Stanford



Roger Pedersen

Bio

INSTITUTE AFFILIATIONS

- Member, Cardiovascular Institute

HONORS AND AWARDS

- Siebel Scholar, Stanford University Institute for Stem Cell Biology and Regenerative Medicine (2012-2013)
- Fellow, Society of Biology (2011-present)
- Linacre Lecture, St. Johns College, University of Cambridge (2007)
- Editorial Board Member, Cell Stem Cells (2006-2020)
- Fellow, Churchill College Cambridge (2006-2018)
- Friday Evening Discourse, Royal Institution of London (2005)
- M.C. Chang Distinguished Lectureship, University of Massachusetts Medical School (2003)
- Stem Cell Pioneer Award, University of Pittsburgh (2003)
- Sadler Lectureship, National Institute of Child Health and Human Development (2002)
- Associate Editor, Molecular Reproduction and Development (1991-present)
- Editorial Board, International Journal of Developmental Biology (1989-present)

EDUCATION AND CERTIFICATIONS

- Postdoc, Johns Hopkins University , Mammalian embryology (1971)
- PhD, Yale University , Biology (1970)
- A.B., Stanford University , Biology (1965)

Professional

PROFESSIONAL INTERESTS

My current interests include the differentiation of human pluripotent stem cells into developmentally normal early embryonic tissue lineages (especially mesoderm), and into clinically relevant cell types that model the placental trophoblast and certain malignant cell types.

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

- Fellow, Society of Biology (2011 - present)
- Member, International Society for Stem Cell Research (2002 - present)

Publications

PUBLICATIONS

- **Human-monkey chimeras: Monkey see, monkey do.** *Cell stem cell*
  Mascetti, V. L., Pedersen, R. A.
  2021; 28 (5): 787–89

- **Allele-specific RNA-seq expression profiling of imprinted genes in mouse isogenic pluripotent states.** *Epigenetics & chromatin*
  Dirks, R. A., van Mierlo, G., Kerstens, H. H., Bernardo, A. S., Kobolák, J., Bock, I., Maruotti, J., Pedersen, R. A., Dinnyés, A., Huynen, M. A., Jouneau, A., Marks, H.
  2019; 12 (1): 14

- **Mammalian embryo comparison identifies novel pluripotency genes associated with the naïve or primed state.** *Biology open*
  Bernardo, A. S., Jouneau, A., Marks, H., Kensche, P., Kobolak, J., Freude, K., Hall, V., Feher, A., Polgar, Z., Sartori, C., Bock, I., Louet, C., Faial, et al
  2018; 7 (8)

- **A novel piperidine identified by stem cell-based screening attenuates pulmonary arterial hypertension by regulating BMP2 and PTGS2 levels.** *The European respiratory journal*
  Xing, Y., Zhao, S., Wei, Q., Gong, S., Zhao, X., Zhou, F., Ai-Lamki, R., Ortmann, D., Du, M., Pedersen, R., Shang, G., Si, S., Morrell, et al
  2018; 51 (4)

- **Inducible and Deterministic Forward Programming of Human Pluripotent Stem Cells into Neurons, Skeletal Myocytes, and Oligodendrocytes** *STEM CELL REPORTS*
  Pawlowski, M., Ortmann, D., Bertero, A., Tavares, J. M., Pedersen, R. A., Vallier, L., Kotter, M. R.
  2017; 8 (4): 803-812

- **Roles of H3K27me2 and H3K27me3 Examined during Fate Specification of Embryonic Stem Cells** *CELL REPORTS*
  Juan, A. H., Wang, S., Ko, K. D., Zare, H., Tsai, P., Feng, X., Vivanco, K. O., Ascoli, A. M., Gutierrez-Cruz, G., Krebs, J., Sidoli, S., Knight, A. L., Pedersen, et al
  2016; 17 (5): 1369-1382

- **Contributions of Mammalian Chimeras to Pluripotent Stem Cell Research** *CELL STEM CELL*
  Mascetti, V. L., Pedersen, R. A.
  2016; 19 (2): 163-175

