John F. McDonald

Curriculum Vitae
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EDUCATION

Assumption College, Worcester, MA, A.B. Biology/Philosophy, 1969
University of California, Davis, Ph.D. Genetics, 1976 (Dr. F.J. Ayala, Thesis Advisor)

HONORS

NIH Predoctoral Fellow, University of California, Davis
NIH Postdoctoral Fellow, University of California, San Diego
Deutscher Akademischer Austauschdienst Fellowship (1988)
Outstanding Teacher Award, University of Georgia (1989)
Elected Fellow, American Association for the Advancement of Science (AAAS) (2005)
Excellence in Teaching, Georgia Institute of Technology (2011)

RESEARCH AND PROFESSIONAL EXPERIENCE

1976-1977	NIH Post-Doctoral Fellow, UC, San Diego
1977-1981	Assistant Professor, Iowa State University
1981-1981	Associate Professor, Iowa State University
1982	Visiting Professor, Waksman Institute, Rutgers University
1983	Visiting Professor, Columbia Medical School, Cancer Institute
1982-1990	Associate Professor, University of Georgia
1987-1988	Visiting Professor, University of Mainz, Mainz, Germany
1990-2004	Professor, University of Georgia
1998-2004	Department Head, Genetics, University of Georgia
2000-2002	Chairman, UGA Bioinformatics Committee
2001-2002	Interim Director, Institute of Bioinformatics, University of Georgia
2001-2002	UGA representative on the Georgia Research Alliance Bioinformatics Cluster
2002-present	Chief Scientific Officer, Ovarian Cancer Institute (Atlanta, GA)

2004-2009 Chair, School of Biology, Georgia Institute of Technology
2009-2014 Assoc. Dean for Biology Program Development, Georgia Institute of Technology
2010-current Director, Integrated Cancer Research Center, Georgia Institute of Technology

PUBLICATIONS

Books

1. Lambert, M., McDonald, J.F. and Weinstein, I.B. (eds) 1988. *Eukaryotic Transposable Elements as Mutagenic Agents*, Cold Spring Harbor Press, NY.

2. McDonald, J.F. 1993. (ed) *Transposable Elements and Evolution*, Kluwer Press, Dordrecht, Holland.

3. Atherly, A., Gurdon, J. and McDonald, J. 1999. *The Science of Genetics*, (Introductory Genetics text) Saunders Press, Philadelphia.

4. McDonald, J.F. 2000. (ed) *Georgia Genetics Review, Vol I. Transposable Elements and Genome Evolution*, Kluwer Press, Dordrecht, Holland.

Research papers

Already published:
2015
173. Hill, C.G. and McDonald J.F. 2016. Evidence and potential clinical significance of changes in gene network interactions in ovarian cancer. *J Biomedical Engineering and Informatics* 2(1):1-12. Online first 9/9/15, *in press*.
172. Sodji, QH, Kornacki JR, McDonald JF, Mrksich M, Oyelere AK. 2015. Design and structure activity relationship of tumor-homing histone deacetylase inhibitors conjugated to folic and pteroic acids. *Eur J Med Chem* 96:340-359. PubMed
171. Mittal, V.K. and McDonald, J.F. 2015. Integrated sequence and expression analysis of ovarian cancer structural variants underscores the importance of gene-fusion regulation.*BMC Med Genomics* 8:40. doi: 10.1186/s12920-015-0118-9. PubMed
170. Sengupta, A, R. Mezencev, J. F. McDonald, and M. R. Prausnitz. 2015. Delivery of siRNA to ovarian cancer cells using laser-activated carbon nanoparticles. *Nanomedicine* 10:1775-1784. PubMed
169. Vermeersch KA, Wang L, Mezencev R, McDonald JF, Styczynski MP. 2015. OVCAR-3 spheroid-derived cells display distinct metabolic profiles. *PLoS One* 10:e0118262. PubMed
168. Allam, H., K. Aiok, B.B. Benigno, J.F. McDonald, S.G. Mackintosh, M. Tiemeyer, and K.L. Abbott. 2015. Glycomic analysis of membrane glycoproteins with bisecting glycosylation from ovarian cancer tissues reveals novel structures and functions. *J Proteome Res* 14:434-446. PubMed
167. McGrail, D.J., R. Meznecev, Q.M.N. Kieu, J.F. McDonald, and M.R. Dawson. 2015. SNAIL-induced epithelial-to-mesenchymal transition produces concerted

biophysical changes from altered cytoskeletal gene expression. *FASEB J* 29:1280-1289. PubMed

