CURRICULUM VITAE

Jane E. Johnson
October 2018

Department of Neuroscience
UT Southwestern Medical Center
5323 Harry Hines Blvd
Dallas TX 75390-9111

Office: (214) 648-1870
Cell: (214) 564-0874
Email: Jane.Johnson@utsouthwestern.edu

EDUCATION

1988 Ph.D. Department of Biochemistry, University of Washington, with Dr. Steven Hauschka
Thesis: " Muscle Creatine Kinase Sequence Elements That Regulate Expression in Skeletal and Cardiac Muscle " (Guest Student with Barbara Wold, Caltech 1986-1988)
1983 B.S. Department of Chemistry, University of Washington, Seattle

POSTDOCTORAL TRAINING

1988-1992 California Institute of Technology, Pasadena CA, with David Anderson

ACADEMIC APPOINTMENTS

2007-present Vice-chair, Department of Neuroscience, University of Texas Southwestern Medical Center
2008-2009 Interim Chair, Department of Neuroscience, University of Texas Southwestern Medical Center
2006-present Professor, Department of Neuroscience, with secondary appointment in Department of Pharmacology, University of Texas Southwestern Medical Center
2000-2006 Associate Professor, Center for Basic Neuroscience, Departments of Cell Biology and Pharmacology, University of Texas Southwestern Medical Center
1993-2000 Assistant Professor, Center for Basic Neuroscience, Departments of Cell Biology and Pharmacology, University of Texas Southwestern Medical Center

GRADUATE SCHOOL AND OTHER INSTITUTIONAL AFFILIATIONS

2017-present Member, Peter O'Donnell Jr. Brain Institute
2016-present Member, Center for Regenerative Science and Medicine
2011-present Member, Harold C. Simmons Comprehensive Cancer Center, Cancer and Development Scientific program
1993-present Faculty member in the Genetics, Development, & Disease Graduate Program
1993-present Faculty member in the Neuroscience Graduate Program

ADMINISTRATIVE EXPERIENCE

2017-present Space Allocation & Infrastructure Management Committee
2014-present Faculty Committee of Southwestern Graduate School
2012-present Women in Science and Medicine Advisory Committee
2008-present Search Committee for Neuroscience Department Faculty
2006-present Institutional Promotions and Tenure Committee
2005-present Medical Scientist Training Program, Admissions Committee
2004-present Postdoctoral Advisory Committee
2001-2008 Division of Biological Sciences Graduate Executive Council & Steering Committee
2001-2008 Chair, Neuroscience Graduate Program
1999-2006 Graduate School Curriculum Committee
1997-2007 Graduate Student Advisory Committee
1994-2006 Institutional Animal Care and Use Committee

FELLOWSHIPS/HONORS/AWARDS

2017-present **MERIT Award from NICHD, NIH**
2013-present **Shirley and William S. McIntyre Distinguished Chair in Neuroscience**

2011	Excellence in Postdoctoral Mentoring Award from the Postdoctoral Association at UT Southwestern
2008-2011	The Nichole Silversteen Research Chair
1995-2000	Established Investigator of the American Heart Association
1991-1993	Neurofibromatosis Foundation Young Investigator Award
1989-1991	Muscular Dystrophy Association Postdoctoral Fellowship

PROFESSIONAL SERVICES

2020-present	International Journal of Developmental Neuroscience Editorial Board
2019-present	Neural Development Editorial Board
2016-present	NIH Study Section Member (DEV1)
2013-present	WIRES Developmental Biology Editorial Board
2012-present	CIRM Basic Biology and Grant Working Group Reviewer
2011-present	Developmental Biology Editorial Board
2010-2018	Developmental Neuroscience Editorial Board
2010-2012	NIH Center for Scientific Review, College of Reviewers
2009-2019	External Advisory Committee Member for COBRE Center, Molecular Biology of Neurosensory Systems, UNMC
2004-2016	NIH Study Section adhoc Reviewer for NCF, SEPs, F03A, and DEV1
2000-2004	NIH Study Section Member (MCDN6/NCF)
1994-present	Adhoc Journal Reviewer for Neuron, Development, Developmental Biology, Developmental Cell, Genes and Development, Journal of Neuroscience, Nature Neuroscience

PEER REVIEWED PUBLICATIONS (oldest to newest)
Public NCBI URL:
http://www.ncbi.nlm.nih.gov/sites/myncbi/jane.johnson.1/bibliography/40433808/public/?sort=date&direction=ascending

1. Jaynes JB, Chamberlain JS, Buskin JN, **Johnson JE** and Hauschka SD (1986). Transcriptional regulation of the muscle creatine kinase gene and regulated expression in transfected mouse myoblasts. **Mol Cell Biol** 6:2855-2864.
2. Jaynes JB, **Johnson JE**, Buskin JN, Gartside CL and Hauschka SD (1988). The muscle creatine kinase gene is regulated by multiple upstream elements including a muscle-specific enhancer. **Mol Cell Biol** 8:62-70.
3. **Johnson JE,** Gartside CL, Jaynes JB and Hauschka SD (1989). Expression of a transfected mouse muscle-creatine kinase gene is induced upon growth factor deprivation of myogenic but not of non-myogenic cells. **Dev Biol** 134:258-262.
4. **Johnson JE**, Wold BJ and Hauschka SD (1989). Muscle creatine kinase sequence elements regulating skeletal and cardiac muscle expression in transgenic mice. **Mol Cell Biol** 9:3393-3399.
5. **Johnson JE**, Birren SJ and Anderson DJ (1990). Two rat homologues of *Drosophila achaete-scute* specifically expressed in neuronal precursors. **Nature** 346:858-861.
6. Lo L-C, **Johnson JE**, Wuenschell CW, Saito T and Anderson DJ (1991). Mammalian *achaete-scute* homolog 1 is transiently expressed by spatially-restricted subsets of early neuroepithelial and neural crest cells. **Genes and Development** 5: 1524-1537.
7. **Johnson JE**, Zimmerman K, Saito T and Anderson DJ 1992). Induction and repression of mammalian *achaete-scute* homologue (MASH) gene expression during neuronal differentiation of P19 embryonal carcinoma cells. **Development** 114: 75-87.

