

# Mehrdad Hajibabaei, Ph.D.

## **Contact information**

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Departmental webpage: <http://www.uoguelph.ca/ib/people/faculty/hajibabaei.shtml>

## **Education**

Ph.D., Biology (Molecular Evolution and Bioinformatics), 2003, Ottawa

B.Sc., Biology (Microbiology), 1994, Tehran

## **Present positions**

Assistant Professor (tenure-track), Department of Integrative Biology, University of Guelph, Canada

Associate Director, Canadian Centre for DNA Barcoding, Biodiversity Institute of Ontario, University of Guelph, Canada

Director of Technology Development, International Barcode of Life Project (iBOL)

## **Previous positions**

Research Scientist, Biodiversity Institute of Ontario, University of Guelph (2006 – January 2009)

Postdoctoral Fellow, Department of Integrative Biology, University of Guelph, Guelph, Canada, (2003- 2006)

Research Assistant, Department of Biology, University of Ottawa (1998-2003)

Teaching Assistant, Department of Biology, University of Ottawa (1998-2003)

## **Awards**

Visualization and analysis software for DNA barcode data, 2<sup>nd</sup> International Barcode of Life Conference, Taipei (2007)

Ontario Graduate Scholarship in Science and Technology (2001-2003)

University of Ottawa Tuition Scholarship (2002-2003)

Burroughs Wellcome Fund Scholarship (2002)

*M. Hajibabaei, Curriculum Vitae*

## **Funding**

DNA probe identification and testing for sue on 3D-Biochip product. Research contract from Safeguard Biosciences Inc. \$173,600, Principle Investigator (2007-2008)

Environmental DNA barcoding through massively parallelized sequencing. Genome Canada. \$1,800,000, Co-applicant and Research Program Coordinator (2008-2010)

DNA identification of animal tissue in cattle feed. Pre-commercialization Research Fund, Ontario Genomics Institute, \$100,000, Principle Investigator (2008-2009)

International Barcode of Life, Genome Canada. \$25,000,000, Co-applicant and Chair of Environmental Barcoding Working Group (2010-2015) (pending)

Environmental barcoding for water quality assessment, Science Horizons Program, Environment Canada. \$12,000, Principle Investigator (2009-2010)

## **Peer reviewed publications**

1. **Hajibabaei M**, Singer GA: Googling DNA Sequences on the World Wide Web. *BMC Bioinformatics* 2009, in press.
2. Hollingsworth PM, and 51 others: A DNA barcode for land plants. *Proceedings of the National Academy of Sciences U.S.A.* 2009, in press
3. Janzen DH, and 45 others: Integration of DNA barcoding into an ongoing inventory of complex tropical biodiversity. *Molecular Ecology Resources* 2009, 9s1:1-26.
4. Singer GA, **Hajibabaei M**: iBarcode.org: web-based molecular biodiversity analysis. *BMC Bioinformatics* 2009, 10 Suppl 6:S14.
5. Fazekas AJ, Kesanakurti PR, Burgess KS, Percy DM, Graham SW, Barrett SC, Newmaster SG, **Hajibabaei M**, Husband BC: Are plant species inherently harder to discriminate than animal species using DNA barcoding markers? *Molecular Ecology Resources* 2009, 9s1:130-139.
6. Zimmermann J, **Hajibabaei M**, Blackburn DC, Hanken J, Cantin E, Posfai J, Evans TC, Jr.: DNA damage in preserved specimens and tissue samples: a molecular assessment. *Frontiers in Zoology* 2008, 5:18.
7. Meusnier I, Singer GA, Landry JF, Hickey DA, Hebert PD, **Hajibabaei M**: A universal DNA mini-barcode for biodiversity analysis. *BMC Genomics* 2008, 9:214. (Ranked as highly accessed article)
8. Fazekas AJ, Burgess KS, Kesanakurti PR, Graham SW, Newmaster SG, Husband BC, Percy DM, **Hajibabaei M**, Barrett SC: Multiple multilocus DNA barcodes from the plastid genome discriminate plant species equally well. *PLoS One* 2008, 3:e2802.
9. deWaard JR, Ivanova NV, **Hajibabaei M**, Hebert PD: Assembling DNA barcodes. Analytical protocols. *Methods in Molecular Biology* 2008, 410:275-293.
10. Burns JM, Janzen DH, **Hajibabaei M**, Hallwachs W, Hebert PD: DNA barcodes and cryptic species of skipper butterflies in the genus *Perichares* in Area de Conservacion Guanacaste, Costa Rica. *Proceedings of the National Academy of Sciences U.S.A.* 2008, 105:6350-6355.
11. **Hajibabaei M**, Singer GA, Hebert PD, Hickey DA: DNA barcoding: how it complements taxonomy, molecular phylogenetics and population genetics. *Trends in Genetics* 2007, 23:167-172. (Published as cover story and ranked 5<sup>th</sup> in the Top 25 Hottest Articles in April-June 2007)

