

Publications

2013

Invited book chapter:

Young H, Schulz, T, Carpenter MK (2013) Feeder-free Culture and Defined Culture Conditions for hESC Growth. In: Handbook of Stem Cells (Eds: A. Atala, et al.) Elsevier. Ch 19.

2012

Chen VC, Couture SM, Ye J, Lin Z, Hua G, Huang HI, Wu J, Hsu D, Carpenter MK, Couture LA. (2012) Scalable GMP compliant suspension culture system for human ES cells. *Stem Cell Res.* 8(3):388-402.

Book editor:

Rao, MS, Carpenter, MK, Vemuri, MC (2012) *Neural Development and Stem Cells*, 3rd Edition. Human Press.

2011

Peterson SE, Westra JW, Rehen SK, Young H, Bushman DM, Paczkowski CM, Yung YC, Lynch CL, Tran HT, Nickey KS, Wang YC, Laurent LC, Loring JF, Carpenter MK, Chun J. (2011) Normal human pluripotent stem cell lines exhibit pervasive mosaic aneuploidy. *PLoS One.* 6(8):e23018

Kelly OG, Chan MY, Martinson LA, Kadoya K, Ostertag TM, Ross KG, Richardson M, Carpenter MK, D'Amour KA, Kroon E, Moorman M, Baetge EE, Bang AG. (2011) Cell-surface markers for the isolation of pancreatic cell types derived from human embryonic stem cells. *Nat Biotechnol.* 29(8):750-6.

2010

Carpenter MK, Couture LA. (2010) Regulatory considerations for the development of autologous induced pluripotent stem cell therapies. *Regenerative Medicine.* 5(4): 569-579.

2009

Carpenter, MK, Frey-Vasconcells, J, Rao, MS. (2009) Developing a safe human embryonic stem cell therapy. *Nature Biotechnology.* 27(7): 606-613.

Invited book chapters:

- Carpenter, MK, Rao, MS. (2009) Therapeutic uses of embryonic stem cells. In: *Regenerative Medicine*. Eds: R. Fisher et al, in press.
- Young H, Schulz, T, Carpenter MK (2009) Feeder-free Culture. In: *Essentials of Stem Cell Biology*. (Eds: RP Lanza, et al.) Elsevier. Ch 44.
- Bang AG, Carpenter, MK (2009) Characteristics and Characterization of Human Pluripotent Stem Cells. In: *Essentials of Stem Cell Biology*. (Eds: RP Lanza, et al.) Elsevier. Ch 38.

2008

Bang AG, Carpenter MK. (2008) Deconstructing pluripotency. *Science.* 320(5872): 58-9.

Kroon E, Martinson LA, Kadoya K, Bang AG, Kelly OG, Eliazer S, Young H, Richardson M, Smart NG, Cunningham J, Agulnick AD, D'Amour KA, Carpenter MK, Baetge EE. (2008) Pancreatic endoderm derived from human embryonic stem cells generates glucose-responsive insulin-secreting cells in vivo. *Nat Biotechnol.* 26(4):443-52.

2007

Lewis AJ, Carpenter M, Robins A, Baetge E. (2007) Novocell, Inc. *Regen Med.* 2(6):973-8.

2006

Xu C, He JQ, Kamp TJ, Police S, Hao X, O'Sullivan C, Carpenter MK, Lebkowski J, Gold JD. (2006) Human embryonic stem cell-derived cardiomyocytes can be maintained in defined medium without serum. *Stem Cells Dev.* 15(6):931-41.

D'Amour KA, Bang AG, Eliazer S, Kelly OG, Agulnick AD, Smart NG, Moorman MA, Kroon E, Carpenter MK, Baetge EE. (2006) Production of pancreatic hormone-expressing endocrine cells from human embryonic stem cells. *Nat Biotechnol.* 24(11):1392-401.

Carpenter, M, Rao, MS, Freed, W, Zeng, X. (2006) Derivation and characterization of neuronal precursors and dopaminergic neurons from human embryonic stem cells in vitro. *Meth. Mol. Biol.* (33) 153-67.

2005

Hoffman LM, Batten JL, Hall L, Young H, Pardasani D, Lawrence J, Baetge EE, Carpenter MK. (2005) X-inactivation status distinguishes distinct epigenetic states in hESC lines. *Stem Cells.* 23(10):1468-78.

