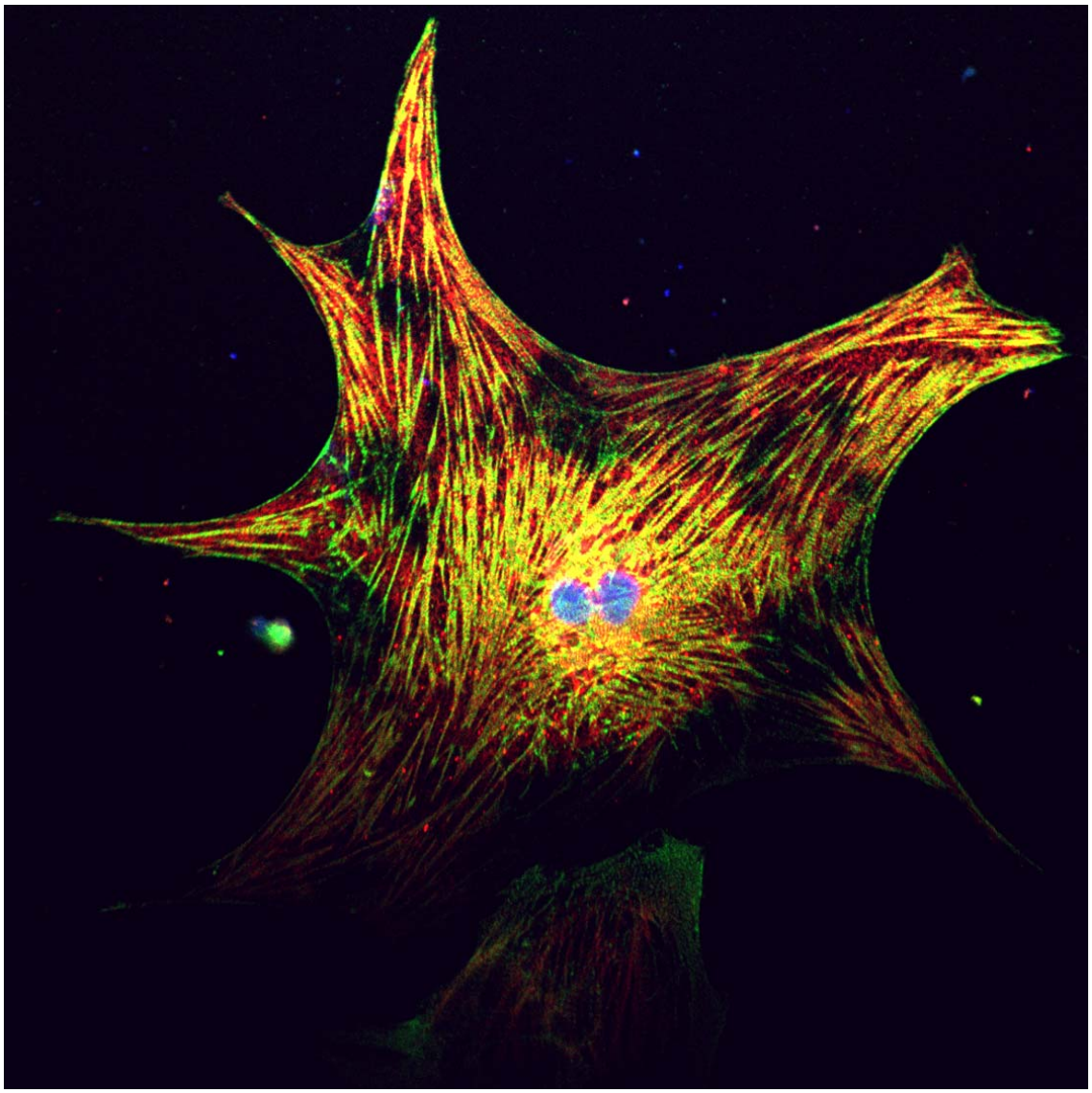
NYSTEM 2013



Cellular Architecture of iPS Cell Derived Cardiomyocytes from Human Skin Biopsy: Cells were immunostained using cardiac markers, anti-α-Actinin (green) and MLC-2v (red), and were counterstained using DAPI to label nuclei (blue). The image was acquired by laser scanning confocal microscopy.

Source: Mayurika Desai and Michael Xavier Doss, Masonic Medical Research Laboratory, Utica, NY

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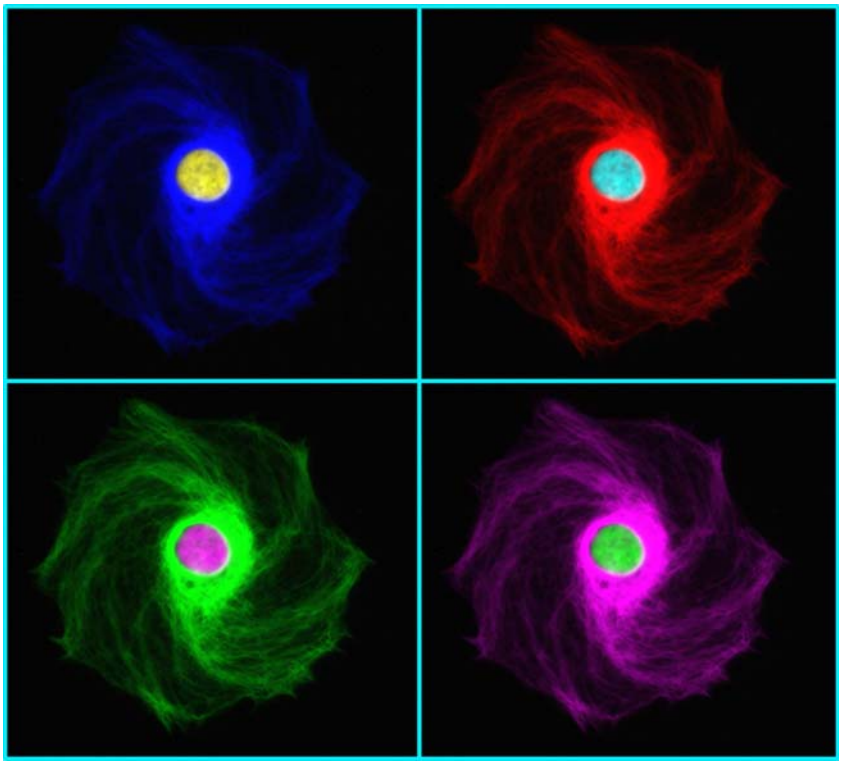

