

# Stanford

---



## Creed Stary

Associate Professor of Anesthesiology, Perioperative and Pain Medicine (Adult MSD) and, by courtesy, of Ophthalmology at the Stanford University Medical Center

### CLINICAL OFFICES

- **Anesthesia Department**

300 Pasteur Dr Rm H3580

MC 5640

Stanford, CA 94305

**Tel** (650) 723-5728

**Fax** (650) 725-8544

### Bio

---

### CLINICAL FOCUS

- Anesthesia

### ACADEMIC APPOINTMENTS

- Associate Professor - Med Center Line, Anesthesiology, Perioperative and Pain Medicine
- Associate Professor - Med Center Line (By courtesy), Ophthalmology
- Member, Bio-X
- Member, Wu Tsai Neurosciences Institute

### ADMINISTRATIVE APPOINTMENTS

- Asst. Clinical Director, Byers Eye Institute, Anesthesiology, (2013- present)

### HONORS AND AWARDS

- NIH R01NS112642 "Cofilin Signaling in Hemorrhagic Stroke", National Institutes of Health (6/15/2020-03/31/2025)
- NIH R01NS107445 "Non-coding RNA regulation of sex differences in stroke", National Institutes of Health (7/1/2019-6/30/2024)
- Fellow to Faculty Transition Award, 14FTF- 19970029, American Heart Association (7/2014 - 6/2019)
- T32 Training Grant in Anesthesia Research and Medicine, National Institutes of Health (7/2012-6/2014)
- Travel Award, Best Scientific Abstract, Association of University Anesthesiologists (3/2014)
- Best Scientific Presentation, Western Anesthesia Residents Conference (5/2012)
- Best Clinical Abstract, Western Anesthesia Residents Conference (5/2012)

### BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, Association of University Anesthesiologists (2016 - present)
- Member, International Anesthesia Research Society (2014 - present)
- Member, American Heart Association (2014 - present)

- Member, Society for Neuroscience (2013 - present)
- Member, Society for Neuroscience in Anesthesiology and Critical Care (2012 - present)
- Member, American Society of Anesthesiologists (2009 - present)
- Member, American College of Sports Medicine (1995 - present)
- Member, American Physiological Society (1994 - present)

## PROFESSIONAL EDUCATION

- Residency: University of California San Diego School of Medicine Registrar (2012) CA
- Medical Education: University of California San Diego School of Medicine Registrar (2008) CA
- Board Certification: Anesthesia, American Board of Anesthesiology (2014)
- Board Certification, American Board of Anesthesiology (2014)
- Internship: University Of Hawaii (2009) HI
- PhD, UC San Diego , Biomedicine (2006)
- BS, UC San Diego , Animal Physiology and Neuroscience (1997)
- BA, UC San Diego , Psychology (1997)

## Research & Scholarship

---

### CURRENT RESEARCH AND SCHOLARLY INTERESTS

We are interested in finding new strategies to promote neuronal survival and improve functional outcome following injury to the brain. The brain consists of several different cell types, the most abundant of which are astrocytes, specialized glial cells that play a vital role in regulating neuronal function and homeostasis. Specifically, we are focused on determining the role of non-coding RNA's in: 1) astrocyte-mediated protection and recovery of brain function following ischemic injury, and; 2) gender differences in severity of injury and recovery from stroke.

## Teaching

---

### STANFORD ADVISEES

#### Postdoctoral Faculty Sponsor

Brian Griffiths

#### Postdoctoral Research Mentor

Brian Griffiths

## Publications

---

### PUBLICATIONS

- **Adult neurogenesis from reprogrammed astrocytes.** *Neural regeneration research*  
Griffiths, B. B., Bhutani, A., Stary, C. M.  
2020; 15 (6): 973–79
- **Stem Cell-Derived Exosomes Protect Astrocyte Cultures From in vitro Ischemia and Decrease Injury as Post-stroke Intravenous Therapy** *FRONTIERS IN CELLULAR NEUROSCIENCE*  
Sun, X., Jung, J., Arvola, O., Santoso, M. R., Giffard, R. G., Yang, P. C., Stary, C. M.  
2019; 13
- **Pre-treatment with microRNA-181a Antagomir Prevents Loss of Parvalbumin Expression and Preserves Novel Object Recognition Following Mild Traumatic Brain Injury** *NEUROMOLECULAR MEDICINE*  
Griffiths, B. B., Sahbaie, P., Rao, A., Arvola, O., Xu, L., Liang, D., Ouyang, Y., Clark, D. J., Giffard, R. G., Stary, C. M.

