
CURRICULUM VITAE

EHAB ABOUHEIF

PERSONAL INFORMATION:

Date & Place of Birth: 28 July 1971, Montreal, Quebec

Citizenship: Canadian

Address: Department of Biology
McGill University
1205 Avenue Dr. Penfield
Montreal, Quebec
Canada, H3A 1B1

Telephone: 514-398-7190

Email: ehab.abouheif@mcgill.ca

Webpage: <http://biology.mcgill.ca/faculty/abouheif/>

PROFESSIONAL EXPERIENCE:

Full Professor. 2015-Present. McGill University, CA. Department of Biology

- *Member, Royal Society of Canada College of New Artists, Scholars, and Scientists (2016 to present)*
- *NSERC E.W.R Steacie Memorial Fellow (2014 to 2016)*
- *Past President, Pan-American Society for Evolutionary Developmental Biology (2015 to present)*
- *President, Pan-American Society for Evolutionary Developmental Biology (2013 to 2015)*
- *Adjunct Professor, School of Life Sciences, Arizona State University, USA (2015 to present).*
- *Associate, Konrad Lorenz Institute for Cognition and Evolution, Austria (2012 to present).*

Associate Professor. 2010-2015. McGill University, CA. Department of Biology

- *NSERC E.W.R Steacie Memorial Fellowship (2014 to 2016)*
- *President, Pan-American Society for Evolutionary Developmental Biology (2013 to present)*
- *Canada Research Chair (Tier II) in Evolutionary Developmental Biology (2009 to 2014).*
- *Adjunct Professor, School of Life Sciences, Arizona State University, USA (2013 to present).*
- *Associate, Konrad Lorenz Institute for Cognition and Evolution, Austria (2012 to present).*

Assistant Professor. 2004-2009. McGill University, CA. Department of Biology

- *Canada Research Chair (Tier II) in Evolutionary Developmental Biology (2004 to 2009).*
- *Alfred P. Sloan Research Fellow in Molecular Evolutionary Biology (2006 to 2008).*

Postdoctoral Fellow. 2002-2004. Howard Hughes Medical Institute

- *University of California, Berkeley, USA. Dept Integrative and Comparative Biology (2003-2004). Advisor: Dr. Nipam H. Patel*
- *University of Chicago, IL, USA. Dept Organismal Biology and Anatomy (2002-2003). Advisor: Dr. Nipam H. Patel*

EDUCATION:

Ph.D. 2002. Duke University, NC, USA. Department of Biology.
Advisor: Dr. Gregory A. Wray

1995 to 1999. SUNY at Stony Brook, NY, USA. Department of Ecology and Evolution. Doctoral coursework and research

M.Sc. 1995. Concordia University, QC, Canada. Department of Biology
Advisor: Dr. Daphne J. Fairbairn

B.Sc. 1993. Concordia University, QC, Canada. Department of Biology
Honors program. Minor as member of Science College

GRANTS:

NSERC (Discovery Accelerator Supplement; 2017-2020; \$40000/year CDN); The evolutionary and developmental genetic basis underling caste polyphenism in ants

NSERC (Discovery Grant; 2010-2015; \$52000/year CDN); *Eco-Evo-Devo* and the origins of novelty in complex biological systems

McGill University (Tomlinson Science Award; 2014-2017; \$16666/year CDN); The role of epigenetics in the regulation and evolution of social organization in ants

NSERC (Research Tools and Instruments Grant; 2014-2016; \$132000 CDN); *Eco-Evo-Devo* and the origin of novelty in complex biological systems

NSERC (Steacie Award; 2014-2016; \$125000/year CDN); *Eco-Evo-Devo* and the origin of novelty in complex biological systems

NSERC (Discovery Grant; 2010-2015; \$46000/year CDN); The evolutionary and developmental genetic basis underling caste polyphenism in ants

FQRNT (Team Grant; 2010-2013; \$198000 CDN); Microfluidic innovation platform for studying gene-environment interactions in fruit flies

FQRNT (Nouveau Chercheurs grant; 2006-2008; \$20000/year CDN); The ecological basis of developmental change in the gene network underlying wing polyphenism in ants

Alfred P. Sloan Foundation (Research Fellowship; 2006; \$50000 USD); Evolutionary and Computational Biology

NSERC (Discovery Grant; 2005-2010; \$32000/year CDN); The evolutionary and developmental genetic basis underling wing polyphenism in ants

Canadian Foundation for Innovation (equipment and infrastructure grant; 2004; \$685452 CDN); The evolutionary and developmental genetic basis underling wing polyphenism in ants

RESEARCH CONTRIBUTIONS:

A. Citations:

- *In total, I have been cited almost 4000 times (Google Scholar citation indices).*
- *I have 1 paper cited over 900 times; 5 papers each cited over 200 times, and 12 papers each cited over 100 times (Google Scholar citation indices).*

