Stanford

Marius Wernig

Professor of Pathology and, by courtesy, of Chemical and Systems Biology

Pathology - Pathology Stem Cell Institute

Curriculum Vitae available Online

Bio

BIO

Dr. Wernig is an Associate Professor of Pathology at the Institute for Stem Cell Biology and Regenerative Medicine at Stanford University. He graduated with an M.D. Ph.D. from the Technical University of Munich where he trained in developmental genetics in the lab of Rudi Balling. After completing his residency in Neuropathology and General Pathology at the University of Bonn, he then became a postdoctoral fellow in the lab of Dr. Rudolf Jaenisch at the Whitehead Institute for Biomedical Research/ MIT in Cambridge, MA. In 2008, Dr. Wernig joined the faculty of the Institute for Stem Cell Biology and Regenerative Medicine at Stanford University where he has been ever since.

He received an NIH Pathway to Independence Award, the Cozzarelli Prize for Outstanding Scientific Excellence from the National Academy of Sciences U.S.A., the Outstanding Investigator Award from the International Society for Stem Cell Research, the New York Stem Cell Foundation Robertson Stem Cell Prize, and more recently has been named a HHMI Faculty Scholar.

Dr. Wernig's lab is interested in pluripotent stem cell biology and the molecular determinants of neural cell fate decisions. His laboratory was the first to generate functional neuronal cells reprogrammed directly from skin fibroblasts, which he termed induced neuronal (iN) cells. The lab is now working on identifying the molecular mechanisms underlying induced lineage fate changes, the phenotypic consequences of disease-causing mutations in human neurons and other neural lineages as well as the development of novel therapeutic gene targeting and cell transplantation-based strategies for a variety of monogenetic diseases.

ACADEMIC APPOINTMENTS

- Professor, Pathology - Pathology Stem Cell Institute
- Professor (By courtesy), Chemical and Systems Biology
- Member, Bio-X
- Member, Cardiovascular Institute
- Member, Institute for Stem Cell Biology and Regenerative Medicine
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Stanford Cancer Institute
- Member, Wu Tsai Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Faculty Senate, Department of Pathology, (2017- present)
- Assistant Professor, Institute for Stem Cell Biology and Regenerative Medicine, (2008-2014)

HONORS AND AWARDS

- Ogawa-Yamanaka Stem Cell Prize, The Gladstone Institutes (2018)
- HHMI Faculty Scholar Award, Howard Hughes Medical Institute (2016)
- New York Stem Cell Foundation Robertson Stem Cell Prize, New York Stem Cell Foundation (2014)
- The Outstanding Young Investigator Award, International Society for Stem Cell Research (2013)
- Ascina Award, Republic of Austria (2010)
- Cozzarelli Prize for Outstanding Scientific Excellence, National Academy of Sciences USA (2009)
- New Scholar in Aging, Ellison Medical Foundation (2010)
- Robertson Investigator Award, New York Stem Cell Foundation (2010)
- Donald E. and Delia B. Baxter Faculty Scholarship, Stanford University (2009)
- Margaret and Herman Sokol Award, Biomedical Research (2007)
- Longterm fellowship Human Frontiers Science Program Organisation, HFSP (2004-2006)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, Society for Neuroscience (2003 - present)
- Member, International Society for Stem Cell Research (2004 - present)
- Editorial Board Member, Cell Stem Cell (2012 - present)
- Editorial Board Member, Stem Cell Reports (2013 - present)
- Member, Program Committee, Society for Neuroscience (2016 - present)
- Chair, Program Committee, International Society for Stem Cell Research (2017 - present)

PROFESSIONAL EDUCATION

- M.D., Technical University of Munich , Medicine (2000)

LINKS

- Wernig Laboratory: http://www.werniglab.org

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Our laboratory is generally interested in the molecular mechanisms that determine specific cell fates.

Recently, we have identified a pool of transcription factors that are sufficient to convert skin fibroblasts directly into functional neuronal cells that we termed induced neuronal (iN) cells. This was a surprising finding and indicated that direct lineage reprogramming may be applicable to many somatic cell types and many different directions. Indeed, following our work others have identified transcription factors that could induce cardiomyocytes, blood progenitors, and hepatocytes from fibroblasts.