Astrocyte: A human CD44+ glial progenitor cell was allowed to mature for several weeks in culture, where it gave rise to an astrocyte (glial fibrillary acidic protein).

Source: Devin Chandler-Militello and Steve Goldman, Neurology, Center for Translational Neuromedicine, University of Rochester Medical Center, Rochester, NY

JANUARY 2013

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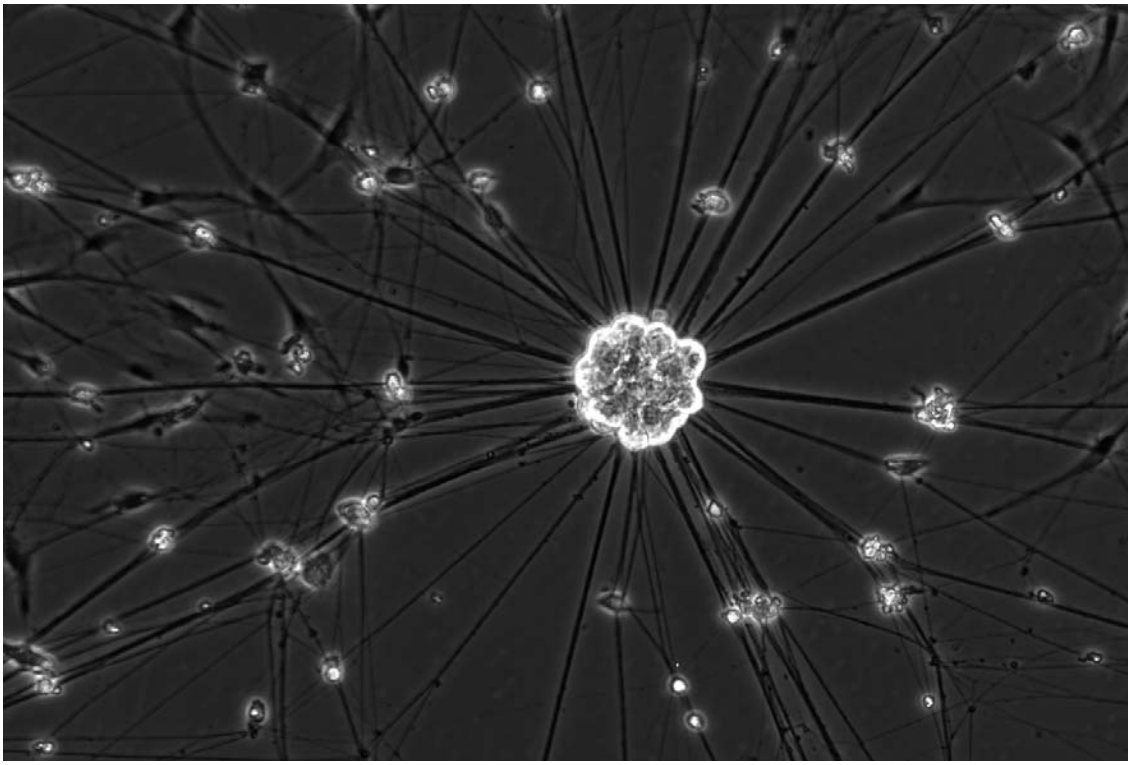

Nociceptors: Using a handful of small molecules, nociceptors capable of detecting pain and noxious stimulus can be derived in high efficiency from human pluripotent stem cells. *In vitro*, nociceptor somas spontaneously cluster into ganglia-like structures observed as bright areas surrounded by axon projections seen by phase contrast microscopy. The generation of nociceptors allows access to a medically relevant cell type important for understanding and preventing pain.

