

Dynamic Leadership | Bioinformatics | Integrative Genomics | Evolution

Associate Professor at Edward Via College of Osteopathic Medicine, focusing on comparative genomics, bioinformatics, and evolution. His team has employed an integrative approach with a variety of molecular, computational and modeling techniques, including NextGen sequencing of entire genomes, epigenomes, and transcriptomes to rigorous understanding how complexity elaborates from genomes through gene regulatory networks, and how it evolves over generations in response to environmental stress and intragenomic challenges. He worked in nine universities in four countries across three continents. His research resulted in a book (another is in preparation), multiple book chapters, and about 50 peer-reviewed papers in scientific journals, including "Science", "Nature", "Proceedings of the National Academy of Sciences USA", and "Proceedings of the Royal Society", already cited about 1,300 times and popularized by various public media.

Education

- 1993-1997: PhD in Evolutionary Biology, Jagiellonian University in Krakow (Poland)
- 1988-1993: "Magisterium" (=MSc) in Biology, University of Lodz (Poland).

Academic positions held:

- 2017-present: Associate Professor, Edward Via College of Osteopathic Medicine
- 2017-present: Adjunct Faculty, Virginia-Maryland College of Veterinary Medicine
- 2018-present: Foreign Adjunct Faculty, Institute of Evolution, University of Haifa, Israel
- 2017-present: Adjunct Faculty, Biocomplexity Institute at Virginia Tech
- 2010-2017: Associate Professor, Virginia Bioinformatics Institute (renamed to Biocomplexity Institute) at Virginia Tech
- 2011-2017: Adjunct Associate Professor, Department of Biological Sciences, Virginia Tech
- 2003-2010: Assistant Professor, Department of Biology, University of Texas Arlington
- 2002-2003: Postdoctoral Research Associate, Department of Life Sciences, Louisiana State University
- 2000-2002: Postdoctoral Fellow, Department of Organismal Biology & Anatomy, The University of Chicago
- 2000: Postdoctoral Fellow, Institute of Evolution, Haifa University (Israel)
- 1998-2000: University Lecturer ("Adiunkt") in biostatistics, Institute of Biology, University of Bialystok (Poland)
- 1996-1997: Postdoctoral Fellow ("Asystent"), Department of Ecosystems Ecology, Jagiellonian University, Krakow (Poland)
- 1996: TEMPUS PhD Scholar, Department of Genetics and Ecology, University of Aarhus (Denmark).

Awards and Honors

- 2015-2016: Distinguished fellow of the Kosciuszko Foundation Collegium of Eminent Scientists
- 2008: Research Excellence Award by UTA's Provost
- 2007: Travel/Professional Development Award by UTA's Provost
- 2006: Travel/Professional Development Award by UTA's Provost
- 2002: Lalor Foundation Postdoctoral Fellowship (Louisiana State University)
- 2000: The U.S.-Israel Binational Science Foundation Postdoctoral Fellowship (University of Haifa, Israel; University of Chicago)
- 2000: NSF-NATO Postdoctoral Fellowship (University of Chicago)
- 2000: Kosciuszko Foundation Postdoctoral Fellowship (declined in favor of NSF-NATO award to the University of Chicago)
- 1999: Elected Member of the Committee for Evolutionary and Theoretical Biology of Polish Academy of Sciences (PAN)

- 1998: "Domestic Grant for Young Scholars" (under thirty years of age) of the Foundation for Polish Science

Publications

Books

1. **Michalak P.** 2018. "*Genome Analysis in R*". CRC Press, Taylor & Francis Group, in prep.
2. **Michalak P.** (Ed.) 2013. "*Speciation: Natural Processes, Genetics and Biodiversity*". Nova Science Publishers, Inc., New York.

Book chapters

3. **Michalak P.**, Kang L., Ciparis S., Henley W., Jones J., Phipps A. & Hallerman E. 2017. Freshwater mussels exposed to arsenic and sulfate show contrasting patterns of gene expression. In: *Organismal and Molecular Malacology* (Ed. S. Ray), 1st ed. InTech, Croatia, pp. 99-117.
4. **Michalak P.** 2016. Speciation Genomics. In: *Encyclopedia of Evolutionary Biology* (Ed. R.M. Kliman), vol. 4, Elsevier, Oxford, UK, pp. 176-182.
5. **Michalak P.**, Sobral B.W., Abedi V., Kim Y. B., Deng X., Philipson C., Viladomiu M., Lu P., Wendelsdorf K., Hontecillas R. & Bassaganya-Riera J. 2015. From big data analytics and network inference to systems modeling. In: *Computational Immunology: models and tools* (Ed. J. Bassaganya-Riera), 1st ed. Elsevier, Oxford, UK, pp. 113-144.
6. Hoops S., **Michalak P.**, Abedi V., Kim Y. B., Kronsteiner B., Hontecillas R., Viladomiu M., Bassaganya-Riera J. & Sobral B.W. 2015. Immunoinformatics cyberinfrastructure for modeling and analytics. In: *Computational Immunology: models and tools* (Ed. J. Bassaganya-Riera), 1st ed. Elsevier, Oxford, UK, pp. 45-62.
7. Rashkovetsky E., Frenkel Z., **Michalak P.** & Korol A. 2015. Sympatric differentiation and speciation: Insights from *Drosophila* studies. In: *Evolutionary Biology: Biodiversification from Genotype to Phenotype* (Ed. P. Pontarotti), Springer International Publishing, Switzerland, pp. 107-140.
8. **Michalak P.**, Kim Y.B. & Gao J. 2007. Computational challenges of microarray analysis. In: *Computational Genomics: Current Methods* (Ed. N. Stojanovic), Horizon Scientific Press, Norwich, UK, pp. 121-142.
9. **Michalak P.** & Noor M.A.F. 2006. Genetics of reproductive isolation and species differences in model systems. In: *Evolutionary Genetics* (Ed. C. Fox & J. Wolf), Oxford University Press, pp. 387-398.
10. Loeschcke V., Krebs R.A., Dahlgaard J. & **Michalak P.** 1997. High-temperature stress and the evolution of thermal resistance in *Drosophila*. In: *Environmental Stress, Adaptation and Evolution* (Ed. R. Bijlsma & V. Loeschcke). Birkhäuser Verlag Basel/Switzerland, pp. 175-190.

