

## CURRICULUM VITAE

1. Sheila A. Haley, Ph.D.  
Assistant Professor (Research)  
Department of Molecular Biology, Cell Biology & Biochemistry

### **3. Education**

B.S. University of Massachusetts, Amherst, MA, 1990. Microbiology

Ph.D. Brown University, Providence, RI, 2001. Molecular Biology, Cell Biology & Biochemistry

Dissertation: The Biology of the Cortical Granule Protease

### **4. Professional Appointments**

May 1987- May 1991	Research Scientist, GeneTrak Systems, Framingham, MA
June 1991- August 1994	Research Associate, National Institutes of Health, Bethesda, MD
September 1995- May 2001	Graduate Student, Brown University, Providence, RI
July 2001- October 2003	Post-Doctoral Research Associate, Brown University, Providence, RI
October 2003- August 2006	Post-Doctoral Research Associate, Rhode Island Hospital, Providence, RI
September 2006- present	Assistant Professor of Research, Brown University, Providence, RI

### **5. Completed Publications**

**Refereed journal articles:**

Kaiserman, J., O'Hara, B.A., Garabian, K., Lukacher, A., **Haley, S.A.**, and Atwood, W.J. (2023) The oxindole GW-5074 inhibits JC Polyomavirus infection and spread by antagonizing the MAPK-ERK signaling pathway. *MBio* (*in press*)

Morris-Love, J., O'Hara, B.A., Gee, G.V., Dugan, A.S., O'Rourke, R.S., Armstead, B.E., Assetta, B., **Haley, S.A.**, Atwood, W.J. (2022) Biogenesis of JC polyomavirus associated extracellular vesicles. *J. Extracellular Bio* 1(5):e43

O'Hara, B.A., Gee, G.V., **Haley, S.A.**, Morris-Love, J., Nyblade, C., Nieves, C., Hanson, B.A., Dang, X., Turner, T.J., Chavin, J.M., Lublin, A., Koralnik, I.J., and Atwood W.J. (2021) Teriflunomide Inhibits JCPyV Infection and Spread in Glial Cells and Choroid Plexus Epithelial Cells. *Int J Mol Sci Sep* 10;22(18):9809. PMID: 34575975

**Haley, S.A.**, O'Hara, B.A., and Atwood, W.J., 2020. Adipocyte Plasma Membrane Protein (APMAP) promotes JC Virus (JCPyV) infection in human glial cells. *Virology* 548:17-24. PMID: 32838939 (*co-corresponding author*)

O'Hara, B.A., Morris-Love, J., Gee, G.V., **Haley, S.A.**, and Atwood W.J., 2020. JC Virus infected choroid plexus epithelial cells produce extracellular vesicles that infect glial cells independently of the virus attachment receptor. *PLoS Pathogens* 16(3):e1008371. PMID: 32130281 (*co-corresponding author*)

Assetta, B., Morris-Love, J., Gee, G.V., Atkinson, A.L., O'Hara, B.A., Maginnis, M.S., **Haley, S.A.**, and Atwood W.J., 2019. Genetic and Functional Dissection of the Role of Individual 5-HT2 Receptors as Entry Receptors for JC Polyomavirus. *Cell Reports* 27(7):1960-1966. PMID: 31091436

Morris-Love, J., Gee, G.V., O'Hara, B.A., Assetta, B., Atkinson, A.L., Dugan, A.S., **Haley, S.A.**, and Atwood, W.J., 2019. The Human Polyomavirus, JCPyV, Uses Extracellular Vesicles to Infect Target Cells. *MBio* 10(2). pii: e00379-19. PMID: 30967463

O'Hara, B.A., Gee, G.V., Atwood, W.J., and **Haley, S.A.**, 2018. Susceptibility of Primary Human Choroid Plexus Epithelial Cells and Meningeal Cells to Infection by JC Virus. *Journal of Virology* 92(8):105-18. PMID: 29437972 (*co-corresponding author*)

**Haley, S.A.** and Atwood, W.J., 2017. Progressive Multifocal Leukoencephalopathy: Endemic Viruses and Lethal Brain Disease. *Annual Review of Virology*. 4(1):349-367. PMID: 28637388