Source: Stuart M. Chambers, Memorial Sloan-Kettering Cancer Center, New York, NY

FEBRUARY 2013

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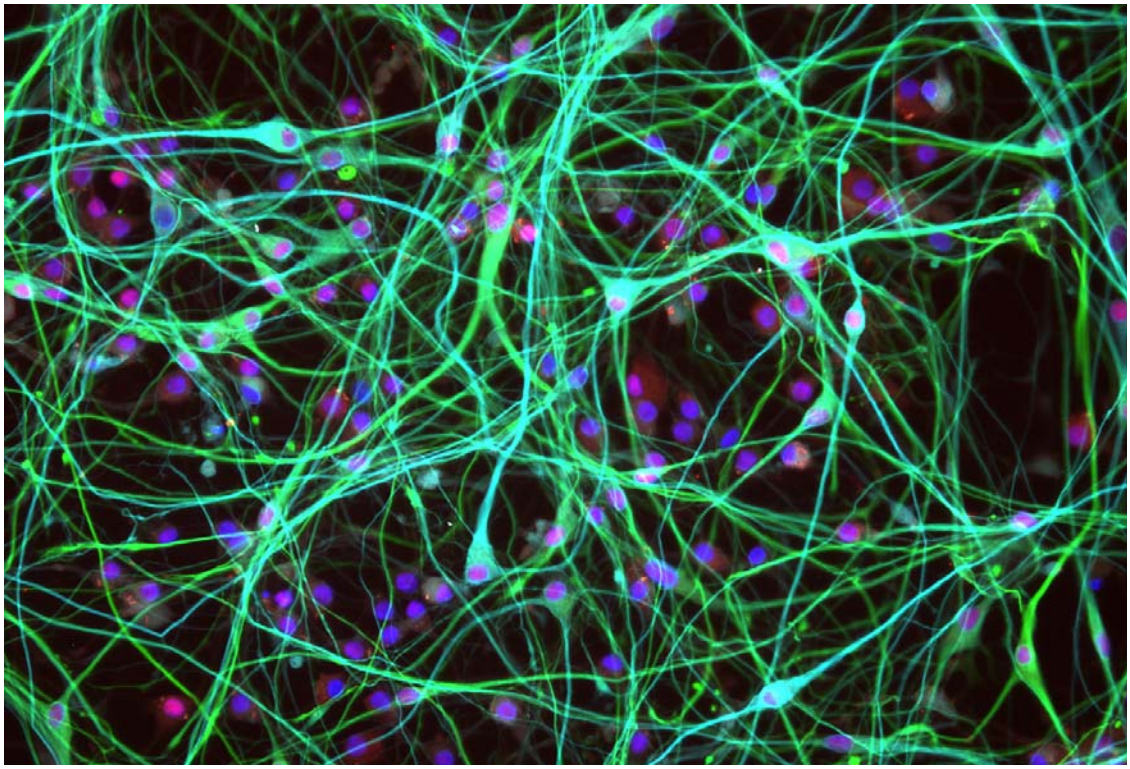

Human Spinal Cord Cells: Cultured adult human donor spinal cord cells divide and generate new neurons and glial cells in culture. Sox2, a neural progenitor marker, was stained red but appears purple due to overlap with the blue nuclear dye DAPI stain. GFAP, an astrocyte and progenitor marker, is shown in green and TUJ1, a neuronal marker, is shown in light blue.

Source: Jun Yan, Neural Stem Cell Institute, Regenerative Research Foundation, Rensselaer, NY

MARCH 2013

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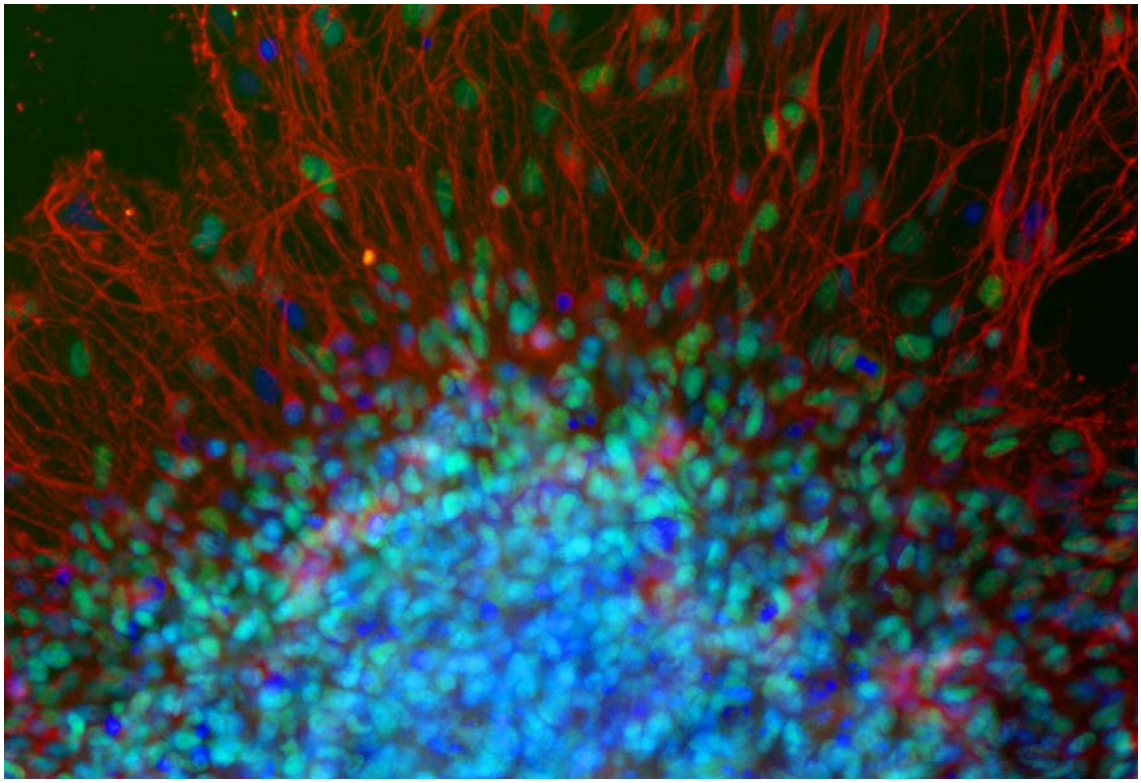

Autistic iPS Cells: Induced pluripotent stem cells (iPSCs) from autistic patients differentiated into forebrain neural cells. The immunofluorescence signal is TuJ1 (red), revealing immature neurons, and FOXG1 (green), a forebrain marker. DAPI is shown in blue to reveal all nuclei in the field.