2019; 21 (2): 170–81

- **Age-dependent sexual dimorphism in hippocampal cornu ammonis-1 perineuronal net expression in rats** *BRAIN AND BEHAVIOR*  
Griffiths, B. B., Madden, A. K., Edwards, K. A., Zup, S. L., Stary, C. M.  
2019; 9 (5)
- **Elucidating sex differences in response to cerebral ischemia: immunoregulatory mechanisms and the role of microRNAs** *PROGRESS IN NEUROBIOLOGY*  
Kaidonis, G., Rao, A. N., Ouyang, Y., Stary, C. M.  
2019; 176: 73–85
- **Sexually Dimorphic Response to Stroke of miR-181a and miR-200c in Aged Mice**  
Griffiths, B. B., Arvola, O., Bhutani, A., Pastroudis, J., Xu Lijun, Stary, C.  
LIPPINCOTT WILLIAMS & WILKINS.2019
- **Ferroptosis Contributes to Isoflurane Neurotoxicity** *FRONTIERS IN MOLECULAR NEUROSCIENCE*  
Xia, Y., Sun, X., Luo, Y., Stary, C. M.  
2019; 11
- **Nursing Markedly Protects Postpartum Mice From Stroke: Associated Central and Peripheral Neuroimmune Changes and a Role for Oxytocin.** *Frontiers in neuroscience*  
Stary, C. M., Xu, L., Voloboueva, L. A., Alcántara-Hernández, M., Arvola, O. J., Idoyaga, J., Giffard, R. G.  
2019; 13: 609
- **Post-injury inhibition of miR-181a promotes restoration of hippocampal CA1 neurons after transient forebrain ischemia in rats.** *eNeuro*  
Griffiths, B. B., Ouyang, Y. B., Xu, L., Sun, X., Giffard, R. G., Stary, C. M.  
2019
- **Stem Cell-Derived Exosomes Protect Astrocyte Cultures From in vitro Ischemia and Decrease Injury as Post-stroke Intravenous Therapy.** *Frontiers in cellular neuroscience*  
Sun, X., Jung, J. H., Arvola, O., Santoso, M. R., Giffard, R. G., Yang, P. C., Stary, C. M.  
2019; 13: 394
- **Ferroptosis Contributes to Isoflurane Neurotoxicity.** *Frontiers in molecular neuroscience*  
Xia, Y., Sun, X., Luo, Y., Stary, C. M.  
2018; 11: 486
- **Inhibition of miR-181a protects female mice from transient focal cerebral ischemia by targeting astrocyte estrogen receptor- $\alpha$ .** *Molecular and cellular neurosciences*  
Stary, C. M., Xu, L., Li, L., Sun, X., Ouyang, Y., Xiong, X., Zhao, J., Giffard, R. G.  
2017; 82: 118-125
- **miR-29a differentially regulates cell survival in astrocytes from cornu ammonis 1 and dentate gyrus by targeting VDACL1.** *Mitochondrion*  
Stary, C. M., Sun, X., Ouyang, Y., Li, L., Giffard, R. G.  
2016; 30: 248-254
- **Astrocytes Protect against Isoflurane Neurotoxicity by Buffering pro-brain-derived Neurotrophic Factor.** *Anesthesiology*  
Stary, C. M., Sun, X., Giffard, R. G.  
2015; 123 (4): 810-819
- **MicroRNA-200c Contributes to Injury From Transient Focal Cerebral Ischemia by Targeting Reelin.** *Stroke; a journal of cerebral circulation*  
Stary, C. M., Xu, L., Sun, X., Ouyang, Y., White, R. E., Leong, J., Li, J., Xiong, X., Giffard, R. G.  
2015; 46 (2): 551-556
- **Pregabalin: Potential for Addiction and a Possible Glutamatergic Mechanism.** *Scientific reports*  
Althobaiti, Y. S., Almalki, A., Alsaab, H., Alsanie, W., Gaber, A., Alhadidi, Q., Hardy, A. M., Nasr, A., Alzahrani, O., Stary, C. M., Shah, Z. A.  
2019; 9 (1): 15136
- **Nursing Markedly Protects Postpartum Mice From Stroke: Associated Central and Peripheral Neuroimmune Changes and a Role for Oxytocin** *FRONTIERS IN NEUROSCIENCE*  
Stary, C. M., Xu, L., Voloboueva, L. A., Alcántara-Hernandez, M., Arvola, O. J., Idoyaga, J., Giffard, R. G.  
2019; 13