8. **Johnson JE**, Birren SJ, Saito T and Anderson DJ (1992). The MASH genes encode transcriptional regulators that can activate expression of muscle creatine kinase, but do not induce myogenesis. **Proc Natl Acad Sci USA** 89: 3596-3600.

9. Guillemot FG, Lo L, **Johnson JE**, Auerbach A, Anderson DJ and Joyner AL (1993). Mammalian *achaete-scute* homolog 1 is required for the early development of olfactory and autonomic neurons. **Cell** 75: 463-476.

10. Verma-Kurvari S, Savage T, Gowan K and **Johnson JE** (1996). Lineage specific regulation of the neural differentiation gene *Mash1*. **Dev Biol** 180: 605-617.

11. Kim P, Helms AW, **Johnson JE** and Zimmerman K (1997). *XATH1*, a vertebrate homolog of *Drosophila atonal*, induces neuronal differentiation within ectodermal progenitors. **Dev Biol** 187: 1-12.

12. Verma-Kurvari S and **Johnson JE** (1997). Identification of an *achaete-scute* homolog, *Fash1*, from *Fugu rubripes*. **Gene** 200: 145-148.

13. Ikeya M, Lee SMK, **Johnson JE**, McMahon AP and Takada S (1997). Wnt signalling required for expansion of neural crest and CNS progenitors. **Nature** 389: 966-970.

14. Helms AW and **Johnson JE** (1998). Progenitors of dorsal commissural interneurons are defined by MATH1 expression. **Development** 125: 919-928.

15. Verma-Kurvari S, Savage T, Smith D and **Johnson JE** (1998). Multiple elements regulate *Mash1* expression in the developing CNS. **Dev Biol** 197: 106-116.

16. Tuttle R, Nakagawa Y, **Johnson JE** and O'Leary D (1999). Misguidance of thalamocortical projections in Mash1 mutant forebrains. **Development** 126, 1903-1916.

17. Horton S, Meredith A, Richardson JA, and **Johnson JE** (1999). Correct coordination of neuronal differentiation events in ventral forebrain requires the bHLH factor MASH1. **Mol Cell Neurosci** 14, 355-369.

18. Nakagawa Y, **Johnson JE** and O'Leary DDM (1999). Graded and areal expression patterns of regulatory genes and Cadherins in embryonic neocortex independent of thalamocortical input. **J. Neurosci** 19, 10877-10885.

19. Helms AW, Abney A, Ben-Arie N, Zoghbi HY and **Johnson JE** (2000). Autoregulation and multiple enhancers control *Math1* expression in the developing nervous system. **Development** 127, 1185-1196.

20. Meredith A and **Johnson JE** (2000). Negative autoregulation of the MASH1 promoter in neural development. **Dev Biol** 222, 336-346.

21. Simmons A, Horton S, Abney A and **Johnson JE** (2001) *Neurogenin2* expression in ventral and dorsal spinal neural tube progenitor cells is regulated by distinct enhancers. **Dev Biol** 229, 327-339.

22. Wang S, Sdrulla A, **Johnson JE**, Yokota Y and Barres BA (2001) A role for the helix-loop-helix protein Id2 in the control of oligodendrocyte development. **Neuron** 29, 603-614.

23. Timmer J, **Johnson J** and Niswander L (2001) The use of *in ovo* electroporation for the rapid analysis of neural-specific murine enhancers. **Genesis** 29, 123-132.

24. Helms AW, Gowan K, Abney A, Savage T and **Johnson JE** (2001) Overexpression of MATH1 disrupts the coordination of neuronal differentiation in cerebellum development. **Mol Cell Neurosci** 17, 671-682.

25. Gowan K, Helms AW, Hunsaker T, Collisson T, Ebert PJ, Odom R and **Johnson JE** (2001) Crossinhibitory Activities of Ngn1 and Math1 Allow Specification of Distinct Dorsal Interneurons. **Neuron** 31, 219-232.

26. Chen P, **Johnson JE,** Zoghbi HY and Segil N (2002). The role of Math1 in inner ear development: uncoupling the establishment of the sensory primordium from hair cell fate determination. **Development** 129, 2495-2505.

27. Yun K, Fischman S, **Johnson JE,** Hrabe de Angelis M, Weinmaster G and Rubenstein JLR (2002). Modulation of the Notch signaling by *Mash1*and *Dlx1/2* regulates sequential specification and differentiation of progenitor cell types in the subcortical telencephalon. **Development** 129, 5029-5040.