Peer-reviewed publications in scientific journals

1. Yablonovitch A.L., Fu J., Li K., Mahato S., Kang L., Rashkovetsky E., Korol A.B., Tang H., **Michalak P.**, Zelhof A.C., Nevo E. & Li J.B. 2017. Regulation of gene expression and RNA editing in *Drosophila* adapting to divergent microclimates. *Nature Communications* 8(1): 1570.
2. Kang L., George P., Price D.K., Sharakhov I. & **Michalak P.** 2017. Mapping genomic scaffolds to chromosomes using Laser Capture Microdissection in application to Hawaiian picture-winged *Drosophila*. *Cytogenetic and Genome Research* 152(4): 204-212.
3. Kang L., Garner H., Price D.K. & **Michalak P.** 2017. A test for gene flow among sympatric and

- allopatric Hawaiian picture-winged *Drosophila*. *Journal of Molecular Evolution* 84(5-6): 259-266.
4. Bishop B.M., Juba M.L., Russo P.S., Devine M., Barksdale S.M., Scott S., Settlege R., **Michalak P.**, Gupta K., Vliet K., Schnur J.M., & van Hoek M.L. 2017. Discovery of novel antimicrobial peptides from *Varanus komodoensis* (Komodo dragon) by large scale analyses and de novo-assisted sequencing using electron transfer dissociation mass spectrometry. *Journal of Proteome Research* 16(4): 1470-1482.
 5. **Michalak P.**, Kang L., Sarup P.M., Schou M.F. & Loeschcke V. 2017. Nucleotide diversity inflation as genome-wide response to experimental lifespan in *Drosophila melanogaster*. *BMC Genomics* 18(1):84.
 6. Velotta J.P., Wegrzyn J.L., Ginzburg S., Kang L., Czesny S., O'Neill R.J., McCormick S.D., **Michalak P.** & Schultz E.T. 2016. Transcriptomic imprints of adaptation to fresh water: parallel evolution of osmoregulatory gene expression in the Alewife. *Molecular Ecology* 26(3): 831-848.
 7. Maciak S., Michalak K., Kale D.S. & **Michalak P.** 2016. Nucleolar dominance and repression of 45S ribosomal RNA genes in hybrids between *Xenopus borealis* and *X. muelleri* (2n = 36). *Cytogenetic and Genome Research* 149(4): 290-296.
 8. Brill E., Kang L., Michalak K., **Michalak P.** & Price D.K. 2016. Hybrid sterility and evolution in Hawaiian *Drosophila*: differential gene and allele-specific expression analysis of backcross males. *Heredity* 117(2): 100-108.
 9. Kang L., Settlege R., Michalak K., McMahon W., Michalak K., Tae H., Garner H.R., Stacy E., Price D.K. & **Michalak P.** 2016. Genomic signatures of speciation in sympatric and allopatric Hawaiian picture-winged *Drosophila*. *Genome Biology and Evolution* 30(5):1482-1488.
 10. Kang L., Aggarwal D.D., Rashkovetsky E., Korol A.B. & **Michalak P.** 2016. Rapid genomic changes in *Drosophila melanogaster* adapting to desiccation stress in an experimental evolution system. *BMC Genomics* 17(1): 233.
 11. **Michalak P.** 2016. Ancient forest: keep the logging ban. *Nature* 530(7591): 419.
 12. Michalak K., Maciak S., Kim Y.B., Santopietro G., Oh J.H., Kang L., Garner H.R., & **Michalak P.** 2015. Nucleolar dominance and maternal control of 45S rDNA expression. *Proceedings of the Royal Society B: Biological Sciences* 282(1820): 20152201.
 13. Aggarwal D.D., Rashkovetsky E., **Michalak P.**, Cohen I., Ronin Y., Zhou D., Haddad G.G. & Korol A. 2015. Experimental evolution of recombination and crossover interference in *Drosophila* caused by directional selection for stress-related traits. *BMC Biology* 13(1):101.
 14. Keane M., Semeiks J., Webb A.E., Li Y.I., Quesada V., Craig T., Madsen L.B., Brawand D., Marques P.I., **Michalak P.**, Kang L., Bhak J., Yim H.-S., Grishin N., Nielsen N.H., Heide-Jørgensen M.P., Oziolor E.M., Matson C.W., Church G., Stuart G., Patton J., George C., Suydam R., Larsen K., López-Otín C., O'Connell M.J., Bickham J., Thomsen B. & de Magalhães J.P. 2015. Insights into the evolution of longevity from the bowhead whale genome. *Cell Reports* 10: 112-122.
 15. Philipson C.W., Bassaganya-Riera J., Viladomiu M., Kronsteiner B., Abedi V., Hoops S., **Michalak P.**, Kang L., Girardin S.E. & Hontecillas R. 2015. Modeling the regulatory mechanisms by which NLRX1 modulates innate immune responses to *Helicobacter pylori* infection. *PLoS One* 10(9):e0137839.
 16. Maciak S. & **Michalak P.** 2015. Cell size and cancer: A new solution to Peto's paradox? *Evolutionary Applications* 8: 2-8.
 17. Kang L. & **Michalak P.** 2015. The evolution of cancer-related genes in hominoids. *Journal of Molecular Evolution* 80: 37-41.
 18. Mechkarska M., Coquet L., Leprince J., Jouenne T., Vaudry H., Michalak K., **Michalak P.** & Conlon JM. 2014. Host-defense peptides from skin secretions of the octoploid frogs *Xenopus vestitus* and *Xenopus wittei* (Pipidae): Insights into evolutionary relationships. *Comparative Biochemistry and Physiology – Part D Genomics Proteomics* 11C: 20-28.