Source: Rachel E. Wywadis and Mark J. Tomishima, Sloan-Kettering Institute, New York, NY

APRIL 2013

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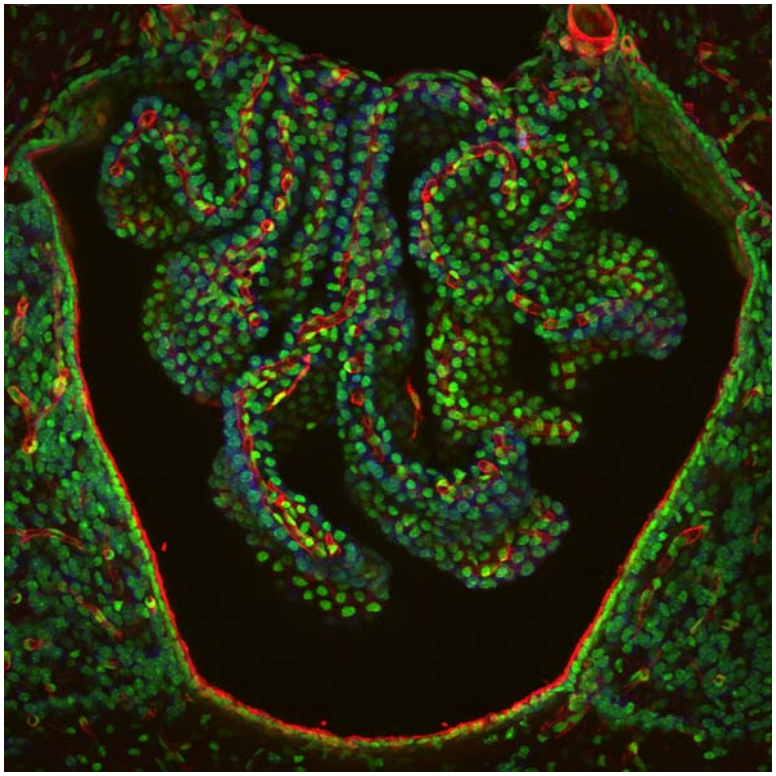

Mouse Brain, 3rd Ventricle with Choroid Plexus: The choroid plexus is responsible for secretion of the cerebrospinal fluid (CSF) that bathes the central nervous system. The CSF is rich in growth factors that are important to stem cell renewal and differentiation, and CSF content is modulated by many disease states and also by aging. This image is a projection of a 3D image stack through a single 130-micrometer-thick section of mouse brain tissue captured using confocal microscopy. Cell nuclei are highlighted in green; blood vessels are shown in red. Absence of Ki67 labeling (blue; a marker for proliferation) in cell nuclei demonstrates the longevity and slow turnover of cells in the choroid plexus.

Source: Chris Bjornsson, Neural Stem Cell Institute, Regenerative Research Foundation, Rensselaer, NY

MAY 2013

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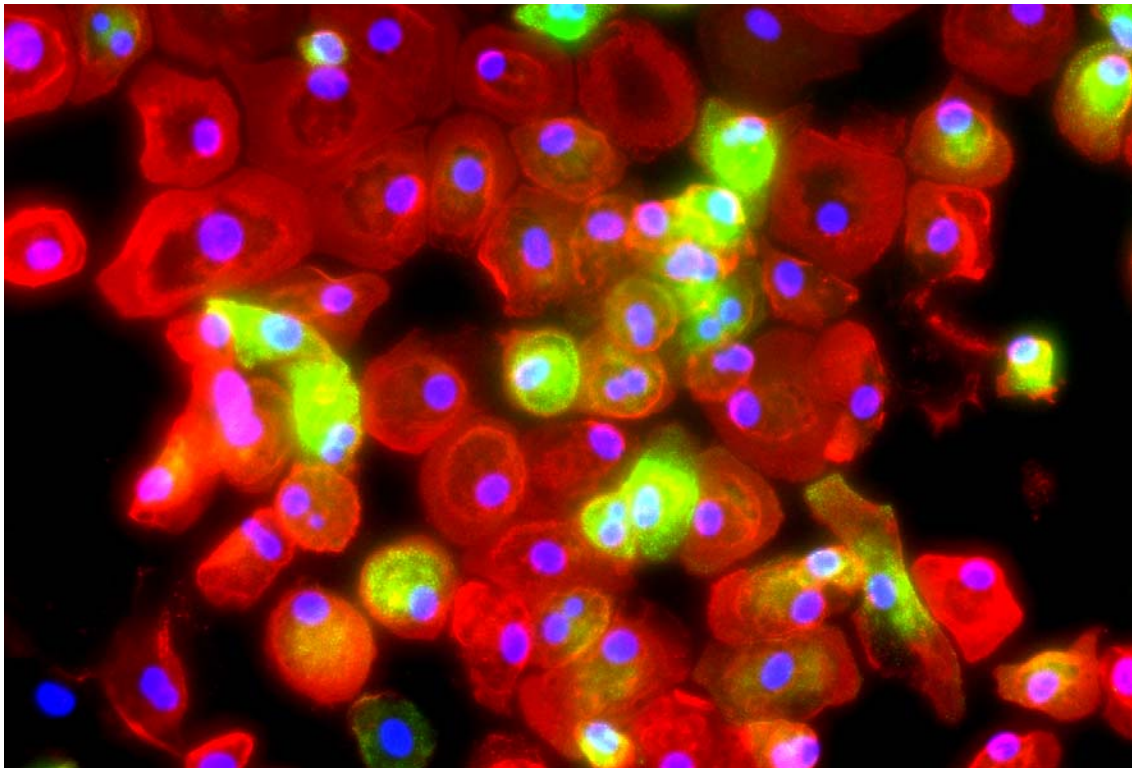