Maitra A, Arkind DE, Shivapurkar N, Ikeda M, Stastny V, Kassaei K, Sui G, Cutler DJ, Liu Y, Brimble S, Karin N, Hyllner J, Schulz TC, Zeng X, Freed WJ, Colman A, Sartipy P, Matsui SI, Carpenter MK, Gaazdar AF, Ras M, Chakravarti A. (2005) Genomic alterations in cultured embryonic stem cells. *Nature Genetics.* 37(10):1099-103.

Hoffman LM, Carpenter MK. (2005) Characterization and culture of human embryonic stem cells. *Nat Biotechnol.* 23(6):699-708.

Xu C, Rosler E, Jiang J, Lebkowski JS, Gold JD, O'Sullivan C, Delavan-Boorsma K, Mok M, Bronstein A, Carpenter MK. (2005) Basic fibroblast growth factor supports undifferentiated human embryonic stem cell growth without conditioned medium. *Stem Cells.* 23(3):315-23.

Nistor GI, Totoiu MO, Haque N, Carpenter MK, Keirstead H. (2005) Human embryonic stem cells differentiate into oligodendrocytes in high purity and myelinate after spinal cord transplantation. *Glia.* 49:385-396.

Invited book chapters:

- Young H, Carpenter MK. (2005) Characterization of Human Embryonic Stem Cells. In: *Essentials of Stem Cell Biology.* (Eds: RP Lanza, et al.) Elsevier. Ch 36.
- Young H, Xu C, Carpenter MK. (2005) Feeder-free Culture. In: *Essentials of Stem Cell Biology.* (Eds: RP Lanza, et al.) Elsevier. Ch 43.
- Hoffman L, Batten J, Carpenter MK. (2005) Epigenesis in Pluripotent Cells. In: *Stem Cells: From Bench to Bedside.* (Eds: A Bongso, et al.) World Scientific Publishing. Ch 9.
- Carpenter MK, Rao MS, Freed WJ, Zeng X. (2005) Derivation and characterization of neuronal precursors and dopaminergic neurons from hES cells in vitro. In: *Human Embryonic Stem Cells: Methods and Protocols.* (Eds: K Turksen, J Walker).

2004

Miura T, Luo Y, Khrebtukova I, Brandenberger R, Zhou D, Thies RS, Vasicek T, Young H, Lebkowski J, Carpenter MK, Rao MS. (2004) Monitoring early differentiation events in human embryonic stem cells by MPSS and EST Scan. *Stem Cells and Development.* 13:694-715.

Xu C, Jiang J, Sottile V, McWhir J, Lebkowski J, Carpenter MK. (2004) Immortalized fibroblast-like cells derived from human embryonic stem cells support undifferentiated cell growth. *Stem Cells.* 22:972-980.

Carpenter MK. (2004) Generation of hepatocyte like cells from human embryonic stem cells. *Emerging Research Front in the field of Molecular Biology & Genetics, Thomson ISIR ESI Special Topics Website.*

Rosler ES, Fisk GJ, Ares X, Irving J, Miura T, Rao MS, Carpenter MK. (2004) Long-term culture of human embryonic stem cells in feeder-free conditions. *Dev Dyn,* 229(2): 259-74.

Roy NS, Nakano T, Keyoung HM, Windrem M, Rashbaum WK, Alonso ML, Kang J, Peng W, Carpenter MK, Lin J, Nedergaard M, Goldman SA. (2004) Telomerase immortalization of neuronally restricted progenitor cells derived from human fetal spinal cord. *Nat Biotechnol.* 22(3): 297-305.

Carpenter MK, Rosler ES, Fisk GJ, Brandenberger R, Ares X, Miura T, Lucero M, Rao MS. (2004) Properties of four human embryonic stem cell lines maintained in a feeder-free culture system. *Dev Dyn.* 229(2): 243-58.

Ginis I, Luo Y, Miura T, Thies S, Brandenberger R, Gerecht-Nir S, Amit M, Hoke A, Carpenter MK, Itskovitz-Eldor J, Rao MS. (2004) Differences between human and mouse embryonic stem cells. *Dev Biology,* 269(2): 360-80.

Invited book chapters:

- Xu C, Carpenter MK. (2004) Feeder-free culture. In: *Handbook of Stem Cells.* (Eds: RP Lanza, JD Gearhart, BLM Hogan, RD McKay, DA Melton, R Pedersen, JA Thomson, MD West) Academic Press, Ch 52.