We are now focussing on two major aspects of iN and iPS cell reprogramming:
(i) we are fascinated by the puzzle how a hand full of transcription factors can so efficiently reprogram the entire epigenome of a cell so that it changes identity. To that end we are applying genome-wide expression analysis, chromatin immunoprecipitation, protein biochemistry, proteomics and functional screens.
(ii) it is equally exciting to now use reprogramming methods as tools to study or treat certain diseases. iPS cells have the great advantage that they can easily be genetically manipulated rendering them ideal for treating monogenetic disorders when combined with cell transplantation-based therapies. In particular we are working

on Dystrophic Epidermolysis Bullosa in collaboration with Stanford's Dermatology Department. An exciting application of iN cell technology will be to try modeling neurological diseases in vitro. We perform both mouse and human experiments hoping to identify quantifiable phenotypes correlated with genotype and in a second step evaluate whether this assay could be used to discover novel drugs improve the disease progression.

CLINICAL TRIALS

- Characteristics of Patients With Recessive Dystrophic Epidermolysis Bullosa, Recruiting

Teaching

COURSES

2019-20

- Regenerative Medicine Seminar Series: STEMREM 250 (Win)
- Stem Cell Biology and Regenerative Medicine Journal Club: STEMREM 280 (Win)
- Stem Cell Intensive: STEMREM 200 (Aut)
- Stem Cells and Human Development: From Embryo to Cell Lineage Determination: STEMREM 201A (Aut)
- Stem Cells and Translational Medicine: STEMREM 202 (Win)

2018-19

- Stem Cell Intensive: STEMREM 200 (Aut)
- Stem Cells and Human Development: From Embryo to Cell Lineage Determination: STEMREM 201A (Aut)

STANFORD ADVISEES

Med Scholar Project Advisor

Danny Huang

Doctoral Dissertation Reader (AC)

Liana Bonanno, Michelle Drews, Sofia Essayan-Perez, Sam Kimmey, Sam Piekos, Yan Ting Shue

Postdoctoral Faculty Sponsor

Ron Danziger, Wendy Fong, Marius Mader, Lingjun Meng, Gernot Neumayer, Katie Schaukowitch, Yohei Shibuya, Christina Tan, Takeshi Uenaka, Yongjin Yoo, Bo Zhou

Doctoral (Program)

Laura Amaya, Allison Banuelos, Pieter Both, Carsten Charlesworth, Shannon Choi, Carolyn Dundes, William Feist, Francisco Galdos, Karen Gonzalez, Joy He, Malachia Hoover, Carl Johnson, Themasap Khan, Katarina Klett, Ishan Kumar, Mallory Laboulaye, Esmond Lee, Angela Liu, Renata Martin, Shamik Mascharak, Sidd Menon, John Pluvinage, Kenisha Puckett, Julien Roth, Harsh Shah, Courtney Stockman, Jennifer Su, Fabian Suchy, Aaron Tan, Molly Uyeda, Daniel Wesche, Heather desJardins-Park

Postdoctoral Research Mentor

Ron Danziger, Wendy Fong, Marius Mader, Christina Tan, Takeshi Uenaka, Yongjin Yoo, Bo Zhou

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Cancer Biology (Phd Program)
- Neurosciences (Phd Program)
- Stem Cell Biology and Regenerative Medicine (Phd Program)

Publications

PUBLICATIONS

- **Neuroligin-4 Regulates Excitatory Synaptic Transmission in Human Neurons.** *Neuron*
  Marro, S. G., Chanda, S., Yang, N., Janas, J. A., Valperga, G., Trotter, J., Zhou, B., Merrill, S., Yousif, I., Shelby, H., Vogel, H., Kalani, M. Y., Sudhof, et al
  2019

- **Reversible Disruption of Specific Transcription Factor-DNA Interactions Using CRISPR/Cas9.** *Molecular cell*
  Shariati, S. A., Dominguez, A., Xie, S., Wernig, M., Qi, L. S., Skotheim, J. M.
  2019; 74 (3): 622

- **Reversible Disruption of Specific Transcription Factor-DNA Interactions Using CRISPR/Cas9** *MOLECULAR CELL*
  Shariati, S., Dominguez, A., Xie, S., Wernig, M., Qi, L. S., Skotheim, J. M.
  2019; 74 (3): 622-+

