

Justin Wong

DATE OF PREPARATION

October 12, 2021

PERSONAL INFORMATION

Address Richardson Laboratory
88 Stuart St, Queen's University
Kingston, ON, Canada,
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Web <http://justinjmwong.github.io>

Languages English – Native
French – Certificate of bilingualism (oral and written)

RESEARCH INTERESTS

I combine molecular biology and artificial intelligence to investigate the genetic nature of disease. Currently, I use machine learning to study microRNA-mediated gene regulation in lung neuroendocrine tumors and identify key microRNA biomarkers. I then use CRISPR-Cas9 to investigate the functional role of these key microRNAs.

EDUCATION

2018.1 - **Doctor of Philosophy**
Department of Pathology and Molecular Medicine, Queen's University
Kingston, ON, Canada
Supervisor: Dr. Neil Renwick
Thesis: *microRNA-mediated gene regulation in lung neuroendocrine neoplasms*

2011.9 - 2015.12 **Bachelor of Science (Honours, Biochemistry)**
Department of Biomedical and Molecular Sciences, Queen's University
Kingston, ON, Canada
Supervisor: Dr. Tomas Babak
Thesis: *Investigating genomic imprinting on the human X chromosome through in silico analysis of asymmetric gene expression*

RESEARCH EXPERIENCE

2018.1 - **PhD Candidate**
Department of Pathology and Molecular Medicine, Queen's University
Kingston, ON, Canada
Supervisor: Dr. Neil Renwick

2016.1 - 2017.12 **MSc Candidate (Reclassification to PhD in Jan. 2018)**
Department of Pathology and Molecular Medicine, Queen's University
Kingston, ON, Canada
Supervisor: Dr. Tomas Babak

2015.9 - 2015.12 **Undergraduate Honours Thesis Student**
Department of Biochemistry / Department of Biology, Queen's University
Kingston, ON, Canada
Supervisor: Dr. Tomas Babak

2015.5 - 2015.8 **Research Student**
The Hospital for Sick Children (Neurosciences and Mental Health)
Toronto, ON, Canada
Supervisor: Dr. Agnes Wong

2014.5 - 2014.8 **Research Student**
The Hospital for Sick Children (Neurosciences and Mental Health)
Toronto, ON, Canada
Supervisor: Dr. Agnes Wong

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2013.5 - 2013.8 **Research Student**
Banting and Best Diabetes Centre, The University of Toronto
Toronto, ON, Canada
Supervisor: Dr. Farid Mahmud

TEACHING EXPERIENCE

2021.9.28 - 2021.10.5 **Guest lecturer**, Queen's University
Path 411 - Applied Data Science in Molecular Medicine (3 lectures)
Lecture series: Introduction to high performance computing for bioinformatics

2021.2.1 - 2021.2.5 **Guest lecturer**, Queen's University
Path 411 - Applied Data Science in Molecular Medicine (3 lectures)
Lecture series: Introduction to high performance computing for bioinformatics

2016.9 - **Teaching Assistant**, Queen's University
Path 828 – Bioinformatics for Cancer Research (Winter 2018 - 2020, Fall 2020)
Biol 205 – Mendelian and Molecular Genetics (Fall 2016)

ACADEMIC SUPERVISION

Graduate mentorship

2021.9 - **Ningyou Li**, Graduate Student, Master of Biomedical Informatics, Tyryshkin Lab/Renwick Lab. Project: *Graph neural network analysis of miRNA-mRNA interactions in lung neuroendocrine cell lines.*

2021.9 - **Melani Maheswaran**, Graduate Student, Master of Biomedical Informatics, Tyryshkin Lab/Renwick Lab. Project: *Novel mRNA biomarkers of R-CHOP treatment response in diffuse large B-cell lymphoma.*

2020.9 - 2021.6 **Greg Erikson**, Graduate Student, Master of Biomedical Informatics, Tyryshkin Lab/Renwick Lab. Project: *Predicted microRNA targeting in lung neuroendocrine cell lines.* Current: Preparing MD application

Undergraduate mentorship

2021.5 - **Harrison Mayotte**, Path 499 Student, Research Project in Pathology, Renwick Lab. Project: *Determining the distribution of miR-375 positive cells in human tissues using chromogenic in situ hybridization.*

2021.5 - **Diana Mirsu**, Path 499 Student, Research Project in Pathology, Renwick Lab. Project: *Target validation of miR-375 in lung NEN cell lines.*

2021.5 - **Alex Pham**, Research volunteer, Renwick Lab. Project: *A comparison of microRNA profiles in lung NEN cell line and tissues.*