B. Peer reviewed publications

***my students and postdocs are in bold, I am in bold and underline

61. **Rajakumar R, Couture M, Fave MJ, Chen T, Lilico-Ouachour A, Abouheif E**. *In Preparation*. Origins of morphological complexity and regulation of the worker caste in ants.
60. **Sanwald R, Lorigiano T, McGill B, Abouheif E**. *In Preparation*. Evidence for influence of climate change on slave-raiding behavior in ants.
59. **Rafiqi AM, Rajakumar A, Abouheif E**. *In Preparation*. Ancient developmental dependencies facilitate a major transition to obligate endosymbiosis in ants
58. Belhagues J, Fisher BL, Péronnet R, **Rajakumar R, Abouheif E** and Molet M. *In Preparation*. Basal species reveal ladder like evolution in the gene network underlying wing polyphenism in ants.
57. **Ibarrarán-Viniegra AS, Sanggyun K, Coleman T, Seid MA, and Abouheif E**. *In Preparation*. Division of labour through inter-individual variation in an advanced ant society.
56. Oettler J, Platschek T, Schmidt C, **Rajakumar R, Favé MJ, Khila A**, Heinze J, and **Abouheif E**. *In Preparation*. Alternative developmental routes to male and female wing polyphenism in Cardiocondyla ants.
55. **Favé M-J and Abouheif E**. *In Preparation*. Integrating ecological genomics and eco-evo-devo reveals multiple adaptive peaks in ant populations of the Arizona Sky Islands.
54. **Lesoway MP, Collin R., Abouheif E**. *In revision*. Early activation of MAPK and apoptosis are associated with nutritive embryo development in the calyptraeid gastropods.
53. **Lilico-Ouachour A and Abouheif E**. 2017. The regulation, development and evolution of caste ratios in the hyperdiverse ant genus *Pheidole*. ***Current Opinion in Insect Science* 19: 43–51**
52. **Lesoway MP, Abouheif E**, Collin R. 2016. Comparative transcriptomics of alternative developmental phenotypes in a marine gastropod. ***Journal of Experimental Zoology, Part B: Molecular Developmental Evolution* 326 (3): 151-16. DOI: 10.1002/jez.b.22674**
51. **Favé M-J, Johnson RA, Cover S, Handschuh S, Metscher B, Müller GB, **Gopalan S**, and **Abouheif E****. 2015. Climate change on Sky Islands drives novelty in a core

developmental gene network and its phenotype. ***BMC Evolutionary Biology*** 15:183. DOI 10.1186/s12862-015-0448-4

- *Perspective article published in Science (impact factor 33.61)*

50. Moczek AP, Sears KE, Stollewerk A, Wittkopp PJ, Diggie P, Dworkin I, Ledon-Rettig C, Matus DQ, Roth S, **Abouheif E**, Brown FD, Chiu C-H, Cohen CS, De Tomaso AW, Gilbert SF, Hall BF, Love A, Lyons DC, Sanger T, Smith J, Specht C, Vallejo-Marin M, Extavour CG. 2015. The significance and scope of evolutionary developmental biology: a vision for the 21st century. ***Evolution & Development*** 17 (3): 198–219. DOI: 10.1111/ede.12125

- *This publication is the result of an international workshop*

49. Alvarado S, **Rajakumar R**, **Abouheif E**, Szyf M. 2015. Epigenetic control of *Egfr* generates quantitative variation of a complex trait in ants. ***Nature Communications*** 6 (6513): doi:10.1038/ncomms7513

- *Shared Senior Authorship*
- *Perspective article published in Science (impact factor 33.61)*
- *Media Coverage (see below)*

48. **Lesoway MP**, **Abouheif E**, Collin R. 2014. The development of viable and nutritive embryos in the direct developing gastropod *Crepidula navicella*. ***The International Journal of Developmental Biology*** 58: 601-611

47. **Khila A**, **Abouheif E**, and Rowe L. 2014. Comparative functional analyses of *Ultrabithorax* reveal multiple paths to diversification of legs in the adaptive radiation of semi-aquatic insects. ***Evolution*** doi:10.1111/evo.12444

46. **Abouheif E**, Favé MJ, Ibarra-Viniegra AS, Lesoway M, Rafiqi AM, and **Rajakumar R**. 2014. Eco-Evo-Devo: the time has come. Pgs 107-125 in C.R. Landry and N. Aubin-Horth (eds.), ***Ecological Genomics: Ecology and the Evolution of Genes and Genomes***, Advances in Experimental Medicine and Biology 781, DOI 10.1007/978-94-007-7347-9__6. Springer

45. **Shbailat SJ** and **Abouheif E**. 2013. The wing-patterning network in the wingless castes of myrmicine and formicine ant species is a mix of evolutionarily labile and non-labile genes. ***Journal of Experimental Zoology, Part B: Molecular Developmental Evolution*** 9999B: 1–10.