Human Macrophages: Human macrophages, the functional arm of the immune system, that were derived from hematopoietic stem cells in the bone marrow, and activated *in vitro* to display pro-inflammatory (red stain) or pro-healing (green stain) behavior, or both, with drastically different effects on wound healing.

Source: Kara Spiller and Gordana Vunjak-Novakovic, Laboratory for Stem Cells and Tissue Engineering, Columbia University, New York, NY

JUNE 2013

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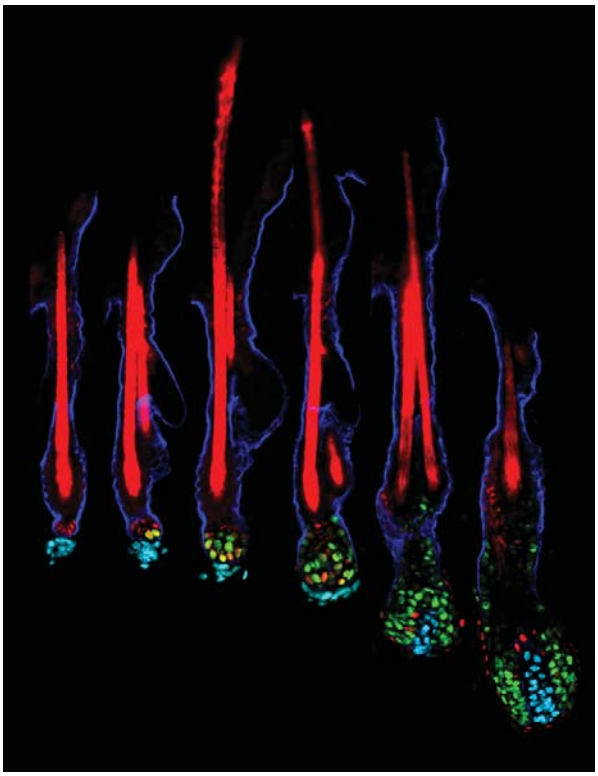

Hair Follicles in Transition: This montage image depicts mouse hair follicles as they transition from quiescent (the most left) to regenerative (the most right) stages. The dermal papillae (cyan) transmit TGF-β signal, stimulating hair follicle stem cells (red, Phospho-Smad2) and counteracting local quiescent signals to proliferate (green, Ki67) and regenerate new hair follicles. Epidermis-dermis boundary is shown in blue, β4-integrin.

Source: Naoki Oshimori and Elaine Fuchs, The Rockefeller University, New York, NY

JULY 2013

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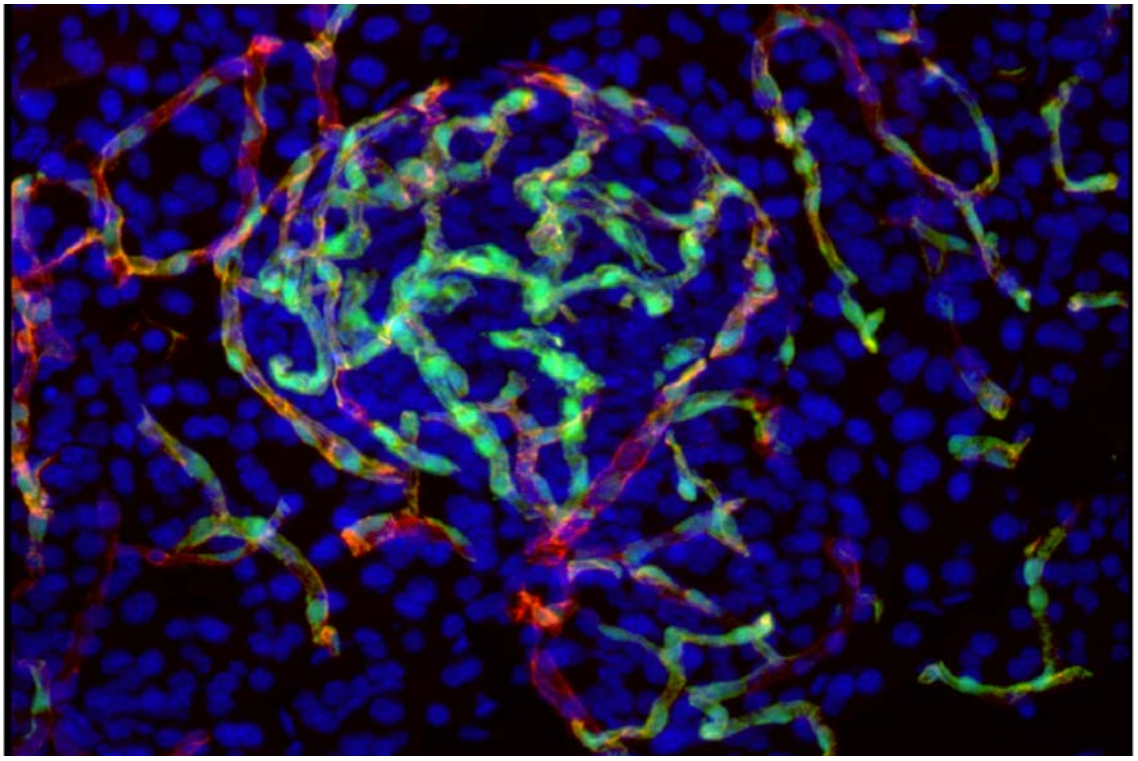