28. Wu H-H, Murray RC, Jaramillo S, Ivkovic S, Lyons KM, **Johnson JE** and Calof AL (2003). Negative autoregulation of neurogenesis by GDF11. **Neuron** 37, 197-207.

29. Ebert PJ, Timmer JR, Nakada Y, Helms AW, Parab PB, Liu Y, Hunsaker T and **Johnson JE** (2003). Zic1 represses *Math1* expression via interactions with the Math1 enhancer and modulation of *Math1* autoregulation. **Development** 130, 1949-1959.

30. Lumpkin EA, Collisson T, Parab P, Omar-Abdalla A, Haeberle H, Chen P, Doetzlhofer A, White P, Groves A, Segil N and **Johnson JE** (2003). Math1-driven GFP expression in the developing nervous system of transgenic mice. **Gene Expression Patterns** 3, 389-395.

31. Nakada Y, Hunsaker TL, Henke RM and **Johnson JE** (2004). Distinct domains within Mash1 and Math1 are required for function in neuronal differentiation versus neuronal cell-type specification. **Development** 131, 1319-1330.

32. Liu Y, Helms AW and **Johnson JE** (2004). Distinct activities of Msx1 and Msx3 in dorsal neural tube development. **Development** 131, 1017-1028.

33. Nakada Y, Parab P, Simmons A, Omer-Abdalla A and **Johnson JE** (2004). Separable enhancer sequences regulate the expression of the neural bHLH transcription factor Neurogenin1. **Dev Biol** 271, 479-487.

34. Doetzlhofer A, White PM, **Johnson JE**, Segil N and Groves AK (2004). A requirement for EGF and periotic mesenchyme in the growth and differentiation of mammalian sensory hair cell progenitors. **Dev Biol** 272, 432-447.

35. Parras CM, Galli R, Britz O, Soares S, Galichet C, Battiste J, **Johnson JE**, Nakafuku M, Vescovi A and Guillemot F (2004). *Mash1* specifies neurons and oligodendrocytes in the postnatal brain. **EMBO** 23, 4495-4505.

36. Saba R, **Johnson JE**, and Saito T (2005). Commissural neuron identity is specified by a homeodomain protein, MBH1, directly downsteam of Math1. **Development** 132, 2147-2155.

37. Helms AW, Battiste J, Henke RM, Nakada Y, Simplicio N, Guillemot F and **Johnson JE** (2005). Sequential roles for Mash1 and Ngn2 in the generation of dorsal spinal cord interneurons. **Development** 132, 2709-2719.

38. Lee A, Kaiser JD, Read TA, Kaiser C, Corbeil D, Huttner WB, **Johnson JE** and Wechsler-Reya RJ (2005). Isolation of neural stem cells from the postnatal cerebellum. **Nature Neurosci** 8, 723-729.

39. Klein C, Butt S, Machold R, **Johnson JE**, and Fishell G (2005). Cerebellar- and forebrain-derived stem cells possess intrinsic regional character. **Development** 132, 4497-4508.

40. Glasgow S, Henke RM, Wright C, MacDonald R and **Johnson JE** (2005). PTF1a determines GABAergic over glutamatergic neuronal cell fate in the spinal cord dorsal horn. **Development** 132, 5461-5469.

41. Battiste J., Helms AW, Kim EJ, Savage TK, Lagace DC, Mandyam CD, Eisch AJ, Miyoshi G, and **Johnson JE** (2007). Ascl1 defines sequentially generated lineage restricted neuronal and oligodendrocyte precursor cells in the spinal cord. **Development** 134, 285-293.

42. Raft S, Koundakjian EJ, Quiñones HI, Jayasena CS, Goodrich LV, **Johnson JE**, Segil N, and Groves AK (2007). Cross-regulation of Ngn1 and Math1 coordinates the production of neurons and sensory hair cells during inner ear development. **Development** 134, 4405-4415.

43. Imondi R, Jevince AR, Helm AW, **Johnson JE** and Kaprielian Z (2007). Mis-expression of L1 on pre-crossing spinal commissural axons disrupts pathfinding at the ventral midline. **Mol Cell Neurosci** 36, 462-471.

44. Kim EJ, Leung CT, Reed RR and **Johnson JE** (2007). In vivo analysis of Ascl1 defined progenitors reveals distinct developmental dynamics during adult neurogenesis and gliogenesis. **J. Neurosci** 27, 12764-12774.

45. Hori K, Cholewa-Waclaw J, Nakada Y, Glasgow S M, Masui T, Henke RM, Wildner H, Martarelli B, Beres TM, Epstein JA, Magneson MA, MacDonald RJ, Birchmeier C, and **Johnson JE** (2008). A non-classical bHLH-Rbpj transcription factor complex is required for specification of GABAergic neurons independent of Notch signaling. **Genes Dev** 22, 166-178.

46. Kim EJ, Battiste J, Nakagawa Y and **Johnson JE** (2008). Ascl1 (Mash1) lineage cells contribute to discrete cell populations in CNS architecture. **Mol Cell Neurosci** 38, 595-606.

47. Masui T, Swift GH, Hale MA, Meredith DM, **Johnson JE** and MacDonald RJ (2008). Transcriptional autoregulation controls pancreatic Ptf1a expression during development and adulthood. **Mol Cell Biol** 28, 5458-5468.

