

Bilgenur Baloglu

Molecular Biologist | Data Scientist | Science Writer & Communicator

Address Centre For Biodiversity Genomics, University of **LinkedIn** <https://www.linkedin.com/in/bilgenur-baloglu>
Guelph, 50 Stone Road, Guelph, ON **WWW** <https://bbaloglu.github.io/>

E-mail bilgenurb@gmail.com

Data scientist with 6+ years of experience in DNA sequencing analysis. Process-oriented data analyst with in depth knowledge of statistical data analysis, big data capture, manipulation, and visualization with R and Python, fluent in Bash and Git. Science communicator, author, and editor with 8+ years of experience.

Skills

Project leadership and management



Teaching and mentoring



Teamwork / Collaboration



Experimental design



Programming with Python and R



Genomic (Illumina and Nanopore Sequencing) data analysis



Data visualization, presentation and writing skills



English (advanced), German (advanced), Turkish (native)



Science communication



Work History

2018-08 - Current Postdoctoral research fellow

University of Guelph, Canada

- Developed molecular workflow and used Python toolkit (Pandas, Numpy, Bokeh, Scipy) to develop error-correction bioinformatics pipeline for Nanopore sequencing.
- Designed and validated primers for metabarcoding with NGS.
- Coordinates a \$1m EPA-funded project with three US universities.

2013-07 - 2018-02 PhD student

National University of Singapore, Singapore

- Developed cost-effective NGS barcoding and bioinformatics pipeline for Nanopore sequencing.
- Provided consulting service to Singapore's National Water Agency.
- Mentored undergraduate students for data analysis.

Education

2013-01 - 2018-01 PhD: Biological Sciences

National University of Singapore - Singapore

- Thesis: Biological assessment and monitoring of Singapore's aquatic environments using NGS tools.

2008-01 - 2012-01 Bachelor of Science: Molecular Biology and Genetics

Istanbul Technical University - Istanbul

- Thesis: Characterization of Nuclear Factor I Protein Expression in Human Neural Stem Cells.

Accomplishments

- Developed two different Python-based bioinformatics pipelines for Nanopore sequencing for DNA barcoding and metabarcoding, increasing the accuracy up to 100%.
- Decreased the sequencing cost by a 100-fold using an optimized NGS barcoding workflow
- Provided consulting services to Singapore's PUB, for midge outbreak surveillance, saving the agency thousands of dollars

Awards

Total to date: \$170,546 USD (Only a few selected shown)

- Accepted to Insight Health Data Science Fellowship (rejected)
- Invited TEDx speaker (upcoming talk in October 2020)
- AllGenetics postdoc award for industrial applications using DNA barcoding & metabarcoding
- Northern Research Fund and Food From Thought Grant for sub-arctic research
- TEV-SINGA PhD scholarship

Publications

Submitted

7- **Baloglu, B.**, Chen. Z., Elbrecht, V., Braukmann, T., MacDonald, S., Steinke, D. (2020). "A workflow for accurate metabarcoding using Nanopore MinION sequencing. bioRxiv: 2020.05.21.108852.

In progress

6- **Baloglu, B.**, Hempel, C., Adamowicz, S., Steinke, D. *A phylogenetic perspective on the distribution of aquatic midges (Chironomidae) in sub-arctic ponds as revealed by PacBio Sequel sequencing of COI gene.* Manuscript in preparation.

5- **Baloglu, B.**, Braukmann, T., MacDonald, S., Steinke, D. Does size sorting matter? Validation of COI metabarcoding primers for aquatic invertebrates. Manuscript in preparation.

Peer-reviewed

4- **Baloglu, B.**, Clews E., Meier R., 2018. *NGS barcoding reveals high resistance of a hyperdiverse chironomid (Diptera) swamp fauna against invasion from adjacent freshwater reservoirs.* Frontiers in Zoology, 15(1):31.

3- Srivathsan, A.*, **Baloglu, B.***, Wang, W., Tan, W.X., Bertrand, D., Ng, A.H.Q., Boey, E.J.H., Koh, J.J.Y., Nagarajan, N. and Meier, R., 2018. *A MinION™-based pipeline for fast and cost-effective DNA barcoding.* Molecular ecology resources, 18(5), 1035-1049. *Equal contribution.