19. Dittmar W.J., McIver L., **Michalak P.**, Garner H.R. & Valdez G. 2014. EvoCor: a platform for predicting functionally related genes using phylogenetic and expression profiles. *Nucleic Acids Research* 42: W72-75.
20. Kim Y.B., Oh J.H., McIver L.J., Rashkovetsky E., Michalak K., Garner H.R., Kang L., Nevo E., Korol A.B. & **Michalak P.** 2014. Divergence of *Drosophila melanogaster* repeatomes in response to a sharp microclimate contrast in 'Evolution Canyon', Israel. *Proceedings of the National Academy of Sciences USA* 111: 10630-10635.
21. Michalak K., Czesny S., Epifanio J., Snyder R.J., Schultz E.T., Velotta J.P., McCormick S.D., Brown B.L., Santopietro G. & **Michalak P.** 2014. Beta-thymosin gene polymorphism associated with freshwater invasiveness of alewife (*Alosa pseudoharengus*). *Journal of Experimental Zoology Part A: Ecological Genetics & Physiology* 321: 233-240. [Cover]
22. **Michalak P.** 2014. Evidence for maternal imprinting of 45S ribosomal RNA genes in *Xenopus* hybrids. *Development Genes & Evolution* 224: 125-128.
23. Hübner S., Rashkovetsky E., Kim Y.B., Oh J.H., Michalak K., Weiner D., Korol A.B., Nevo E. & **Michalak P.** 2013. Genome differentiation of *Drosophila melanogaster* from a microclimate contrast in Evolution Canyon, Israel. *Proceedings of the National Academy of Sciences USA* 110: 21059-2164.
24. Bavarva JH, Tae H, **Michalak P.**, Garner HR. 2013. Life cycle of an n-globin pseudogene microsatellite locus. *Frontiers in Genetics* 2013 Dec 4; 4:267.
25. Viladomiu M., Hontecillas R., Pedragosa M., Carbo A., Hoops S., **Michalak P.**, Michalak K., Guerrant, R.L., Roche J.K, Warren C.A. & Bassaganya-Riera J. 2012. Modeling the role of peroxisome proliferator-activated receptor gamma and microRNA-146 in mucosal immune responses to *Clostridium difficile*. *PLoS One* 7(10):e47525.
26. Viladomiu M., Hontecillas R., Pedragosa M., **Michalak P.**, Michalak K., Guerrant R., Roche J., Warren C. & Bassaganya-Riera J. 2012. Modulation of immune responses to *Clostridium difficile* by peroxisome proliferator-activated receptor gamma and miRNA-146b. *Journal of Immunology* 2012, 188.
27. Mechkarska M., Meetanib M., **Michalak P.**, Vaksman Z., Takadae K. & Conlon J.M. 2012. Hybridization between the African clawed frogs *Xenopus laevis* and *Xenopus muelleri* (Pipidae) increases the multiplicity of antimicrobial peptides in skin secretions of female offspring. *Comparative Biochemistry and Physiology – Part D Genomics Proteomics* 7: 285-291.
28. Czesny S., Epifanio J. & **Michalak P.** 2012. Genetic divergence between freshwater and marine morphs of alewife (*Alosa pseudoharengus*): A 'next-generation' sequencing analysis. *PLoS One* 7(3): e31803.
29. Madison-Villar M.J. & **Michalak P.** 2011. Misexpression of testicular microRNA in sterile *Xenopus* hybrids points to tetrapod specific microRNAs associated with male fertility. *Journal of Molecular Evolution* 73: 316-324.
30. Ma D. & **Michalak P.** 2011. Ephemeral association between gene CG5762 and hybrid male sterility in *Drosophila* sibling species. *Journal of Molecular Evolution* 73: 181-187.
31. Ma D., Smith D.P., Zheng Z. & **Michalak P.** 2011. Sensory components of behavioral isolation between Zimbabwe and Cosmopolitan *Drosophila melanogaster*. *Israel Journal of Ecology and Evolution* 56: 197-206.
32. Koroma A., Jones R. & **Michalak P.** 2011. A snapshot of DNA methylation changes associated with hybridization in *Xenopus*. *Physiological Genomics* 43: 1276-1280.
33. **Michalak P.** 2010. An eruption of mobile elements in genomes of hybrid sunflowers. *Heredity* 104: 329-330.
34. **Michalak P.** 2009. Epigenetic, transposon, and small RNA determinants of hybrid dysfunctions. *Heredity* 102: 45-50.
35. **Michalak P.** & Ma D. 2008. The acylphosphatase (Acyp) alleles associate with male hybrid sterility in *Drosophila*. *Gene* 416: 61-65.
36. Malone J.H. & **Michalak P.** 2008. Gene expression analysis of the ovary of hybrid females of *Xenopus laevis* and *X. muelleri*. *BMC Evolutionary Biology* 8: 82.

