

# Stanford

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## Eric R. Gross

Assistant Professor of Anesthesiology, Perioperative and Pain Medicine

 Curriculum Vitae available Online

### CLINICAL OFFICES

- **Anesthesia**

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Stanford, CA 94305

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### ACADEMIC CONTACT INFORMATION

- **Alternate Contact**

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## Bio

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### CLINICAL FOCUS

- Anesthesia

### ACADEMIC APPOINTMENTS

- Assistant Professor, Anesthesiology, Perioperative and Pain Medicine
- Member, Bio-X
- Member, Cardiovascular Institute
- Member, Maternal & Child Health Research Institute (MCHRI)

### ADMINISTRATIVE APPOINTMENTS

- Member, Anesthesiology Research Executive Committee, (2018- present)
- Co-Director, Neuroscience, Behavior, Cognition Medical Student Scholarly Concentration, (2014- present)
- Member, Stanford Diabetes Research Center, (2017- present)
- Director, Stanford Anesthesia Research Seminars (FNR), (2012- present)

### HONORS AND AWARDS

- Young Investigator Award, Runner-Up, International Society For Heart Research (ISHR) Annual Meeting (2005)
- Resident Research Award, 1st Place, New York Society of Anesthesiologists (2010)
- Kosaka Award Finalist, International Anesthesia Research Society (IARS) Annual Meeting (2010)
- Best Overall Abstract of Meeting- Basic Science, International Anesthesia Research Society (IARS) Annual Meeting (2013)
- K99/R00 Award, NHLBI (2011-Pres)
- NIGMS EC MIRA award, NIH (2016-Pres)

### BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Vice Chair, Sub-committee on Experimental Circulation, Anesthesiology (2020 - present)

- Peer Review Fellow, British Journal of Anesthesiology (2020 - present)
- Editorial Board, Journal of Pharmacology and Experimental Therapeutics, Scientific Reports (2019 - present)
- Member, Academic University Anesthesiologists (2015 - present)
- Board Certification in Anesthesiology, ABA (2013 - present)
- Member, International Society For Heart Research (ISHR) (2012 - present)
- Member, International Association for the Study of Pain (IASP) (2011 - present)
- Professional Member, American Heart Association (2003 - present)

## PROFESSIONAL EDUCATION

- Medical Education: Medical College Of Wisconsin Office of Graduate Medical Education (2007) WI
- Residency: Stanford University (2011) CA
- Internship: St Joseph's Regional Medical Center (2008) WI
- Board Certification: Anesthesia, American Board of Anesthesiology (2013)
- Anesthesiology, Stanford University , Anesthesiology (2011)
- MD, Medical College of Wisconsin , Medicine (2007)
- PhD, Medical College of Wisconsin , Pharmacology (2005)
- MS, Marquette University , Biomedical Engineering (2000)
- BS, Marquette University , Biomedical Engineering (1997)

## LINKS

- Lab Website: <http://med.stanford.edu/grosslab.html>

## Research & Scholarship

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### CURRENT RESEARCH AND SCHOLARLY INTERESTS

For a full description, see <http://med.stanford.edu/grosslab.html>

### PROJECTS

- NIGMS R35 GM119522 Precision Medicine for Asian Americans Requiring Anesthesia - Stanford University (5/1/2016)
- NHLBI R01 HL144388 E-cigarette Aerosol Effects On The Cardiovascular System In Rodents (9/1/2018 - 8/31/2022)

## Teaching

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### STANFORD ADVISEES

#### Postdoctoral Faculty Sponsor

Xuan Yu

#### Postdoctoral Research Mentor

Xuan Yu

### GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Anesthesia (Fellowship Program)
- Chemical and Systems Biology (Phd Program)