2014

166. Vermeersch, K.A., L. Wang, J.F. McDonald, M.P. Styczynski. 2014. Distinct metabolic responses of an ovarian cancer stem cell line. *BMC Syst Biol* 8:134. PubMed
165. Hill, C.G., N. Jabbari, L.V. Matyunina and J.F. McDonald. 2014. Functional and evolutionary significance of human microRNA seed region mutations. *PLos One*, 9(12): e115241. PubMed
164. Medrzycki, M., Zhang, Y., Zhang, W., Cao, K., Pan, C., Lailler, N., McDonald, J.F., Bouhassira, E.E., Fan, Y. 2014. Histone H1.3 suppresses *H19* noncoding RNA expression and cell growth of ovarian cancer cells. *Cancer Res* 74:6463-6473. PubMed
163. Zang, X., C. Jones, T. Long, M. Monge, M. Zhou, Manshui, L.D.Walker, R. Mezencev, A. Gray, J. F. McDonald, and F. Fernandez. 2014. Feasibility of detecting prostate cancer by ultra performance liquid chromatography−mass spectrometry serum metabolomics. *J Proteome Res* 13:3444-3454. PubMed
162. Wang, L., R. Mezencev, M. Svajdler, B.B. Benigno, and J.F. McDonald. 2014. Ectopic over-expression of miR-429 induces mesenchymal-to-epithelial transition (MET) and increased drug sensitivity in metastasizing ovarian cancer cells. *Gyn Oncol* 134:96-103. PubMed
161. Hill, C.G., L.V. Matyunina, L.D. Walker, B.B. Benigno, and J.F. McDonald. 2014. Transcriptional override: a network model of indirect responses to modulations in microRNA expression. *BMC Syst Biol* 8:36-44. PubMed
160. Muniyan, S., Y-W. Chou, T-J. Tsai, P. Thomes, S. Veeramani, B.B. Benigno, L.D. Walker, J. F. McDonald, S.A. Khan, F-F. Lin, S.M. Lele, and M-F. Lin. 2014. P66Shc longevity protein regulates the proliferation of human ovarian cancer cells. *Mol Carcinog.* 54(8):618-631. PubMed
159. Lili, L.N., L.V. Matyunina, L.D. Walker, G.W. Daneker, and J.F. McDonald. 2014. Evidence for the importance of personalized molecular profiling in pancreatic cancer. *Pancreas* 43 (2):198-211. PubMed
158. Jabbari, N., A.N. Reavis and J.F. McDonald. 2014. Sequence variation among members of the miR-200 microRNA family is correlated with variation in the ability to induce hallmarks of mesenchymal-epithelial transition in ovarian cancer cells. *J Ovarian Res* 7:12. PubMed
157. Ghosh, D., Lilli, L., McGrail, D.J., Matyunina, L.V., McDonald, J.F., Dawson, M.R. 2014. Integral role of platelet derived growth factor in mediating transforming growth factor-β1 dependent mesenchymal stem cell stiffening. *Stem Cells Dev* 23:245-61. PubMed
156. Bongiorno T, Kazlow J, Mezencev R, Griffiths S, Olivares-Navarrete R, McDonald JF, Schwartz Z, Boyan BD, McDevitt TC, Sulchek T. 2014. Mechanical stiffness as an improved single-cell Indicator of osteoblastic human mesenchymal stem cell differentiation. *J Biomechanics* 47:2197-2204. PubMed

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155. Lili, L.N., L.V. Matyunina, L.D. Walker, S.L. Wells, B.B. Benigno, and J.F. McDonald. 2013. Molecular profiling supports the role of epithelial-to-

mesenchymal transition (EMT) in ovarian cancer metastasis. *J Ovarian Res.* 6:49. PubMed

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153. Mezencev, R., L. Wang, W. Xu, B. Kim, T.A. Sulchek, G. W. Daneker, and J.F. McDonald. 2013. Molecular analysis of the inhibitory effect of N-acetyl-L-cysteine on the proliferation and invasiveness of pancreatic cancer cells. *Anti-Cancer Drugs* 24:504-518. PubMed