- *Cover photo of Journal*

44. **Rajendhran R, San Mauro D, Dijkstra M, Wang M, Wheeler DW, Hiou-Tim F, Khila A, Courneyea M, Abouheif E.** 2012. Ancestral developmental potential facilitates parallel evolution in ants. *Science* 335: 79-82
- *Perspective articles, which are short articles written to highlight the importance of a recent discovery, were published in Current Biology (impact factor 11.435) and Genome Biology (impact factor 6.89)*
 - *Media Coverage (see below)*
43. **Khila A, Abouheif E,** and Rowe L. 2012. Function, developmental genetics, and fitness consequences of a sexually antagonistic trait. *Science* 336: 585-589.
- *Shared senior authorship*
 - *Media Coverage (see below)*
42. Smith CD, Zimin A, Holt C, **Abouheif E,** Benton R, Cash E, Croset V, Currie CR, Elhaik E, Elsik CG, **Favé M-J, Fernandes V,** Gadau J, Gibson JD, Graur D, Grubbs KJ, Hagen DE, Helmkampf M, Holley J, Huc H, **Ibarraran Viniegra AS,** Johnson BR, Johnson RM, **Khila A,** Kim JW, Laird J, Mathis KA, Moeller JA, Muñoz-Torres MC, Murphy MC, Nakamura R, Nigam S, Overson RP, Placek JE, **Rajakumar R,** Reese JT, Robertson HM, Smith CR, Suarez AV, Suen G, Suhr EL, Tao S, Torres CW, van Wilgenburg E, Viljakainen L, Walden KKO, Wild AL, Yandell M, Yorker JA, and Tsutsui ND. 2011. Draft genome of the globally widespread and invasive Argentine ant (*Linepithema humile*). *Proceedings of the National Academy of Sciences, USA* 108: 5673–5678
- *This publication is the result of an international genome project*
 - *Perspective articles published in Science, Nature Genetics, Trends in Genetics*
 - *Media Coverage (see below)*
41. Smith CR, Smith CD, Robertson HM, Helmkampf M, Zimin A, Yandell M, Holt C, Hu H, **Abouheif E,** Benton R, Cash E, Croset V, Currie CR, Elhaik E, Elsik CG, **Favé M-J, Fernandes V,** Gibson JD, Graur D, Gronenberg W, Grubb KJ, Hagen DE, **Ibarraran Viniegra AS,** Johnson BR, Johnson RM, **Khila A,** Kim JW, Mathis KA, Muñoz-Torres MC, Murphy MC, Mustard JA, Nakamura R, Niehuis O, Nigam S, Overson RP, Placek JE, **Rajakumar R,** Reese JT, Suen G, Tao S, Torres CW, Tsutsui ND, Viljakainen L, Wolschin F, and Gadau J. 2011. Draft genome of the red harvester ant *Pogonomyrmex barbatus*. *Proceedings of the National Academy of Sciences, USA* 108: 5667–5672
- *This publication is the result of an international genome project*
 - *Perspective articles published in Science, Nature Genetics, Trends in Genetics*

- *Media Coverage (see below)*
40. Suen G, Teiling C, Li Lewyn, Holt C, **Abouheif E**, Bornberg-Bauer E, Bouffard P, Caldera EJ, Cash E, Cavanaugh A, Denas O, Elhaik E, **Favé M-J**, Gadau J, Gibson JD, Graur D, Grubbs KJ, Hagen DE, Harkins TT, Helmkampf M, Hu H, Johnson BR, Kim J, Marsh SE, Moeller JA, Munoz-Torres MC, Murphy MC, Naughton MC, Nigam S, Overson R, **Rajakumar R**, Reese JT, Scott JJ, Smith CR, Tao S, Tsutsui ND, Viljakainen L, Wissler L, Yandell MD, Zimmer F, Taylor J, Slater SC, Clifton SW, Warren WC, Elsik CG, Smith CD, Weinstock GM, Gerardo NM, Currie CR. 2011. The genome sequence of the leaf-cutter ant *Atta cephalotes* reveals insights into its obligate symbiotic lifestyle. ***PLoS Genetics* 7**: e1002007. doi:10.1371/ journal.pgen.1002007
- *This publication is the result of an international genome project*
 - *Perspective articles published in Science, Nature Genetics, Trends in Genetics.*
 - *Media Coverage (see below)*
39. Lynch J, Özüak O, **Khila A**, **Abouheif E**, Desplan C, Roth S. 2011. The phylogenetic origin of *oskar* coincided with the origin of maternally provisioned germ plasm and pole cells at the base of the Holometabola. ***PLoS Genetics* 7**: e1002029. doi:10.1371/journal. pgen.1002029
- *Perspective article published in PLoS Genetics written by CG Extavour at Harvard University*
38. Moczek AP, Sultan S, Foster S, Ledón-Rettig C, Dworkin I, Nijhout HF, **Abouheif E**, Pfennig DW. 2011. The role of developmental plasticity in evolutionary innovation. ***Proceedings of the Royal Society B* 278**: 2705-2713.
37. Yang A and **Abouheif E**. 2011. Gynandromorphs as indicators of modularity and evolvability in ants. ***Journal of Experimental Zoology, Part B: Molecular Developmental Evolution* 314B**: 1-6
36. **Shbailat SJ**, **Khila A**, **Abouheif E**. 2010. Correlations between spatiotemporal changes in gene expression and apoptosis underlie wing polyphenism in the ant *Pheidole morrisi*. ***Evolution & Development* 12**: 580-581
35. **Khila A** and **Abouheif E**. 2010. Evaluating the role of reproductive constraints in ant social evolution. ***Philosophical Transactions of the Royal Society of London Series B* 365**: 617-630

