Paul Tesar….stem cell pioneer

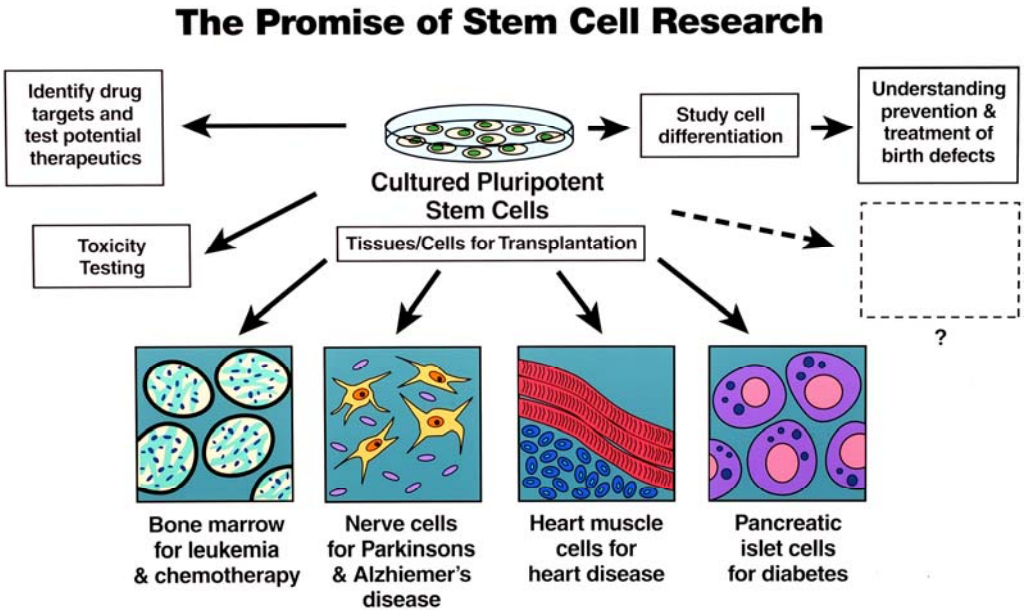
"The NIH-OXCAM Scholars Program afforded me the independence to bring together the unique knowledge and skills of two preeminent research laboratories. This was essential for me to successfully pursue my ideas from a novel perspective."