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152. Mezencev, R., L. Wang and J.F. McDonald. 2012. Identification of inhibitors of ovarian cancer stem-like cells by high-throughput screening. *J Ovarian Res.*5:30. PubMed
151. Nakamura, T., J. Chen, Y. Xinhua, J. Li, J.P. Chen, S.B. King the 3rd, N. Chronos, J.F. McDonald, and D. Hou. 2012. Vasomotor function and molecular responses following drug-eluting stent in a porcine coronary model. *Int. J Cardio.* 160:210-212. PubMed
150. Scarberry, K and JF McDonald. 2012. Use of magnetic filtration in the treatment of metastasizing cancers. *Med Device Develop Mag* 17 Sept 2012. Medical Device Development Mag
149. Xu, W., R. Mezencev, B. Kim, L. Wang, J.F. McDonald, and T.A. Sulchek. 2012. Cell stiffness is a biomarker of the metastatic potential of ovarian cancer cells. *PLoS One* 7(10): e46609. PubMed
148. Arora, G., R. Mezencev and J.F. McDonald. 2012. Human cells display reduced apoptotic function relative to chimpanzee cells. *PLoS One* 7(9): e46182. PubMed
147. Shahab, S., L.V. Matyunina, C.G. Hill, L. Wang, R. Mezencev, L.D. Walker, and J.F. McDonald. 2012**.** The effects of microRNA transfections on global patterns of gene expression in ovarian cancer cells are functionally coordinated. *BMC Med Genomics* 5:33. PubMed
146. Liu, Y., N.J. Bowen, L. Matyunina, J.F. McDonald, and M.R. Prausnitz. 2012. Gene transfection enhanced by ultrasound exposure combined with drug treatment guided by gene chip analysis. *Int J Hyperthermia* 28:349-361. PubMed
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identifies pathophysiological vascular responses to implantation of overlapping drug-eluting stents into porcine coronary arteries. *J Amer College Cardio.* 57:e1693. JACC

140. Polavarapu, N., G. Arora, V.K. Mittal, and J.F. McDonald. 2011. Characterization and potential functional significance of human-chimpanzee large INDEL variation. *Mobile DNA*.2:13. PubMed
139. Mezencev, R. and J.F. McDonald. 2011. Subcutaneous xenografts of human T-lineage acute lymphoblastic leukemia Jurkat cells in nude mice-brief evaluation of an *in vivo* model. *In Vivo.* 25 (4):603-607. PubMed
138. Shahab, S.W., L.V. Matyunina, R. Mezencev, L.D. Walker, N.J. Bowen, B.B. Benigno, and J.F. McDonald. 2011. Evidence for the complexity of microRNA-mediated regulation in ovarian cancer: A systems approach. *PLoS One.* 6(7): e22508. PubMed
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135. Chen, J., L. Wang, L.V. Matyunina, C.G. Hill, and J.F. McDonald. 2011. Overexpression of miR-429 induces mesenchymal-to-epithelial transition (MET) in metastatic ovarian cancer cells. *Gynecol Oncol*. 121:200-205. PubMed
134. Scarberry, K.E., R Mezencev and J.F. McDonald 2011. Targeted removal of migratory tumor cells by functionalized magnetic nanoparticles impedes metastasis and tumor progression. *Nanomedicine.* 6:69-78. PubMed

2010

133. Ravindran, R., J.A. Sadie, K.E. Scarberry, H.S. Yang, M.S. Bakir, J.F. McDonald, and J.D. Meindl. 2010. Biochemical sensing with an arrayed silicon nanowire platform. *Electronic Components and Tech Conf* 2010:1015-1020. pdf
132. Liu, Y., Y. Chen, A. Momin, R. Shaner, E. Wang, N.J. Bowen, L.V. Matyunina, L.D. Walker, J.F. McDonald, M.C. Sullards, and A.H. Merrill, Jr. 2010. Elevation of sulfatides in ovarian cancer: An integrated genomic and lipidomic analysis including tissue-imaging mass spectrometry. *Mol Cancer.* 9:186. PubMed
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129. Zhou, M, J.F. McDonald and F.M. Fernandez. 2010. Optimization of a direct analysis in real time/time-of-flight mass spectrometry method for rapid serum metabolic fingerprinting. *J. Am. Soc. Mass Spectrom.* 21:68-75. PubMed
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nanogel delivery. *BMC Cancer*. 2010 10:10. PubMed
127. Scarberry, K.E., E.B. Dickerson, Z.J. Zhang, B.B. Benigno and J.F. McDonald. 2010. Selective removal of ovarian cancer cells from human ascites fluid using magnetic nanoparticles. *Nanomedicine: Nanotech Biol Med.* 6:399-408. PubMed

