REFERENCES CITED:

- 1. Cullen, K.M., Kocsi, Z. & Stone, J. Pericapillary haem-rich deposits: evidence for microhaemorrhages in aging human cerebral cortex. *Journal of Cerebral Blood Flow and Metabolism* **25**, 1656-1667 (2005).
- 2. Wardlaw, J.M., Sandercock, P.A., Dennis, M.S. & Starr, J. Is breakdown of the blood-brain barrier responsible for lacunar stroke, leukoaraiosis, and dementia? *Stroke; a journal of cerebral circulation* **34**, 806-812 (2003).
- 3. Poels, M.M. et al. Cerebral microbleeds are associated with worse cognitive function: the Rotterdam Scan Study. *Neurology* **78**, 326-333 (2012).
- 4. De Reuck, J. et al. Prevalence of small cerebral bleeds in patients with a neurodegenerative dementia: a neuropathological study. *Journal of the neurological sciences* **300**, 63-66 (2011).
- 5. Gregoire, S.M. et al. Cerebral microbleeds and long-term cognitive outcome: longitudinal cohort study of stroke clinic patients. *Cerebrovasc Dis* **33**, 430-435 (2012).
- 6. Nishimura, N. et al. Targeted insult to subsurface cortical blood vessels using ultrashort laser pulses: three models of stroke. *Nature methods* **3**, 99-108 (2006).
- 7. Rosidi, N.L. et al. Cortical microhemorrhages cause local inflammation but do not trigger widespread dendrite degeneration. *PloS one* **6**, e26612 (2011).
- 8. Allen, N.J. & Barres, B.A. Neuroscience: Glia more than just brain glue. *Nature* **457**, 675-677 (2009).
- 9. Beattie, E.C. et al. Control of synaptic strength by glial TNFalpha. *Science* **295**, 2282-2285 (2002).
- 10. Paolicelli, R.C. et al. Synaptic pruning by microglia is necessary for normal brain development. *Science* **333**, 1456-1458 (2011).
- 11. Holtmaat, A.J. et al. Transient and persistent dendritic spines in the neocortex in vivo. *Neuron* **45**, 279-291 (2005).
- 12. Chen, J.L. et al. Structural basis for the role of inhibition in facilitating adult brain plasticity. *Nature neuroscience* **14**, 587-594 (2011).
- 13. Tremblay, M.E. & Majewska, A.K. A role for microglia in synaptic plasticity? *Communicative & integrative biology* **4**, 220-222 (2011).
- 14. Dirnagl, U., ladecola, C. & Moskowitz, M.A. Pathobiology of ischaemic stroke: an integrated view. *Trends Neurosci* **22**, 391-397 (1999).
- 15. Hanisch, U.K. & Kettenmann, H. Microglia: active sensor and versatile effector cells in the normal and pathologic brain. *Nature neuroscience* **10**, 1387-1394 (2007).
- 16. Kim, J.V. & Dustin, M.L. Innate response to focal necrotic injury inside the blood-brain barrier. *J Immunol* **177**, 5269-5277 (2006).
- 17. Wake, H., Moorhouse, A.J., Jinno, S., Kohsaka, S. & Nabekura, J. Resting microglia directly monitor the functional state of synapses in vivo and determine the fate of ischemic terminals. *The Journal of neuroscience : the official journal of the Society for Neuroscience* **29**, 3974-3980 (2009).
- 18. Xu, H., Pan, F., Yang, G. & Gan, W. Choice of cranial window type for in vivo imaging affects dendritic spine turnover in the cortex. *Nature neuroscience* **10**, 549-551 (2007).
- 19. Corriveau, R.A., Huh, G.S. & Shatz, C.J. Regulation of class I MHC gene expression in the developing and mature CNS by neural activity. *Neuron* **21**, 505-520 (1998).
- 20. Mildner, A. et al. Distinct and non-redundant roles of microglia and myeloid subsets in mouse models of Alzheimer's disease. *The Journal of neuroscience : the official journal of the Society for Neuroscience* **31**, 11159-11171 (2011).
- 21. Haynes, S.E. et al. The P2Y12 receptor regulates microglial activation by extracellular nucleotides. *Nature neuroscience* **9**, 1512-1519 (2006).
- 22. Rossi, B., Angiari, S., Zenaro, E., Budui, S.L. & Constantin, G. Vascular inflammation in central nervous system diseases: adhesion receptors controlling leukocyte-endothelial interactions. *Journal of leukocyte biology* **89**, 539-556 (2011).
- 23. Broderick, J.P., Brott, T.G., Duldner, J.E., Tomsick, T. & Huster, G. Volume of intracerebral hemorrhage. A powerful and easy-to-use predictor of 30-day mortality. *Stroke; a journal of cerebral circulation* **24**, 987-993 (1993).
- Werring, D.J. et al. Cognitive dysfunction in patients with cerebral microbleeds on T2*-weighted gradient-echo MRI. *Brain : a journal of neurology* **127**, 2265-2275 (2004).