- **Global DNA methylation remodeling during direct reprogramming of fibroblasts to neurons.** *eLife*
  Luo, C., Lee, Q. Y., Wapinski, O., Castanon, R., Nery, J. R., Mall, M., Kareta, M. S., Cullen, S. M., Goodell, M. A., Chang, H. Y., Wernig, M., Ecker, J. R.
  2019; 8

- **TFAP2C- and p63-Dependent Networks Sequentially Rearrange Chromatin Landscapes to Drive Human Epidermal Lineage Commitment.** *Cell stem cell*
  Li, L., Wang, Y., Torkelson, J. L., Shankar, G., Pattison, J. M., Zhen, H. H., Fang, F., Duren, Z., Xin, J., Gaddam, S., Melo, S. P., Piekos, S. N., Li, et al
  2019

- **The novel lncRNA lnc-NR2F1 is pro-neurogenic and mutated in human neurodevelopmental disorders.** *eLife*
  Ang, C. E., Ma, Q., Wapinski, O. L., Fan, S., Flynn, R. A., Lee, Q. Y., Coe, B., Onoguchi, M., Olmos, V. H., Do, B. T., Dukes-Rimsky, L., Xu, J., Tanabe, et al
  2019; 8

- **Direct Reprogramming of Human Neurons Identifies MARCKSL1 as a Pathogenic Mediator of Valproic Acid-Induced Teratogenicity.** *Cell stem cell*
  Chanda, S., Ang, C. E., Lee, Q. Y., Ghebrial, M., Haag, D., Shibuya, Y., Wernig, M., Südhof, T. C.
  2019

- **Modeling Alzheimer's disease with human iPS cells: advancements, lessons, and applications.** *Neurobiology of disease*
  Essayan-Perez, S., Zhou, B., Nabet, A. M., Wernig, M., Huang, Y. A.
  2019: 104503

- **Direct targeting of the mouse optic nerve for therapeutic delivery.** *Journal of neuroscience methods*
  Mesentier-Louro, L. A., Dodd, R., Domizi, P., Nobuta, H., Wernig, M., Wernig, G., Liao, Y. J.
  2018

- **CRISPR Activation Screens Systematically Identify Factors that Drive Neuronal Fate and Reprogramming.** *Cell stem cell*
  Liu, Y., Yu, C., Daley, T. P., Wang, F., Cao, W. S., Bhate, S., Lin, X., Still, C. 2., Liu, H., Zhao, D., Wang, H., Xie, X. S., Ding, et al
  2018

- **The fragile X mutation impairs homeostatic plasticity in human neurons by blocking synaptic retinoic acid signaling.** *Science translational medicine*
  Zhang, Z., Marro, S. G., Zhang, Y., Arendt, K. L., Patzke, C., Zhou, B., Fair, T., Yang, N., Sudhof, T. C., Wernig, M., Chen, L.
  2018; 10 (452)

- **Stem cell therapy for treatment of ischemic optic neuropathy**
  Mesentier-Louro, L., Yang, N., Shariati, A., Domizi, P., Dodd, R., Wernig, G., Wernig, M., Liao, Y.
  ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2018

- **Transdifferentiation of human adult peripheral blood T cells into neurons.** *Proceedings of the National Academy of Sciences of the United States of America*
  Tanabe, K., Ang, C. E., Chanda, S., Olmos, V. H., Haag, D., Levinson, D. F., Sudhof, T. C., Wernig, M.
  2018

- **Profiling DNA-transcription factor interactions** *NATURE BIOTECHNOLOGY*
  Ang, C., Wernig, M.
  2018; 36 (6): 501–2

- **Rapid Chromatin Switch in the Direct Reprogramming of Fibroblasts to Neurons** *CELL REPORTS*
  Wapinski, O. L., Lee, Q., Chen, A. C., Li, R., Corces, M., Ang, C., Treutlein, B., Xiang, C., Baubet, V., Suchy, F., Sankar, V., Sim, S., Quake, et al
  2017; 20 (13): 3236–47