## Publications

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### PUBLICATIONS

- **12(S)-HETE mediates diabetes induced endothelial dysfunction by activating intracellular endothelial cell TRPV1.** *The Journal of clinical investigation*  
Otto, M., Bucher, C., Liu, W., Muller, M., Schmidt, T., Kardell, M., Driessen, M. N., Rossaint, J., Gross, E. R., Wagner, N.  
2020
- **Annals Graphic Medicine - Asian Flush.** *Annals of internal medicine*  
Jiang, S., Bastov, D., Bharadwaj, A., Gross, E. R.  
2019
- **A newly developed anesthetic based on a unique chemical core.** *Proceedings of the National Academy of Sciences of the United States of America*  
Cayla, N. S., Dagne, B. A., Wu, Y., Lu, Y., Rodriguez, L., Davies, D. L., Gross, E. R., Heifets, B. D., Davies, M. F., MacIver, M. B., Bertaccini, E. J.  
2019
- **Mitochondrial Bioenergetics and Quality Control Mechanisms in Health and Disease** *OXIDATIVE MEDICINE AND CELLULAR LONGEVITY*  
Ferreira, J. B., Mori, M. A., Gross, E. R.  
2019; 2019
- **Environmental Aldehyde Sources and the Health Implications of Exposure.** *Advances in experimental medicine and biology*  
Sinharoy, P., McAllister, S. L., Vasu, M., Gross, E. R.  
2019; 1193: 35–52
- **Alcohol consumption and vascular disease: other points to consider.** *Lancet (London, England)*  
Chen, C. H., Ferreira, J. C., Mochly-Rosen, D., Gross, E. R.  
2019; 394 (10209): 1617–18
- **Risks of Impaired Organ Protection with Inhibiting Transient Receptor Potential Vanilloid 1.** *Anesthesiology*  
Wu, Y., Gross, E. R., Qian, J.  
2018; 129 (2): 377–78
- **Risks of Impaired Organ Protection with Inhibiting Transient Receptor Potential Vanilloid 1** *ANESTHESIOLOGY*  
Wu, Y., Gross, E. R., Qian, J.  
2018; 129 (2): 377–78
- **Aldehyde-Induced DNA and Protein Adducts as Biomarker Tools for Alcohol Use Disorder.** *Trends in molecular medicine*  
Heymann, H. M., Gardner, A. M., Gross, E. R.  
2018; 24 (2): 144–55
- **Association of Impaired Reactive Aldehyde Metabolism with Delayed Graft Function in Human Kidney Transplantation** *OXIDATIVE MEDICINE AND CELLULAR LONGEVITY*  
Wijermars, L. M., Schaapherder, A. F., George, T., Sinharoy, P., Gross, E. R.  
2018: 3704129
- **Peptidomimetic therapeutics: scientific approaches and opportunities.** *Drug discovery today*  
Qvit, N., Rubin, S. J., Urban, T. J., Mochly-Rosen, D., Gross, E. R.  
2017; 22 (2): 454-462
- **Transient receptor potential vanilloid 1 inhibitors block laparotomy- and opioid-induced infarct size reduction in rats.** *British journal of pharmacology*  
Heymann, H. M., Wu, Y., Lu, Y., Qvit, N., Gross, G. J., Gross, E. R.  
2017; 174 (24): 4826–35
- **Genetic variations of aldehyde dehydrogenase 2 and alcohol dehydrogenase 1B are associated with the etiology of atrial fibrillation in Japanese** *JOURNAL OF BIOMEDICAL SCIENCE*  
Nakano, Y., Ochi, H., Onohara, Y., Sairaku, A., Tokuyama, T., Matsumura, H., Tomomori, S., Amioka, M., Hironomobe, N., Motoda, C., Oda, N., Chayama, K., Chen, et al  
2016; 23
- **Developing precision medicine for people of East Asian descent** *JOURNAL OF BIOMEDICAL SCIENCE*