34. Kilfoil M, Lasko P, and **Abouheif E**. 2009. Stochastic variation: from single cells to superorganisms. *HFSP Journal* (1): doi:10.2976/1.3223356
33. **Khila A, Abouheif E**, and Rowe L. 2009. Evolution of a novel appendage ground plan in water striders is driven by changes in the *Hox* gene *Ultrabithorax*. *PLoS Genetics* 5: e1000583. doi:10.1371/journal.pgen.1000583
- Shared senior authorship
 - Media Coverage (see below)
32. **Khila A** and **Abouheif E**. 2008. Reproductive constraint is a developmental mechanism that maintains social harmony in ants. *Proceedings of the National Academy of Sciences, USA* 105:17884-17889
- Media coverage (see below)
31. **Nahmad M**, Glass L, and **Abouheif E**. 2008. The dynamics of developmental system drift in the gene network underlying wing polyphenism in ants: a mathematical model. *Evolution & Development* 10: 360-374
- Highlighted by the Faculty of 1000 as "Recommended"
30. **Abouheif E**. 2008. Parallelism as the pattern and process of mesoevolution. *Evolution & Development* 10: 3-5
29. Bowsher J, Wray G.A., and **Abouheif E**. 2007. Growth and patterning are evolutionarily dissociated in the vestigial wing discs in workers of the red imported fire ant, *Solenopsis invicta*. *Journal of Experimental Zoology, Part B: Molecular Developmental Evolution* 308B: 769-776
28. Oakley TH, Zhenglong G., **Abouheif E**., Patel N.H., Li W-H. 2005. Comparative methods for the analysis of gene expression evolution: an example using functional genomic data. *Molecular Biology and Evolution* 22: 40-50
27. Rheindt FE, Grafe TU, **Abouheif E**. 2004. Rapidly evolving traits and the comparative method: how important is testing for phylogenetic independence? *Evolutionary Ecology Research* 6: 377-396
26. Wray GA, Hahn MW, **Abouheif E**, Balhoff JP, Pizer M, Rockman MV, Romano L. 2003. The evolution of transcriptional regulation in eukaryotes. *Molecular Biology and Evolution* 20: 1377-1419
- This paper has been cited 890 times (Google Scholar).

25. **Abouheif E** and Wray GA. 2002. Evolution of the gene network underlying wing polyphenism in ants. **Science** 297: 249-252
- *Has appeared in general biology textbooks*
 - *This paper was highlighted by the Faculty of 1000 as "Must Read"*
 - *It has been cited 263 times (Google Scholar).*
24. **Abouheif E** and Wray GA. 2001. Evolution of development, version 1.0. In: Encyclopedia of Life Sciences. London: **Nature Publishing Group** [www.els.net]
23. **Abouheif E**. 1999. Establishing homology criteria for regulatory gene networks: prospects and challenges. In Homology. Wiley, Chichester. **Novartis Foundation Symposium** 222: 207-225.
22. Wray GA and **Abouheif E**. 1998. When homology is not homology. **Current Opinions in Genetics and Development** 8: 675-680
21. **Abouheif E**, Zardoya R, and Meyer A. 1998. Limitations of metazoan 18S rRNA sequence data: implications for reconstructing a phylogeny for the animal kingdom, and inferring the existence of the Cambrian explosion. **Journal of Molecular Evolution** 47: 394-405
- *This paper has been cited 148 times (Google Scholar).*
20. **Abouheif E**. 1998. Random trees and the comparative method: a cautionary tale. **Evolution** 52: 1197-1204
19. **Abouheif E**, Akam M, Dickinson WJ, Holland PWH, Meyer A, Patel NH, Raff RA, Roth VL, and Wray GA. 1997. Homology and developmental genes. **Trends In Genetics** 13:432-433
- *This paper has been cited 162 times (Google Scholar).*
18. **Abouheif E**. 1997. Developmental genetics and homology: a hierarchical approach. **Trends In Ecology and Evolution** 12: 405-408
- *This paper has been cited over 136 times (Google Scholar).*
17. **Abouheif E** and Fairbairn DJ. 1997. A comparative analysis of allometry for sexual size dimorphism. **American Naturalist** 149: 540-562
- *This paper has been cited over 241 times (Google Scholar).*

16. Zardoya R, **Abouheif E** and Meyer A. 1996a. Evolutionary analyses of hedgehog and Hoxd-10 genes in fish species closely related to the zebrafish. ***Proceedings of the National Academy of Sciences USA*** 93: 13036-13041
15. Zardoya R, **Abouheif E**, and Meyer A. 1996b. Evolution and orthology of hedgehog genes. ***Trends In Genetics*** 12: 489-536

C. Development of new methodologies published in peer reviewed journals:

14. **Abouheif E**. 1999. A method for testing the assumption of phylogenetic independence in comparative data. ***Evolutionary Ecology Research*** 1: 895-909
 - *This method is now called the "Abouheif test"*
 - *This method has led to the discovery of a general statistical matrix called the "Abouheif proximity," which is a measure of how related species are*
 - *This paper has been cited 266 times (Google Scholar)*

D. Book chapters, book reviews, proceedings and perspective articles (non-peer reviewed):

13. **Abouheif E**. *In Press*. On Bridging Islam and Evolution through the Secret World of Ants: the Struggles of a Muslim Evolutionary Biologist. In: ***Islam and Evolution***, J. Wiles (ed.) McGill-Queen's University Press.
12. Doebeli M. and **Abouheif E**. 2015. Modeling evolutionary transitions in social insects. ***eLife*** 5: e12721. DOI: 10.7554/eLife.12721
11. **Abouheif E** and Sears K. 2015. It's time to get together: Announcing the new society for evolutionary developmental biology in the Americas. ***Evolution & Development*** 17 (1): 1. DOI: 10.1111/ede.12114
10. **Abouheif E** and Rafiqi AM. 2014. Sex combs find middle ground in evolution debate. ***Proceedings of the National Academy of Sciences, USA***: doi/10.1073/pnas.1415189111
9. **Abouheif E**. 2014. Phylogenies and the Evolution of Development. In: ***The Tree of Life: systematics and evolution of living things***. Pablo Vargas and Rafael Zardoya (Eds.) Sinauer. Sunderland.

