIOL 102: Introductory Biology of Cells (Fall 2017)
CISC 101: Elements of Computer Science (Fall 2015, Fall 2016)

ACADEMIC MENTORSHIP

Helia Ghazinejad, Master of Biomedical Informatics Student, Ghasemlou Lab/Duan Lab (Sept. 2020 – Apr. 2021). Project: *Identifying genes under circadian rhythm control in murine brain tissues*

Hanlin Chen, Master of Biomedical Informatics Student, Ghasemlou Lab/Duan Lab (Sept. 2020 – Apr. 2021).
Project: *Identifying microRNAs under circadian rhythm control in murine brain*

Lisa Flaten, Master of Epidemiology, Peng Lab (May – Sept. 2020).
Project*: Pre-processing and analysis of circadian gene DNA methylation data for female night shift workers*

Sorin Park, Master of Biomedical Informatics Student, Duan Lab/Abraham Lab (Sept. 2017 – May 2018).
Project: *Genes and co-expression networks associated with response to a novel combination treatment in chronic myeloid leukemia*

PUBLICATIONS

Under review

1. Ritonja, J, Bhatti P, Leung M, Flaten L, **Topouza DG**, Duan QL, Durocher F, Tranmer J, Aronson K. Patterns of melatonin secretion and methylation in circadian genes among female healthcare workers. *Under review in the Journal of Biological Rhythms* (2021).

Preprints

1. **Topouza DG**, Choi J, Nesdoly S, Tarnouskaya A, Nicol CJB, Duan QL. Novel regulatory and transcriptional networks associated with resistance to platinum-based chemotherapy in ovarian cancer. *bioRxiv* (2021). doi:10.1101/2020.09.09.289868. *Under review in Scientific Reports.*

Publications

1. Choi J, **Topouza DG**, Tarnouskaya A, Nesdoly S, Koti M, Duan QL. Gene networks and expression quantitative trait loci associated with adjuvant chemotherapy response in high-grade serous ovarian cancer. *BMC Cancer* 20, 413 (2020). PMID: 32404140

PUBLISHED ABSTRACTS

1. **Topouza DG**, Choi J, Nesdoly S, Duan QL. Novel biological networks associated with chemotherapy response in high-grade serous ovarian cancer. *The 22nd Annual Scientific Meeting for Health Science Research Trainees* (2019).
2. **Topouza DG**, Choi J, Nesdoly S, Duan QL. Biological networks modulating chemotherapy response in ovarian cancer; (Abstract #685). *The 68th Annual Meeting of The American Society of Human Genetics* (2018).
3. **Topouza DG**, Choi J, Nesdoly S, Duan QL. Gene expression networks modulating chemotherapy response in ovarian cancer. *The 3rd Annual Toronto RNA Enthusiast's Day* (2018).
4. **Topouza DG**, Choi J, Nesdoly S, Duan QL. Biological networks modulating chemotherapy response in ovarian cancer. *The 21st Annual Scientific Meeting for Health Science Research Trainees* (2018).

POSTERS AND PRESENTATIONS

Oral presentations

1. **Conference Speaker.** Novel biological networks associated with chemotherapy response in high-grade serous ovarian cancer. *The 22nd Annual Scientific Meeting for Health Science Research*, *Faculty of Health Sciences, Queen's University* (4 Jun. 2019).
2. **Seminar Speaker.** Biological networks modulating chemotherapy response in ovarian cancer. *Masters Student Symposium Seminar Presentation, Department of Biomedical and Molecular Sciences, Queen's University* (26 Feb. 2019).
3. **Seminar Speaker.** A pharmacogenomics analysis of biological networks regulating chemotherapy response among ovarian cancer patients**.** *Masters Student Symposium Seminar Presentation*, *Department of Biomedical and Molecular Sciences, Queen's University* (24 Apr. 2018).
4. **Seminar Speaker.** Programmed cell death in the unicellular eukaryote *Saccharomyces cerevisiae. Undergraduate Thesis Seminar Presentation, Department of Biology, Queen's University* (11 Nov. 2016).

Poster presentations

1. **Topouza DG**, Choi J, Nesdoly S, Duan QL. Biological networks modulating chemotherapy response in ovarian cancer; (Abstract #685). *American Society of Human Genetics Meeting, San Diego Convention Center, San Diego, CA* (16 - 20 Oct. 2018).
2. **Topouza DG**, Choi J, Nesdoly S, Duan QL. Gene expression networks modulating chemotherapy response in ovarian cancer. *Toronto RNA Enthusiast's Day (TREnD), Peter Gilgan Centre for Research and Learning, Toronto, ON* (31 Jul. 2018).
3. **Topouza DG**, Choi J, Nesdoly S, Duan QL. Biological networks modulating chemotherapy response in ovarian cancer. *The 21st Annual Scientific Meeting for Health Science Research*, *Faculty of Health Sciences, Queen's University, Kingston, ON* (13 Jun. 2018).
4. **Topouza DG**, Young PG. Programmed cell death in the unicellular eukaryote *Saccharomyces cerevisiae. Undergraduate Thesis Poster Presentations, Department of Biology, Queen's University, Kingston, ON* (10 Mar. 2017).
5. Nowak S, Thomsen C, **Topouza DG**. The role of mycorrhizal community assemblages in agricultural productivity. *Scinapse Undergraduate Science Case Competition (Finalist)*, *Western University, London, ON* (19 Mar. 2016).

AWARDS

Human Genetics Graduate Excellence Fellowship **2021 – 2022**
McGill University, Department of Human Genetics. Amount: $ 14,025 (CAD), renewable.

Conference Travel Award **22 Oct. 2018**
Queen's University, Department of Biomedical and Molecular Sciences. Amount: $ 250 (CAD)

International Tuition Award (**2017 – 2018**
Queen's University, Department of Biomedical and Molecular Sciences. Amount: $ 5,000 (CAD)

Queen' University Principal's Scholarship **2013 – 2014**
Queen's University. Amount: $ 6,000 (CAD)

PROFESSIONAL ACTIVITIES

Professional Extension

MATH 136, MATH 235: Linear Algebra 1 and 2 (Audit) **Jan. – Apr. 2021**
Online course, University of Waterloo, Waterloo, ON

KHSC/QU Innovation Workshop on Digital Health, Machine Learning, and AI **3 Feb. 2020**
Donald Gordon Hotel and Conference Centre, Kingston, ON

Graduate Management Consulting Association (GMCA) mini-MBA **Nov. 2017 – Dec. 2019**
Queen's University, Kingston, ON

Research Adjudicator for the Canadian Undergraduate Conference on Healthcare (CUCOH) **9 Nov. 2019**
Biosciences Complex, Queen's University, Kingston, ON

PATH 828: Bioinformatics for Cancer Research (Audit) **13 – 17 Mar. 2019**
Richardson Laboratory, Queen's University, Kingston, ON

CISC 859: Pattern Recognition (Audit) **Jan. – Apr. 2019**
Goodwin Hall, Queen's University, Kingston, ON

ASHG/IGES/ISCB Joint Symposium: **16 Oct. 2018**
Working with Big Data in the Cloud--Research and Privacy
San Diego Convention Center, San Diego, CA

HPC Summer School 2018: Bioinformatics Workflows **3 Aug. 2018**
Chernoff Hall, Queen's University, Kingston, ON

The High Performance Computing Symposium (HPCS) **6 - 9 Jun. 2017**
Queen's University, Kingston, Ontario

Professional Memberships

The American Society of Human Genetics **2018 - 2020**