**Haley, S.A.**, O'Hara, B.A., Nelson, C.D., Brittingham, F.L., Henriksen, K.J., Stopa, E.G., and Atwood, W.J., 2015. Human polyomavirus receptor distribution in brain parenchyma contrasts with receptor distribution in kidney and choroid plexus. *American Journal of Pathology*, 185(8): 2246-58. PMID: 26056932 (**Cover**)

**Haley, S.A.**, and Atwood, W.J., 2014. An animal model for progressive multifocal leukoencephalopathy. *Journal of Clinical Investigation*, 124(12):5103-6. PMID: 25401466

Assetta, B., Maginnis, M.S., Gracia-Ahufinger, I., **Haley, S.A.**, Gee, G.V., Nelson, C.D., O'Hara, B.A., Allen-Ramdial, S.A., and Atwood W.J., 2013. 5-HT<sub>2</sub> receptors facilitate JC polyomavirus entry. *Journal of Virology*, 87(24):13490-8. PMID: 24089568

**Haley, S.A.**, O'Hara, B.A., Banerjee, R., and Atwood, W.J., 2010. Unique Susceptibility of a Human Lung Carcinoid Tumor Cell Line to Infection with BK Virus. *Virus Research* 149 (1): 128-132. PMID: 20122973

Maginnis, M.S., **Haley, S.A.**, Gee, G.V., and Atwood, W.J., 2010. Role of N-linked Glycosylation of the 5-HT<sub>2A</sub> Receptor in JC Virus Infection. *Journal of Virology*, 84 (19): 9677 – 9684. PMID: 20660194

De Paepe, M.E., **Haley, S.A.**, Lacourse, Z., Mao, Q., 2010. The Effects of Fas-Ligand Overexpression on Alveolar Type II Cell Growth Kinetics in Perinatal Murine Lungs. *Pediatric Research*, 68 (1): 57-62. PMID: 20375852

DePaepe, M.E., Gundavarapu, S., Tantravahi, U., Pepperell, J.R., **Haley, S.A.**, Luks, F.I., Mao, Q., 2008. Fas-Ligand-Induced Apoptosis of Respiratory Epithelial Cells Causes Disruption of Postcanalicular Alveolar Development. *American Journal of Pathology*, 173(1):42-56. PMID: 18535181

**Haley, S.A.**, Zhao, T., Zou, L., Klysik, J.E., Padbury, J.F., Kochilas, L.K., 2008. Forced expression of the cell cycle inhibitor p57<sup>Kip2</sup> in cardiomyocytes attenuates ischemia-reperfusion injury in the mouse heart. *BMC Physiology* 8:4. PMID: 18312674

**Haley, S.A.**, Wessel, G.M., 2004. Proteolytic cleavage of the cell surface protein p160 is required for detachment of the fertilization envelope in the sea urchin. *Developmental Biology*, 272(1):191-202. PMID: 15242800

**Haley, S.A.**, Wessel, G.M., 2004. Regulated proteolysis by cortical granule serine protease 1 at fertilization. *Molecular Biology of the Cell*, 15(5):2084-92. PMID: 14978210

Wessel, G.M., Brooks, J.M., Green, E., **Haley, S.**, Voronina, E., Wong, J., Zaydfudim, V., Conner, S., 2001. The biology of cortical granules. *International Review of Cytology*, 209:117-206. PMID: 11580200

**Haley, S.A.**, Wessel, G.M., 1999. The cortical granule serine protease CGSP1 of the sea urchin, *Strongylocentrotus purpuratus*, is autocatalytic and contains a low-density

lipoprotein receptor-like domain. *Developmental Biology*, 211(1): 1-10. PMID: 10373300

**Abstracts:**

Kaiserman, J., O'Hara, B.A., Haley, S.A., and Atwood, W.J. 2022. The oxindole GW-5074 reduces infection by JC Polyomavirus in glial cells. *DNA Tumour Virus Meeting 2022*, Cambridge, UK.

Morris-Love, J., O'Hara, B.A., Gee, G.V., Dugan, A.S., O'Rourke, R.S., Armstead, B.E., Assetta, B., Haley, S.A., Atwood, W.J. 2022 Biogenesis of JC polyomavirus associated extracellular vesicles" presented at the *DNA Tumour Virus Meeting 2022*, Cambridge, UK.