8. **Abouheif E.** 2013. Evolution: *oskar* reveals missing link in co-optive evolution. ***Current Biology*** 23 (1): R24-R25
7. **Rajakumar R** and **Abouheif E.** 2013. **Ancestral developmental potential: a new tool for animal breeding?** In N. O'Sullivan, M. Cooper, & F. Siewerdt (Eds.), Proceeding of the 62nd Annual National Breeders Roundtable. Paper presented at The 2013 National Breeders Roundtable, St. Louis, Missouri, 2-3 May (pp. 5-18). Tucker, GA: US Poultry & Egg
6. **Abouheif E.** 2012. Filogenias y evolución del desarrollo. Páginas 517-523 en ***El árbol de la vida: sistemática y evolución de los seres vivos***. Pablo Vargas y Rafael Zardoya (Eds.) Madrid.
5. **Abouheif E** and Larsson H. 2009. Synthesis Version 4.1beta. ***Evolution & Development*** 11: 456–457.
4. **Abouheif E.** 2004. Comprehensive reference for Evo-Devo or collective challenge to neo-Darwinism? ***Evolution*** 58: 2837-2839.
3. **Abouheif E.** 2003. A framework for studying the evolution of gene networks underlying polyphenism: insights from winged and wingless ant castes. In ***Environment, Development, and Evolution: Towards a Synthesis***. Hall Bk, Pearson R, and Muller G, eds. **MIT Press**.

E. Computer Programs and protocols (non-peer reviewed):

2. **Khila A** and **Abouheif E.** 2009. In situ hybridization on ant ovaries and embryos. ***CSH Protocols***, 4(7): doi:10.1101/pdb.prot5250
1. Reeve J and **Abouheif E.** 2003. Phylogenetic Independence. Version 2.0. **Computer Program**

OTHER EVIDENCE OF IMPACT AND CONTRIBUTIONS:

A. Awards received:

Member, Royal Society of Canada College of New Artists, Scholars, and Scientists (2016 to present). *This is Canada's first national system of multidisciplinary recognition for the emerging generation of Canadian intellectual leadership. Members of the College, who at an early stage in their career, have demonstrated a high level of achievement.*

Canadian Arab To Watch (September 2014). Canadian Arab Institute. This honor highlights Canadian Arabs who are having a beneficial impact on society.

NSERC E.W.R. Steacie Memorial Fellowship (2014). The Steacie award is the most prestigious award a young Canadian scientist can receive from Natural Sciences and Engineering Council of Canada. These Fellowships are awarded to enhance the career development of outstanding and highly promising university faculty who are earning a strong international reputation for original research.

Tomlinson Science Award, Faculty of Science, McGill University (2014).

Canada Research Chair (Tier II) in evolutionary developmental biology (2004 to 2014).

Alfred P. Sloan Research Fellowship in evolutionary and computational biology (2006). The Alfred P. Sloan Fellowship “seeks to recognize the achievements of outstanding young scholars in science, mathematics, economics and computer science. Past recipients of Sloan Research Fellowships have gone on to win 38 Nobel prizes, 14 Fields Medals (mathematics), and 8 John Bates Clark awards (economics).”

BGSA/MBSU Biology Department Teaching Award (2013). This teaching award is particularly meaningful because it comes directly from graduate (BGSA: Biology Graduate Student Association) and undergraduate (MBSU: McGill Biology Students Union) students.

Nominated for Principals Prize for Teaching Excellence and for the Faculty of Science's Leo Yaffe Teaching Award (2010 and 2013). Both of these teaching awards are the most distinguished teaching awards at McGill University. The Principals Prize for Teaching Excellence is a university wide competition, while the Leo Yaffe teaching award honors the best teachers in the Faculty of Science.