Vascular Stem Cell Niche in the Pancreas: Pancreatic islet sinusoidal endothelial cells (green fluorescent tubes, VEGFR2) establish a network of microvascular niches that are in contact with islet cells (round/ovoid blue nucleus DAPI stain). Red fluorescence represents intravital staining of the CD31 positive endothelial cells.

Source: Shahin Rafii and Daniel Nolan, Weill Cornell Medical College, New York, NY

AUGUST 2013

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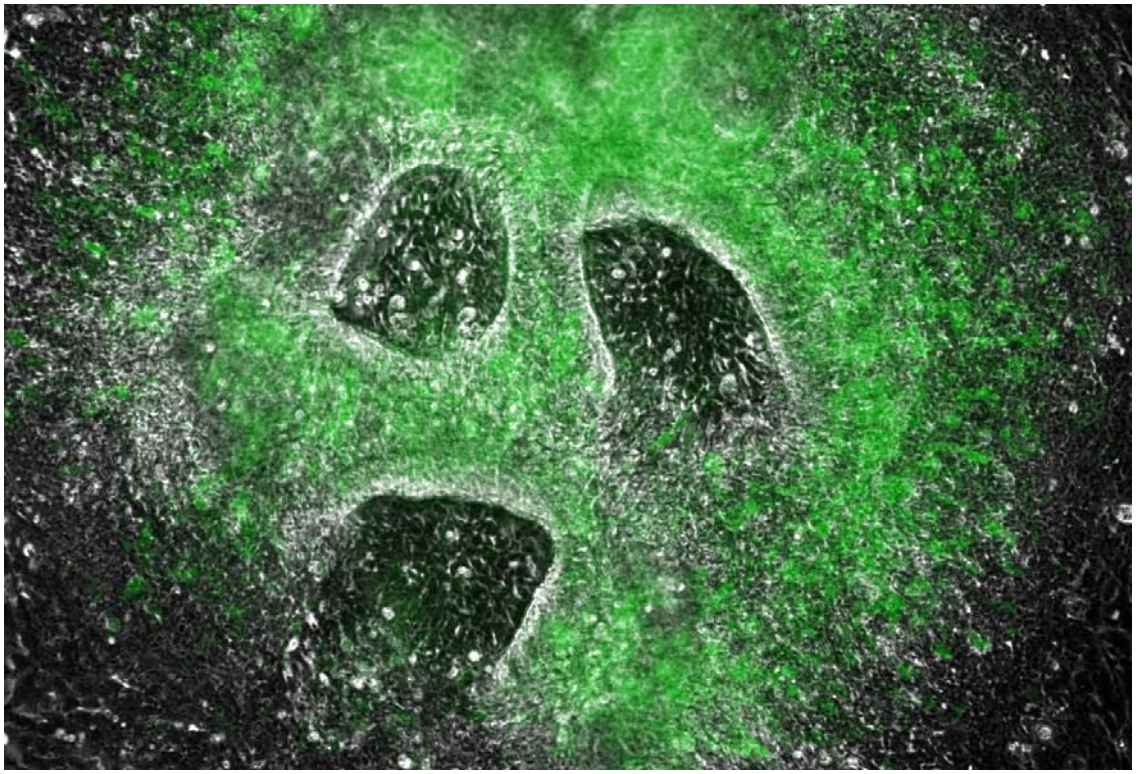

Neural Differentiation: A BAC transgenic DLL1::GFP hESC line was differentiated toward the dopaminergic neuronal lineage at Day 17 of differentiation.

Source: Yosif Ganat and Lorenz Studer, Memorial Sloan-Kettering Cancer Center, New York, NY

SEPTEMBER 2013

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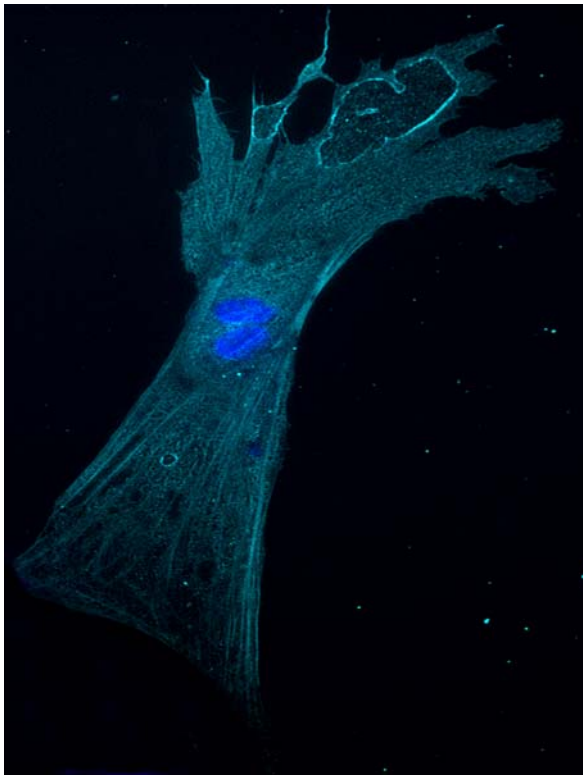

Smooth Muscle Actin Positive Cells from Human Adult RPE-derived iPSCs: When bFGF is withdrawn and iPSCs are allowed to spontaneously differentiate *in vitro*, they generate cells from the three germ layers. Here represented are smooth muscle actin positive cells (mesoderm), progeny of iPSCs derived from adult human retinal pigment epithelium (RPE, a CNS tissue located in the back of the eye).

