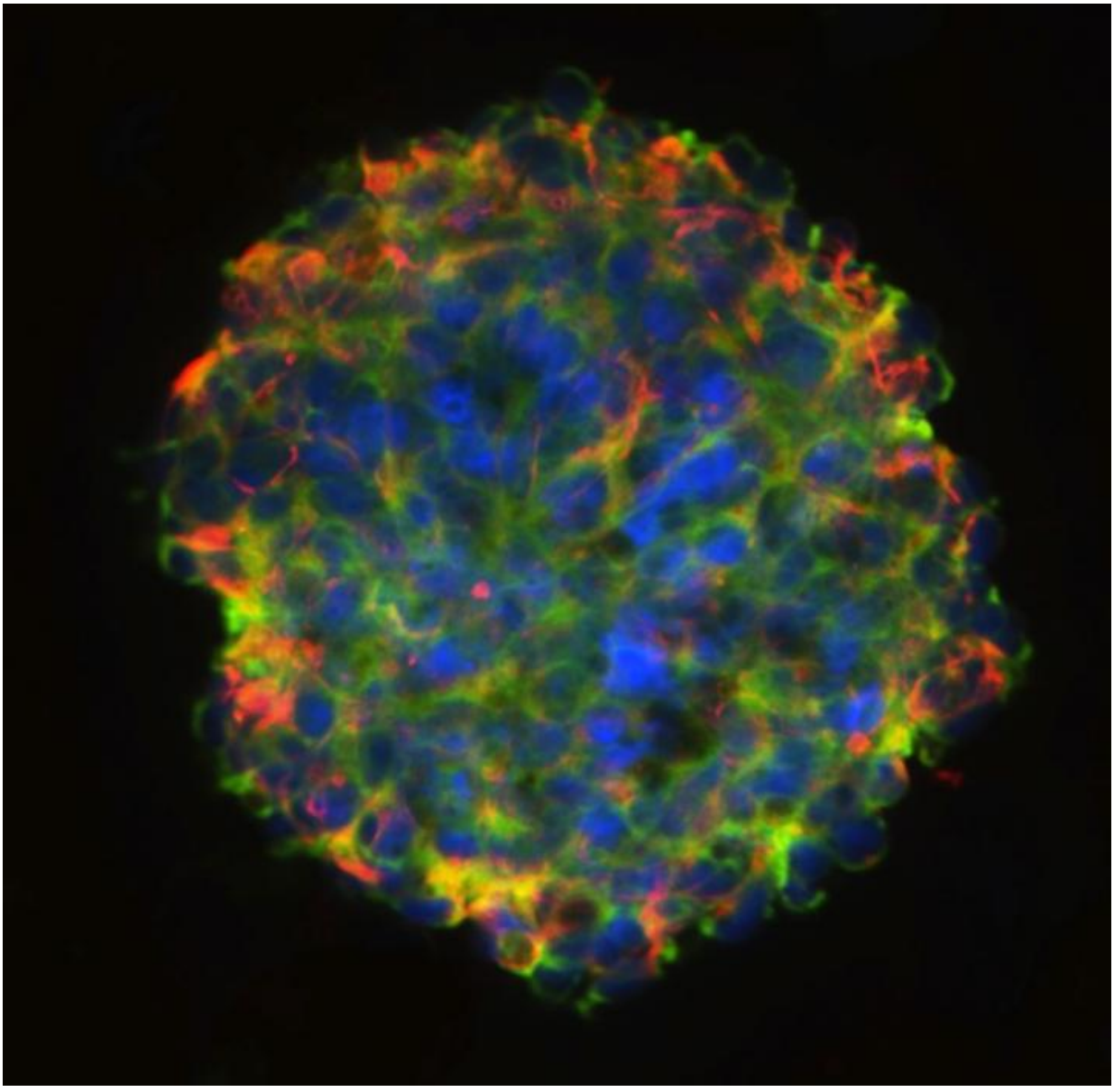
Using donor stem cells to treat spinal cord injury