B. 96 Invited talks, workshops, public debates and lectures:

*pending

*2017. Invited Talk: Conference, ICCE State of the Art Speaker, Alberta, CA

*2017. Invited Talk: Conference, Pan-Am Evo-Devo Society, Calgary, CA

*2017. Invited Talk: Dept. Seminar, Wesleyan University, CT, USA

*2017. Keynote Address, University of Massachusetts Amherst, MA, USA

*2017. Invited Talk: Dept. Seminar, Stony Brook University, NY, USA

2017. Invited Talk: Dept. Seminar, STRI, Panama City, Panama

2016. Invited Talk: Symposium, RIKEN Institute, Kobe, Japan,

2016. Keynote Address, Conference, EuroEvoDevo, Uppsala, Sweden

2016. Invited Talk: Dept. Seminar, STRI, Panama City, Panama

2015. Invited Talk: Conference, ISHPSSB, Montreal, CA

2015. Invited Talk: Conference, ISNA, Chicago, USA
2015. Invited Talk: Dept. Seminar, University of Illinois, Chicago, USA
2015. Public Lecture: Hampshire College, MA, USA
2015. Invited Talk: Symposium, University of Florida, Fl, USA
2015. Invited Talk: Dept. Seminar, Western University, Ontario, CA
2015. Invited Talk: Conference, Cold Spring Harbour, NY, USA
2015. Invited Talk: Dept. Seminar, University of Illinois at Chicago, USA
2015. Invited Talk: Dept. Seminar, University of Oklahoma, Ok, USA
2014. Public Lecture: RSC Cutting Edge Lecture, McGill University, Montreal, Quebec, CA
2014. Invited Talk: Dept. Seminar, University of Pittsburgh, PA, USA
2014. Invited Talk: Dept. Seminar, University of Dayton, Ohio, USA
2014. Invited Talk: Dept. Seminar, Arizona State University, Tempe, Arizona, USA
2014. Invited Talk: Dept. Seminar, University of Jordan, Amman, Jordan
2014. Invited Talk: Dept. Seminar, Washington University, St. Louis, Missouri, USA
2014. Invited Talk: Dept. Seminar, University of Alberta, Edmonton, Canada
2013. Invited Talk: Dept. Seminar, Rockefeller University, NY, USA
2013. Invited Talk: Dept. Seminar, Max Planck Institute, Tubigen, Germany
2013. Invited Talk: Dept. Seminar, Harvard University, USA
2013. Invited Talk: Conference, Gordon Research Conference, Texas, USA
2013. Televised Public Debate: Islam and Evolution. Deen Institute. London, UK
2013. Invited Talk: Conference, National Breeders Roundtable, St. Louis, USA
2013. Invited Talk: Dept. Seminar, New York University, Abu Dhabi, UAE
2013. Invited Talk: Dept. Seminar, Univ. Colorado, Boulder, Denver, USA
2013. Invited Workshop Participant: Concordia University, Montreal, QC, CA
2013. Televised lecture: McGill Mini Science, Montreal, QC, CA
2013. Invited Talk: Dept. Seminar, McGill, Macdonald Campus, QC, CA
2013. Public outreach lecture at Marionopolis College, QC, CA
2012. Invited Talk: Dept. Seminar, New York University, NY, USA
2012. Invited Talk: Dept. Seminar, Botanical Gardens, University of Montreal, CA
2012. Invited Talk: Public outreach, Webcast Public lecture, McGill Univ., Montreal, CA
2012. Invited Talk: Conference, European Society of EvoDevo, Lisbon, Portugal
2012. Invited Talk: Public outreach, DNA day, Vanier College, Montreal, CA
2012. Invited Talk: Dept. Seminar, Michigan State University, Michigan, USA
2012. Invited Talk: Dept. Seminar, Arizona State University, SIRG, USA
2012. Invited Talk: Dept. Seminar, Univ. of Manitoba, Dept. of Biol, Winnipeg, CA
2011. Invited Talk: Dept. Seminar, McGill Univ., Dept of Physiology, Quebec, CA
2011. Invited Talk: Conference, Society for Developmental Biology, Chicago, USA
2011. Invited Talk: Dept. Seminar, Gulbankien Institute, Carcavelos, Portugal
2011. Invited Talk: Dept. Seminar, Univ. of Vienna, Dept Theoretical Biol, Austria
2011. Invited Talk: Dept. Seminar, Univ. of Jordan, Dept Biology, Amman, Jordan
2011. Invited Talk: Dept. Seminar Konrad Lorenz Institute, Altenberg, Austria
2011. Invited Talk: Conference, Keynote Speaker at IUSSI, Banuyls-Sur-Mer, France
2011. Invited Talk: Dept. Seminar, University of Vienna, Dept of Biology, Austria
2010. Invited Talk: Conference, Canadian Soc. for Dev. Biol., Mt Tremblant, CA