Morris-Love, J., O'Hara, B.A., Gee, G.V., Dugan, A.S., Armstead, B., O'Rourke, R., Assetta, B., **Haley, S.A.**, and Atwood, W.J. 2020. Deciphering the biogenesis mechanisms of JC polyomavirus associated extracellular vesicles. *International Society of Extracellular Vesicles Annual Meeting*. Online.

Morris-Love, J., O'Hara, B.A., Gee, G.V., Dugan, A.S., Assetta, B., **Haley, S.A.**, and Atwood, W.J. 2020. Neutral sphingomyelinase 2 contributes to the biogenesis of JC polyomavirus associated extracellular vesicles. *American Society for Virology 39<sup>th</sup> Annual Meeting*, University of Colorado, Fort Collins, CO (online)

O'Hara, B.A., Morris-Love, J., Gee, G.V., Atwood, W.J., and **Haley, S.A.** 2019. Human choroid plexus-derived extracellular vesicles in viral neuroinvasion. *International Society of Extracellular Vesicles Annual Meeting*. Kyoto, Japan.

Morris-Love, J., O'Hara, B.A., Gee, G.V., Dugan, A.S., Assetta, B., **Haley, S.A.**, and Atwood, W.J. 2019. Biogenesis of JC polyomavirus associated extracellular vesicle depends on nSMase2. *International Society of Extracellular Vesicles Annual Meeting*. Kyoto, Japan.

Morris-Love, J., O'Hara, B.A., Gee, G.V., Dugan, A.S., Assetta, B., **Haley, S.A.**, and Atwood, W.J. 2019. Biogenesis of JC polyomavirus associated extracellular vesicle depends on nSMase2. *DNA Tumor Virus Annual Meeting*, Trieste, Italy.

**Haley, S.A.**, Atwood, W.J. 2016. Identification of APMAP as part of the JCPyV attachment receptor complex. *Emerging Oncogenic Viruses*. San Pietro in Bevagna, Manduria, Italy.

**Haley, S.A.**, Atwood, W.J. 2015. JCPyV receptor determination in kidney and choroid plexus contrasts with brain parenchyma. *2<sup>nd</sup> International Progressive Multifocal Leukoencephalopathy Consortium Research Conference*, MoIndal, Sweden (Award: Best Poster)

**Haley, S.A.**, Nelson, C.D., Derdowski, A., and Atwood, W.J. 2013 Determinants of JCPyV tropism in human tissue. American Society for Virology 32<sup>st</sup> Annual Meeting, Pennsylvania State University, State College, PA

**Haley, S.A.**, Nelson, C.D., Derdowski, A., and Atwood, W.J. 2013 Receptors of the human polyomavirus JCPyV. Gordon Research Conference, Viruses and Cells. Lucca, Italy

**Haley, S.A.**, Atwood, W.J. 2012. Receptor distribution for JCpyV in human tissues. American Society for Virology 31<sup>st</sup> Annual Meeting, University of Wisconsin, Madison, WI

**Haley, S.A.**, Atwood, W.J. 2012. The distribution of JCpyV virus receptors in human tissue. Emerging Oncogenic Viruses. San Pietro in Bevagna, Manduria, Italy.

**Haley, S.A.**, Gracia-Ahufinger, I, Atwood, W.J. 2011. Functional receptor expression for JC virus in the PML brain. American Society for Virology 30<sup>th</sup> Annual Meeting, University of Minnesota, Minneapolis, MN

**Haley, S.A.**, and Atwood, W.J. 2010. Up-regulation of serotonin receptor 2A in PML brain. American Society for Virology 29th Annual Meeting, Montana State University, Bozeman, MT

Maginnis, M.S., **Haley, S.A.**, and Atwood, W.J. 2009. The Role of 5-HT2AR N-linked Glycosylation Sites in JC Virus Infection. The DNA Tumor Virus Meeting, St. Catherine's College, Oxford, England, UK

Maginnis, M.S., **Haley, S.A.**, Dugan, A.S., Gasparovic, M.L., and Atwood, W.J. 2008. Molecular Mechanisms of JC Virus Entry. American Society for Virology 27th Annual Meeting, Cornell University, Ithaca, NY

