

Name James (Pat) McAllister
Title PhD
Position Professor of Neurosurgery

Photograph



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Research Interests (<200 words)

My research includes a variety of interdisciplinary, translational approaches to advance understanding of the pathophysiology of hydrocephalus and develop improved treatments for this disorder. In addition to advancing understanding of the neuronal damage that occurs in the hydrocephalic brain, our introduction of shunting experiments in the mid-eighties has contributed to what is known about the potential for recovery after treatment. Working closely with other neuroscientists, neurosurgeons, and bioengineers, I also explore treatments that could supplement surgical approaches by protecting cells, reducing neuroinflammation, or promoting regeneration in the hydrocephalic brain, developing shunt systems that resist cellular obstruction, evaluating the functional effects of endoscopic third ventriculostomy and choroid plexus cauterization, analyzing brain compliance using magnetic resonance elastography in patients and animal models, and determining the pathophysiology of post-hemorrhagic hydrocephalus. I remain dedicated to the training of students, and have mentored numerous clinicians and neuroscientists who treat and investigate hydrocephalus.

Research Focus

Keywords (5 keywords): Hydrocephalus, Pathophysiology; Neurodevelopment; Neuroanatomy; Neuroimaging

Research Technologies/Facilities: Histology, Immunohistochemistry, Magnetic Resonance Imaging, Advanced Neuroimaging, Cognitive & Behavioral Outcomes, Small Animal procedures, Large Animal procedures, Biomedical Engineering

Publications

- 10 key papers (preferably pdf's) - attached:
 1. Garcia-Bonilla M, Castaneyra-Ruiz L, Zwick S, Talcott M, Otun A, Isaacs AM, Morales DM, Limbrick DD Jr, McAllister JP 2nd. Acquired hydrocephalus is associated with neuroinflammation, progenitor loss, and cellular changes in the subventricular zone and periventricular white matter. Fluids Barriers

CNS. 2022 Feb 22;19(1):17. doi: 10.1186/s12987-022-00313-3. PubMed PMID: 35193620; PubMed Central PMCID: PMC8864805.

2. McAllister JP 2nd, Talcott MR, Isaacs AM, Zwick SH, Garcia-Bonilla M, Castaneyra-Ruiz L, Hartman AL, Dilger RN, Fleming SA, Golden RK, Morales DM, Harris CA, Limbrick DD Jr. A novel model of acquired hydrocephalus for evaluation of neurosurgical treatments. *Fluids Barriers CNS*. 2021 Nov 8;18(1):49. doi: 10.1186/s12987-021-00281-0. PubMed PMID: 34749745; PubMed Central PMCID: PMC8576945.
3. Harris CA, Morales DM, Arshad R, McAllister JP 2nd, Limbrick DD Jr. [Cerebrospinal fluid biomarkers of neuroinflammation in children with hydrocephalus and shunt malfunction](#). *Fluids Barriers CNS*. 2021 Jan 29;18(1):4. doi: 10.1186/s12987-021-00237-4. PubMed PMID: 33514409; PubMed Central PMCID: PMC7845119.
4. Henzi R, Vío K, Jara C, Johanson CE, McAllister JP, Rodríguez EM, Guerra M. [Neural stem cell therapy of foetal onset hydrocephalus using the HTx rat as experimental model](#). *Cell Tissue Res*. 2020 Jul;381(1):141-161. doi: 10.1007/s00441-020-03182-0. Epub 2020 Feb 17. PubMed PMID: 32065263.
5. Castaneyra-Ruiz L, Morales DM, McAllister JP, Brody SL, Isaacs AM, Strahle JM, Dahiya SM, Limbrick DD. [Blood Exposure Causes Ventricular Zone Disruption and Glial Activation In Vitro](#). *J Neuropathol Exp Neurol*. 2018 Sep 1;77(9):803-813. doi: 10.1093/jnen/nly058. PubMed PMID: 30032242; PubMed Central PMCID: PMC6927874
6. McAllister JP, Guerra MM, Ruiz LC, Jimenez AJ, Dominguez-Pinos D, Sival D, den Dunnen W, Morales DM, Schmidt RE, Rodriguez EM, Limbrick DD. [Ventricular Zone Disruption in Human Neonates With Intraventricular Hemorrhage](#). *J Neuropathol Exp Neurol*. 2017 May 1;76(5):358-375. doi: 10.1093/jnen/nlx017. PubMed PMID: 28521038; PubMed Central PMCID: PMC6251528.
7. Limbrick DD Jr, Baksh B, Morgan CD, Habiyaremye G, McAllister JP 2nd, Inder TE, Mercer D, Holtzman DM, Strahle J, Wallendorf MJ, Morales DM. [Cerebrospinal fluid biomarkers of infantile congenital hydrocephalus](#). *PLoS One*. 2017;12(2):e0172353. doi: 10.1371/journal.pone.0172353. eCollection 2017. PubMed PMID: 28212403; PubMed Central PMCID: PMC5315300.
8. Botfield H, Gonzalez AM, Abdullah O, Skjolding AD, Berry M, McAllister JP 2nd, Logan A. [Decorin prevents the development of juvenile communicating hydrocephalus](#). *Brain*. 2013 Sep;136(Pt 9):2842-58. doi: 10.1093/brain/awt203. PubMed PMID: 23983032.
9. Miller JM, McAllister JP 2nd. [Reduction of astrogliosis and microgliosis by cerebrospinal fluid shunting in experimental hydrocephalus](#). *Cerebrospinal Fluid Res*. 2007 Jun 7;4:5. doi: 10.1186/1743-8454-4-5. PubMed PMID: 17555588; PubMed Central PMCID: PMC1899521.
10. Wagshul ME, McAllister JP, Limbrick DD Jr, Yang S, Mowrey W, Goodrich JT, Meiri A, Morales DM, Kobets A, Abbott R. [MR Elastography demonstrates reduced white matter shear stiffness in early-onset hydrocephalus](#). *Neuroimage Clin*. 2021;30:102579. doi: 10.1016/j.nicl.2021.102579. Epub 2021 Feb 2. PubMed PMID: 33631603; PubMed Central PMCID: PMC7905205.

- Link to full publication list:
<https://www.ncbi.nlm.nih.gov/myncbi/pat.mcallister.1/bibliography/public/>
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Collaborators

David D. Limbrick, MD, PhD
Maria Garcia Bonilla, PhD
Carolyn Harris, PhD
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Albert M. Isaacs, MD, PhD
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Ramin Eskandari, MD
Marion L. Walker, MD
Janet M. Miller, PhD
Saibal Bandyopadinyay, PhD
W. Chad Webb, PhD
Diego M. Morales, MS
Michael Talcott, DVM
Michael A. Williams, MD

Student/Fellowship Opportunities

Graduate student – PhD
Research Associate/Technician