- Carpenter MK, Bhatia M. (2004) Characterization of Human Embryonic Stem Cells. In: Handbook of Stem Cells. (Eds: RP Lanza, JD Gearhart, BLM Hogan, RD McKay, DA Melton, R Pedersen, JA Thomson, MD West) Academic Press, Ch 38.

2003

Carpenter MK, Rosler E, Rao MS. (2003) Characterization and differentiation of human embryonic stem cells. *Stem Cells and Cloning*. 5(1): 79-88.

Rambhatla L, Chiu CP, Kundu P, Peng Y, Carpenter MK. (2003) Generation of hepatocyte-like cells from human embryonic stem cells. *Cell Transplant*. 12: 1-11.

Invited book chapters:

- Xu C, Carpenter MK. (2003) Human embryonic stem cell-derived cardiomyocytes: Derivation and characterization. In: *Human Embryonic Stem Cells*. (Eds: A Chiu, M Rao) Humana Press, pp181-199.
- Carpenter MK, Xu C, Daigh CA, Antosiewicz JE, Thomson JA. (2003) Protocols for the isolation and maintenance of human embryonic stem cells. In: *Human Embryonic Stem Cells*. (Eds: A Chiu, M Rao) Humana Press, pp113-126.
- Carpenter MK, Mattson MP, Rao MS. (2003) Sources of cells for CNS therapies. In: *Neural Stem Cells for Brain and Spinal Cord Repair*. (Eds: T Zigova, EY Snyder, PR Sanberg) Humana Press, pp3-44.

2002

Xu C, Police S, Rao N, Carpenter MK. (2002) Characterization and enrichment of cardiomyocytes derived from human embryonic stem cells. *Circ Res*. 91(6): 501-508.

Mayer-Proschel M, Liu Y, Xue H, Wu YY, Carpenter MK, Rao MS. (2002) Human neural precursor cells- an in vitro characterization. *Clinical Neurosci Res*. 2: 58-69.

2001

Carpenter MK, Inokuma MS, Denham J, Mujtaba T, Chiu C-P, Rao MS. (2001) Enrichment of neurons and neural precursors from human embryonic stem cells. *Exp Neurol*. 172: 383-397.

Lebkowski JS, Gold J, Xu C, Funk W, Chiu C-P, Carpenter MK. (2001) Human embryonic stem cells: Culture, differentiation, and genetic modification for regenerative medicine applications. *Cancer J*. 7(2): S83-S93.

Xu C, Inokuma MS, Denham J, Golds K, Kundu P, Gold JD, Carpenter MK. (2001) Feeder-free growth of undifferentiated human embryonic stem cells. *Nat Biotechnol*. 19: 971-974.

2000

Amit M, Carpenter MK, Inokuma MS, Chiu CP, Harris HP, Waknitz MA, Itskovitz-Eldor J, Thomson JA. (2000) Clonally derived human embryonic stem cell lines maintain pluripotency and proliferative potential for prolonged periods of in vitro culture. *Dev Biol*. 227(2): 271-8.

18. Fricker-Gates RA, Winkler C, Kirik D, Rosenblad C, Carpenter MK, Björklund A. (2000) EGF infusion stimulates the proliferation and migration of embryonic progenitor cells transplanted in the adult rat striatum. *Exp Neurol*. 165(2): 237-47.

1999

Fricker RA, Carpenter MK, Winkler C, Greco C, Gates M, Björklund A. (1999) Site-specific migration and neuronal differentiation of human neural progenitor cells after transplantation in the adult rat brain. *J Neurosci*. 19(14): 5990-6005.

Carpenter MK, Cui X, Hu Z, Jackson J, Sherman S, Seiger Å, Wahlberg LU. (1999) In vitro expansion of a multipotent population of human neural progenitor cells. *Exp Neurol*. 158(2): 265-278.

1998

Winkler C, Fricker R, Gates M, Olsson M, Hammang JP, Carpenter MK, Björklund A. (1998) Incorporation and glial differentiation of mouse EGF-responsive neural progenitor cells after transplantation into embryonic rat brain. *Molecular and Cellular Neurosci*. 11: 99-116.

Invited book chapter:

- Sagen J, Bruhn SL, Rein DH, Li R, Carpenter MK. (1998) Transplantation of encapsulated cells into the central nervous system. In: *Handbook on Cell Encapsulation and Therapeutics*. (Eds: WM Kühnreiter, RP Lanza, WL Chick) Springer-Verlag, pp351-378.