2010. Invited Workshop Participant: WissenschaftKolleg. Berlin, Germany
2010. Invited Talk: Dept. Seminar, University of Guelph, Dept. Integ. Biology, CA
2010. Invited Talk: Dept. Seminar, York University, Dept. of Biology, CA
2010. Invited Talk: Dept. Seminar, UQAM, Dept. Biology, Montreal, Quebec, CA
2010. Invited Talk: Dept. Seminar, Vanderbilt University, Dept. Biol, Tennessee, USA
2009. Invited Public Lecture-Debate: Islam & Evolution, Hampshire College, USA
2009. Invited Workshop Participant: Organized by NESCent, Durham, NC, USA
2009. Invited Talk: Darwin Lecture Series: University of Calgary, Dept. Biology, CA
2009. Invited Public Lecture: Darwin Lecture, Lake Head Univ., Thunderbay, CA
2009. Invited Public Lecture: Conference on Islam & Evolution, McGill Univ., CA
2009. Invited Workshop Participant: Arizona State University, Arizona, USA
2009. Invited Workshop Participant: NESCent, NC, USA
2008. Invited Talk: Conference, Konstanz University, Konstanz, Germany
2008. Invited Talk: Conference, European EvoDevo Society, Gent, Belgium
2008. Invited Talk: Conference, Animal Behaviour Society, Salt Lake City, UT, USA
2007. Invited Talk: Conference, Canadian Society of Zoologists, Montreal, Canada
2007. Invited Talk, Conference, Keynote Speaker, Canadian Society Ecology & Evolution, Toronto, CA
2007. Invited Talk: Conference, Society of Molecular Biology and Evolution, Halifax.
2007. Invited Talk: Dept. Seminar, Arizona State University, SIRG, AZ, USA
2007. Invited Talk: Dept. Seminar, University of Iowa, Iowa, USA
2007. Invited Talk: Dept. Seminar, University of Ottawa, Ottawa, Canada
2007. Invited Talk: Dept. Seminar, Universite de Laval, Quebec City, Canada
2006. Invited Talk: Dept. Seminar, Cornell University, NY, USA
2006. Invited Talk & Workshop Participant: Organized by CIHR, held in Ontario, CA
2006. Invited Talk: Conference, Canadian Society Zoologists, CMD section, CA
2006. Invited Workshop Participant: Arizona State University, USA
2006. Invited Workshop Participant: NESCent, Florida Keys, USA
2005. Invited Talk: Dept. Seminar, Syracuse University, Dept of Biol., NY, USA
2005. Invited Talk: Dept. Seminar, University of Indiana, Dept. of Biol., USA
2005. Invited Talk: Conference, Phenotypic Diversity and Evolution, Sweden.
2005. Invited Talk: Dept. Seminar, Univ. of Copenhagen, Dept. Pop. Biol, Denmark
2005. Invited Talk: Dept. Seminar, Arizona State University, USA
2005. Invited Talk: Dept. Seminar, Museum of Natural History, Madrid, Spain
2004. Invited Talk: Dept. Seminar, McGill Centre for Non-Linear Dynamics, CA
2004. Invited Talk: Dept. Seminar, Biotechnology Research Institute, Govt. of Canada
2004. Invited Talk: Dept. Seminar, University of Toronto, Dept. Zoology, CA
2004. Invited Talk: Dept. Seminar, Univ. Cal, Berkeley, Dept. Mol. Cell Biol., USA
2003. Invited Talk: Dept. Seminar, Harvard University, Department of OEB, USA
2003. Invited Talk: Dept. Seminar, UC Riverside, Dept. Ecol & Evol, USA
2003. Invited Talk: Dept. Seminar, UChicago, Dept. Geophysical Sciences,
2002. Invited Talk: Dept. Seminar, McGill Dept. of Biology, Canada
2002. Invited Talk: Dept. Seminar, Concordia University, Dept. of Biology, Canada
2002. Invited Talk: Conference, Society of Integ. & Comparative Biol, Anaheim, USA

2001. Invited Talk: Dept. Seminar, Konrad Lorenz Institute, Altenberg, Austria
 2000. Invited Talk: Conference, North East Regional Dev. Biol., Woods Hole, USA
 1999. Invited Talk: Conference, Dev. Basis Evolutionary Change, Chicago, USA
 1998. Invited Talk: Conference, Norvartis Foundation Symposium on Homology,
 London, UK

C. Co-founder and Co-Director of Centre of Islam and Science, McGill University:

This Centre represents one of the first attempts to bring together experts from modern science, Islamic studies, and science education, as well as policy makers, in order to enhance understanding of the conflict and harmony between science, Islam, and society. The Centre is based on a tripartite structure consisting of inter-related research, teaching, and outreach components: (1) Science Policy in Islamic countries: instituting pathways to innovation; (2) The Rational Sciences in Islam: historical perspectives; (3) Scientific Literacy in Muslim Societies. By allowing modern scientists, policy makers, educators, and Islamic Studies specialists to interact, the Centre would provide opportunities for new and creative approaches to the vexing problems facing the development of science in modern Islamic societies. Key Centre activities include: sponsoring postdoctoral researchers and doctoral students, organizing local reading groups, developing an interdisciplinary graduate seminar, inviting scholars and policy makers to speak at McGill, and organizing an international conference that brings together an interdisciplinary panel of scholars and policy makers.

D. Editorial duties:

Associate Editor and Editorial Board Member, *Journal of Experimental Zoology, Part B: Molecular Development and Evolution* (January 2012 to present)

Associate Editor, BMC Evolutionary Biology (2011 to Present)

Associate Editor, BMC Developmental Biology (2011 to 2016)

Associate Editor, *Evolution* (2011 to 2014)

E. Contributions to scientific societies:

Past President (2015 to 2017) Pan-American Society for Evolutionary Developmental Biology

Founding President (2013 to 2015) Pan-American Society for Evolutionary Developmental Biology

Organizer (2015) Inaugural Meeting Pan-American Society of Evolutionary Developmental Biology

Organizer of Symposia (May 2 to 5, 2015) during Cold Spring Harbor meeting on Biology & Genomics of Social Insects.

Chair (2009-2010) Comparative Morphology & Development section, Canadian Society of Zoology

Vice Chair (2008-2009) Comparative Morphology & Development section, Canadian Society of Zoology

Organizer (2010) "Importance of Parallelism to Evolutionary Theory" symposium, Canadian Society of Zoology

Organizer (2006) "Molecular Approaches to EvoDevo" symposium, Canadian Society of Zoology

F. Participation in international working groups:

I participated in several international working groups on: (1) ant genomics (Arizona State University 2007-2010); (2) the role of developmental plasticity (Duke University, North Carolina, 2009-2011); and (3) functional RNAi (Pennsylvania State University). Four publications (Smith et al. 2011; Smith et al. 2011; Suen et al. 2011; Moczek et al. 2011) have resulted from these working groups, and several more are expected in the future.

