Bilgenur **Baloglu**

Molecular Biologist & Data Scientist

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LinkedIn https://www.linkedin.com/in/bilgenur-baloglu

WWW https://github.com/BBaloglu/

Skills

- Project leadership and management
- Teaching and mentoring
- Teamwork / Collaboration / Communication skills
- Experimental design
- Programming with Python and R
- Genomic (NGS & Nanopore Sequencing) data analysis
- Data visualization, presentation and writing skills
- English (advanced), German (advanced), Turkish (native)

Work History

2018-08 - Current

Postdoctoral research fellow

University of Guelph, Canada

- Co-led the development of a Python product (https://github.com/BBaloglu/ASHURE)
- Developed molecular and bioinformatics pipeline with Python toolkit (Pandas, Numpy, Bokeh, Scipy) 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 National Water Agency, PUB, for midge outbreak surveillance, saving the agency thousands of dollars

Awards

Total to date: $169,557 USD
• Accepted to Insight Health Data Science Fellowship (declined)
• Travel grant for attending Great Lakes meeting at Cornell University Field Station, 2020 ($605)
• Invited TEDx speaker (upcoming talk in October, 2020)
• Conference travel grant from CBG, 2019 ($5,300)
• Centre for Biodiversity Genomics (CBG) postdoctoral fellowship, 2018-2020 ($67,000)
• AllGenetics postdoc award for industrial applications using DNA barcoding & metabarcoding, 2019 ($442)
• Northern Research Fund and Food From Thought Grant for sub-arctic research, 2019 ($8,320)
• National University of Singapore (NUS) conference travel grant, 2017-2018 ($1,470)
• TEV-SINGA PhD scholarship, 2013-2018 $82,000
• Scholarship from Turkish National Agency for Erasmus Exchange Program, 2010-2011 ($4,420)

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 (Chironomide) 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.

Teaching experience

- Great Lakes DNA barcoding research collaborators and EPA representatives, Genetic data analysis workshop, 2020

- High school and undergraduate students in Turkey, Stardust Squad, Mentor, 2020
- Comparative genomics and Evolution, NUS, Teaching assistant, 2014-2017
- PUB, Singapore's National Water Agency, Consultant, 2014-2016
- Biodiversity, NUS, Teaching assistant, 2014
- Animal Behavior, NUS, Teaching assistant, 2015
- Undergraduate students, EvoLab, NUS, Mentor, 2014-2016
- Bioinformatics workshop, Istanbul Technical University, Organizer, 2012

Certifications

Reviewer for Molecular Ecology Resources, Ecology and Evolution.

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

2019-12 SCUBA PADI open water diver

2019-05 Wilderness First responder certified