- **Hippocampal sub-regional differences in the microRNA response to forebrain ischemia.** *Molecular and cellular neurosciences*  
Arvola, O., Kaidonis, G., Xu, L., Griffiths, B., Stary, C. M.  
2019
- **Bidirectional gut-brain-microbiota axis as a potential link between inflammatory bowel disease and ischemic stroke.** *Journal of neuroinflammation*  
Zhao, L., Xiong, Q., Stary, C. M., Mahgoub, O. K., Ye, Y., Gu, L., Xiong, X., Zhu, S.  
2018; 15 (1): 339
- **Elucidating sex differences in response to cerebral ischemia: immunoregulatory mechanisms and the role of microRNAs.** *Progress in neurobiology*  
Kaidonis, G., Rao, A. N., Ouyang, Y., Stary, C. M.  
2018
- **Micro-RNAs in the pathogenesis of epiretinal membrane (ERM) formation**  
Kaidonis, G., Stary, C. M., Leng, T.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2018
- **Engineering chimeric antigen receptor-T cells for cancer treatment** *MOLECULAR CANCER*  
Ye, B., Stary, C. M., Li, X., Gao, Q., Kang, C., Xiong, X.  
2018; 17: 32
- **Anesthetic neurotoxicity: an emerging role for glia in neuroprotection** *JOURNAL OF MOLECULAR MEDICINE-JMM*  
Bell, J. D., Stary, C. M.  
2017; 95 (4): 349-351
- **Genetically Modified T-Cell-Based Adoptive Immunotherapy in Hematological Malignancies** *JOURNAL OF IMMUNOLOGY RESEARCH*  
Ye, B., Stary, C. M., Gao, Q., Wang, Q., Zeng, Z., Jian, Z., Gu, L., Xiong, X.  
2017
- **Serum prealbumin as an effective prognostic indicator for determining clinical status and prognosis in patients with hemorrhagic stroke.** *Neural regeneration research*  
Zhang, S. Q., Peng, B., Stary, C. M., Jian, Z. H., Xiong, X. X., Chen, Q. X.  
2017; 12 (7): 1097-1102
- **Exaggerated Oculocardiac Reflex Elicited by Local Anesthetic Injection of an Empty Orbit: A Case Report.** *A & A case reports*  
Nicholson, D., Kossler, A., Topping, K., Stary, C. M.  
2017
- **Advances in Immunotherapy for Glioblastoma Multiforme** *JOURNAL OF IMMUNOLOGY RESEARCH*  
Huang, B., Zhang, H., Gu, L., Ye, B., Jian, Z., Stary, C., Xiong, X.  
2017
- **The inflammasome as a target for pain therapy** *BRITISH JOURNAL OF ANAESTHESIA*  
Zhang, H., Li, F., Li, W., Stary, C., Clark, J. D., Xu, S., Xiong, X.  
2016; 117 (6): 693-707
- **Transient Receptor Potential Vanilloid 1 Regulates Mitochondrial Membrane Potential and Myocardial Reperfusion Injury.** *Journal of the American Heart Association*  
Hurt, C. M., Lu, Y., M Stary, C., Piplani, H., Small, B. A., Urban, T. J., Qvit, N., Gross, G. J., Mochly-Rosen, D., Gross, E. R.  
2016; 5 (9)
- **A high-resolution method for assessing cellular oxidative phosphorylation efficiency: bringing mitochondrial bioenergetics into focus. Focus on "Direct real-time quantification of mitochondrial oxidative phosphorylation efficiency in permeabilized skeletal muscle myofibers".** *American journal of physiology. Cell physiology*  
Stary, C. M.  
2016; 311 (2): C237-8
- **Cytosolic calcium transients are a determinant of contraction-induced HSP72 transcription in single skeletal muscle fibers** *JOURNAL OF APPLIED PHYSIOLOGY*  
Stary, C. M., Hogan, M. C.  
2016; 120 (10): 1260-1266