2021.5 - **Alexis Fang**, Research volunteer, Renwick Lab. Project: *microRNA profiling of lung cell lines.*

2019.9 - **Tashifa Imtiaz**, Summer Student, Path 499 Student, Research Project in Pathology, Renwick Lab. Project: *Key microRNAs in the Cancer Genome Atlas.*

2018.5 - 2020.5 **Zier Zhou**, Craig Jury Memorial Summer Student, and Honours Thesis Student, Renwick Lab. Project: *Differential microRNA expression in Alzheimer's disease.* Current: MSc Candidate, University of Ottawa

2020.1 - 2020.4 **Alessia Morin**, Cisc 499 Student, Advanced Undergraduate Project in Computer Science, Tyryshkin Lab/Renwick Lab. Project: *Fuzzy logic analysis of miRNA blood and plasma biomarkers.* Current: BSc (Computer Science) Graduate

2018.5 - 2019.9 **Abby Christi**, QuARMS Student, Research Volunteer, and M. Daria Haust Summer Student, Renwick Lab. Project: *Downloading and analyzing miRNA expression data from The Cancer Genome Atlas project.* Current: MD Candidate, Queen's University

2018.9 - 2019.4 **Yiwen Feng**, Cisc 499 Student, Advanced Undergraduate Project in Computer Science, Tyryshkin Lab/Renwick Lab. Project: *Preprocessing and analysis of TCGA miRNA profiles.* Current: BSc (Computer Science) Graduate

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- 2018.9 - 2019.4 **Linke Li**, Cisc 499 Student, Advanced Undergraduate Project in Computer Science, Renwick Lab/Tyryshkin Lab. Project: *Survival analysis for adenoid cystic carcinoma regarding microRNA*. Current: BSc (Computer Science) Graduate
- 2018.9 - 2019.4 **Miranda Smith**, Cisc 499 Student, Advanced Undergraduate Project in Computer Science, Tyryshkin Lab. Project: *A graphic user interface for feature selection analysis of genes*. Current: BSc (Computer Science) Graduate
- 2018.1 - 2018.4 **Christopher Bon**, Bchm 421/422 Student, Research Project in Biochemistry, Renwick Lab. Project: *Establishing plasma miRNA profiling for clinical use*. Current: BSc (Biochemistry) Graduate
- 2017.9 - 2018.5 **David Xie**, Bchm-421/-422 Student, Research Project in Biochemistry, Renwick Lab. Project: *Understanding lung neuroendocrine tumors through expression profiling*. Current: BSc (Biochemistry) Graduate
- 2017.5 - 2017.8 **Allison Jacobi-Dorbeck**, Research Volunteer, Renwick Lab. Project: *Identifying the anatomic basis of the diffuse neuroendocrine system*. Current: MD Candidate, Trinity School of Medicine
- 2017.5 - 2017.8 **Mary Goodwin**, Research Volunteer, Renwick Lab. Project: *Updating the human miRNA expression atlas*. Current: BHSc Candidate, Midwifery Education Program, McMaster University
- 2016.9 - 2017.5 **Adrianna Majewski**, Path 499 Student, Research Project in Pathology, Renwick Lab. Project: *miRNA-guided diagnostics for neuroendocrine tumors*. Current: MD candidate, Jagiellonian Medical College
- 2016.9 - 2017.5 **Mareena Mallory**, Cisc 499 Student, Advanced Undergraduate Project in Computer Science, Renwick Lab/Tyryshkin Lab. Project: *Macaque miRNA curation and reannotation*. Current: MSc Candidate, Health Informatics, University of Toronto

PROFESSIONAL ACTIVITIES

Professional Extension

- 2019.1 - 2019.4 **Cisc 859: Pattern Recognition (graduate course audit)**, Queen's University, Kingston, ON, Canada.
- 2018.10.15 **Introduction to Biostats for Pathology Researchers: Using statistics in pathology research with the Biostatistics Training Initiative**, Vantage Venues, Toronto, ON, Canada.
- 2018.9 - 2019.4 **miniMBA: workshops and seminars in business studies**, Graduate Management Consulting Association, Kingston, ON, Canada.
- 2017.7.31 - 2017.8.4 **Ontario HPC Summer School, High Performance Computing Training**, The Centre for Advanced Computing, Kingston, ON, Canada.
- 2017.5.29 - 2017.6.5 **Canadian Bioinformatics Workshop, Bioinformatics for Cancer Genomics**, MaRS Centre, Toronto, ON, Canada.