2- **Baloglu, B.** 2018. *Biological assessment and monitoring of Singapore aquatic environments* (Doctoral dissertation).

1- Lim, N.K., Tay, Y.C., Srivathsan, A., Tan, J.W., Kwik, J.T., **Baloglu, B.**, Meier, R. and Yeo, D.C., 2016. *Next-generation freshwater bioassessment: eDNA metabarcoding with a conserved metazoan primer reveals species-rich and reservoir-specific communities.* Royal Society Open Science, 3(11), p.160635.

Professional Presentations

- 14- **Baloglu, B.**, Chen, Z., Elbrecht, V., Braukmann, T., MacDonald, S., Steinke, D. Nanopore sequencing for highly accurate metabarcoding. Upcoming poster presentation and lightning talk at London Calling 2020 online.
- 13- **Baloglu, B.**, Braukmann, T., MacDonald, S., Steinke, D. How to improve aquatic invertebrate metabarcoding? Evaluate your primers and skip size sorting. Paper presented digitally at the 50th Ontario Ecology, Ethology, and Evolution Colloquium, Guelph, Canada, May, 2020.
- 12- **Baloglu, B.**, Chen, Z., Elbrecht, V., Braukmann, T., MacDonald, S., Steinke, D. A molecular and bioinformatics workflow for metabarcoding with the Nanopore MinION. Paper presented at Great Lakes Restoration Initiative Meeting, Cornell University Biological Station, USA, February 2020.
- 11- **Baloglu, B.**, Braukmann, T., MacDonald, S., Steinke, D. Primer comparison and size sorting for metabarcoding of aquatic invertebrates. Poster presented at Food From Thought, Research Integration Symposium, Guelph, Canada, February 2020.
- 10- **Baloglu, B.**, Chen, Z., Elbrecht, V., Braukmann, T., MacDonald, S., Steinke, D. Get outside: *Metabarcoding with the Nanopore MinION*. Paper presented at 8th International Barcode of Life Conference, Trondheim, Norway, June 2019.
- 9- Elbrecht, V., **Baloglu, B.**, Braukmann, T., Ivanova, N., Prosser, S., Hajibabei, M., Wright, M., Zakharov, E., Hebert, P., Steinke, D. *The ultimate primer comparison for metabarcoding terrestrial insects and aquatic invertebrates*. Paper presented at 8th International Barcode of Life Conference, Trondheim, Norway, June 2019.
- 8- **Baloglu, B.**, Chen, Z., Elbrecht, V., Braukmann, T., MacDonald, S., Steinke, D. *Highly accurate freshwater macrozoobenthos metabarcoding with Nanopore MinION*. Paper presented at Society for Freshwater Science Annual Meeting, Salt Lake City, USA, May 2019.
- 7- Elbrecht, V., Braukmann, T., **Baloglu, B.**, Steinke, D. *A 10 minute guide to DNA metabarcoding macroinvertebrates*. Talk given at Society for Freshwater Science Annual Meeting, Salt Lake City, USA, May 2019.
- 6- **Baloglu, B.**, Clews, E., Meier, R. *Next-generation freshwater bioassessment in the 21st century: Species-level resolution for non-biting midges (Diptera: Chironomidae) and implications for conservation*. Paper presented at the 5th Ecology and Evolutionary Biology Symposium, Izmir, Turkey, July, 2018.
- 5- **Baloglu, B.** *Biological assessment and monitoring of Singapore's aquatic environments using NGS tools*. Talk given at the Biodiversity Institute of Ontario, Guelph, Canada, May, 2018.
- 4- **Baloglu, B.**, Clews, E., Meier, R. *Biomonitoring of Singapore waters with NGS barcodes: Species-level resolution for non-biting midges (Diptera: Chironomidae) and implications for conservation*. Paper presented at the 3rd Southeast Asian Gateway Evolution Meeting, Bogor, Indonesia, 2017.
- 3- **Baloglu, B.**, Clews, E., Meier, R. *Deciphering non-biting midge (Diptera: Chironomidae) communities of Singapore's aquatic habitats in species-level resolution using NGS barcodes*. Paper presented at the 21st Biological Sciences Graduate Congress, University of Malaya, Malaysia, 2016
- 2- **Baloglu, B.**, Clews, E., Meier, R. *NGS barcodes provide species-level resolution for non-biting midges (Diptera: Chironomidae) and reveal near-complete species turnover between urban and natural aquatic habitats*. Paper presented at the 25th International Congress of Entomology, Orlando, Florida, USA, 2016.
- 1- **Baloglu, B.**, Kumbasar A. *Characterization of Nuclear Factor I Protein Expression in Human Neural Stem Cells*. Talk given at International ITU 6th Molecular Biology and Genetics Student Congress, Istanbul, Turkey, August, 2012.