- **Generation of pure GABAergic neurons by transcription factor programming.** *Nature methods*
  Yang, N., Chanda, S., Marro, S., Ng, Y., Janas, J. A., Haag, D., Ang, C. E., Tang, Y., Flores, Q., Mall, M., Wapinski, O., Li, M., Ahlenius, et al
  2017; 14 (6): 621-628

- **Induction of functional dopamine neurons from human astrocytes in vitro and mouse astrocytes in a Parkinson's disease model** *NATURE BIOTECHNOLOGY*
  Cervo, P. R., Romanov, R. A., Spigolon, G., Masini, D., Martin-Montanez, E., Toledo, E. M., La Manno, G., Feyder, M., Pifl, C., Ng, Y., Sanchez, S. P., Linnarsson, S., Wernig, et al
  2017; 35 (5): 444-?

- **Myt1l safeguards neuronal identity by actively repressing many non-neuronal fates** *NATURE*
  Mall, M., Kareta, M. S., Chanda, S., Ahlenius, H., Perotti, N., Zhou, B., Grieder, S. D., Ge, X., Drake, S., Ang, C. E., Walker, B. M., Vierbuchen, T., Fuentes, et al
  2017; 544 (7649): 245-?

- **Partial Reprogramming of Pluripotent Stem Cell-Derived Cardiomyocytes into Neurons** *SCIENTIFIC REPORTS*
  Chuang, W., Sharma, A., Shukla, P., Li, G., Mall, M., Rajarajan, K., Abilez, O. J., Hamaguchi, R., Wu, J. C., Wernig, M., Wu, S. M.
  2017; 7

- **Human AML-iPSCs Reacquire Leukemic Properties after Differentiation and Model Clonal Variation of Disease.** *Cell stem cell*
  Chao, M. P., Gentles, A. J., Chatterjee, S., Lan, F., Reinisch, A., Corces, M. R., Xavy, S., Shen, J., Haag, D., Chanda, S., Sinha, R., Morganti, R. M., Nishimura, et al
  2017; 20 (3): 329-344 e7

- **Concise Review: Stem Cell-Based Treatment of Pelizaeus-Merzbacher Disease** *STEM CELLS*
  Osorio, M., Rowitch, D. H., Tesar, P., Wernig, M., Windrem, M. S., Goldman, S. A.
  2017; 35 (2): 311–15

- **ApoE2, ApoE3, and ApoE4 Differentially Stimulate APP Transcription and Aß Secretion.** *Cell*
  Huang, Y. A., Zhou, B., Wernig, M., Südhof, T. C.
  2017; 168 (3): 427-441 e21

- **The novel tool of cell reprogramming for applications in molecular medicine.** *Journal of molecular medicine (Berlin, Germany)*
  Mall, M., Wernig, M.
  2017

- **µNeurocircuitry: Establishing in vitro models of neurocircuits with human neurons.** *Technology*
  Fantuzzo, J. A., De Filippis, L., McGowan, H., Yang, N., Ng, Y. H., Halikere, A., Liu, J. J., Hart, R. P., Wernig, M., Zahn, J. D., Pang, Z. P.
  2017; 5 (2): 87–97

- **Unique versus Redundant Functions of Neuroligin Genes in Shaping Excitatory and Inhibitory Synapse Properties.** *The Journal of neuroscience : the official journal of the Society for Neuroscience*
  Chanda, S., Hale, W. D., Zhang, B., Wernig, M., Südhof, T. C.
  2017; 37 (29): 6816–36

- **FoxO3 regulates neuronal reprogramming of cells from postnatal and aging mice** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Ahlenius, H., Chanda, S., Webb, A. E., Yousif, I., Karmazin, J., Prusiner, S. B., Brunet, A., Suedhof, T. C., Wernig, M.
  2016; 113 (30): 8514-8519

- **Dissecting direct reprogramming from fibroblast to neuron using single-cell RNA-seq** *NATURE*
  Treutlein, B., Lee, Q. Y., Camp, J. G., Mall, M., Koh, W., Shariati, S. A., Sim, S., Neff, N. F., Skotheim, J. M., Wernig, M., Quake, S. R.
  2016; 534 (7607): 391-?

- **Autism-associated SHANK3 haploinsufficiency causes I-h channelopathy in human neurons** *SCIENCE*
  Yi, F., Danko, T., Botelho, S. C., Patzke, C., Pak, C., Wernig, M., Sudhof, T. C.
  2016; 352 (6286): 672-?