Professional Membership

- 2016.11 - Ontario Molecular Pathology Research Network
- 2012.1 - 2014.5 Education Executive, Queen's Genetically Engineered Machine Team

Service Activities

- 2021.10.13 **Critical Enquiry Tutor**, Medical Student Research Showcase, Queen's University, Kingston, ON, Canada.
- 2021.9.23 **Poster Judge**, Faculty of Health Sciences Research Day, Queen's University, Kingston, ON, Canada.
- 2020.6 - 2021.09 **Graduate Student Representative**, Graduate Academic Operations Working Group (COVID-19 logistics task force), Queen's University, Kingston, ON, Canada.
- 2019.11.09 **Presentation Judge**, Canadian Undergraduate Conference on Healthcare, Queen's University, Kingston, ON, Canada.

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2018.11.10 **Presentation and Poster Judge**, Canadian Undergraduate Conference on Healthcare, Queen's University, Kingston, ON, Canada.

2018.9.20 **Critical Enquiry Tutor**, Medical Student Research Showcase, Queen's University, Kingston, ON, Canada.

Consultation

2021.6.2 **BioBox Analytics Inc.** Assessed bioinformatics software in development by BioBox. Gave feedback on what features would be useful for computational genomics researchers.

SCHOLARSHIPS AND FUNDING

Current

2021.9 - 2022.5 **Dr. Robert J. Wilson Fellowship**, Funding Agency: Queen's University, Faculty of Health Sciences, Amount: \$ 10,000 (CAD)

2018.1 - **Dean's Doctoral Award**, Funding Agency: Queen's University, Department of Pathology and Molecular Medicine, Amount: \$ 15,000 per an. (CAD) [Renewable]

Previous

2018.9 **Robert Kisilevsky Research Education Award**, Funding Agency: Queen's University, Department of Pathology and Molecular Medicine, Amount: \$ 5,000 (CAD)

2018 **Ontario Graduate Scholarship**, Funding Agency: Government of Ontario, Amount: \$ 15,000 (CAD) [Declined]

2016.2 **The Jeremy Nesheim Graduate Travel Award**, Funding Agency: Queen's University, Department of Pathology and Molecular Medicine, Amount: \$ 5,739 (CAD)

2015.5 - 2015.8 **SickKids Summer Research Grant**, Funding Agency: The Hospital for Sick Children, Amount: \$6,366 (CAD)

2014.5 - 2014.8 **SickKids Summer Research Grant**, Funding Agency: The Hospital for Sick Children, Amount: \$6,052 (CAD)

2013.5 - 2013.8 **Charles Hollenberg Summer Studentship Award**, Funding Agency: The University of Toronto, Amount: \$ 2,517 (CAD)

2011.9 **Queen's University Excellence Scholarship**, Funding Agency: Queen's University, Amount: \$ 2,000 (CAD)

PUBLICATIONS

Peer reviewed manuscripts

1. Yang X, Nanayakkara J, Claypool D, Saghafinia S, **Wong JJM**, Xu M, Wang X, Nichol CJB, Michael IP, Hafner M, Yang X, Renwick N. *A miR-375/YAP axis regulates neuroendocrine differentiation and tumorigenesis in lung carcinoid cells*. *Scientific reports* 2021, 11: 10455. DOI: [10.1038/s41598-021-89855-4](https://doi.org/10.1038/s41598-021-89855-4) [IF: 4.6]
2. **Wong JJM***, Ginter PS*, Tyryshkin K, Yang X, Nanayakkara J, Zhou Z, Tuschl T, Chen YT, Renwick N. *Classifying Lung Neuroendocrine Neoplasms through MicroRNA Sequence Data Mining*. *Cancers* 2020, 12(9), 2653. DOI: [10.3390/cancers12092653](https://doi.org/10.3390/cancers12092653) [IF: 6.1]
3. Nanayakkara J, Tyryshkin K, Yang X, **Wong JJM**, Vanderbeck K, Ginter PS, Scognamiglio T, Chen Y-T, Panarelli N, Cheung N-K, Dijk F, Ben-Dov IZ, Kim MK, Singh S, Morozov P, Max KEA, Tuschl T, Renwick N. *Evaluating gastroenteropancreatic neuroendocrine tumors through microRNA sequencing*. *NAR Cancer* 2020, 2;3:1-12. DOI: [10.1093/narcan/zcaa009](https://doi.org/10.1093/narcan/zcaa009) [IF: -]
4. Panarelli N, Tyryshkin K, **Wong JJM**, Majewski A, Yang X, Scognamiglio T, Kim MK, Bogardus K, Tuschl T, Chen YT, Renwick N. *Evaluating gastroenteropancreatic neuroendocrine tumors through microRNA sequencing*. *Endocrine-Related Cancer* 2019, 29;1:47-57. DOI: [10.1530/ERC-18-0244](https://doi.org/10.1530/ERC-18-0244) [IF: 5.3]