Source: Patricia Lederman and Barbara Corneo, Neural Stem Cell Institute, Regenerative Research Foundation, Rensselaer, NY

OCTOBER 2013

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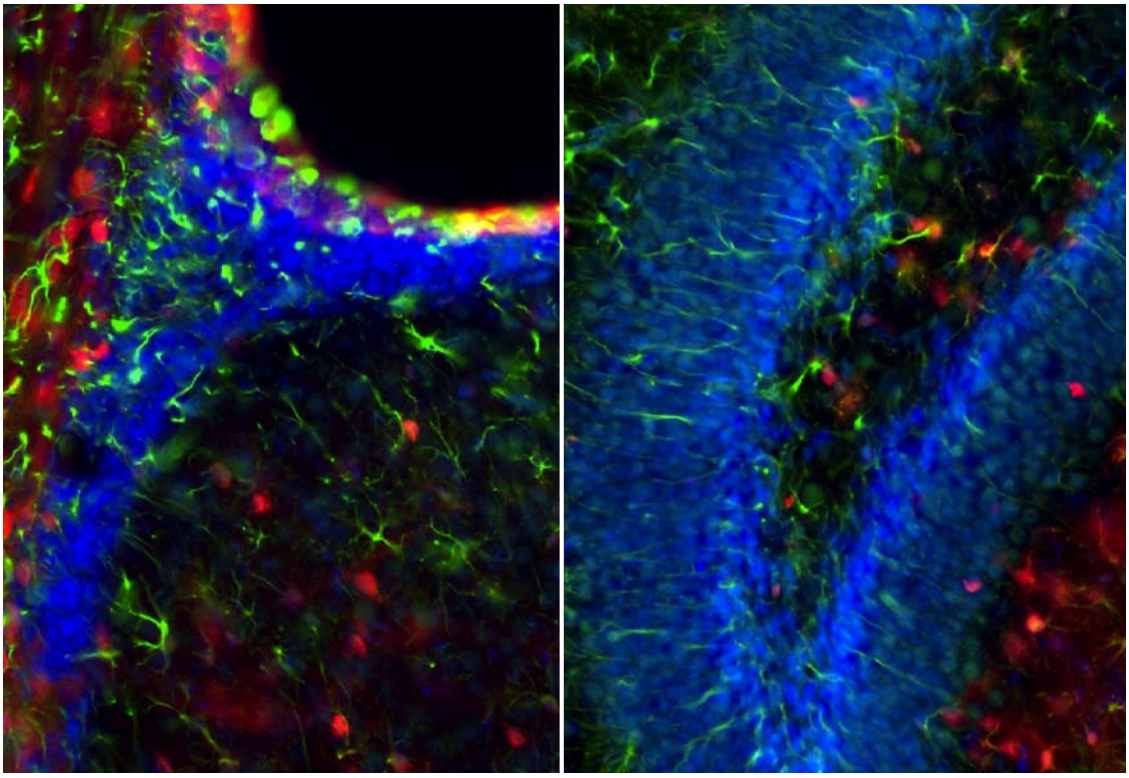

Brain: Dorsal-lateral corner of SVZ (image on left) and dentate gyrus of hippocampus (image on right) of P12 mouse brain. GFAP (green) labels neural stem cells and mature astrocytes, while S100 (red) labels only mature astrocytes. Sections are counterstained with DAPI.

Source: Bo Zhou, Center for Excellence, Biochemistry Department, University at Buffalo, Buffalo, NY

NOVEMBER 2013

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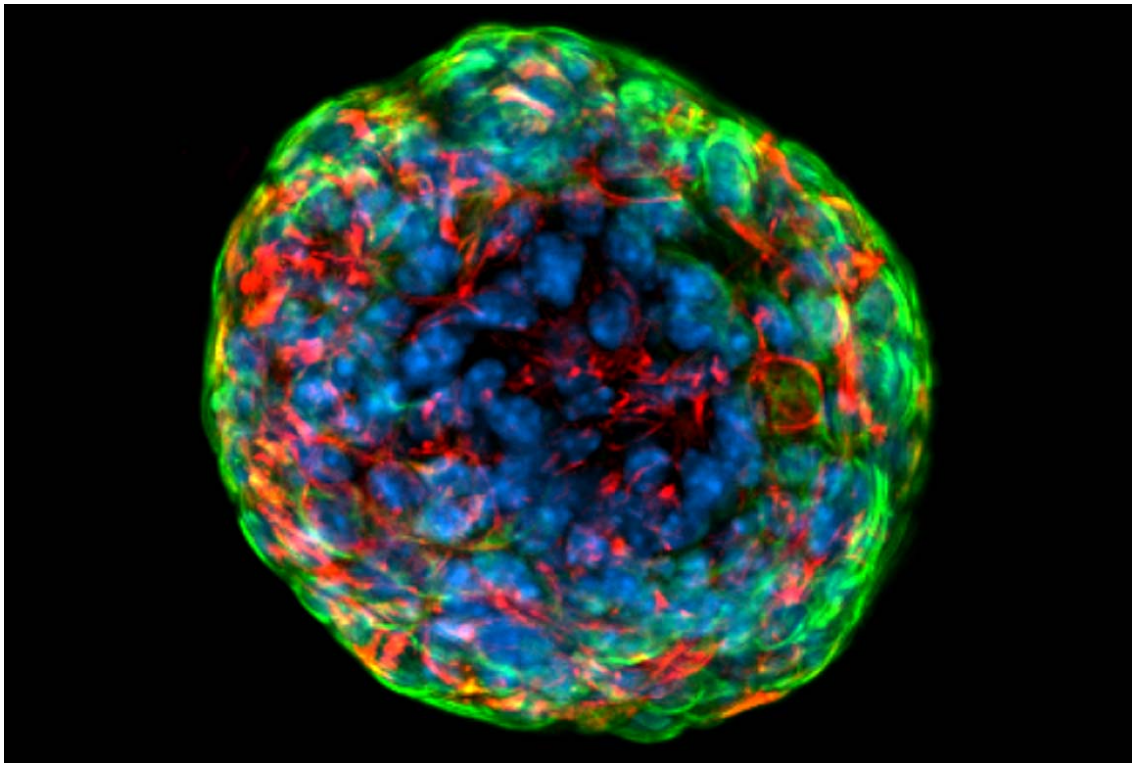