- **Large-scale production of megakaryocytes from human pluripotent stem cells by chemically defined forward programming** *NATURE COMMUNICATIONS*
  Moreau, T., Evans, A. L., Vasquez, L., Tijssen, M. R., Yan, Y., Trotter, M. W., Howard, D., Colzani, M., Arumugam, M., Wu, W. H., Dalby, A., Lampela, R., Bouet, et al
  2016; 7

- **Human-Mouse Chimerism Validates Human Stem Cell Pluripotency** *CELL STEM CELL*
  Mascetti, V. L., Pedersen, R. A.
  2016; 18 (1): 67-72

- **Generation of Human Induced Pluripotent Stem Cells from Peripheral Blood Mononuclear Cells Using Sendai Virus.** *Methods in molecular biology (Clifton, N.J.)*
  Soares, F. A., Pedersen, R. A., Vallier, L.
  2016; 1357: 23-31

- **Activin/Nodal Signaling Supports Retinal Progenitor Specification in a Narrow Time Window during Pluripotent Stem Cell Neuralization** *STEM CELL REPORTS*
  Bertacchi, M., Lupo, G., Pandolfini, L., Casarosa, S., D'Onofrio, M., Pedersen, R. A., Harris, W. A., Cremisi, F.
  2015; 5 (4): 532-545

- **Brachyury and SMAD signalling collaboratively orchestrate distinct mesoderm and endoderm gene regulatory networks in differentiating human embryonic stem cells** *DEVELOPMENT*
  Faial, T., Bernardo, A. S., Mendjan, S., Diamanti, E., Ortmann, D., Gentsch, G. E., Mascetti, V. L., Trotter, M. W., Smith, J. C., Pedersen, R. A.
  2015; 142 (12): 2121-?

- **Robust derivation of epicardium and its differentiated smooth muscle cell progeny from human pluripotent stem cells** *DEVELOPMENT*
  Iyer, D., Gambardella, L., Bernard, W. G., Serrano, F., Mascetti, V. L., Pedersen, R. A., Talasila, A., Sinha, S.
  2015; 142 (8): 1528-1541

- **Activin/Nodal signaling and NANOG orchestrate human embryonic stem cell fate decisions by controlling the H3K4me3 chromatin mark** *GENES & DEVELOPMENT*
  Bertero, A., Madrigal, P., Galli, A., Hubner, N. C., Moreno, I., Burks, D., Brown, S., Pedersen, R. A., Gaffney, D., Mendjan, S., Pauklin, S., Vallier, L.
  2015; 29 (7): 702-717

- **An Important Role of Endothelial Hairy-Related Transcription Factors in Mouse Vascular Development** *GENESIS*
  Morioka, T., Sakabe, M., Ioka, T., Iguchi, T., Mizuta, K., Hattammaru, M., Sakai, C., Itoh, M., Sato, G. E., Hashimoto, A., Fujita, M., Okumura, K., Araki, et al
  2014; 52 (11): 897-906

- **NANOG and CDX2 Pattern Distinct Subtypes of Human Mesoderm during Exit from Pluripotency** *CELL STEM CELL*
  Mendjan, S., Mascetti, V. L., Ortmann, D., Ortiz, M., Karjosukarso, D. W., Ng, Y., Moreau, T., Pedersen, R. A.
  2014; 15 (3): 310-325

- **Differentiation of trophoblast cells from human embryonic stem cells: to be or not to be?** *REPRODUCTION*
  Roberts, R. M., Loh, K. M., Amita, M., Bernardo, A. S., Adachi, K., Alexenko, A. P., Schust, D. J., Schulz, L. C., Telugu, B. P., Ezashi, T., Pedersen, R. A.
  2014; 147 (5): D1-D12

- **Directed differentiation of embryonic origin-specific vascular smooth muscle subtypes from human pluripotent stem cells** *NATURE PROTOCOLS*
  Cheung, C., Bernardo, A. S., Pedersen, R. A., Sinha, S.
  2014; 9 (4): 929-938