- **Targeting Glial Mitochondrial Function for Protection from Cerebral Ischemia: Relevance, Mechanisms, and the Role of MicroRNAs** *OXIDATIVE MEDICINE AND CELLULAR LONGEVITY*  
Li, L., Stary, C. M.  
2016
- **Exploring and exploiting unique properties of the hippocampal dentate gyrus for post-stroke therapy: astrocytes link ischemic resistance with neurogenic potential.** *Neural regeneration research*  
Stary, C. M.  
2016; 11 (11): 1756–57
- **Single-Cell Sequencing Technology in Oncology: Applications for Clinical Therapies and Research.** *Analytical cellular pathology*  
Ye, B., Gao, Q., Zeng, Z., Stary, C. M., Jian, Z., Xiong, X., Gu, L.  
2016; 2016: 9369240-?
- **Physiologically normal 5% O<sub>2</sub> supports neuronal differentiation and resistance to inflammatory injury in neural stem cell cultures.** *Journal of neuroscience research*  
Sun, X., Voloboueva, L. A., Stary, C. M., Giffard, R. G.  
2015; 93 (11): 1703-1712
- **Physiologically normal 5% O<sub>2</sub> supports neuronal differentiation and resistance to inflammatory injury in neural stem cell cultures.** *Journal of neuroscience research*  
Sun, X., Voloboueva, L. A., Stary, C. M., Giffard, R. G.  
2015; 93 (11): Spc1-?
- **Epigenetics: The Epicenter for Future Anesthesia Research?** *Anesthesiology*  
Stary, C. M., Patel, H. H., Roth, D. M.  
2015; 123 (4): 743-744
- **T Cells and Cerebral Ischemic Stroke** *NEUROCHEMICAL RESEARCH*  
Gu, L., Jian, Z., Stary, C., Xiong, X.  
2015; 40 (9): 1786-1791
- **Advances in Astrocyte-targeted Approaches for Stroke Therapy: An Emerging Role for Mitochondria and microRNAs.** *Neurochemical research*  
Stary, C. M., Giffard, R. G.  
2015; 40 (2): 301-307
- **Post-stroke treatment with miR-181 antagomir reduces injury and improves long-term behavioral recovery in mice after focal cerebral ischemia.** *Experimental neurology*  
Xu, L., Ouyang, Y., Xiong, X., Stary, C. M., Giffard, R. G.  
2015; 264: 1-7
- **Role of caveolin-3 in lymphocyte activation.** *Life sciences*  
Tran, C., Stary, C. M., Schilling, J. M., Bentley, B., Patel, H. H., Roth, D. M.  
2015; 121: 35-39
- **The Use of microRNAs to Modulate Redox and Immune Response to Stroke.** *Antioxidants & redox signaling*  
Ouyang, Y., Stary, C. M., White, R. E., Giffard, R. G.  
2015; 22 (2): 187-202
- **Molecular Pathogenesis of Anti-NMDAR Encephalitis** *BIOMED RESEARCH INTERNATIONAL*  
Ding, H., Jian, Z., Stary, C. M., Yi, W., Xiong, X.  
2015
- **microRNAs: Innovative Targets for Cerebral Ischemia and Stroke** *CURRENT DRUG TARGETS*  
Ouyang, Y., Stary, C. M., Yang, G., Giffard, R.  
2013; 14 (1): 90-101
- **Caveolins: targeting pro-survival signaling in the heart and brain.** *Frontiers in physiology*  
Stary, C. M., Tsutsumi, Y. M., Patel, P. M., Head, B. P., Patel, H. H., Roth, D. M.  
2012; 3: 393-?