48. Reeber S, Sakai N, Nakada Y, Dumas J, **Johnson JE** and Kaprielian Z (2008). Manipulating Robo expression in vivo perturbs commissural axon pathfinding in the chick spinal cord. **J. Neurosci** 28, 8698-8708.

49. Henke RM, Meredith DM, Borromeo MD, Savage TK, and **Johnson JE** (2009). Ascl1 and Neurog2 form novel complexes and regulate *Delta-like3 (Dll3)* expression in the neural tube. **Dev Biol** 328, 529–540.

50. Henke RM*, Savage TK*, Meredith DM, Glasgow SM, Hori K, Dumas J, MacDonald RJ and **Johnson JE** (2009). Neurog2 is a Direct Downstream Target of the Ptf1a-Rbpj Transcription Complex in Dorsal Spinal Cord. **Development** 136, 2945-2954.

51. Meredith DM, Masui T, Swift GH, MacDonald RJ and **Johnson JE** (2009). Multiple Transcriptional Mechanisms Control Ptf1a Levels During Neural Development Including Autoregulation by the PTF1-J Complex. **J. Neurosci** 29, 11139-11148.

52. Miyoshi G, Hjerling-Leffler J, Karayannis T, Sousa VH, Butt SJB, Battiste J, **Johnson JE**, Machold RP and Fishell G (2010). Genetic fate mapping reveals that the caudal ganglionic eminence produces a large and diverse population of superficial cortical interneurons. **J Neurosci** 30, 1582-1594.

53. Quinones HI, Savage TK, Battiste J, and **Johnson JE** (2010). *Neurogenin 1* expression in the ventral neural tube is mediated by a distinct enhancer and preferentially marks ventral interneuron lineages. **Dev Biol** 340, 283–292.

54. Kim EJ, Hori K, Wyckoff A, Dickel LK, Koundakjian EJ, Goodrich LV and **Johnson JE** (2011). The spatiotemporal fate map of Neurogenin1 (Neurog1) lineages in the central nervous system. **J Comp Neurol** 519, 1355-1370.

55. Kim EJ, Ables JL, Dickel LK, Eisch AJ, and **Johnson JE** (2011). Ascl1 (Mash1) defines cells with long term neurogenic potential in subgranular and subventricular zones in adult mouse brain. **PLoS One** 6, e18472. (http://dx.plos.org/10.1371/journal.pone.0018472).

56. Lai HC, Tiemo JK, Roberts R, Zoghbi HY and **Johnson JE** (2011). In vivo neuronal subtype-specific targets of Atoh1 (Math1) in dorsal spinal cord. **J. Neurosci** 31, 10859-10871.

57. Zhou J, Shrikhande G, Xu J, McKay R M, Burns DK, **Johnson JE** and Parada, LF (2011). Tsc1 mutant neural stem/progenitor cells exhibit migration deficits and give rise to subependymal lesions in the lateral ventricle. **Genes Dev** 25, 1595-6000.

58. Brzezinski JA, Kim EJ, **Johnson JE,** and Reh TA (2011). Ascl1 expression defines a subpopulation of lineage-restricted progenitors in the mammalian retina. **Development** 138, 3519-3531.

59. Gokoffski KK, Wu H-H, Beites CL, Kim J, Kim EJ, Matzuk MM, **Johnson JE**, Lander AD and Calof AL (2011). Activin and GDF11 collaborate in integral feedback control of neuroepithelial stem cell proliferation and fate. **Development** 138 4131-4142.

60. Bluske K, Vue TY, Kawakami Y, Taketo MM, Yoshikawa Y, **Johnson JE**, and Nakagawa Y. (2012) Wnt/β-catenin signaling specifies progenitor cell identity in concert with Shh signaling in the developing mammalian thalamus. **Development** 139, 2692-2702.

61. Guha A, Vasconcelos M, Cai Y, Yoneda M, Hinds A, Qian J, Li G, Dickel LK, **Johnson JE**, Kimura S, Guo J, McMahon J, McMahon AP, and Cardoso WV. (2012) Neuroepithelial body microenvironment is a niche for a distinct subset of Clara-like precursors in the developing airways. **PNAS** 109, 12592-12597.

62. Chang JC, Meredith DM, Mayer PR, Borromeo MD, Lai HC, Ou YH and **Johnson JE.** (2013) Prdm13 mediates the balance of inhibitory and excitatory neurons in somatosensory circuits. **Dev Cell** 25, 182-195.

63. Meredith DM^, Borromeo MD^, Deering TG, Casey B, Savage TK, Mayer PR, Hoang C, Tung KC, Kumar M, Shen CC, Swift GH, MacDonald RJ*, and **Johnson JE***. (2013) Program specificity for Ptf1a in pancreas *versus* neural tube development correlates with distinct collaborating cofactors and chromatin accessibility. **Mol Cell Biol** 33, 3166-3179.

64. Tran TS, Carlin E, Lin R, Martinez E, **Johnson JE**, and Kaprielian Z. (2013) Neuropilin2 regulates the guidance of post-crossing spinal commissural axons in a subtype-specific manner. **Neural Development** 8:15. doi: 10.1186/1749-8104-8-15.