August 28 2017

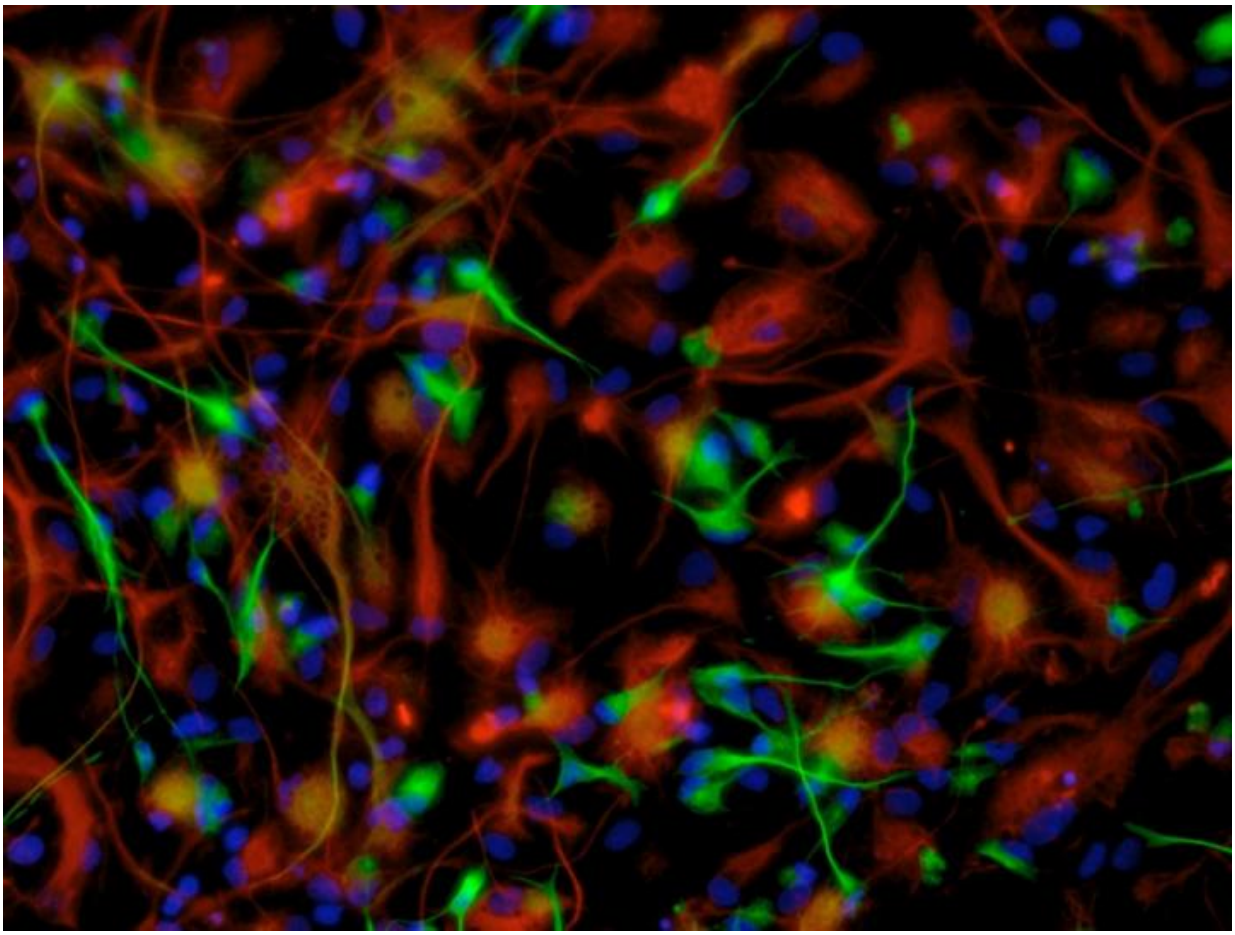


Human neural stem cells are derived via fluorescence-activated cell sorting (FACS) from donated fetal brain tissue. Credit: Hal X. Nguyen and Aileen J. Anderson