- **Caveolins: targeting pro-survival signaling in the heart and brain** *FRONTIERS IN PHYSIOLOGY*  
Stary, C. M., Tsutsumi, Y. M., Patel, P. M., Head, B. P., Patel, H. H., Roth, D. M.  
2012; 3
- **Idiopathic granulomatous mastitis associated with corynebacterium sp. Infection.** *Hawaii medical journal*  
Stary, C. M., Lee, Y. S., Balfour, J.  
2011; 70 (5): 99-101
- **The O-2 cost of the tension-time integral in isolated single myocytes during fatigue** *AMERICAN JOURNAL OF PHYSIOLOGY-REGULATORY INTEGRATIVE AND COMPARATIVE PHYSIOLOGY*  
Hepple, R. T., Howlett, R. A., Kindig, C. A., Stary, C. M., Hogan, M. C.  
2010; 298 (4): R983-R988
- **Glycolytic activation at the onset of contractions in isolated *Xenopus laevis* single myofibres** *EXPERIMENTAL PHYSIOLOGY*  
Walsh, B., Stary, C. M., Howlett, R. A., Kelley, K. M., Hogan, M. C.  
2008; 93 (9): 1076-1084
- **Elevation in heat shock protein 72 mRNA following contractions in isolated single skeletal muscle fibers** *AMERICAN JOURNAL OF PHYSIOLOGY-REGULATORY INTEGRATIVE AND COMPARATIVE PHYSIOLOGY*  
Stary, C. M., Walsh, B. J., Knapp, A. E., Brafman, D., Hogan, M. C.  
2008; 295 (2): R642-R648
- **Measurement of activation energy and oxidative phosphorylation onset kinetics in isolated muscle fibers in the absence of cross-bridge cycling** *AMERICAN JOURNAL OF PHYSIOLOGY-REGULATORY INTEGRATIVE AND COMPARATIVE PHYSIOLOGY*  
Walsh, B., Howlett, R. A., Stary, C. M., Kindig, C. A., Hogan, M. C.  
2006; 290 (6): R1707-R1713
- **Determinants of oxidative phosphorylation onset kinetics in isolated myocytes** *MEDICINE AND SCIENCE IN SPORTS AND EXERCISE*  
Walsh, B., Howlett, R. A., Stary, C. M., Kindig, C. A., Hogan, M. C.  
2005; 37 (9): 1551-1558
- **Intracellular pH during sequential, fatiguing contractile periods in isolated single *Xenopus* skeletal muscle fibers** *JOURNAL OF APPLIED PHYSIOLOGY*  
Stary, C. M., Hogan, M. C.  
2005; 99 (1): 308-312
- **Relationship between intracellular PO<sub>2</sub> recovery kinetics and fatigability in isolated single frog myocytes** *JOURNAL OF APPLIED PHYSIOLOGY*  
Kindig, C. A., Walsh, B., Howlett, R. A., Stary, C. M., Hogan, M. C.  
2005; 98 (6): 2316-2319
- **NAD(P)H fluorescence imaging of mitochondrial metabolism in contracting *Xenopus* skeletal muscle fibers: effect of oxygen availability** *JOURNAL OF APPLIED PHYSIOLOGY*  
Hogan, M. C., Stary, C. M., Balaban, R. S., Combs, C. A.  
2005; 98 (4): 1420-1426
- **Effects of acute creatine kinase inhibition on metabolism and tension development in isolated single myocytes** *JOURNAL OF APPLIED PHYSIOLOGY*  
Kindig, C. A., Howlett, R. A., Stary, C. M., Walsh, B., Hogan, M. C.  
2005; 98 (2): 541-549
- **Effect of dissociating cytosolic calcium and metabolic rate of intracellular Po-2 kinetics in single frog myocytes** *JOURNAL OF PHYSIOLOGY-LONDON*  
Kindig, C. A., Stary, C. M., Hogan, M. C.  
2005; 562 (2): 527-534
- **Resistance to fatigue of individual *Xenopus* single skeletal muscle fibres is correlated with mitochondrial volume density** *EXPERIMENTAL PHYSIOLOGY*  
Stary, C. M., Mathieu-Costello, O., Hogan, M. C.  
2004; 89 (5): 617-621
- **Effect of contraction frequency on the contractile and noncontractile phases of muscle venous blood flow** *JOURNAL OF APPLIED PHYSIOLOGY*  
Hogan, M. C., Grassi, B., Samaja, M., Stary, C. M., Gladden, L. B.  
2003; 95 (3): 1139-1144