- **Investigating the feasibility of scale up and automation of human induced pluripotent stem cells cultured in aggregates in feeder free conditions** *JOURNAL OF BIOTECHNOLOGY*
  Soares, F. A., Chandra, A., Thomas, R. J., Pedersen, R. A., Vallier, L., Williams, D. J.
  2014; 173: 53-58

- **Naivete of the human pluripotent stem cell** *NATURE BIOTECHNOLOGY*
  Mascetti, V. L., Pedersen, R. A.
  2014; 32 (1): 68-70

- **Transplantation of Expanded Fetal Intestinal Progenitors Contributes to Colon Regeneration after Injury** *CELL STEM CELL*
  Fordham, R. P., Yui, S., Hannan, N. R., Soendergaard, C., Madgwick, A., Schweiger, P. J., Nielsen, O. H., Vallier, L., Pedersen, R. A., Nakamura, T., Watanabe, M., Jensen, K. B.
  2013; 13 (6): 734-744

- **Multiple roles of Activin/Nodal, bone morphogenetic protein, fibroblast growth factor and Wnt/beta-catenin signalling in the anterior neural patterning of adherent human embryonic stem cell cultures** *OPEN BIOLOGY*
  Lupo, G., Novorol, C., Smith, J. R., Vallier, L., Miranda, E., Alexander, M., Biagioni, S., Pedersen, R. A., Harris, W. A.
  2013; 3

- **Conversion from mouse embryonic to extra-embryonic endoderm stem cells reveals distinct differentiation capacities of pluripotent stem cell states** *DEVELOPMENT*
  Cho, L. T., Wamaitha, S. E., Tsai, I. J., Artus, J., Sherwood, R. I., Pedersen, R. A., Hadjantonakis, A., Niakan, K. K.
  2012; 139 (16): 2866-2877

- **Genomic Targets of Brachyury (T) in Differentiating Mouse Embryonic Stem Cells** *PLOS ONE*
  Evans, A. L., Faial, T., Gilchrist, M. J., Down, T., Vallier, L., Pedersen, R. A., Wardle, F. C., Smith, J. C.
  2012; 7 (3)

- **Human pre-implantation embryo development** *DEVELOPMENT*
  Niakan, K. K., Han, J., Pedersen, R. A., Simon, C., Pera, R. A.
  2012; 139 (5): 829-841

- **Generation of human vascular smooth muscle subtypes provides insight into embryological origin-dependent disease susceptibility** *NATURE BIOTECHNOLOGY*
  Cheung, C., Bernardo, A. S., Trotter, M. W., Pedersen, R. A., Sinha, S.
  2012; 30 (2): 165-173

- **Status of Genomic Imprinting in Epigenetically Distinct Pluripotent Stem Cells** *STEM CELLS*
  Sun, B., Ito, M., Mendjan, S., Ito, Y., Brons, I. G., Murrell, A., Vallier, L., Ferguson-Smith, A. C., Pedersen, R. A.
  2012; 30 (2): 161-168

- **BRACHYURY and CDX2 Mediate BMP-Induced Differentiation of Human and Mouse Pluripotent Stem Cells into Embryonic and Extraembryonic Lineages** *CELL STEM CELL*
  Bernardo, A. S., Faial, T., Gardner, L., Niakan, K. K., Ortmann, D., Senner, C. E., Callery, E. M., Trotter, M. W., Hemberger, M., Smith, J. C., Bardwell, L., Moffett, A., Pedersen, et al
  2011; 9 (2): 144-155

- **Signaling Pathways Controlling Pluripotency and Early Cell Fate Decisions of Human Induced Pluripotent Stem Cells** *STEM CELLS*
  Vallier, L., Touboul, T., Brown, S., Cho, C., Bilican, B., Alexander, M., Cedervall, J., Chandran, S., Ahrlund-Richter, L., Weber, A., Pedersen, R. A.
  2009; 27 (11): 2655-2666