12. **Hajibabaei M**, Singer GA, Clare EL, Hebert PD: Design and applicability of DNA arrays and DNA barcodes in biodiversity monitoring. *BMC Biology* 2007, 5:24. (Ranked as highly accessed article)
13. Burns JM, Janzen DH, **Hajibabaei M**, Hallwachs W, Hebert PD: DNA barcodes of closely related (but morphologically and ecologically distinct) species of skipper butterflies (Hesperiidae) differ by only one to three nucleotides. *Journal of the Lepidopterists' Society* 2007, 61:138-153.
14. **Hajibabaei M**, Xia J, Drouin G: Seed plant phylogeny: gnetophytes are derived conifers and a sister group to Pinaceae. *Molecular Phylogenetics and Evolution* 2006, 40:208-217.
15. **Hajibabaei M**, Smith MA, Janzen DH, Rodriguez JJ, Whitfield JB, Hebert PDN: A minimalist barcode can identify a specimen whose DNA is degraded. *Molecular Ecology Notes* 2006, 6:959-964. (Ranked among top 20 accessed papers on journal's website)
16. **Hajibabaei M**, Singer GA, Hickey DA: Benchmarking DNA barcodes: An assessment using available primate sequences. *Genome* 2006, 49:851-854.
17. **Hajibabaei M**, Janzen DH, Burns JM, Hallwachs W, Hebert PD: DNA barcodes distinguish species of tropical Lepidoptera. *Proceedings of the National Academy of Sciences U.S.A.* 2006, 103:968-971. (Presented as cover image and ranked 4<sup>th</sup> among 50<sup>th</sup> Most-Read Articles in January 2006)
18. Janzen DH, **Hajibabaei M**, Burns JM, Hallwachs W, Remigio E, Hebert PD: Wedding biodiversity inventory of a large and complex Lepidoptera fauna with DNA barcoding. *Philos Trans R Soc Lond B Biol Sci* 2005, 360:1835-1845.
19. **Hajibabaei M**, deWaard JR, Ivanova NV, Ratnasingham S, Dooh RT, Kirk SL, Mackie PM, Hebert PD: Critical factors for assembling a high volume of DNA barcodes. *Philosophical Transactions of the Royal Society B: Biological Sciences* 2005, 360:1959-1967.

### **Patent**

**Hajibabaei, M.**, P.D.N. Hebert, and D.A. Hickey, 2006. Method and device for DNA barcode sequence searching. (patent filed on June 2007, Reference provisional patent # H310952US, patent application was not pursued passed 2008)

### **Software**

**GoogleGene**, Searching for DNA barcode sequences by using Google search engine.

**www.iBarcode.org**, Web-based analysis and visualization tools for DNA barcoding. (Winner of the visualization and analysis software award in the 2<sup>nd</sup> International Barcode of Life Conference, September 2007, Taipei)

### **Training Highly Qualified Personnel**

Saina Taidi (MSc), Biodiversity Assessment of Insects from Environmental Samples Using Next-generation Parallelized Sequencing of DNA Barcodes. 2008-

Rebecca Bloch (PhD), DNA barcoding of fresh water invertebrate communities. 2009-

Isabelle Meusnier (postdoctoral fellow), Developing DNA barcoding in fungi, plants, and protists, 2007-09

Suresh Nick (postdoctoral fellow), Micro-array identification of fish species, 2007-08

Shadi Kamal Georg Shokralla (postdoctoral fellow), Environmental barcoding using massively parallelized pyrosequencing, 2008-

Pedro Pedro (postdoctoral fellow), Large-scale tropical biodiversity and phylogeography analysis using next-generation sequencing approaches, 2009-

Jared Hortie (B.Sc. honors student), Sample preparation for environmental barcoding, Sept 2007 – April 2008