* Asterisks indicate equal authorship

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Peer reviewed abstracts

1. Vanderbeck K, Nanayakkara J, Tyryshkin K, **Wong J**, Yang X, Ginter P, Scognamiglio T, Renwick N. *MicroRNA-based classification of neuroendocrine neoplasms*. *Laboratory Investigation* 2020, 100: 832-833. DOI: [10.1038/s41374-020-0387-6](https://doi.org/10.1038/s41374-020-0387-6) [IF: 4.411]
2. Nanayakkara J, Tyryshkin K, Yang X, **Wong J**, Tuschl T, Renwick N. *MicroRNA-Based classification of neuroendocrine neoplasms*. *Pancreas* 2020, 49(3):461-491. DOI: [10.1097/MPA.0000000000001516](https://doi.org/10.1097/MPA.0000000000001516) [IF: 2.675]
3. Khara M, Zhou, Z, **Wong J**, Renwick, N.. *Human brain atlas: miRNA version*. *Canadian Journal of Neurological Sciences / Journal Canadien Des Sciences Neurologiques* 2019, 46(S2), S63-S63. DOI: [10.1017/cjn.2019.264](https://doi.org/10.1017/cjn.2019.264) [IF: 1.714]
4. Panarelli N, Tyryshkin K, **Wong J**, Yang X, Kim M, Tuschl T, Chen YT, Renwick N. *Classifying and grading archived gastrointestinal neuroendocrine tumors through microRNA sequencing*. *Pancreas* 2019, 48(3):447. DOI: [10.1097/MPA.0000000000001250](https://doi.org/10.1097/MPA.0000000000001250) [IF: 2.958]

PRESENTATIONS

1. **Seminar Speaker**. *Investigating microRNA-mediated gene regulation in neuroendocrine neoplasms*. Pathology and Molecular Medicine Research Seminar Series, Queen's University, Department of Pathology and Molecular Medicine. Kingston, ON, Canada (Online). 3 March 2021.
2. **Conference Speaker**. *Classifying lung neuroendocrine neoplasms through data mining of comprehensive microRNA expression profiles*. Pathology and Molecular Medicine Departmental Research Day, Kingston Yacht Club. Kingston, ON, Canada. 13 June 2019.
3. **Invited Speaker**. *Using microRNAs to diagnose and monitor Merkel cell carcinoma*. Merkel Cell Carcinoma Round Table, Aqua Terra Restaurant, Delta Hotel. Kingston, ON, Canada. 9 April 2019.
4. **Conference Speaker**. *Feature selection to identify gastroenteropancreatic neuroendocrine tumor biomarkers*. CSearch Computing Conference, Queen's University. Kingston, ON, Canada. 29 September 2018.
5. **Conference Speaker**. *microRNA Profiling for Classification of Gastrointestinal Neuroendocrine Tumors*. Toronto RNA Enthusiasts' Day (TREN D), Peter Gilgan Centre for Research and Learning. Toronto, ON, Canada. 31 July 2018.
6. **Conference Speaker**. *Evaluating the use of microRNA profiling for classification of gastrointestinal neuroendocrine tumors*. Pathology and Molecular Medicine Departmental Research Day, Kingston Yacht Club. Kingston, ON, Canada. 22 June 2018.
7. **Seminar Speaker**. *Computational analysis to evaluate asymmetric gene expression and genomic imprinting on the human X chromosome*. Pathology and Molecular Medicine Research Seminar Series, Richardson Amphitheatre. Kingston, ON, Canada. 19 September 2017.
8. **Conference Speaker**. *Identifying genomic imprinting through next-generation sequencing and high-performance computing*. High performance computing symposium, The Centre for Advanced Computing. Kingston, ON, Canada. 7 June 2017.
9. **Seminar Speaker**. *Byte -ing into the X chromosome: Identifying and characterizing genomic imprinting on the human X chromosome through data mining and big data techniques*. Pathology and Molecular Medicine Research Seminar Series, Richardson Amphitheatre. Kingston, ON, Canada. 1 November 2016.
10. **Invited Speaker**. *Chromosomes and bytes of code: A computational genomics approach to identify imprinted genes on the human X chromosome*. Molecular and Cellular Integrative Biology Seminar, Biosciences Complex. Kingston, ON, Canada. 4 October 2016.
11. **Conference Speaker**. *Impact of a portable touch tablet and video to introduce clinical research and facilitate patient recruitment*. Charles Hollenberg Summer Student Mini-Conference, MaRS Centre. Toronto, ON, Canada. 6 August 2013.