65. Mich JK, Signer RAJ, Nakada D, Pineda A, Burgess RJ, Vue TY, **Johnson JE**, and Morrison, SJ. (2014) Prospective identification of functionally distinct stem cells and neurosphere-initiating cells in adult mouse forebrain. **eLife** 10.7554/eLife.02669

66. Borromeo MD, Meredith DM, Castro D, Chang JC, Tung KC, Guillemot F, and **Johnson JE**. (2014) Transcription factor network specifying inhibitory versus excitatory neurons in the dorsal spinal cord. **Development** 141, 2803-2812.

67. Vue TY, Kim EJ, Parras CM, Guillemot F, and **Johnson JE**. (2014) Ascl1 controls the number and distribution of astrocytes and oligodendrocytes in the gray matter and white matter of the spinal cord. **Development** 141, 3721-3731.

68. Augustyn A, Borromeo M, Wang T, Fujimoto J, Shao C, Dospoy PD, Lee V, Tan C, Sullivan JP, Larsen JE, Girard L, Behrens C, Wistuba II, Xie Y, Cobb MH, Gazdar AF, **Johnson JE**, and Minna JD. **(**2014**)** ASCL1 is a lineage oncogene providing therapeutic targets for high-grade neuroendocrine lung cancers. **PNAS** 111, 14788-91473.

69. Gazdar AF, Savage TK, **Johnson JE**, Berns A, Sage J, Linnoila RI, MacPherson D, McFadden DG, Farago A, Jacks T, Travis WD, and Brambilla E. (2015) The comparative pathology of genetically engineered mouse models for neuroendocrine carcinomas of the lung. **J. Thorac Oncol** 10, 553-564.

70. Russ JB, Borromeo MD, Kollipara RK, Bommareddy P, **Johnson JE**, and Kaltschmidt JA. (2015) Misexpression of Ptf1a promotes an inhibitory peptidergic identity in cortical pyramidal cells in vivo. **J. Neurosci** 35, 6028-6037.

71. Niu W, Zang T, Smith DK, Vue TY, Zou Y, Bachoo R, **Johnson JE**, Zhang C-L. (2015) SOX2 reprograms resident astrocytes into neural progenitors in the adult brain. **Stem Cell Reports** 4, 780-794. doi: 10.1016/j.stemcr.2015.03.006. PMID:25921813

72. Alcantara-Llaguno SR, Wang Z, Sun D, Chen J, Xu J, Kim E, Hatanpaa KJ, Raisanen JM, Burns DK, **Johnson JE**, and Parada LF. (2015) Adult Lineage Restricted CNS Progenitors Specify Distinct Glioblastoma Subtypes. **Cancer Cell** 28, 429-440.

73. Thelie A, Desiderio S, Hanotel J, Quigley I, Van Driessche B, Rodari A, Borromeo MD, Kricha S, Lahaye F, Croce J, Cerda-Moya G, Ordono-Fernandez J, Bole B, Lewis KE, Sander M, Pierani A, Schubert M, **Johnson JE**, Kintner CR, Pieler T, Van Lint C, Henningfeld KA, Bellefroid EJ, and Van Campenhout C. (2015) *Prdm12* specifies V1 interneurons though cross-repressive interactions with *Dbx1* and *Nkx6* genes in Xenopus. **Development** 142, 3416-3428.

74. Borromeo MD*, Savage TK*, Kollipara RK*, He M, Augustyn A, Osborne JK, Girard L, Minna JD, Gazdar AF, Cobb MH, and **Johnson JE**. (2016) ASCL1 and NEUROD1 reveal heterogeneity in pulmonary neuroendocrine tumors and regulate distinct genetic programs. **Cell Reports** 16, 1-14. (http://dx.doi.org/10.1016/j.celrep.2016.06.081)

75. Mona B, Avila JM, Meredith DM, Kollipara RK, and **Johnson JE**. (2016) Regulating the dorsal neural tube expression of *Ptf1a* through a distal 3' enhancer. **Dev Biol** 418, 216-225.

76. Mollaoglu G, Guthrie MR, Böhm S, Brägelmann J, Can I, Ballieu PM, Marx A, George J, Heinen C, Chalishazar MD, Cheng H, Ireland AS, Denning KE, Mukhopadhyay A, Vahrenkamp JM, Berrett KC, Mosbruger TL, Wang J, Kohan JL, Salama ME, Witt BL, Peifer M, Thomas RK, Gertz J, **Johnson JE**, Gazdar AF, Wechsler-Reya RJ, Sos ML, and Oliver TG. (2017) MYC drives progression of small cell lung cancer to a variant neuroendocrine subtype with vulnerability to Aurora kinase inhibition. **Cancer Cell** 31, 270-285.

77. Mona B*, Uruena A*, Ma, Z, Borromeo MD, Kollipara RK, Chang JC, and **Johnson JE**. (2017) Repression by PRDM13 is critical for generating precise neuronal identity. **eLIFE** 6. pii: e25787. doi: 10.7554/eLife.25787. PMCID: PMC5576485

78. Ma Z, Zang T, Birnbaum SG, Wang Z, **Johnson JE**, Zhang CL, and Parada LF. (2017) TrkB dependent adult hippocampal progenitor differentiation mediates sustained ketamine antidepressant response. **Nature Comm** 8, 1668. doi: 10.1038/s41467-017-01709-8.

79. Goodson NB, Nahreini J, Randazzo G, Uruena A, **Johnson JE**, and Brzezinski JA. (2018) PRDM13 is required for EBF3+ amacrine cell formation in the retina. **Dev Biol** 434, 149-163.