- 25. Yakushiji, Y. et al. Brain microbleeds and global cognitive function in adults without neurological disorder. *Stroke; a journal of cerebral circulation* **39**, 3323-3328 (2008).

- 26. Scheid, R., Preul, C., Gruber, O., Wiggins, C. & von Cramon, D.Y. Diffuse axonal injury associated with chronic traumatic brain injury: evidence from T2*-weighted gradient-echo imaging at 3 T. *AJNR American journal of neuroradiology* **24**, 1049-1056 (2003).
- 27. Cordonnier, C. Brain microbleeds. *Practical neurology* **10**, 94-100 (2010).
- 28. Liem, M.K. et al. MRI correlates of cognitive decline in CADASIL: a 7-year follow-up study. *Neurology* **72**, 143-148 (2009).
- 29. MacLellan, C.L., Silasi, G., Auriat, A.M. & Colbourne, F. Rodent models of intracerebral hemorrhage. *Stroke; a journal of cerebral circulation* **41**, S95-98 (2010).
- 30. Wakisaka, Y., Chu, Y., Miller, J.D., Rosenberg, G.A. & Heistad, D.D. Spontaneous intracerebral hemorrhage during acute and chronic hypertension in mice. *Journal of cerebral blood flow and metabolism : official journal of the International Society of Cerebral Blood Flow and Metabolism* **30**, 56-69 (2010).
- 31. Zhang, S., Boyd, J., Delaney, K. & Murphy, T.H. Rapid reversible changes in dendritic spine structure in vivo gated by the degree of ischemia. *The Journal of neuroscience : the official journal of the Society for Neuroscience* **25**, 5333-5338 (2005).
- 32. Davalos, D. et al. ATP mediates rapid microglial response to local brain injury in vivo. *Nature neuroscience* **8**, 752-758 (2005).
- 33. Hines, D.J., Hines, R.M., Mulligan, S.J. & Macvicar, B.A. Microglia processes block the spread of damage in the brain and require functional chloride channels. *Glia* **57**, 1610-1618 (2009).
- 34. Nimmerjahn, A., Kirchhoff, F. & Helmchen, F. Resting microglial cells are highly dynamic surveillants of brain parenchyma in vivo. *Science* **308**, 1314-1318 (2005).
- 35. Murphy, T.H. & Corbett, D. Plasticity during stroke recovery: from synapse to behaviour. *Nature reviews. Neuroscience* **10**, 861-872 (2009).
- 36. Neniskyte, U., Neher, J.J. & Brown, G.C. Neuronal death induced by nanomolar amyloid beta is mediated by primary phagocytosis of neurons by microglia. *The Journal of biological chemistry* (2011).
- 37. Neher, J.J. et al. Inhibition of microglial phagocytosis is sufficient to prevent inflammatory neuronal death. *J Immunol* **186**, 4973-4983 (2011).
- 38. Bruce-Keller, A.J. Microglial-neuronal interactions in synaptic damage and recovery. *Journal of neuroscience research* **58**, 191-201 (1999).
- 39. Schaffer, C.B., Brodeur, A., Garcia, J.F. & Mazur, E. Micromachining bulk glass by use of femtosecond laser pulses with nanojoule energy. *Optics Letters* **26**, 93-95 (2001).
- 40. Vogel, A., Noack, J., Huttman, G. & Paltauf, G. Mechanisms of femtosecond laser nanosurgery of cells and tissues. *Applied Physics B-Lasers and Optics* **81**, 1015-1047 (2005).
- 41. Lauer, A. et al. Anticoagulation with the oral direct thrombin inhibitor dabigatran does not enlarge hematoma volume in experimental intracerebral hemorrhage. *Circulation* **124**, 1654-1662 (2011).
- 42. Drew, P.J. et al. Chronic optical access through a polished and reinforced thinned skull. *Nature methods* **7**, 981-984 (2010).
- 43. Feng, G. et al. Imaging neuronal subsets in transgenic mice expressing multiple spectral variants of GFP. *Neuron*, 41-51 (2000).
- 44. Becker, K., Kindrick, D., Relton, J., Harlan, J. & Winn, R. Antibody to the alpha4 integrin decreases infarct size in transient focal cerebral ischemia in rats. *Stroke; a journal of cerebral circulation* **32**, 206-211 (2001).
- 45. Fabene, P.F. et al. A role for leukocyte-endothelial adhesion mechanisms in epilepsy. *Nat Med* **14**, 1377-1383 (2008).
- 46. Grutzendler, J., Kasthuri, N. & Gan, W.B. Long-term dendritic spine stability in the adult cortex. *Nature* **420**, 812-816 (2002).
- 47. Oliva, A.A., Jr., Jiang, M., Lam, T., Smith, K.L. & Swann, J.W. Novel hippocampal interneuronal subtypes identified using transgenic mice that express green fluorescent protein in GABAergic interneurons. *The Journal of neuroscience : the official journal of the Society for Neuroscience* **20**, 3354-3368 (2000).
- 48. Livet, J. et al. Transgenic strategies for combinatorial expression of fluorescent proteins in the nervous system. *Nature* **450**, 56-62 (2007).