37. Malone J.H. & **Michalak P.** 2008. Physiological sex predicts hybrid sterility regardless of genotype. *Science* 319: 59.
38. **Michalak P.** 2008. Coexpression, coregulation, and cofunctionality of neighboring genes in eukaryotic genomes. *Genomics* 91: 243-248.
39. **Michalak P.** & Malone J.H. 2008. Testis-derived microRNA profiles of African Clawed Frogs (*Xenopus*) and their sterile hybrids. *Genomics* 91: 158-164.
40. Malone J.H., Chrzanowski T.H. & **Michalak P.** 2007. Sterility and gene expression in hybrid males of *Xenopus laevis* and *X. muelleri*. *PLoS ONE* 2(8): e781.
41. **Michalak P.**, Malone J., Lee I.T., Hoshino D. & Ma D. 2007. Gene expression polymorphism in *Drosophila* populations. *Molecular Ecology* 16: 1179-1189.
42. Malone J., Hawking D.L. & **Michalak P.** 2006. Sex biased gene expression in *Xenopus*. *Journal of Molecular Evolution* 63: 427-436. [Cover]
43. Kim Y.B., Gao J. & **Michalak P.** 2006. A new maximum-relevance criterion for significant gene selection. *Proceedings of IEEE on Pattern Recognition in Bioinformatics* 2006: 71-80.
44. **Michalak P.** 2006. RNA world - the dark matter of evolutionary genomics. *Journal of Evolutionary Biology* 19: 1768-1774.
45. Rashkovetsky E., Iliadi K., **Michalak P.**, Lupu A., Nevo E., Feder M.E. & Korol A. 2006. Stable adaptive differentiation of thermotolerance in *Drosophila* along a microclimatic gradient. *Heredity* 96: 353-359.
46. **Michalak P.** & Noor M.A.F. 2004. Association of misexpression with sterility in hybrids of *Drosophila simulans* and *D. mauritiana*. *Journal of Molecular Evolution* 59: 277-282.
47. Noor M.A.F., **Michalak P.** & Donze D. 2003. Characterization of a male-predominant antisense transcript underexpressed in hybrids of *Drosophila pseudoobscura* and *D. persimilis*. *Genetics* 165: 1823-1830.
48. **Michalak P.** & Noor M. A. F. 2003. Genome-wide patterns of expression in *Drosophila* pure-species and hybrid males. *Molecular Biology & Evolution* 20:1070-1076.
49. Lerman* D.N., **Michalak* P.**, Helin A., Bettencourt B.R. & Feder M. 2003. Modification of Heat-shock gene expression in *Drosophila* populations via transposable elements. *Molecular Biology & Evolution* 20: 135-144. [*These authors contributed equally to the work; order alphabetical]
50. Feder M.E., Bedford T.B.C., Albright D.R. & **Michalak P.** 2002. Evolvability of Hsp70 expression under artificial selection for inducible thermotolerance in independent populations of *Drosophila melanogaster*. *Physiological & Biochemical Zoology* 75: 325-334.
51. **Michalak P.**, Minkov I., Helin A., Lerman D.N., Bettencourt B.R., Feder M., Korol A. & Nevo E. 2001. Genetic evidence for adaptation-driven incipient speciation of *Drosophila melanogaster* along a microclimatic contrast in 'Evolution Canyon', Israel. *Proceedings of the National Academy of Sciences USA* 98: 13195-13200.
52. Korol A., Rashkovetsky E., Iliadi K., **Michalak P.**, Ronin Y. & Nevo E. 2000. Non-random mating in *Drosophila melanogaster* laboratory populations derived from closely adjacent ecologically contrasting slopes at "Evolution Canyon". *Proceedings of the National Academy of Sciences USA* 97: 12637-12642.
53. Sorensen J. G., **Michalak P.**, Justensen J. & Loeschcke V. 1999. Expression of the heat-shock protein HSP70 in *Drosophila buzzatii*. *Hereditas* 131: 155-165.
54. **Michalak P.** & Rafinski J. 1999. Sexual isolation between two newt species, *Triturus vulgaris* and *T. montandoni* (Amphibia, Urodela, Salamandridae). *Biological Journal of the Linnean Society* 67: 343-352.
55. Dahlgaard J., Loeschcke V., **Michalak P.** & Justensen J. 1998. Acclimation, thermal resistance and associated expression of the heat-shock protein HSP70 in adult *Drosophila melanogaster*. *Functional Ecology* 12: 786-794.
56. **Michalak P.**, Grzesik J. & Rafinski J. 1997. Tests for sexual incompatibility between two newt species, *Triturus vulgaris* and *T. montandoni*: No-choice mating design. *Evolution* 51: 2045-2050.

57. **Michalak P.** 1996. Repeatability of mating behaviour in the Montandon's newt, *Triturus montandoni* (Caudata, Salamandridae). *Ecology Ethology & Evolution* 8: 19-27.
58. **Michalak P.** 1996. Some comments on simultaneous statistical inference. [In Polish] *Wiadomosci Ekologiczne* 42: 229-233.
59. **Michalak P.** 1995. Inter-habitat morphometric differentiation in male willow warblers (*Phylloscopus trochilus*). *Ornis Fennica* 72: 138-139.

Research Funding

1. Title: "Integrative Genomics Approach to Computational Assessment of Threats (IGACAT)".
Role: Biological Systems Expert, (PI: Dr. Stephen G. Eubank, Virginia Tech)
Period: 05/01/2017 – 12/15/2018
Agency: Intelligence Advanced Research Projects Activity (IARPA), US Dept. of Defense
Amount: \$3,000,000 awarded
2. Title: "Hawaiian hoary bat conservation genetics: diet composition and population structure".
Role: Co-PI, (PI: Dr. Frank Bonaccorso, USGS)
Period: 01/01/2018 – 12/31/2020
Agency: US Geological Survey
Amount: \$153,083 awarded
3. Title: "Conduct a Post-White-nose Survey of Bats in the National Capital Region".
Role: Co-PI, (PI: Dr. W. Mark Ford)
Period: 04/01/2018 – 03/31/2019
Agency: National Park Service
Amount: \$40,000 awarded
4. Title: "IGPOH: An Integrative Genomics Platform for One Health".
Role: PI
Period: 07/01/2018 – 06/30/2019
Agency: VCOM's Research Eureka Accelerator Program (REAP)
Amount: \$61,000 awarded
5. Title: "Third-generation DNA sequencing approaches to rapid characterization of drinking water contamination in El Salvador, Honduras, and the Dominican Republic".
Role: Co-PI
Period: 07/01/2018 – 06/30/2019
Agency: VCOM's Research Eureka Accelerator Program (REAP)
Amount: \$31,000 awarded
6. Title: "IGPOM: An Integrative Genomics Platform for Osteopathic Medicine".
Role: PI
Period: 07/01/2017 – 06/30/2018
Agency: VCOM's Research Eureka Accelerator Program (REAP)
Amount: \$60,000 awarded
7. Title: "Integrative genomics of small noncoding RNAs in host-associated bacteria".
Role: PI
Period: 07/01/2017 – 06/30/2019
Agency: VCOM's One Health Research Seed Grant Program
Amount: \$87,840 awarded
8. Title: "Nanopore-based deep sequencing to characterize *Ixodes scapularis* variants and their pathogenic microbiota".
Role: PI
Period: 07/01/2018 – 06/30/2019
Agency: VCOM's One Health Research Seed Grant Program
Amount: \$49,601 awarded
9. Title: "Modeling Immunity for Biodefense: Enterovaggressive *E. coli* and *Helicobacter pylori*".
(Contract # 272201000056C-0-0-1).
Role: Co-I, Bioinformatics Core (PI: Dr. Josep Bassaganya-Riera, Virginia Tech)