80. He M, Liu S, Gallolu Kankanamalage S, Borromeo MD, Girard L, Gazdar AF, Minna JD, **Johnson JE***, and Cobb MH*. (2018) The epithelial sodium channel (αENaC) is a downstream therapeutic target of ASCL1 in pulmonary neuroendocrine tumors. **Transl Oncol** 11, 292-299.

81. Casey B, Kollipara RK, Pozo K, and **Johnson JE**. (2018) Intrinsic DNA binding properties demonstrated for lineage-specifying basic helix-loop-helix transcription factors. **Genome Res** 28, 484-496.

82. Kelenis D, Hart E, Edwards-Fligner M, **Johnson JE**, and Vue TY. (2018) ASCL1 regulates proliferation of NG2-glia in the embryonic and adult spinal cord. **Glia** 66, 1862-1880. doi: 10.1002/glia.23344.

83. Wang X-D, Hu R, Ding Q, Savage TK, Huffman KE, Williams N, Cobb MH, Minna JD, **Johnson JE**, and Yu Y. (2019) Subtype-specific secretomic characterization of pulmonary neuroendocrine tumor cells. **Nat Comm** 10:3201. doi: 10.1038/s41467-019-11153-5.

84. Rudin CM*, Poirier JT*, Byers LA, Dive C, Dowlati A, George J, Heymach JV, **Johnson JE**, Lehman JM, MacPherson D, Massion PP, Minna JD, Oliver TG, Quaranta V, Sage J, Thomas RK, Vakoc CR, and Gazdar AF. (2019) Molecular subtypes of small cell lung cancer: a synthesis of human and mouse model data. **Nat Rev Cancer** doi: 10.1038/s41568-019-0133-9.

85. Mona B, Villarreal J, Savage TK, Kollipara RK, Boisvert BE, and **Johnson JE**. (2020) Positive auto-feedback regulation of *Ptf1a* transcription generates the levels of PTF1A required to generate itch-circuit neurons. **Genes and Dev** 34, 1-17. doi:10.1101/gad.332577.119

Invited Reviews and Highlight/Previews:

1. Helm AW and **Johnson JE** (2003). Specification of dorsal spinal cord interneurons. **Curr Op in Neurobiology** 13, 42-49.
2. **Johnson JE** (2003). Numb and Numblike control cell number during vertebrate neurogenesis. **Trends Neurosci**. 26:395-6.
3. Lai HC and **Johnson JE** (2008). Neurogenesis or neuronal specification: phosphorylation strikes again! **Neuron** 58, 3-5.
4. Glasgow SM and **Johnson JE** (2009).“Helix-loop-helix (bHLH) proteins, proneural” in ***Encyclopedia of Neuroscience****,* Elsevier Limited, Oxford, England, Pg 1067-1072. Selected for inclusion in ***Developmental Neurobiology****,* edited by G. Lemke, Aug 2009, Elsevier Limited.
5. **Johnson JE** and MacDonald RJ (2011). “Notch-independent Functions of CSL” in **Current Topics in Developmental Biology** 97:55-74.
6. Lai HC, Meredith DM and **Johnson JE** (2013). bHLH Factors in Neurogenesis and Neuronal Subtype Specification. In: Rubenstein J. L. R. and Rakic P. (ed.) **Comprehensive Developmental Neuroscience: Patterning and Cell Type Specification in the Developing CNS and PNS** 1:333-354. Amsterdam: Elsevier.
7. Bunn PA, Minna J, Augustyn A …. **Johnson JE**…. Rudin CM, Hirsch FR. (2016) Small Cell Lung Cancer: Can recent advances in biology and molecular biology be translated into improved outcomes? **J. Thorac Oncol** 11:453-474.
8. Lai HC, Seal BP, and **Johnson JE**. (2016) Making sense out of spinal somatosensory development. **Development** 143: 3434-3448.
9. Minna JD and **Johnson JE.** (2016) Opening a chromatin gate to metastasis. **Cell** 166:275-6.
10. Pozo K, Minna JD, and **Johnson JE** (2018) Identifying a missing lineage driver in a subset of lung neuroendocrine tumors. **Genes and Dev** 32:865-867. doi: 10.1101/gad.316943.118.
11. Pozo K, Kelenis, D, Minna JD, and **Johnson JE** (2018) Different originating cells underlie intertumoral heterogeneity in lung neuroendocrine tumors. **Cancer Discov** 8:1216-1218. doi: 10.1158/2159-8290.CD-18-0979.
12. Poirier JT, …**Johnson JE**, …Oliver T (2020) New Approaches to small cell lung cancer therapy: From the laboratory to the clinic. **J. Thorac Oncol** Feb 1 doi: 10.1016/j.jtho.2020.01.016

INVITED SPEAKER (*last 10 years*)

2019 Society for Developmental Biology Southwest Regional Meeting, Keynote Speaker, Aurora, CO
“The molecular basis of progenitor cell fate decisions in the developing spinal cord”

Department of Biomedicine, University of Bergen, Norway “Roles for developmental transcription factors in neural and neuroendocrine cancers”

Small Cell Lung Cancer Workshop, International Association for the Study of Lung Cancer, NY
“SCLC-subtype specific transcription factor networks”

COBRE Center, Molecular Biology of Neurosensory Systems, University of Nebraska Medical Center, Omaha, NE “Transcriptional Control of Neuronal Subtype Specification”