Media & Science Communication

- Oct 2020 TEDx IKU Istanbul. [TEDx talk](#): How will insects save the world?
- July 2020 BioTechniques. Upcoming opinion piece: Where are the Southeast Asian Sars-Cov-2 genomes?
- June 2020 Barcode Bulletin. Scicomm [article](#) about our Great Lakes research (What can't be measured won't be managed)
- June 2020 Medium. [My data science article](#), published under Towards Data Science (20+ million monthly views): Predicting ocean water temperature with machine learning
- April 2020 EAL Bilim. [Discord event](#) with high school students from Turkey on biology and genetics
- March 2020 Evrim Agaci. [My scicomm article](#) on the importance of evolutionary biology and biodiversity research for preventing pandemics published on Turkey's biggest Science website (Eng: Tree of Evolution)
- March 2020 Coronavirus file, GRF. [My opinion piece](#) emphasizing evolutionary biology and biodiversity research in the politics and economics of COVID-19, featured on Global Relations Forum website. Also featured on the Turkish society of ecology and evolutionary biology [website](#).
- January 2020 Bilim Kadinlari. [Woman scientist of the week](#): Twitter thread by Bilim Kadinlari (Eng: Women Scientists) about my research projects in Singapore and Canada
- September 2019 Barcode Bulletin. [Article](#) about our research on the discovery of new insect species in a Singaporean swamp forest
- July 2019 Research coverage. Our research in sub-Arctic Canada was [featured](#) at Churchill Northern Research Centre (CNSC)
- June 2019 Science Magazine. A [story](#) in the Science Magazine about our research in Singapore on Nanopore sequencing
- June 2019 AllGenetics Award Coverage. Award [announcement](#) for my talk on my postdoc project on nanopore sequencing and metabarcoding
- December 2018 Women Doing Science. My research in STEM, featured by WDS on their [Instagram](#), Facebook, and Twitter pages
- May 2018 Antalya Gundem Gazetesi. A local newspaper [covers](#) my one day at a Montessori Kindergarten educating kids on ecology
- 2012-2017 Bilim.org. I was an author and editor for a Turkish popular science magazine and I wrote 37 [articles](#), interviewed five scientists, edited numerous articles
- October 2017 Noroblog Podcast. [Insects and humans](#): A podcast featuring my PhD research (in Turkish)

Teaching experience

National University of Singapore undergraduate modules unless otherwise stated:

- Teaching assistant, 2014-2017. Comparative genomics and Evolution
- Teaching assistant, 2014. Biodiversity
- Teaching assistant, 2015. Animal Behavior
- Organizer, Istanbul Technical University, 2012. Bioinformatics workshop

Certifications

2018-2020

Reviewer for Molecular Ecology Resources, Ecology and Evolution.

2018-2020

Member of Ecology and Evolutionary Biology Society of Turkey, Society for Freshwater Science.

2020-04	Machine learning with Python
2020-02	Python: Python Programming for Artificial Intelligence and Data Science
2020-06	Deep Learning with PyTorch: Zero to GANs
	SCUBA PADI open water diver (December 2019), Wilderness First responder certified (May 2019).