Claudia Bertrand (B.Sc. project student), Plant DNA barcoding (January 2008 – April 2008)

### **Teaching experience**

Guest Lecturer, Probing Biodiversity Using Molecular Data, Graduate level course, Department of Integrative Biology, University of Guelph (Fall 2006)

Teaching Assistant and Laboratory Instructor. Molecular Biology, Bioinformatics, Evolutionary Biology, and Microbiology. Biology Department, University of Ottawa (1998-2003)

### **Selected recent talks**

**Hajibabaei, M.** 2009. Assembling DNA Barcodes. Barcoding-Towards a DNA PDA. Ontario Genomics institute. Toronto, Canada (invited)

**Hajibabaei, M.** 2009. Environmental and Biodiversity Genomics, Roche454 workshop at TCAG, MaRS, Toronto, Canada (invited)

**Hajibabaei, M.** 2009. Next Generation Biodiversity Analysis, Institute of Ecology and Evolution, UNAM, Mexico city, Mexico (invited departmental seminar)

**Hajibabaei, M.** 2009. Assembling DNA Barcodes, MexBol Workshop, Institute of Biology, UNAM, Mexico city, Mexico (invited)

**Hajibabaei, M.** 2009. Next generation sequencing platforms in biodiversity analysis. Workshop in Evolutionary Genetics - the impact of next generation sequencing technologies, Wittenberg, Germany (invited)

**Hajibabaei, M.** 2008. Biodiversity Informatics and Barcode of Life. European Molecular Biology Network Annual Conference, Bari, Italy (Keynote)

**Hajibabaei, M.** 2008. Environmental Barcoding. 2<sup>nd</sup> Canadian Barcode of Life Meeting, Royal Ontario Museum, Toronto. Canada (invited)

**Hajibabaei, M.** 2007. Minimalist barcode sequences. Workshop on Using Barcode Data in Studies of Molecular and Evolutionary Dynamics, Banbury Center, Cold Spring Harbor, USA (invited)

**Hajibabaei, M.** 2007. The Barcode of Life Initiative. Biology Department, Concordia University, Montreal, Canada (invited departmental seminar)

**Hajibabaei, M.** 2007. Molecular Biodiversity and DNA Barcodes. Biology Department, University of Toronto at Mississauga, Mississauga, Canada (invited departmental seminar)

**Hajibabaei, M.** 2007. Assembling DNA barcodes. European Barcode of Life Conference, Leiden, the Netherlands (invited)

**Hajibabaei, M.** 2007. Minimalist barcodes. 2<sup>nd</sup> International Barcode of Life Conference, Taipei (invited)

**Hajibabaei, M.** 2007. The Barcode of Life Initiative. ISOP/PSA annual meeting. Rhode Island, USA (invited)

**Hajibabaei, M.** 2006. The Barcode of life initiative. New England BioLabs, Boston, USA (invited seminar)

**Hajibabaei, M.** 2006. Google Gene: searching DNA barcode sequences using Google search engine. Data Analysis Workshop, Consortium for the Barcode of Life. Paris, France

**Hajibabaei, M.** 2006. Barcode of life. Genome Canada Symposium, Ontario Genomics Institute, Toronto, Canada (invited)

**Hajibabaei, M.** 2005. Discriminating among tropical Lepidoptera with DNA barcodes. Evolution Conference, Fairbanks, USA

**Hajibabaei, M.** 2005. Protocols for the high-volume assembly of DNA barcodes. 1<sup>st</sup> International Barcode of Life Conference, London, England (invited)

#### **University/Department/Professional service**

Associate Editor, *BMC Ecology*, 2009-

Reviewed for several scientific journals including *Systematic Biology*, *Trends in Genetics*, *Trends in Parasitology*, *Molecular Ecology Notes*, *PLoS ONE*, *Proceedings B*, *BMC Evolutionary Biology*, *BMC Bioinformatics*, *Nucleic Acids Research*, *Canadian Journal of Botany*, *Zootaxa*

Co-founder and organizer of Ottawa Bioinformatics Discussion Group (2001-2003)

Chief steward, negotiator, and member of the executive committee, Canadian Union of Public Employees Local 2626, Representing Teaching/Research Assistants of the University of Ottawa, (2000-2003)

Health and Safety Representative, Science and Engineering Sector, University of Ottawa, (2001-2003)