- Period: 10/01/2010 – 09/30/2016
Agency: NIH –National Institute of Allergy and Infectious Diseases (NIAID)
Amount: \$10,571,877 awarded
10. Title: “Emerald shiner habitat conservation and restoration study in the upper Niagara River: importance for sport fish, common terns and public education”.
Role: Co-PI (PI: Dr. Alicia Pérez-Fuentetaja, SUNY-Buffalo State)
Period: 01/01/2014 – 12/31/2017
Agency: Niagara Greenway Ecological Fund
Amount: \$766,488 awarded
11. Title: “Hawaiian hoary bat conservation genetics”.
Role: PI
Period: 06/10/2015 – 12/31/2015
Agency: US Geological Survey
Amount: \$18,000 awarded
12. Title: “Development of Markers for Biological Monitoring of Freshwater Mussels at NRDAR Sites”.
Role: Co-PI (PI: Dr. Eric Hallerman, Virginia Tech)
Period: 07/01/14-03/30/15
Agency: US Fish and Wildlife Service
Amount: \$92,012 awarded
13. Title: “Exploring the roles of adaptive plasticity and invasibility of alewife (*Alosa pseudoharengus*) to better manage fisheries in the Great Lakes: Phase II”.
Role: Co-PI (PI: Dr. Sergiusz Czesny, Illinois Natural History Survey)
Period: 03/01/2013 – 02/28/2014.
Agency: Illinois Department of Natural Resources
Amount: \$167,648 awarded (incl. federal rate overheads)
14. Title: “microRNA regulation of colonic CD4+ T cells during *Clostridium difficile* infection”.
Role: co-PI (PIs: Josep Bassaganya-Riera, Virginia Bioinformatics Institute)
Period: 09/01/2012 – 05/01/2013
Agency: Virginia Tech (“Seed” Grant)
Amount: \$18,536 awarded
15. Title: “Methylation patterns in relation to genome size in *Xenopus* and their hybrids”.
Role: Advisor of the scholarship recipient, Dr. Sebastian Maciak
Period: 03/01/2013-02/28/2015
Agency: Polish Ministry of Science and Higher Education, Mobility Plus Program
Amount: ~\$152,000 (477,600 PZL)
16. Title: “Epigenetic capacitors of adaptive evolution”.
Role: PI (Co-PIs: Prof. Abraham Korol and Dr. Eugenia Rashkovetsky, University of Haifa, Israel)
Period: 10/01/2012 – 09/30/2015
Agency: United States – Israel Binational Science Foundation
Amount: \$135,000 awarded
17. Title: “Exploring the roles of adaptive plasticity and invasibility of alewife (*Alosa pseudoharengus*) to better manage fisheries in the Great Lakes”.
Role: Co-PI (PI: Dr. Sergiusz Czesny, Illinois Natural History Survey)
Period: 09/15/2011 – 12/31/2012.
Agency: Illinois Department of Natural Resources
Amount: \$184,000 awarded (incl. federal rate overheads)
18. Title: “MRI: Acquisition of a Genome Sequencer FLX for High Throughput Sequencing and Genotyping in Genomics Research and Student Training”.
Role: Lead PI
Period: 06/01/09-31/05/11
Agency: National Science Foundation
Amount: \$526,567 awarded

19. Title: “Genetic, molecular, and neurological bases of sexual discrimination in *Drosophila*”.
Role: PI (Co-PIs: Dr. Dean Smith, Pharmacology Department, UTSW Dallas)
Period: 04/01/07 - 03/31/08
Agency: UTSW-UT Arlington Collaborative Research Program
Amount: \$100,000 awarded
20. Title: “DNA biochip using magnetic nanodisk labels”.
Role: Co-PI (PI: Dr. Yaowu Hao, Materials Science and Engineering, UTA)
Period: 10/01/06 - 09/30/08
Agency: Strategic Partnership for Research in Nanotechnology (SPRING/AFOSR)
Amount: \$140,000 awarded (48% Indirect Cost Rates)
21. Title: “DDIG: Genetic determinants of postzygotic isolation in *Xenopus*”.
Role: PI (PhD candidate: John Malone)
Period: 06/01/05 - 05/31/07
Agency: National Science Foundation (Dissertation Research, DDIG)
Amount: \$12,000 awarded
22. Title: “Genetic basis of incipient speciation in *Drosophila melanogaster*”.
Role: PI
Period: 10/01/04-09/30/05
Agency: UTA Research Enhancement Program
Amount: \$9,996 awarded