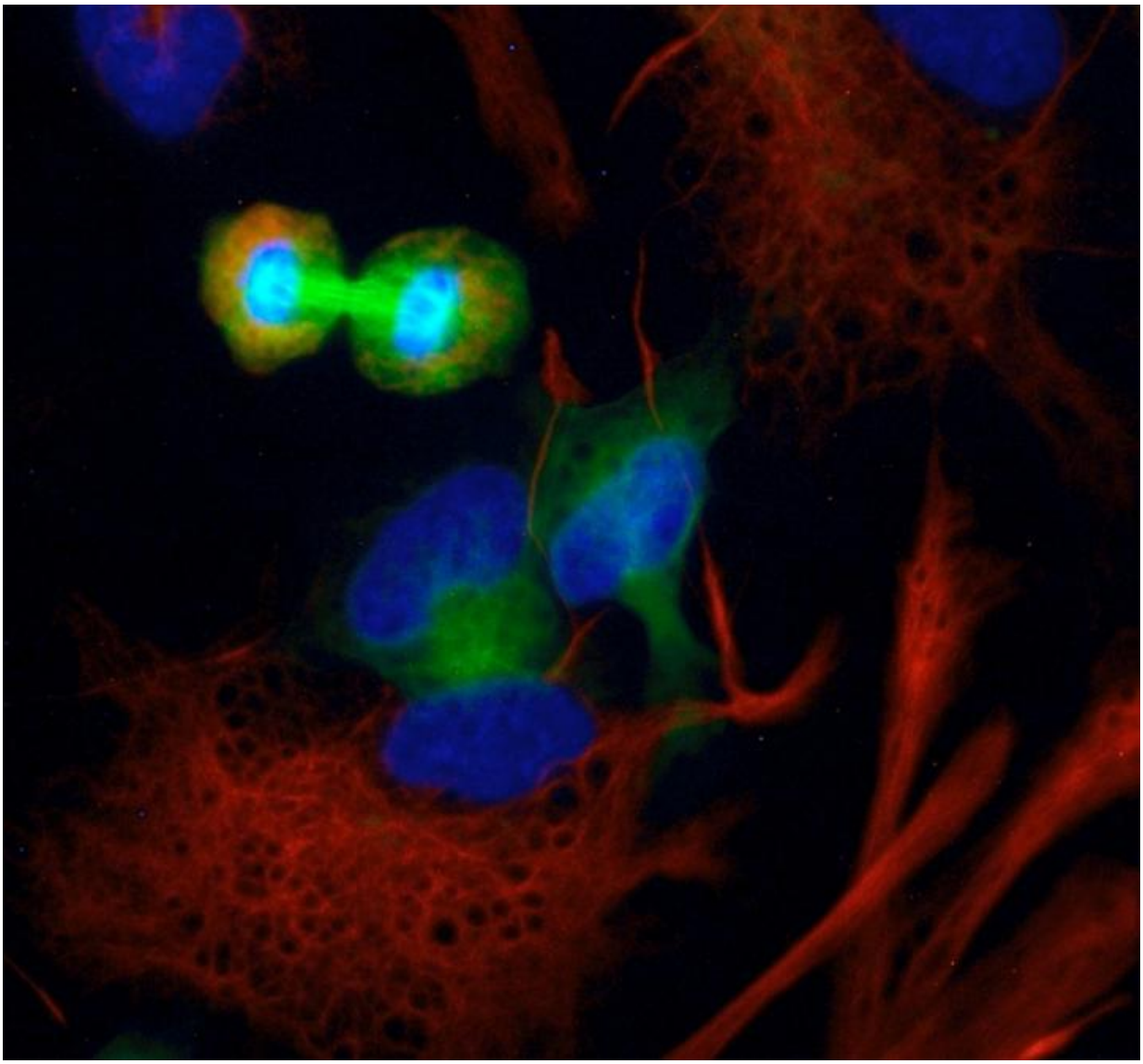
A new study in mice published in The *Journal of Neuroscience* details a potential therapeutic strategy that uses stem cells to promote recovery of motor activity after spinal cord injury.

The transplantation of neural stem cells could help promote repair of an injured spinal cord, but the interaction between donor cells and the resident cells that are part of the body's immune response to injury is not well understood.

Hal Nguyen, Aileen Anderson and colleagues found that mice receiving stem cells derived from donated human brain tissue required depletion of a specific population of immune cells in order to improve the mice's ability to walk along a glass plate. Although the donor cells survived equally when transplanted immediately or 30 days after injury, their location and cell type changed with time. These results suggest that immune cells populating the spinal cord at different time points after injury affect the ability of stem cells to promote functional recovery.



Human neural stem cells have the potential to differentiate into neurons, oligodendrocytes and astrocytes. Credit: Hal X. Nguyen and Aileen J. Anderson



Human neural stem cell replicates itself during mitosis in vitro. Credit: Hal X. Nguyen and Aileen J. Anderson

More information: "Systemic neutrophil depletion modulates the migration and fate of transplanted human neural stem cells to rescue functional repair," *Journal of Neuroscience* (2017). DOI:

10.1523/JNEUROSCI.2785-16.2017