Prostate Sphere: Mouse prostate stem cells have the capacity to form spheres *in vitro* containing basal epithelial cells (cytokeratin 5 - green) and luminal epithelial cells (cytokeratin 18 - red); nuclei are counterstained with DAPI (blue).

Source: Maher Hanoun, Sandra Pinho and Paul S. Frenette, Albert Einstein College of Medicine, Bronx, NY

DECEMBER 2013

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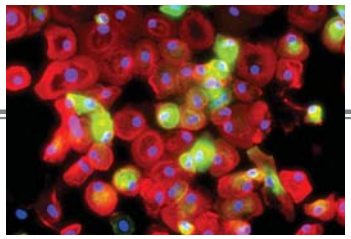
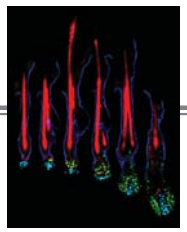
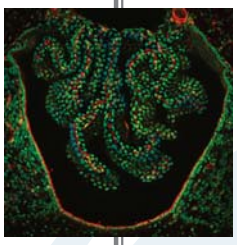
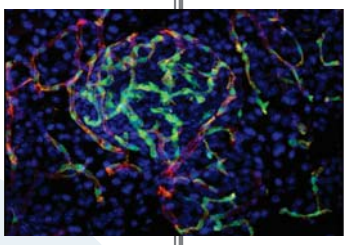
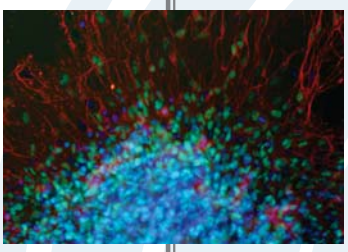
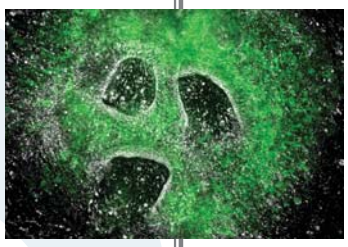
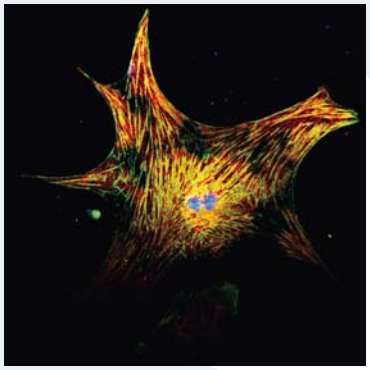
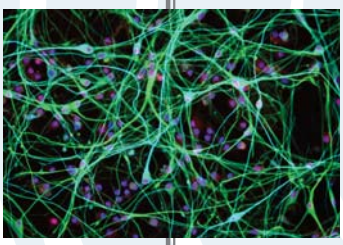
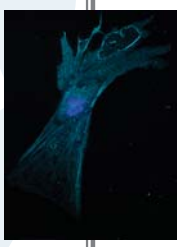
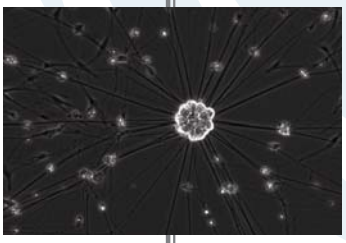
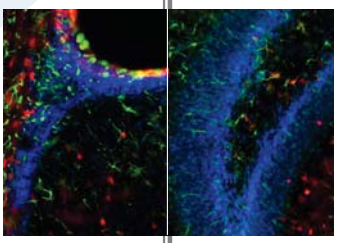
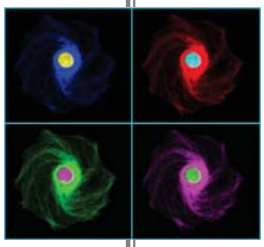
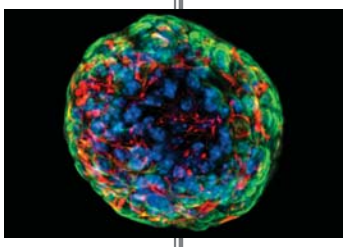
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