Department of Oncological Sciences, University of Utah, “Requirement for developmental transcription factors in neural and neuroendocrine cancers”

2018 Small Cell Lung Cancer Research Consortium Meeting, NCI "Oncogenesis and Tumor Biology: Targeting ASCL1"

2017 Control of Neuronal Identity II, Janelia Farms Conferences, Ashburn, VA "Transcription control of neuronal diversity in the dorsal neural tube"

Small Cell Lung Cancer Workshop, International Association for the Study of Lung Cancer, NY "Understanding ASCL1 and NEUROD1 dependent vulnerabilities in small cell lung cancer"

Department of Oncological Sciences, Huntsman Cancer Institute, University of Utah, Salt Lake City, UT "Lineage-specific transcription regulators in neural and neuroendocrine cancers"

Keynote Speaker, Developmental Biology Graduate Program Retreat, Vanderbilt University, Nashville, TN

2016 AACR Annual Meeting, New Orleans, LA, Recent Advances in Small Cell Lung Cancer session "ASCL1 and NEUROD1 distinguish subtypes of pulmonary neuroendocrine tumors and regulate distinct genetic programs"

Cell Biology Department Cutting Edge Seminar Series, UT Southwestern, Dallas, TX "Making sense out of somatosensory development"

Neuro-Oncology Symposium, UT Southwestern, Dallas, TX "Developmental transcription factors in glioblastoma"

Department of Biological Structures, University of Washington, Seattle, WA "Transcriptional control of neural development and cancer"

2015 Cell and Developmental Biology, Weill Cornell Medical College, NY

Developmental Biology Training Grant Retreat Invited Distinguished Speaker, University of Utah, Salt Lake City, UT

Small Cell Lung Cancer Workshop, International Association for the Study of Lung Cancer, NY

2014 Neuroscience, University of Texas at Dallas, TX

Department of Neurobiology, University of Pittsburgh, Pittsburgh, PA

Neural Development Gordon Conference, Salve Regina, Newport, RI "Transcription networks controlling the generation of excitatory and inhibitory neurons in somatosensation"

Hamon Center for Therapeutic Oncology Research and Simmons Cancer Center, UT Southwestern, Dallas, TX "Requirement of transcription factor Ascl1, but not Neurod1, for mouse pulmonary neuroendocrine tumors"

2013 Genetics and Developmental Biology, Baylor College of Medicine, Houston, TX

Department of Developmental Biology, UT Southwestern Medical Center, Dallas, TX

Neuroscience, Rockefeller University, NY, NY

2012 Neurobiology Department, University of Chicago, IN

Developmental Biology Group, Universitat Pompeu Fabra, Barcelona, Spain

Gordon Conference, Notch Signaling in Development, Regeneration and Disease, NH

2011 Developmental Biology Program at Sloan-Kettering Institute, New York, NY

Dept Neurology, Neuroscience and Oncology, Johns Hopkins Medical Institute, Baltimore, MD

Conference at the Fondation des Treilles, *"Specification, multipotency and plasticity during embryonic and adult neurogenesis",* France

Department of Biology at Indiana University-Purdue University Indianapolis, IN

2010 Washington University, Department of Anatomy and Neuroscience, St Louis, MO

International Society for Developmental Neuroscience 18th Biennial Meeting, Portugal

STARS Epigenetics Symposium, UT Southwestern Medical Center, Dallas, TX

2009 EMBO workshop *"Basic Helix-Loop-Helix (bHLH) transcription factors",* London, UK

Division of Developmental Neurobiology, National Institute for Medical Research, UK

University of Michigan Medical School, Dept of Cell and Dev Biology, Ann Arbor, MI

ARO (Association for Research in Otolaryngology) National Mtg, Bethesda, MD

Seattle Children's Research Institute, Center for Integrated Brain Research, Seattle, WA

University of Oregon, Biology Department, Eugene, OR

TEACHING EXPERIENCE

2017	Principles of Early Neurodevelopment Journal Club (8 weeks), Neuroscience Graduate Program
2017-present	Graduate School Teaching: Developmental Neurobiology, Center for Regenerative Medicine course
2011-2019	Faculty Facilitator/Advisor for RCR, Ethics, Professionalism course for first year graduate students.
1996-present	Medical School Teaching: Neurodevelopment I and II
1995-present	Graduate School Teaching: Developmental Neurogenetics (in Fundamentals of Neuroscience)
1993-present	Serve on numerous (>100) Thesis Committees and Qualifying Committees in the Neuroscience, and Genetics, Development & Disease, and Cancer Biology Graduate Programs, trained > 30 graduate students and postdoctoral fellows

ACTIVE GRANT SUPPORT

2017-2022 R37 HD091856-01 (MERIT Award) (PI:Johnson) NIH/NICHD
Transcription Factor Control of Neuronal Diversity

2017-2022 1U01CA213338-01A1 (PI: Minna) (Co-I:Johnson) NIH/NCI
Developing ASCL1 and NeuroD1 lineage oncogene targeted therapy for small cell lung cancer

2019-2020 SEED Award Pilot from Simmons Comprehensive Cancer Center
Role for ASCL1 in Neuroendocrine Prostate Cancer