**Haley, S.A.**, Zhao, T., Zou, L., Padbury, J.F., Kochilas, L.K. 2007. The Role of p57<sup>Kip2</sup> in Cardiac Development and Response to Hypoxic Stress. American Society of Pediatric Research, Toronto, Canada

**Haley, S.A.**, Zhao T., Zou, L., Padbury, J. F., Kochilas, L.K.. 2007. Protection by the Cell Cycle Inhibitor p57<sup>Kip2</sup> in Response to Cardiac Ischemia/Reperfusion. Weinstein Conference on Cardiovascular Development, Tuscon, AZ

**Haley, S.A.**, Kochilas, L.K. 2006. The Role of p57<sup>Kip2</sup> in Mouse Cardiac Development. American Society of Pediatric Research, San Francisco, CA

**Haley, S.A.**, Kochilas, L.K. 2006. Regulation of Cell Cycle Control in Mouse Heart Development. National IDeA Symposium of Biomedical Research Excellence, Washington, D.C.

**Haley, S.A.**, Zou, L., Klysik, J., Padbury, J.F., Kochilas, L.K. 2006. The Cell Cycle Regulator p57<sup>kip2</sup> in Mouse Heart Development and Ischemic Injury. Weinstein Conference on Cardiovascular Development, St. Petersburg, FL.

**Haley, S.A.**, Klysik, J., Padbury, J.F., Kochilas, L.K. 2005. The Role of p57<sup>kip2</sup> in Mouse Heart Development. Society of Developmental Biology, San Francisco, CA.

**Haley, S.A.**, Wessel, G.M. 2003. Analysis of Egg Plasma Membrane and Cortical Granule Proteins at Fertilization. Society of Developmental Biology, Boston, MA.

**Haley, S.A.**, Wessel, G.M. 2002. Identification of p160, a Plasma Membrane Substrate of CGSP1. American Society of Cell Biology, San Francisco, CA.

**Haley, S.A.**, Wessel, G.M. 2000. Analysis of Cortical Granule pH Changes at Fertilization. International Conference on the Developmental Biology of the Sea Urchin, Woods Hole, MA.

**Haley, S.A.**, Wessel, G.M. 2000. CGSP1 Substrates in *Strongylocentrotus purpuratus*. Gordon Research Conference, The Molecular Biology of Fertilization, Holderness, NH

**Haley, S.A.**, Wessel, G.M. 1997. Characterization of Cortical Granule Serine Protease Activity. International Conference on the Developmental Biology of the Sea Urchin XI, Woods Hole, MA.

**Haley, S.A.**, Wessel, G.M. 1997. Molecular Analysis of Proteolytic Activity in the *Strongylocentrotus purpuratus* egg. American Society of Cell Biology, Washington, D.C.

#### **Papers read:**

2022 DNA Tumor Virus Annual Meeting, Cambridge, UK. “JCPyV-Induced Changes in the Blood-CSF Barrier”.

2019 DNA Tumor Virus Annual Meeting, Trieste, Italy. “The role of human choroid plexus-derived extracellular vesicles in receptor-independent JCPyV infection of the nervous system”.

2005 Lifespan Research Celebration, Rhode Island Hospital. “A Transgenic Mouse Model of Cell Cycle Inhibition”.

2004 Pediatric Research Colloquium, Rhode Island Hospital. “p57<sup>kip2</sup> and Mouse Heart Development”.

2002 International Conference on the Developmental Biology of the Sea Urchin XIII, Woods Hole, MA. “Substrates of the Cortical Granule Protease CGSP1 at Fertilization”.

2000 New England Regional Developmental Biology Meeting, Woods Hole, MA. “Molecular Analysis of CGSP1”.

1999 International Conference on the Developmental Biology of the Sea Urchin XII, Woods Hole, MA. “Identification of CGSP1, the Cortical Granule Protease of *Strongylocentrotus purpuratus*”.

## 7. Service

### **To the profession:**

Reviewer for Developmental Biology (from 2001)

Reviewer for Biochimica et Biophysica Acta (from 2003)

Reviewer for Molecular Reproduction and Development (from 2008)

Reviewer for Viruses (from 2018)

Reviewer for PLoS Pathogens (from 2019)

## 8. Honors/Societies

American Society for Virology

American Society of Cell Biology