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126. Bowen, N.J., L.D. Walker, L.V. Matyunina, S. Logani, K.A. Totten, B.B. Benigno, and J.F. McDonald. 2009. Gene expression profiling supports the hypothesis that human ovarian surface epithelia are multipotent and capable of serving as ovarian cancer initiating cells. *BMC Medical Genomics.* 2:71. PubMed
125. Guan, W., M. Zhou, C.Y. Hampton, B.B. Benigno, L.D. Walker, A. Gray, J.F. McDonald, and F M. Fernandez. 2009. Ovarian cancer detection from metabolomic liquid chromatography/mass spectrometry data by support vector machines. *BMC Bioinformatics.* 2009 10:259. PubMed
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123. Arora G., N. Polavarapu, J.F. McDonald. 2009. Did natural selection for increased cognitive ability in humans lead to an elevated risk of cancer? *Med. Hypoth.* 73:453-456. PubMed
122. Mezencev, R., P. Kutschy, A. Salayová, T. Updegrove and J.F. McDonald. 2009. The design, synthesis and anticancer activity of new nitrogen mustard derivatives of natural indole phytoalexin 1-methoxyspirobrassinol. *Neoplasma.* 56 (4):321-330. PubMed
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2008

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118. Arakaki, A., J. Skolnick, J.F. McDonald. 2008. Marker metabolites can be therapeutic targets as well. *Nature*. 456 (7221):443. PubMed
117. Scarberry, K., E.B. Dickerson, J.F. McDonald, and Z.J. Zhang. 2008. Magnetic nanoparticle-peptide conjugates for *in vitro* and *in vivo* targeting and extraction of cancer cells. *J. Am. Chem. Soc*. 130:10258-10262. PubMed
116. Dickerson, E.B., E.C. Dreaden, X. Huang, I.H. El-Sayed, H. Chu, S. Pushpanketh, J.F. McDonald, and M.A. El-Sayed. 2008. Gold nanorod assisted near-infrared plasmonic photothermal therapy (PPTT) of squamous cell carcinoma in mice. *Cancer Lett.* 269:57-66. PubMed

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114. Mezencev, R., P. Kutschy, A. Salayova, Z. Curillová, J. Mojzis, M. Pilatová, and J.F. McDonald. 2008. Anticancer properties of 2-piperidyl analogues of the natural indole phytoalexin 1-methoxyspirobrassinol. *Chemotherapy.* 54:372-378. PubMed

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112. Polavarapu, N., L. Mariño-Ramírez, D. Landsman, J.F. McDonald, and I.K. Jordan. 2008. Evolutionary rates and patterns for human transcription factor binding sites derived from repetitive DNA. *BMC Genomics.* 9:226. PubMed

111. Matyunina, L.V., N.J. Bowen and J.F. McDonald. 2008. LTR retrotransposons and evolution of dosage compensation in *Drosophila*. *BMC Mol. Biol*. 9:55. PubMed

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108. Piriyapongsa, J., N. Polavarapu, M. Borodovsky and J. McDonald. 2007. Exonization of the LTR transposable elements in human genome. *BMC Genomics.* 8:291. PubMed

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2006

104. Dickerson, E.B., M. Akhtar, L.B. Kapa, N.J. Bowen, K.D. Clark, and J.F. McDonald. 2006. Peptide targeting of EphA2 in epithelial ovarian cancer. *J Immunotherapy* 29:672-673.

103. Polavarapu, N., N.J. Bowen and J.F. McDonald. 2006. Identification, characterization and comparative genomics of chimpanzee endogenous retroviruses. *Genome Biol.* 7:R51. PubMed

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2004

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1990s

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