Invited Talks/Workshop Organizer

USA

1. 2018/03/30: *Interspecies hybrids as a model for allele-specific gene expression*. Department of Biological Sciences, Old Dominion University, Norfolk, VA.
2. 2016/10/14: *Speciation and adaptation in Drosophila*. School of Life Sciences, University of Nevada Las Vegas, NV.
3. 2016/08/08: *From genome reading to genome editing and pest management*. USDA Agricultural Research Service, Hilo, HI.
4. 2016/03/01: *Genomic conflicts within nuclei of African clawed frogs*. University of South Florida St. Petersburg, FL.
5. 2015/10/08: *Speciation and adaptation in Drosophila*. Department of Entomology, Virginia Tech, VA.
6. 2015/02/12: *Genomic misdeeds of Xenopus hybrids*. Department of Biological Sciences, Auburn University, AL.
7. 2014/06/11: *Overview on How to Analyze RNAseq Data with Galaxy*. Modeling Mucosal Immunity Summer School & Symposium in Computational Immunology. Virginia Tech, Blacksburg, VA.
8. 2012/11/13: *RNA-seq Workshop*. Pacific Center for Infectious Diseases Research (COBRE) and Department of Information and Computer Science, University of Hawaii, Manoa, HI.
9. 2012/11/9-10: *RNA-seq Workshop*. Department of Biology, University of Hawaii Hilo, HI.
10. 2012/11/5: *Epigenomic reprogramming in Xenopus hybrids*. University of Hawaii Hilo.
11. 2011/03/03: *Genomic insights into the origin of new species*. Department of Statistics, Virginia Tech, Blacksburg, VA.
12. 2011/01/07: *Comparative genomics and evolution*. Virginia Tech Carilion School of Medicine, Roanoke, VA.
13. 2010/06/07: *Genomic insights into the evolution of reproductive isolation*. Department of Ecology and Evolutionary Biology, Rice University, Houston, TX.
14. 2010/03/04: *Genomic and bioinformatic insights into the origin of species*. Department of Biology, University of Tampa, FL.

15. 2010/01/12: *Genomic determinants of reproductive defects in interspecies hybrids*. Department of Biology, University of North Florida, Jacksonville FL.
16. 2009/12/05: *Genomic insights into the origin of new species*. Department of Biology, College of Charleston, SC.
17. 2009/11/03: *Genetic determinants of postzygotic reproductive isolation*. Illinois Natural History Survey, University of Illinois at Urbana-Champaign, IL.
18. 2009/09/26: *Genetic determinants of hybrid dysfunctions*. Department of Biology, Texas Woman's University, Denton, TX.
19. 2009/06/23: *Genomics of hybrid sterility*. Department of Biology, Claflin University, Orangeburg, SC.
20. 2009/04/01: A panelist at *What Role, if any, Does Heritable Epigenetic Variation Play in Phenotypic Evolution?* (NESCent Catalysis Meeting), Duke University, Durham, NC.
21. 2008/12/03: *Omics! Expert panel on gene and protein studies* (co-chaired with Dr. Laszlo Prokai). Fort Worth Life Sciences Coalition, Fort Worth, TX.
22. 2008/05/02: *Meanders of speciation genetics*. Southern Methodist University – Department of Biological Sciences, Dallas, TX.
23. 2006/11/02: *Genetics of hybrid sterility and reproductive isolation between species*. University of Texas – Dallas, Department of Molecular & Cell Biology, TX.

International

1. 2016/10/26: *Speciation and adaptation in Drosophila*. Institute of Evolution, Haifa University, Israel.
2. 2014/10/27: *Genomic misdeeds of Xenopus hybrids*. Institute of Evolution, Haifa University, Israel.
3. 2012/09/19: *Epigenome under nucleolar dominance*. Hunan Normal University, Changsha, China.
4. 2010/05/14: *Genomic insights into the origin of species*. School of Biological Sciences, Seoul National University, South Korea.
5. 2009/05/19: *Genomics of hybrid sterility*. School of Molecular Sciences, La Trobe University, Melbourne, Australia.

Presentations at Conferences

(Bold fonts indicate the speaker)

USA

1. **Viladomiu M.**, Hontecillas R., Pedragosa M., Michalak P., Michalak K., Guerrant R., Roche J., Warren C. & Bassaganya-Riera J. 2013 (3-7 May). *Modeling the role of peroxisome proliferator-activated receptor γ and microRNA-146 in mucosal immune responses to Clostridium difficile*. Immunology 2013 AAI Annual Meeting, Honolulu, Hawaii.
2. **Czesny S.**, Michalak & Epifanio J. 2009 (6-9 December). *Exploring adaptive plasticity of alewife (Alosa pseudoharengus) to better manage fisheries in the Great Lakes* (poster). 70th Annual Midwest Fish and Wildlife Conference. Springfield IL
3. **Marshall J. L.** & Michalak P. 2006 (4-6 November). *The Allonemobius-Wolbachia host-endosymbiont system: evidence that Wolbachia infections can modify patterns of host gene expression* (poster). Annual Symposium: Genes in Ecology, Ecology in Genes. Lenexa-Overland Park, Kansas.
4. **Michalak P.** & Hoshino D. 2006 (29 March- 2 April). *Conservation of gene expression neighborhoods across Drosophila species* (poster). 47th Annual Drosophila Research Conference, Houston, Texas.
5. **Michalak P.**, Lee I.T., Hoshino D. & Malone J. 2005 (June 10-14). *Genome-wide gene expression changes and reproductive isolation*. EVOLUTION 2005, University of Alaska, Fairbanks.
6. **Malone J.** & Michalak P. 2005 (10-14 June). *Microarray analysis of reproductive isolation in Xenopus (Amphibia: Anura)*. EVOLUTION 2005, University of Alaska, Fairbanks.

7. **Noor M.A.F.**, Michalak P. & Donze D. 2003. *Genome wide patterns of expression in Drosophila pure-species and hybrid males*. Society for Molecular Biology & Evolution. Abstracts. Newport Beach, California.
8. **Michalak P.**, Minkov I., Helin A., Feder M., Korol A., Lerman D.N., Bettencourt B.R. & Nevo E. 2001. *Distinct genetic differentiation in Drosophila melanogaster populations from adjacent microclimates ("Evolution Canyon" case, Israel)*, EVOLUTION 2001, Knoxville, USA.