- **Conditional deletion of L1CAM in human neurons impairs both axonal and dendritic arborization and action potential generation.** *journal of experimental medicine*
  Patzke, C., Acuna, C., Giam, L. R., Wernig, M., Südhof, T. C.
  2016; 213 (4): 499-515
- **Generation and transplantation of reprogrammed human neurons in the brain using 3D microtopographic scaffolds** *NATURE COMMUNICATIONS*
  Carlson, A. L., Bennett, N. K., Francis, N. L., Halikere, A., Clarke, S., Moore, J. C., Hart, R. P., Paradiso, K., Wernig, M., Kohn, J., Pang, Z. P., Moghe, P. V.
  2016; 7
- **Pathogenic mechanism of an autism-associated neuroligin mutation involves altered AMPA-receptor trafficking.** *Molecular psychiatry*
  Chanda, S., Aoto, J., Lee, S., Wernig, M., Südhof, T. C.
  2016; 21 (2): 169-177
- **The histone chaperone CAF-1 safeguards somatic cell identity** *NATURE*
  Cheloufi, S., Elling, U., Hopfgartner, B., Jung, Y. L., Murn, J., Ninova, M., Hubmann, M., Badeaux, A. I., Ang, C. E., Tenen, D., Wesche, D. J., Abazova, N., Hogue, et al
  2015; 528 (7581): 218-?
- **Crosstalk between stem cell and cell cycle machineries** *CURRENT OPINION IN CELL BIOLOGY*
  Kareta, M. S., Sage, J., Wernig, M.
  2015; 37: 68-74
- **Direct somatic lineage conversion.** *Philosophical transactions of the Royal Society of London. Series B, Biological sciences*
  Tanabe, K., Haag, D., Wernig, M.
  2015; 370 (1680)
- **Hallmarks of pluripotency** *NATURE*
  De Los Angeles, A., Ferrari, F., Xi, R., Fujiwara, Y., Benvenisty, N., Deng, H., Hochedlinger, K., Jaenisch, R., Lee, S., Leitch, H. G., Lensch, M. W., Lujan, E., Pei, et al
  2015; 525 (7570): 469-478
- **Failure to replicate the STAP cell phenomenon** *NATURE*
  De Los Angeles, A., Ferrari, F., Fujiwara, Y., Mathieu, R., Lee, S., Lee, S., Tu, H., Ross, S., Chou, S., Minh Nguyen, Wu, Z., Theunissen, T. W., Powell, B. E., et al
  2015; 525 (7570): E6-+
- **Human Neuropsychiatric Disease Modeling using Conditional Deletion Reveals Synaptic Transmission Defects Caused by Heterozygous Mutations in NRXN1.** *Cell stem cell*
  Pak, C., Danko, T., Zhang, Y., Aoto, J., Anderson, G., Maxeiner, S., Yi, F., Wernig, M., Südhof, T. C.
  2015; 17 (3): 316-328
- **Analysis of conditional heterozygous STXBP1 mutations in human neurons** *JOURNAL OF CLINICAL INVESTIGATION*
  Patzke, C., Han, Y., Covy, J., Yi, F., Maxeiner, S., Wernig, M., Suedhof, T. C.
  2015; 125 (9): 3560-3571
- **Analysis of conditional heterozygous STXBP1 mutations in human neurons.** *journal of clinical investigation*
  Patzke, C., Han, Y., Covy, J., Yi, F., Maxeiner, S., Wernig, M., Südhof, T. C.
  2015; 125 (9): 3560-3571
- **Human Neuropsychiatric Disease Modeling using Conditional Deletion Reveals Synaptic Transmission Defects Caused by Heterozygous Mutations in NRXN1** *CELL STEM CELL*
  Pak, C., Danko, T., Zhang, Y., Aoto, J., Anderson, G., Maxeiner, S., Yi, F., Wernig, M., Suedhof, T. C.
  2015; 17 (3): 316-328
- **Early reprogramming regulators identified by prospective isolation and mass cytometry** *NATURE*
  Lujan, E., Zunder, E. R., Ng, Y. H., Goronzy, I. N., Nolan, G. P., Wernig, M.
  2015; 521 (7552): 352-?
- **A Continuous Molecular Roadmap to iPSC Reprogramming through Progression Analysis of Single-Cell Mass Cytometry.** *Cell stem cell*
  Zunder, E. R., Lujan, E., Goltsev, Y., Wernig, M., Nolan, G. P.
  2015; 16 (3): 323-337