G. Service as a Reviewer:

Journals:

Nature; Science; PLoS Biology; PLoS Genetics; PLoS One; American Naturalist; American Zoologist; BioEssays; Bioinformatics; Frontiers in Zoology; Development Genes and Evolution; Evolution; Evolution and Development; Insect Molecular Biology; Journal of Evolutionary Biology; Journal of Molecular Evolution; McGill University; Molecular Phylogenetics and Evolution; Systematic Biology; Trends In Genetics; National Science Foundation; Proceedings of the Royal Society, Series B; Zoological Studies; Journal of Insect Science; Insect Biochemistry and Molecular Biology; Biological Reviews.

Granting Agencies:

Villum Foundation, Denmark (2017); Research Council for Biosciences and Environment of the Academy of Finland (2008); NSERC, Canada (2006-2013); Natural Environment Research Council, UK (2006); National Science Foundation, USA (2002-2012); Canadian Space Agency, Canada (2005); Konrad Lorenz Institute, Austria (2004, 2012).

MEDIA AND OUTREACH

- **TV coverage:** *Global National News*, *Discovery Channel (Daily Planet)*, *TV documentary show Le Code Chastenay on TV5 and Tele Quebec*
- **Radio coverage:** *CNN Radio*, *CBC Radio (Canada, Quirks & Quarks, As it Happens, International)*, *Radio Canada (Canada, French)*, *John Gormley Show (Canada)*, *NPR (USA, Academic Minute)*, *National Radio of Ireland (RTE Radio 1)*

- **Print news coverage:** *The Montreal Gazette, La Presse (Montreal, French), The Ottawa Citizen, The Winnipeg Free Press, The Vancouver Sun, and The Calgary Herald, London Times, Guardian, The Economist magazine, Forbes magazine, USA today.*
- **Online news coverage:** *Over 2.5 million hits on Google Chinese & over half million hits on Google English, including Nature news, BBC news, CBC news, PBS, MSNBC, Discover, Scientific American, Der Spiegel, Le Monde.*

CONTRIBUTIONS TO THE TRAINING OF HIGHLY QUALIFIED PERSONNEL:

A. Training ongoing:

- Angelly Vasquez, PhD* (incoming 2017).
Hussein Alnasarat, PhD (incoming 2017).
Arjuna Rajakumar, PhD (2014-present).
Travis Chen, PhD (2015-present).
Sophie Koch, MSc (2016-present).
Frédérique Larichelière, MSc (2016-present).

B. Training Completed:

- Angelica Lillico-Ouachour, MSc* (2014-2016).
Abdul-Matteen Rafiqi, Postdoc (2011-2016)
Melanie Couture, Research Technician (2014-2016).
Maryna Lesoway, PhD (2009-2015, co-supervised Rachel Collin at STRI).
 - Currently FQRNT Postdoctoral Fellow at the University of Illinois, Champagne-Urbana*Ana Sofia Ibararran, PhD* (2008-2014).
 - Currently Postdoctoral fellow at Woods Hole Oceanographic Institution*Rajee Rajakumar, PhD* (2006-2013). Doctoral fellowship from FQRNT.
 - Currently NSERC postdoctoral fellow with Marty Cohen, Howard Hughes Medical Institute Investigator, University of Florida 01 September 2014*Marie-Julie Fave, PhD* (2007-2012).
 - Currently Postdoctoral fellow with Dr. Phillippe Awadalla at Universite De Montreal (St. Justine Hospital) in September 2013.*Seba Shbailat. PhD* (2005 - 2010).

- Currently Assistant Professor at the Hashemite University, Jordan.

Marcos Nahmad. MSc (2003-2005)

- Currently Professor at the University of Autonoma, Mexico
- PhD at Caltech and Postdoc at University of California, Santa Barbara.

Abderrahman Khila. Postdoc (2006 - 2011).

- Currently CNRS Group Leader at the University of Lyon, France.

Mikhiel Dijkstra. Postdoc (2006 - 2007).

- Currently Editor at *Frontiers* journals (*Nature* publishing group) Lausanne, Switzerland

Diego San Mauro. Visiting PhD Student (2004-2005).

- Currently Professor at the University of Barcelona

Francois Hioutim. Technician (2006-2008).

- Currently bioinformatician at McGill University.

C. Undergraduates:

- I have trained 29 Summer NSERC, Honor's Thesis, and Independent Studies students.
 - Many of these students have continued into graduate school and are/will be included on Abouheif Lab publications. Here are some highlights:
 - Michael Cournoyea (Summer NSERC 2005) is doing a PhD at the University of Toronto
 - Shyamilika Gopalan (Independent Studies students 2010-2011) is doing PhD in the Ecology and Evolution Department at Stony Brook University
 - Kyle Martin (Honor's thesis 2005) is now doing a PhD at Oxford University
 - Kevin Wei (Summer NSERC, 2008, 2009) is doing a PhD at the Cornell University
 - Anna Kazanets (Honor's thesis, 2007) is studying MSc at McGill University
 - TingJia Loregiano (Summer NSERC 2012, independent studies 2012), is studying medicine at Dartmouth University
-