- **Trimetazidine reduces basal cytosolic Ca<sup>2+</sup> concentration during hypoxia in single *Xenopus* skeletal myocytes** *EXPERIMENTAL PHYSIOLOGY*  
Stary, C. M., Kohin, S., Samaja, M., Howlett, R. A., Hogan, M. C.  
2003; 88 (3): 415-421
- **No effect of trans sodium crocetinate on maximal O-2 conductance or V-O<sub>2</sub>, V-max in moderate hypoxia** *RESPIRATORY PHYSIOLOGY & NEUROBIOLOGY*  
Hepple, R. T., Stary, C. M., Kohin, S., Wagner, P. D., Hogan, M. C.  
2003; 134 (3): 239-246
- **Assessment of O-2 uptake dynamics in isolated single skeletal myocytes** *JOURNAL OF APPLIED PHYSIOLOGY*  
Kindig, C. A., Kelley, K. M., Howlett, R. A., Stary, C. M., Hogan, M. C.  
2003; 94 (1): 353-357
- **Preconditioning improves function and recovery of single muscle fibers during severe hypoxia and reoxygenation** *AMERICAN JOURNAL OF PHYSIOLOGY-CELL PHYSIOLOGY*  
Kohin, S., Stary, C. M., Howlett, R. A., Hogan, M. C.  
2001; 281 (1): C142-C146
- **Recovery of force during postcontractile depression in single *Xenopus* muscle fibers** *AMERICAN JOURNAL OF PHYSIOLOGY-REGULATORY INTEGRATIVE AND COMPARATIVE PHYSIOLOGY*  
Howlett, R. A., Stary, C. M., Hogan, M. C.  
2001; 280 (5): R1469-R1475
- **Impairment of Ca<sup>2+</sup> release in single *Xenopus* muscle fibers fatigued at varied extracellular Po-2** *JOURNAL OF APPLIED PHYSIOLOGY*  
Stary, C. M., Hogan, M. C.  
2000; 88 (5): 1743-1748
- **Phosphorylating pathways and fatigue development in contracting *Xenopus* single skeletal muscle fibers** *AMERICAN JOURNAL OF PHYSIOLOGY-REGULATORY INTEGRATIVE AND COMPARATIVE PHYSIOLOGY*  
Stary, C. M., Hogan, M. C.  
2000; 278 (3): R587-R591
- **Structural basis of muscle O-2 diffusing capacity: evidence from muscle function in situ** *JOURNAL OF APPLIED PHYSIOLOGY*  
Hepple, R. T., Hogan, M. C., Stary, C., Bebout, D. E., Mathieu-Costello, O., Wagner, P. D.  
2000; 88 (2): 560-566
- **Rapid force recovery in contracting skeletal muscle after brief ischemia is dependent on O-2 availability** *JOURNAL OF APPLIED PHYSIOLOGY*  
Hogan, M. C., Kohin, S., Stary, C. M., Hepple, R. T.  
1999; 87 (6): 2225-2229
- **Effect of varied extracellular PO<sub>2</sub> on muscle performance in *Xenopus* single skeletal muscle fibers** *JOURNAL OF APPLIED PHYSIOLOGY*  
Stary, C. M., Hogan, M. C.  
1999; 86 (6): 1812-1816
- **Pulmonary gas exchange during exercise in pigs** *JOURNAL OF APPLIED PHYSIOLOGY*  
Hopkins, S. R., Stary, C. M., Falor, E., Wagner, H., Wagner, P. D., McKirnan, M. D.  
1999; 86 (1): 93-100
- **Faster adjustment of O-2 delivery does not affect Vo(2) on-kinetics in isolated in situ canine muscle** *JOURNAL OF APPLIED PHYSIOLOGY*  
Grassi, B., Gladden, L. B., Samaja, M., Stary, C. M., Hogan, M. C.  
1998; 85 (4): 1394-1403
- **Peripheral O-2 diffusion does not affect Vo(2) on-kinetics in isolated in situ canine muscle** *JOURNAL OF APPLIED PHYSIOLOGY*  
Grassi, B., Gladden, L. B., Stary, C. M., Wagner, P. D., Hogan, M. C.  
1998; 85 (4): 1404-1412
- **Bioenergetics of contracting skeletal muscle after partial reduction of blood flow** *JOURNAL OF APPLIED PHYSIOLOGY*  
Hogan, M. C., Gladden, L. B., Grassi, B., Stary, C. M., Samaja, M.  
1998; 84 (6): 1882-1888