PAST RESEARCH SUPPORT

2012-2018	National Institutes of Health 2RO1 NS32817-(17-22), Regulation and Function of Ascl1 (Mash1) in Neural Development, PI
2014-2018	CPRIT RP140143, Dependence of small cell lung cancer on the basic helix-loop-helix transcription factors Ascl1 and NeuroD1, co-PI
2015-2017	CPRIT RP150590, Identifying Inhibitors of Ascl1 to Block Growth of Malignant Neuroendocrine and Neural Tumors, PI
2013-2016	CPRIT RP130464, Requirement for Ascl1 in Gliomagenesis, PI
2011-2017	National Institutes of Health RO1 2HD037932-(11-16), bHLH Transcription Factors in Neural Development, PI
2010-2013	CPRIT RP110383, Targeting dependence of small cell lung cancer on the basic helix-loop-helix transcription factors Ascl1 and NeuroD1, co-PI

2007-2012 National Institutes of Health 2RO1 NS32817-(12-16), Regulation and Function of Ascl1 (Mash1) in Neural Development, PI
2009-2011 National Institutes of Health 1R21 NS067553, Genome Wide Identification of PTF1 Targets in Dorsal Neural Tube, PI
2008-2011 Malia's Cord Foundation, Spinal Cord Progenitor Cells: Distinct Molecular Characteristics and Involvement in Tumor Formation, PI
2005-2011 National Institutes of Health RO1 2HD037932-(6-10), bHLH Transcription Factors in Neural Development, PI
2004-2009 National Institutes of Health RO1 NS048887-(1-4), Function and Regulation of Math1 in Neural Tube Development, PI
2002-2007 National Institutes of Health 2RO1 NS032817-(8-11), Regulation of the Neural Determination Gene MASH1, PI
2003-2007 NY Spinal Cord Injury Research Program, Regulating Axon Guidance in the Vertebrate Spinal Cord, Co-PI
2000-2005 National Institutes of Health 1RO1 HD037932-(1-5), bHLH Transcription Factors in Neural Development, PI
2000-2001 Texas Advanced Technology Program, Neural stem cells: controlling proliferation and differentiation, PI
1999-2002 March of Dimes, Regulation of the neural differentiation genes Ngn1 and Ngn2, PI
1998-2002 National Institutes of Health 2RO1 NS032817-(4-7), Regulation of the Neural Determination Gene MASH1, PI
1997-2007 Muscular Dystrophy Association, Genetic regulation of spinal cord and cerebellum development, PI
1995-2000 American Heart Association, Molecular determinants of mammalian nervous system development, PI
1995-1998 National Institutes of Health 1RO1 NS032817-(1-3), Regulation of the Neural Determination Gene MASH1, PI
1995-1997 Council for Tobacco Research, Molecular determinants in mammalian development, PI
1994-1996 Muscular Dystrophy Assoc, Isolation and characterization of neural precursor cells, PI
1994-1995 Texas Advanced Technology Program, Signal transduction in mammalian devel, Co-PI

RESEARCH CONTRIBUTIONS AND PROGRAM SUMMARY

My main research area is transcriptional regulation in vertebrate neural development, and I have been funded and published in this area for almost 3 decades. As a postdoctoral fellow I identified the first vertebrate member of the proneural bHLH transcription factor family, MASH1 (now ASCL1) (Nature 1990). Since that time the research efforts in my laboratory have used the bHLH family of factors to probe the molecular mechanisms controlling the balance of neural progenitor cell maintenance and differentiation, and the generation of neuronal diversity. Much of our focus has been in the dorsal neural tube giving rise to the dorsal spinal cord and is critical for somatosensation, where we have defined a shared function for the proneural bHLH factors in neuronal differentiation contrasted with distinct functions in neuronal sub-type specification. We identified and characterized enhancer sequences for these genes that direct spatially and temporally discrete transcription during neural development. Mouse models generated from these projects continue to have broad impact in the research community for research in many different systems including spinal cord and other brain regions, inner ear, retina, olfactory epithelium, adult neurogenesis, stem cell biology, and cancer. We also made significant contributions to understanding the function of these factors in regulating the transition of progenitor cells to differentiating neurons, and to glia. These studies use mouse models and mis-expression in chick neural tube to probe the function and mechanisms of action of the bHLH factors, and the identity and fates of progenitor cells expressing each factor. These efforts have revealed fundamental molecular mechanisms and rationales for how a nervous system is generated. Exploiting sequencing technologies and CRISPR, we continue to gain a deeper understanding of how transcription factors function by identifying direct transcriptional targets genome wide and connecting DNA binding factors to chromatin modifying events that modulate cell fate and plasticity.

The neural bHLH transcription factors sit at critical choice points for generating the correct number of neurons of specific types required for proper neuronal circuit function. Thus, it is not too surprising that some of these factors are aberrantly present in neural cancers. ASCL1 is largely a lineage-restricted developmentally required gene, and its expression in mature tissues is restricted to progenitor niches within those tissues. ASCL1 is also aberrantly present in multiple neural and neuroendocrine cancers. We are leveraging the reagents and mouse models we generated for the developmental studies to address questions in cancer biology including cell of origin, tumor heterogeneity, and requirement for lineage-specific transcriptional regulators. Our focus has largely been to use ASCL1 to contribute fundamental insights into the biology and possible vulnerabilities in small cell lung carcinoma and other neuroendocrine cancers such as that seen in treatment resistant prostate cancer.