International

1. **Michalak P.** 2015 (June 26-30). *The evolution of nucleolar dominance and maternal control of 45S rDNA expression*. EVOLUTION 2015, Guarujá, Brazil.
2. **Michalak P.**, Vaksman Z., Michalak K., Santopietro G. & Vijayan V. 2011 (Sep 27-Oct 1st). *Nucleolar dominance and differential genome silencing in Xenopus*. Gene Expression and RNA Processing Symposium 2011, Iguazu Falls, Argentina.
3. **Czesny S.**, Michalak & Epifanio J. 2010 (17-21 May). *Exploring adaptive plasticity of alewife (Alosa pseudoharengus) to better manage fisheries in the Great Lakes* (poster). IAGLR (International Association of Great Lakes Research) Conference, Toronto, Canada.
4. **Michalak P.** & Malone J. 2007 (16-20 June). *microRNA profile changes associated with reproductive isolation in Xenopus*. EVOLUTION 2007, Christchurch, New Zealand.
5. **Malone J.** & Michalak P. 2007 (9-10 February). *Gene expression and reproductive isolation in Xenopus*. Transcription: from molecular mechanisms to disease. 2nd Helsinki Biomedical Graduate School Council Symposium, Biomedicum Helsinki, Finland.
6. **Ma D.**, Michalak P. & Hoshino D. 2007 (16-20 June). *Genetics of male sterility in Drosophila simulans x D. mauritiana hybrids* (poster). EVOLUTION 2007, Christchurch, New Zealand.
7. **Michalak P.** & Malone J. 2006 (12-16 September). *Developing resources for comparative genomics and transcriptomics of Xenopus* (poster). 11 Xenopus Meeting, Kazusa Akademia, Japan.
8. **Malone J.** & Michalak P. 2006 (12-16 September). *Gene expression basis of postzygotic reproductive isolation in Xenopus*. 11 Xenopus Meeting, Kazusa Akademia, Japan.
9. **Malone J.** & **Michalak P.** 2006 (21-24 July). *Xenopus as a model system for speciation genetics* (poster). Genetics of Speciation - American Genetics Association Annual Symposium, Co-sponsored by Molecular Ecology, Vancouver, Canada.
10. **Michalak P.**, Lee I.T., Hoshino D. & Malone J. 2005 (15-20 August). *Genome-wide gene expression changes during speciation* (poster). X Congress of the European Society for Evolutionary Biology, Krakow, Poland.
11. **Malone J.** & Michalak P. 2005 (15-20 August). *Gene expression and postzygotic isolation in Xenopus hybrids* (poster). X Congress of the European Society for Evolutionary Biology, Krakow, Poland.
12. **Sorensen J. G.**, Michalak P., Justensen J. & Loeschcke V. 1999. *Expression of the heat-shock protein HSP70 in Drosophila buzzatii*. VII Congress of the European Society for Evolutionary Biology, Barcelona, Spain.
13. **Michalak P.** 1997. *Sexual isolation between two newt species, Triturus vulgaris and T. montandoni*, VI Congress of the European Society for Evolutionary Biology, Arnhem, The Netherlands.
14. **Michalak P.** 1996. *Sexual isolation between Triturus vulgaris and T. montandoni*, Triturus 7 Meeting, Chester, UK.
15. **Michalak P.** 1995. *Repeatability of mating behavior*, 1st Meeting of PhD Students in Evolutionary Biology, Zurich, Switzerland.
16. **Michalak P.** 1994. *Inter-habitat morphometric differentiation in the willow warbler* (poster), XXI International Ornithological Congress, Vienna, Austria

Memberships in Professional Societies

- European Society for Evolutionary Biology
- The Society for the Study of Evolution
- The Genetics Society of America
- Elected Member of the Committee for Evolutionary and Theoretical Biology of Polish Academy of Sciences (PAN).

Editorial Boards

- *Genomics Insights*, 2008 – present
- *PLoS ONE*, 2007 – present
- *Frontiers in Toxicogenomics*, 2011 – present

Study Section and Review Panels

- 2011/04/19-20: National Science Foundation, MRI Review Panel 1.
- 2012/04/10-11: National Science Foundation, MRI Review Panel 1.
- 2013/045: National Science Foundation, MRI Review Panel 1.

Reviewer activity**Granting Agencies (number of proposals reviewed)**

- *Austrian Science Fund* (3)
- *Biotechnology and Biological Sciences Research Council (BBSRC) in UK* (1)
- *Czech Science Foundation* (2)
- *Competitive Research Grants (CRG) program at King Abdullah University of Science and Technology (KAUST) in Saudi Arabia* (1)
- *Earth and Life Sciences (ALW) of the Netherlands Organization for Scientific Research (NWO)* (2)
- *National Science Foundation* (15)

Journals (number of manuscripts reviewed)

- *Animal Genetics* (1)
- *Bioinformatics* (1)
- *BMC Biology* (1)
- *BMC Biotechnology* (1)
- *BMC Genomics* (3)
- *BMC Evolutionary Biology* (1)
- *Cell & Tissue Research* (1)
- *Ecology Letters* (1)
- *Evolution* (3)
- *Evolutionary Applications* (1)
- *Gene* (2)
- *Genetica* (1)
- *Genetics* (2)
- *Genome* (1)
- *Genome Biology* (2)
- *Genome Biology and Evolution* (1)

- *Heredity* (6)
- *Infection, Genetics and Evolution* (1)
- *International Journal of Evolutionary Biology* (1)
- *Israel Journal of Ecology and Evolution* (1)
- *Journal of Experimental Zoology Part B: Molecular and Developmental Evolution* (1)
- *Journal of Heredity* (2)
- *Journal of Molecular Evolution* (3)
- *Journal of Proteome Research* (1)
- *Mobile Genetic Elements* (1)
- *Molecular Biology and Evolution* (5)
- *Molecular Ecology* (6)
- *Nucleic Acids Research* (2)
- *Open Biology* (1)
- *PLoS Biology* (1)
- *PLoS Genetics* (3)
- *PLoS Medicine* (1)
- *PLoS ONE* (2)
- *Proceedings of National Academy of Sciences USA* (2)
- *Proceedings of the Royal Society B: Biological Sciences* (2)
- *RNA* (1)
- *Scientific Reports* (1)