- **Early Cell Fate Decisions of Human Embryonic Stem Cells and Mouse Epiblast Stem Cells Are Controlled by the Same Signalling Pathways** *PLOS ONE*
  Vallier, L., Touboul, T., Chng, Z., Brimpari, M., Hannan, N., Millan, E., Smithers, L. E., Trotter, M., Rugg-Gunn, P., Weber, A., Pedersen, R. A.
  2009; 4 (6)

- **Activin/Nodal signalling maintains pluripotency by controlling Nanog expression** *DEVELOPMENT*
  Vallier, L., Mendjan, S., Brown, S., Chng, Z., Teo, A., Smithers, L. E., Trotter, M. W., Cho, C. H., Martinez, A., Rugg-Gunn, P., Brons, G., Pedersen, R. A.
  2009; 136 (8): 1339-1349

- **Robust, persistent transgene expression in human embryonic stem cells is achieved with AAVS1-targeted integration** *STEM CELLS*
  Smith, J. R., Maguire, S., Davis, L. A., Alexander, M., Yang, F., Chandran, S., Ffrench-Constant, C., Pedersen, R. A.
  2008; 26 (2): 496-504

- **Inhibition of Activin/Nodal signaling promotes specification of human embryonic stem cells into neuroectoderm** *DEVELOPMENTAL BIOLOGY*
  Smith, J. R., Vallier, L., Lupo, G., Alexander, M., Harris, W. A., Pedersen, R. A.
  2008; 313 (1): 107-117

- **Recombination signatures distinguish embryonic stem cells derived by parthenogenesis and somatic cell nuclear transfer** *CELL STEM CELL*
  Kim, K., Ng, K., Rugg-Gunn, P. J., Shieh, J., Kirak, O., Jaenisch, R., Wakayama, T., Moore, M. A., Pedersen, R. A., Daley, G. Q.
  2007; 1 (3): 346-352

- **Derivation of pluripotent epiblast stem cells from mammalian embryos** *NATURE*
  Brons, I. G., Smithers, L. E., Trotter, M. W., Rugg-Gunn, P., Sun, B., de Sousa Lopes, S. M., Howlett, S. K., Clarkson, A., Ahrlund-Richter, L., Pedersen, R. A., Vallier, L.
  2007; 448 (7150): 191-U7

- **HOXB4 overexpression promotes hematopoietic development by human embryonic stem cells** *STEM CELLS*
  Bowles, K. M., Vallier, L., Smith, J. R., Alexander, M. R., Pedersen, R. A.
  2006; 24 (5): 1359-1369

- **Banking on human embryonic stem cells: estimating the number of donor cell lines needed for HLA matching** *LANCET*
  Taylor, C. J., Bolton, E. M., Pocock, S., Sharples, L. D., Pedersen, R. A., Bradley, J. A.
  2005; 366 (9502): 2019-2025

- **Activin/Nodal and FGF pathways cooperate to maintain pluripotency of human embryonic stem cells** *JOURNAL OF CELL SCIENCE*
  Vallier, L., Alexander, M., Pedersen, R. A.
  2005; 118 (19): 4495-4509

- **Epigenetic status of human embryonic stem cells** *NATURE GENETICS*

Rugg-Gunn, P. J., Ferguson-Smith, A. C., Pedersen, R. A.
2005; 37 (6): 585-587

- **Nodal inhibits differentiation of human embryonic stem cells along the neuroectodermal default pathway** *DEVELOPMENTAL BIOLOGY*
  Vallier, L., Reynolds, D., Pederson, R. A.
  2004; 275 (2): 403-421

- **Enhancing and diminishing gene function in human embryonic stem cells** *STEM CELLS*
  Vallier, L., Rugg-Gunn, P. J., Bouhon, I. A., Andersson, F. K., Sadler, A. J., Pedersen, R. A.
  2004; 22 (1): 2-11