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Outreach Presentations

1. **Invited Speaker.** *My journey through science.* EMC Pathology Day, Queen's University. Kingston, ON, Canada. 5 May 2018.
2. **Finalist.** *When Mom's DNA Fights Dad's DNA: A big data approach to the search for genomic imprinting.* Queen's University 3 Minute Thesis Competition, Queen's University. Kingston, ON, Canada. 30 March 2016.

POSTERS

1. **Wong J,** Ginter PS, Tyryshkin K, Yang X, Nanayakkara J, Zhou Z, Tuschl T, Chen Y-T, Renwick N. *MicroRNA-based classification of lung neuroendocrine neoplasms.* The Canadian Cancer Research Conference, Shaw Center. Ottawa, ON, Canada. 3-5 November 2019.
2. **Wong J,** Nanayakkara J, Yang X, Tyryshkin T, Renwick N. *Classification of gastroenteropancreatic and lung neuroendocrine tumors through microRNA profiling.* OMPRN Pathology Matters Meeting, Canada Science and Technology Museum. Ottawa, ON, Canada. 7 October 2019.
3. Nanayakkara J, Tyryshkin K, Yang X, **Wong J,** Tuschl T, Renwick N. *MicroRNA-based classification of neuroendocrine neoplasms.* North American Neuroendocrine Tumor Society Annual Symposium, Sheraton Boston Hotel. Boston, MA, USA. 3-5 October 2019.
4. **Wong J,** Nanayakkara J, Yang X, Tyryshkin T, Renwick N. *MicroRNA-based classification of gastroenteropancreatic and lung neuroendocrine tumors.* Toronto RNA Enthusiasts' Day (TREN-D), Peter Gilgan Centre for Research and Learning. Toronto, ON, Canada. 30 July 2019.
5. **Wong J,** Panarelli N, Tyryshkin K, Majewski A, Yang X, Scognamiglio T, Kim M, Bogardus K, Tuschl T, Chen Y, Renwick N. *Classification of gastroenteropancreatic neuroendocrine tumors through microRNA sequencing.* OMPRN Pathology Matters Meeting, Vantage Venues. Toronto, ON, Canada. 15 October 2018.
6. **Wong J,** Panarelli N, Tyryshkin K, Majewski A, Yang X, Tuschl T, Chen Y, Renwick N. *Classifying and grading gastroenteropancreatic neuroendocrine tumors through microRNA sequencing.* North American Neuroendocrine Tumor Society Annual Symposium, Westin Seattle Conference Center. Seattle, WA, USA. 4-6 October, 2018.
7. **Wong J,** Panarelli N, Tyryshkin K, Majewski A, Yang X, Scognamiglio T, Kim M, Bogardus K, Tuschl T, Chen Y, Renwick N. *MicroRNA-based classification of gastrointestinal neuroendocrine tumors.* The Twenty-first Annual Meeting for Health Sciences Research Trainees, Biosciences Complex. Kingston, ON, Canada. 13 June 2018.
8. **Wong J,** Panarelli N, Tyryshkin K, Majewski A, Yang X, Scognamiglio T, Kim M, Bogardus K, Tuschl T, Chen Y, Renwick N. *Evaluating gastrointestinal neuroendocrine tumors through microRNA sequencing.* Keystone Symposium, Precision Medicine in Cancer, Clarion Hotel Sign. Stockholm, Sweden. 6-10 May 2018.
9. **Wong J,** Richards MD, Wong AMF. *Luminance and Latency: Simultaneity judgement with dichoptic luminance as a technique to investigate perceptual phenomena in amblyopia.* SSuRe Research Symposium, Peter Gilgan Centre for Research and Learning. Toronto, ON, Canada. 10 August 2015.
10. **Wong J,** Fraser J, Chandrakumar M, Cotesta M, John T, Poesys T, Hartman M, During D, Wong AMF. *Optimizing Ophthalmology: Using Lean principles to maximize the efficiency of patient scheduling in an Ophthalmology clinic.* SSuRe Research Symposium, Peter Gilgan Centre for Research and Learning. Toronto, ON, Canada. 12 August 2014.
11. Fraser J, **Wong J,** Chandrakumar M, Cotesta M, Hartman M, During D, Wong AMF. *Ophthalmology Clinic Uses Lean Methodology to Improve Patient Wait-time: Standardization of Lanes.* SSuRe Research Symposium, Peter Gilgan Centre for Research and Learning. Toronto, ON, Canada. 12 August 2014.

OTHER INTERESTS

My hobbies include: cooking, swing dancing, playing guitar, and strategy gaming. I also run a YouTube channel covering study tips, research skills, and other aspects of academic life.