Teaching

Graduate student courses

- *Essentials of Genomics* (UTA, 2003-2009)

Undergraduate student courses

- *Essentials of Genomics* (UTA, 2003-2009)
- *Genetics* (UTA, 2005-2009)
- *Biostatistics* (University of Bialystok, Poland, 1998-1999)

List of Michalak Lab Alumni

- Daiju Hoshino, MSc 2007, currently instructor at Shonan Seminar Co., Ltd, Japan
- John H. Malone, PhD 2007, currently faculty at UConn
- Daina Ma, PhD 2010
- Alie Koroma, PhD 2011
- Lin Kang, PhD 2017

List of undergraduate students supervised

(UTA)

- 2004: Anthonia Adewole Dolapo; Daiju Hoshino; Kateryna Ivanova; Titilope Jinadu; Mervat Karout; Ronnie Khoury; Ivan Lee
- 2005: Akshay Bhonsle; Grace Chang; Nina thi Dinh; Dipendra Raj Gyawali; Kateryna Ivanova; Ivan Lee; Sandeep Mudda; Taniya Muliyl; Ba T. Nguyen; Danny Nguyen; Olivia Jackson-Okeke; Chris Paul; L. Varghese
- 2006: Mohhamed Asad; Matthew Bandomer; Brad Broadway; Long Do; Dana Doan; Benjamin Egusquiza; Ohi Esechie; Quy Le; Ivan Lee; Madhab Sapkota
- 2007: Erika Crespo; Huon Ong; Chris C. Riley; Sigred Slempe; Aaron Summerhill; Zhichao “Ivy” Zheng

- 2008: Chris C. Riley; Zhichao “Ivy” Zheng

(Virginia Tech)

- 2011-2016: Catherine Galecki, Brittany Ralph, Nicholas Sharp, Josh Freda, Amanda Nemezc, John Heller, Elderen Lee, Anthony Fisher

List of awards received by students

- Erika Crespo, McNair Summer Research Fellowship (2007)
- John Malone:
 - 2nd Place-Texas Academy of Science Student Research Competition (2006)
 - 1st Place-Texas Academy of Science Student Research Competition (2005)
 - Phi Sigma Society Travel Grants (2005)
 - Deans Excellence Scholarship (2004)
 - Animal Behavior Society Student Research Grant (2004)
- Ivan Lee: Undergraduate Research Assistantship (URA) of UTA Honors College for 11-week summer research in 2004
- Ronnie Khoury: Undergraduate Research Assistantship (URA) of UTA Honors College for 11-week summer research in 2004.
- Zhichao “Ivy” Zheng: Undergraduate Research Assistantship (URA) of UTA Honors College for 11-week summer research in 2007.

Graduate study committees – List of students

Virginia Tech, Virginia Bioinformatics Institute

- Robin Varghese (Doctoral, graduated 2016)
- Monica Viladomiu (Doctoral, graduated 2015)
- Zhixiong Sun (Doctoral)

Virginia Tech, Department of Entomology

- Atashi Sharma (Doctoral, graduated 2016)
- Jiangtao Liang (Doctoral)

University of Hawaii at Hilo

- Eva Brill (Masters, graduated 2015)

UTA, Department of Mathematics

- Min Mo (Doctoral, graduated 2008)

UTA, Department of Computer Science

- Young Bun (Doctoral, graduated 2008)
- Jung Hun (Doctoral, graduated 2008)

UTA, Department of Biology

- Ron M. Bonett (Doctoral, graduated 2005)
- David K. Britton (Doctoral, graduated 2005)
- Yongsheng Bai (Doctoral, graduated 2007)
- Daiju Hoshino (Masters, graduated 2007)
- Jung Hwa Chung (Masters, graduated 2007)
- John H. Malone (Doctoral, graduated 2007)
- Taniya Muliylil (Masters, graduated 2007)
- Kanchana Panaram (Doctoral, graduated 2007)
- Ananya Roy (Masters, graduated 2008)
- Walter E. Schargel (Doctoral, graduated 2008)
- Anthony Kappell (Doctoral, graduated 2008)

-
- Victoria Inyang Idio (Masters, graduated 2009)
 - Brian Fontenot (Doctoral, graduated 2009)
 - Mansi Motiwale (Doctoral, graduated 2009)
 - Daina Ma (Doctoral, graduated 2010)
 - Alie P. Koroma (Doctoral, graduated 2011)
 - Mercedita J. Madison-Villar (Doctoral, graduated 2011)

Service to the University/Community

- **2011:** New Faculty Search Committee (Medical Bioinformatics and Systems) – member
- **2011:** Exhibition titled “How to make a white frog? VBI’s African Clawed Frog (*Xenopus*) colony and its applications” at Kids’ Tech University (<http://kidstechuniversity.vbi.vt.edu/>), Blacksburg, VA, April 9
- **2011:** Research Excellence Award Nomination Committee – member
- **2011:** VBI Research Symposium Organizing Committee - member
- **2008:** McNair Committee – member
- **2007:** McNair Faculty Mentor
- **2007:** New Faculty Search Committee (Genetics/Genomics) – member
- **2006:** New Faculty Search Committee (Evolutionary Biology) – member
- **2005:** UTA Biology Graduate Studies Committee – member
- **2005:** UTA Biology Facilities Committee – member
- **2005:** New Faculty Search Committee (Genetics/Genomics) – member
- **2004:** UTA Biology Graduate Studies Committee – member
- **2004:** UTA Biology Facilities Committee – member
- **2004:** New Faculty (Genetics/Genomics) Search Committee – member
- **2004:** Guest speaker for the Contemporary Science 5301 course “Proteomics and the Post-genomics Revolution” within the MAIS program (non-thesis masters for K-12 science teachers)