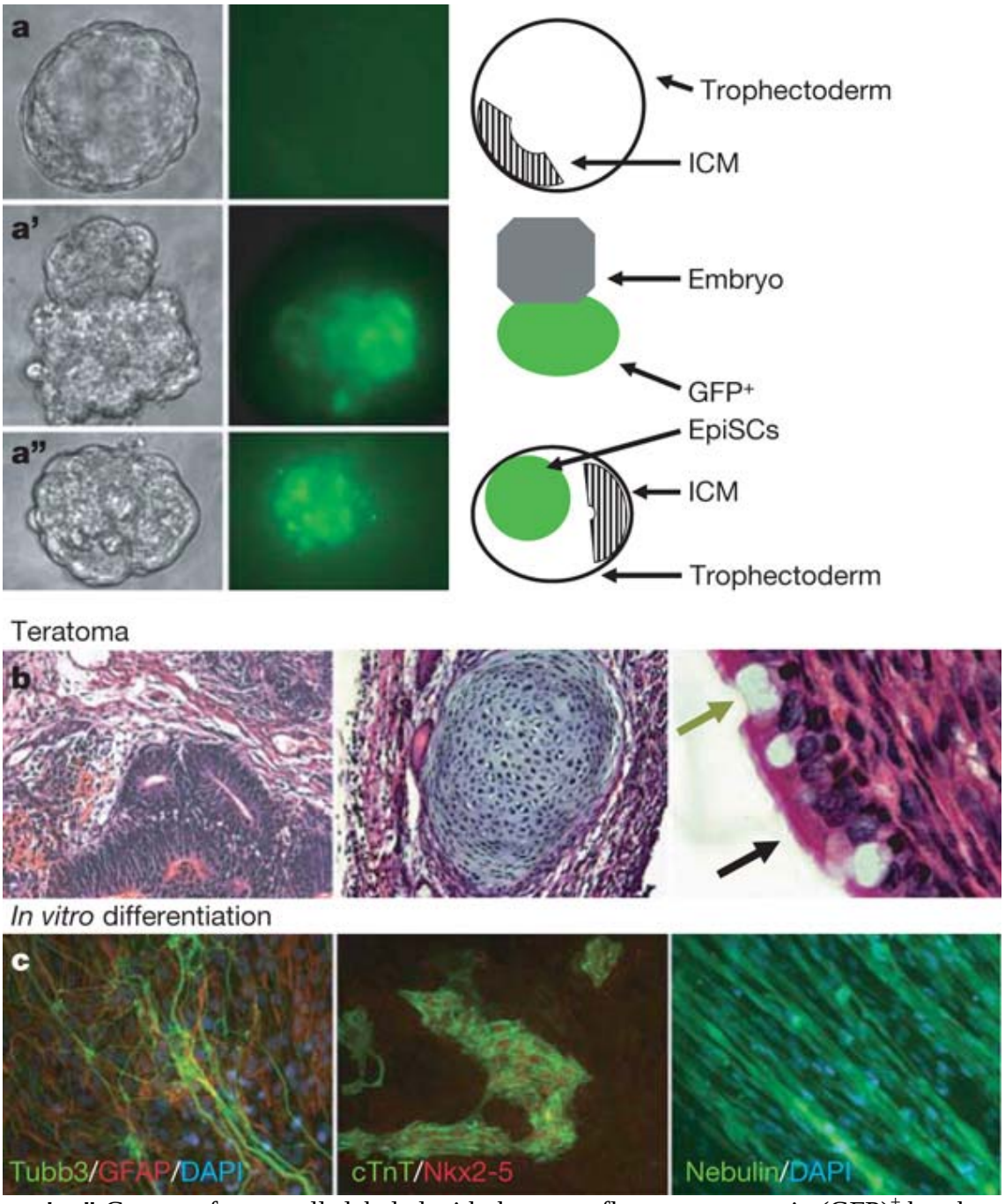
Paul Tesar grew up in Eastlake Ohio and attended Case Western University where he graduated with honors in 2003. He says, "I have always been fascinated with science and medicine. My decision to pursue science as a career was shaped by the lab experience afforded to me by programs sponsored by the American Cancer Society and the Howard Hughes Medical Institutes during high school and my early undergraduate education. I became interested in how different cell types form during development and I decided to focus my studies on embryology and stem cell biology. Paul's initial work, carried out mainly at Oxford in the Department of Zoology, led to the discovery of new methods for deriving stem cells from mouse embryos. This work was reported in a sole author paper in the Proceedings of the National Academy of Sciences (see http://www.pnas.org/cgi/content/full/102/23/8239), which is an unusual accomplishment for a scientist and extremely rare for a graduate student. Building on this initial success, Paul then explored other important aspects of stem cells. He has enjoyed a unique and productive collaboration between two of the world's most eminent researchers in stem cell biology and embryology: Professor Sir Richard Gardner at Oxford and Dr. Ronald McKay in NINDS, NIH. After finishing two years of research at Oxford, he returned to the NIH and attempted to determine the relationship between the phenotype of various mouse stem cell stages and human embryonic stem cells. These yielded a new understanding of the properties of the human

embryonic stem cells that was described in a major paper in the journal Nature on which Paul was first author: "New cell lines from mouse epiblast share defining features with human embryonic stem cells," Tesar, P.J. et al. Nature 448, 196-199, 2007. On working in this exciting and controversial field of biomedical research, Paul says, ""Some people find it very controversial, but I think that the potential for therapies is so great that it's a worthwhile cause to jump into," Tesar was heartened by Harvard University's recent announcement that it plans to launch a new, multimillion-dollar center to grow and study human embryonic stem cells. He says, ""Stem cells may one day be able to cure disorders of every tissue, and I feel it is vital for the U.S. to be at the forefront of this race to save lives." In 2007, Paul was awarded the Beddington Medal from the British Society of Developmental Biology for the best PhD in the field.

Professor Sir Richard Gardner, FRS

Ronald D. G. McKay





a, **a'**, **a"** Groups of stem cells labeled with the green fluorescent protein $(GFP)^+$ by phase contrast microscopy (left panels) and by fluorescence microscopy (center panels). Stem cells aggregated with individual morulae (**a control morula; a'**, **a" show clusters of GFP+ stem cells**). Schematics are shown to the right to highlight aggregation results. **b**, Haematoxylin and eosin stained histological sections of stem cell-derived teratomas. Shown are, from left to right, epithelial rosettes, cartilage, and ciliated endothelium (black arrow) with secretory goblet cells (yellow arrow). **c**, Differentiated outgrowths from stem cells that are differentiated to neurons shown by neuronal markers.

From Tesar et al., Nature. 2007 Jul 12;448(7150):196-9.