- **Inhibition of pluripotency networks by the rb tumor suppressor restricts reprogramming and tumorigenesis.** *Cell stem cell*
  Kareta, M. S., Gorges, L. L., Hafeez, S., Benayoun, B. A., Marro, S., Zmoos, A., Cecchini, M. J., Spacek, D., Batista, L. F., O'Brien, M., Ng, Y., Ang, C. E., Vaka, et al
  2015; 16 (1): 39-50

- **m(6)A RNA Modification Controls Cell Fate Transition in Mammalian Embryonic Stem Cells.** *Cell stem cell*
  Batista, P. J., Molinie, B., Wang, J., Qu, K., Zhang, J., Li, L., Bouley, D. M., Lujan, E., Haddad, B., Daneshvar, K., Carter, A. C., Flynn, R. A., Zhou, et al
  2014; 15 (6): 707-719

- **Human COL7A1-corrected induced pluripotent stem cells for the treatment of recessive dystrophic epidermolysis bullosa** *SCIENCE TRANSLATIONAL MEDICINE*
  Sebastiano, V., Zhen, H. H., Derafshi, B. H., Bashkirova, E., Melo, S. P., Wang, P., Leung, T. L., Siprashvili, Z., Tichy, A., Li, J., Ameen, M., Hawkins, J., Lee, et al
  2014; 6 (264)

- **Induced Neuronal Reprogramming** *JOURNAL OF COMPARATIVE NEUROLOGY*
  Ang, C. E., Wernig, M.
  2014; 522 (12): 2877-2886

- **Generation of Induced Neuronal Cells by the Single Reprogramming Factor ASCL1** *STEM CELL REPORTS*
  Chanda, S., Ang, C. E., Davila, J., Pak, C., Mall, M., Lee, Q. Y., Ahlenius, H., Jung, S. W., Suedhof, T. C., Wernig, M.
  2014; 3 (2): 282-296

- **Calcineurin Signaling Regulates Neural Induction through Antagonizing the BMP Pathway.** *Neuron*
  Cho, A., Tang, Y., Davila, J., Deng, S., Chen, L., Miller, E., Wernig, M., Graef, I. A.
  2014; 82 (1): 109-124

- **Harnessing the stem cell potential: a case for neural stem cell therapy.** *Nature medicine*
  Yang, N., Wernig, M.
  2013; 19 (12): 1580-1581

- **Hierarchical Mechanisms for Direct Reprogramming of Fibroblasts to Neurons** *CELL*
  Wapinski, O. L., Vierbuchen, T., Qu, K., Lee, Q. Y., Chanda, S., Fuentes, D. R., Giresi, P. G., Ng, Y. H., Marro, S., Neff, N. F., Drechsel, D., Martynoga, B., Castro, et al
  2013; 155 (3): 621-635

- **Neurons generated by direct conversion of fibroblasts reproduce synaptic phenotype caused by autism-associated neuroligin-3 mutation.** *Proceedings of the National Academy of Sciences of the United States of America*
  Chanda, S., Marro, S., Wernig, M., Südhof, T. C.
  2013; 110 (41): 16622-16627

- **FOXO3 Shares Common Targets with ASCL1 Genome-wide and Inhibits ASCL1-Dependent Neurogenesis.** *Cell reports*
  Webb, A. E., Pollina, E. A., Vierbuchen, T., Urbán, N., Ucar, D., Leeman, D. S., Martynoga, B., Sewak, M., Rando, T. A., Guillemot, F., Wernig, M., Brunet, A.
  2013; 4 (3): 477-491

- **Acute reduction in oxygen tension enhances the induction of neurons from human fibroblasts** *JOURNAL OF NEUROSCIENCE METHODS*
  Davila, J., Chanda, S., Ang, C. E., Suedhof, T. C., Wernig, M.
  2013; 216 (2): 104-109