1997

Kordower JH, Chen E-Y, Winkler C, Fricker R, Charles V, Messing A, Mufson EJ, Wong SC, Rosenstein JM, Björklund A, Emerich DF, Hammang J, Carpenter MK. (1997) Grafts of EGF-responsive neural stem cells derived from GFAP-hNGF transgenic mice: trophic and tropic effects in a rodent model of Huntington's Disease. *J Comp Neurol.* 387: 96-113.

Carpenter MK, Winkler C, Fricker R, Emerich DF, Wong SC, Greco C, Chen E-Y, Chu Y, Kordower J, Messing A, Björklund A, Hammang JP. (1997) Generation and transplantation of EGF-responsive neural stem cells derived from GFAP-hNGF transgenic mice. *Exp Neurol.* 148: 187-204.

Kozlosky CJ, Vandenbos T, Park L, Cerretti DP, Carpenter MK. (1997) LERK-7: A ligand of the Eph-related kinases is developmentally regulated in brain. *Cytokine.* 9(8): 540-549.

1996

Bruce AJ, Boling W, Kindy MS, Peschon J, Kraemer PH, Carpenter MK, Holtzman FW, Mattson MP. (1996) Altered neuronal and microglial responses to excitotoxic and ischemic brain injury in mice lacking tumor necrosis factor receptors. *Nat Med.* 2(7): 788-794.

1995

Ware CB, Horowitz MC, Renshaw BR, Hunt JS, Liggitt D, Koblar SA, Gliniak BC, McKenna HJ, Stamatoyannopoulos G, Thoma B, Donovan PJ, Peschon JJ, Bartlett PF, Willis CR, Wright BD, Carpenter MK, Davison BL, Gearing DP. (1995) Targeted disruption of the leukemia inhibitory factor receptor b gene causes placental, skeletal, neural and metabolic defects and results in perinatal death. *Development.* 121: 1283-1299.

Carpenter MK, Shilling H, Van den Bos T, Beckmann MP, Kott JN, Davison BL, Fletcher FA. (1995) Ligands for eph-related tyrosine kinase receptors are developmentally regulated in the CNS. *J Neurosci Res.* 42(2): 199-206.

1994

Fletcher FA, Carpenter MK, Shilling H, Baum P, Gimpel S, Hollingsworth T, Van den Bos T, Davison BL, Lyman SD, Beckmann BP. (1994) LERK-2, a ligand for the receptor-tyrosine kinase ELK, is evolutionarily conserved and expressed in a developmentally regulated pattern. *Oncogene.* 9: 3241-3247.

Carpenter MK, Hassinger T, Whalen LR, Kater SB. (1994) CNS white matter can be altered to support neuronal outgrowth. *J Neurosci Res.* 37: 1-14.

1993

Carpenter MK, Crutcher K, Kater SB. (1993) An analysis of the effects of Alzheimer's plaques on living neurons. *Neurobiol Aging.* 14: 207-215.

1992

Carpenter MK, Parker I, Miledi R. (1992) Messenger RNAs coding for receptors and channels in the cerebral cortex of adult and aged rats. *Molecular Brain Res.* 13:1-5.

1991

Invited book chapter:

- Kater SB, Carpenter MK. (1991) Alterations in calcium homeostatic capacity: A locus for constructive and destructive neuronal remodeling. In: *Glutamate, Cell Death, and Memory.* (Eds: P Ascher, D Choi, Y Christen) Springer-Verlag, pp66-76.

1990

Carpenter MK, Parker I, Miledi R. (1990) Changes in messenger RNAs coding for neurotransmitter receptors and voltage-operated channels in the developing rat cerebral cortex. *Dev Biol.* 138: 313-323.

1988

Carpenter MK, Parker I, Miledi R. (1988) Expression of GABA and glycine receptors by messenger RNAs from the developing rat cerebral cortex. *Proc R Soc Lond. B,* 234: 159-170.

1987

Marrocco RT, Carpenter MK, Wright SE, Doran RA. (1987) Peripheral field stimulation suppresses flicker but not pattern detection in foveal targets. *Percept & Psychophy.* 42(4): 337-341.

1985

Marrocco RT, Carpenter MK, Wright SE. (1985) Spatial contrast sensitivity: effects of peripheral stimulation during monocular and dichoptic viewing. *Vision Res.* 25 (7): 917-924.