- **Rapid single-step induction of functional neurons from human pluripotent stem cells.** *Neuron*
  Zhang, Y., Pak, C., Han, Y., Ahlenius, H., Zhang, Z., Chanda, S., Marro, S., Patzke, C., Acuna, C., Covy, J., Xu, W., Yang, N., Danko, et al
  2013; 78 (5): 785-798

- **Generation of oligodendroglial cells by direct lineage conversion.** *Nature biotechnology*
  Yang, N., Zuchero, J. B., Ahlenius, H., Marro, S., Ng, Y. H., Vierbuchen, T., Hawkins, J. S., Geissler, R., Barres, B. A., Wernig, M.
  2013; 31 (5): 434-439

- **An indirect approach to generating specific human cell types** *NATURE METHODS*
  Lujan, E., Wernig, M.
  2013; 10 (1): 44-46

- **The many roads to Rome: induction of neural precursor cells from fibroblasts** *CURRENT OPINION IN GENETICS & DEVELOPMENT*
  Lujan, E., Wernig, M.
  2012; 22 (5): 517-522

- **Molecular Roadblocks for Cellular Reprogramming** *MOLECULAR CELL*
  Vierbuchen, T., Wernig, M.
  2012; 47 (6): 827-838

- **Direct conversion of mouse fibroblasts to self-renewing, tripotent neural precursor cells** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Lujan, E., Chanda, S., Ahlenius, H., Suedhof, T. C., Wernig, M.
  2012; 109 (7): 2527-2532

- **Comprehensive qPCR profiling of gene expression in single neuronal cells** *NATURE PROTOCOLS*
  Citri, A., Pang, Z. P., Suedhof, T. C., Wernig, M., Malenka, R. C.
  2012; 7 (1): 118-127

- **Induced Neuronal Cells: How to Make and Define a Neuron** *CELL STEM CELL*
  Yang, N., Ng, Y. H., Pang, Z. P., Suedhof, T. C., Wernig, M.
  2011; 9 (6): 517-525

- **Cellular Reprogramming: Recent Advances in Modeling Neurological Diseases** *JOURNAL OF NEUROSCIENCE*
  Ming, G., Bruestle, O., Muotri, A., Studer, L., Wernig, M., Christian, K. M.
  2011; 31 (45): 16070-16075

- **In Situ Genetic Correction of the Sickle Cell Anemia Mutation in Human Induced Pluripotent Stem Cells Using Engineered Zinc Finger Nucleases** *STEM CELLS*
  Sebastiano, V., Maeder, M. L., Angstman, J. F., Haddad, B., Khayter, C., Yeo, D. T., Goodwin, M. J., Hawkins, J. S., Ramirez, C. L., Batista, L. F., Artandi, S. E., Wernig, M., Joung, et al
  2011; 29 (11): 1717-1726

- **Direct Lineage Conversion of Terminally Differentiated Hepatocytes to Functional Neurons** *CELL STEM CELL*
  Marro, S., Pang, Z. P., Yang, N., Tsai, M., Qu, K., Chang, H. Y., Suedhof, T. C., Wernig, M.
  2011; 9 (4): 374-382

- **Direct lineage conversions: unnatural but useful?** *NATURE BIOTECHNOLOGY*
  Vierbuchen, T., Wernig, M.
  2011; 29 (10): 892-907

- **Induction of human neuronal cells by defined transcription factors** *NATURE*
  Pang, Z. P., Yang, N., Vierbuchen, T., Ostermeier, A., Fuentes, D. R., Yang, T. Q., Citri, A., Sebastiano, V., Marro, S., Suedhof, T. C., Wernig, M.
  2011; 476 (7359): 220-U122

- **Telomere shortening and loss of self-renewal in dyskeratosis congenita induced pluripotent stem cells** *NATURE*
  Batista, L. F., Pech, M., Zhong, F. L., Nguyen, H. N., Xie, K. T., Zaug, A. J., Crary, S. M., Choi, J., Sebastiano, V., Cherry, A., Giri, N., Wernig, M., Alter, et al
  2011; 474 (7351): 399-?

- **An imprinted signature helps isolate ESC-equivalent iPSCs** *CELL RESEARCH*
  Lujan, E., Wernig, M.
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