- McAllister, S. L., Sun, K., Gross, E. R.  
2016; 23
- **Transient Receptor Potential Ankyrin 1 Activation within the Cardiac Myocyte Limits Ischemia-reperfusion Injury in Rodents.** *Anesthesiology*  
Lu, Y., Piplani, H., McAllister, S. L., Hurt, C. M., Gross, E. R.  
2016: -?
  - **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)
  - **Transient Receptor Potential Vanilloid 1 Regulates Mitochondrial Membrane Potential and Myocardial Reperfusion Injury** *JOURNAL OF THE AMERICAN HEART ASSOCIATION*  
Hurt, C. M., Lu, Y., Stary, C. M., Piplani, H., Small, B. A., Urban, T. J., Qvit, N., Gross, G. J., Mochly-Rosen, D., Gross, E. R.  
2016; 5 (9)
  - **A Slick Way Volatile Anesthetics Reduce Myocardial Injury** *ANESTHESIOLOGY*  
Wagner, N., Gross, E. R., Patel, H. H.  
2016; 124 (5): 986-88
  - **Reactive aldehydes: an initial path to develop precision medicine for pain control.** *Annals of translational medicine*  
Zambelli, V. O., Chen, C., Gross, E. R.  
2015; 3 (17): 258-?
  - **Happy 53rd Birthday GIK: Insulin, Cake, and Presents.** *Anesthesiology*  
Cole, S. P., Gross, E. R.  
2015; 123 (2): 249-250
  - **A personalized medicine approach for asian americans with the aldehyde dehydrogenase 2\*2 variant.** *Annual review of pharmacology and toxicology*  
Gross, E. R., Zambelli, V. O., Small, B. A., Ferreira, J. C., Chen, C., Mochly-Rosen, D.  
2015; 55: 107-127
  - **Morphine Reduces Myocardial Infarct Size via Heat Shock Protein 90 in Rodents.** *BioMed research international*  
Small, B. A., Lu, Y., Hsu, A. K., Gross, G. J., Gross, E. R.  
2015; 2015: 129612-?
  - **Aldehyde dehydrogenase-2 regulates nociception in rodent models of acute inflammatory pain.** *Science translational medicine*  
Zambelli, V. O., Gross, E. R., Chen, C., Gutierrez, V. P., Cury, Y., Mochly-Rosen, D.  
2014; 6 (251): 251ra118-?
  - **TARGETING ALDEHYDE DEHYDROGENASE 2: NEW THERAPEUTIC OPPORTUNITIES** *PHYSIOLOGICAL REVIEWS*  
Chen, C., Batista Ferreira, J. C., Gross, E. R., Mochly-Rosen, D.  
2014; 94 (1): 1-34
  - **Nociceptive-induced myocardial remote conditioning is mediated by neuronal gamma protein kinase C.** *Basic research in cardiology*  
Gross, E. R., Hsu, A. K., Urban, T. J., Mochly-Rosen, D., Gross, G. J.  
2013; 108 (5): 381-?
  - **Factors Mediating Remote Preconditioning of Trauma in the Rat Heart: Central Role of the Cytochrome P450 Epoxygenase Pathway in Mediating Infarct Size Reduction** *JOURNAL OF CARDIOVASCULAR PHARMACOLOGY AND THERAPEUTICS*  
Gross, G. J., Hsu, A., Gross, E. R., Falck, J. R., Nithipatikom, K.  
2013; 18 (1): 38-45
  - **Hunter Syndrome in an Adult: Beware of Tracheal Stenosis** *ANESTHESIA AND ANALGESIA*  
Gross, E. R., Lemmens, H. J.  
2010; 110 (2): 642-643
  - **Acute Methadone Treatment Reduces Myocardial Infarct Size via the delta-Opioid Receptor in Rats During Reperfusion** *ANESTHESIA AND ANALGESIA*  
Gross, E. R., Hsu, A. K., Gross, G. J.  
2009; 109 (5): 1395-1402

- **Activation of kappa-opioid receptors at reperfusion affords cardioprotection in both rat and mouse hearts** *BASIC RESEARCH IN CARDIOLOGY*  
Peart, J. N., Gross, E. R., Reichelt, M. E., Hsu, A., Headrick, J. P., Gross, G. J.  
2008; 103 (5): 454-463
- **Delayed cardioprotection afforded by the glycogen synthase kinase 3 inhibitor SB-216763 occurs via a K-ATP- and MPTP-dependent mechanism at reperfusion** *AMERICAN JOURNAL OF PHYSIOLOGY-HEART AND CIRCULATORY PHYSIOLOGY*  
Gross, E. R., Hsu, A. K., Gross, G. J.  
2008; 294 (3): H1497-H1500
- **Pharmacologic therapeutics for cardiac reperfusion injury** *EXPERT OPINION ON EMERGING DRUGS*  
Gross, E. R., Gross, G. J.  
2007; 12 (3): 367-388
- **GSK3 beta inhibition and K-ATP channel opening mediate acute opioid-induced cardioprotection at reperfusion** *BASIC RESEARCH IN CARDIOLOGY*  
Gross, E. R., Hsu, A. K., Gross, G. J.  
2007; 102 (4): 341-349
- **Impaired p38 MAPK/HSP27 signaling underlies aging-related failure in opioid-mediated cardioprotection** *JOURNAL OF MOLECULAR AND CELLULAR CARDIOLOGY*  
Peart, J. N., Gross, E. R., Headrick, J. P., Gross, G. J.  
2007; 42 (5): 972-980
- **Diabetes abolishes morphine-induced cardioprotection via multiple pathways upstream of glycogen synthase kinase-3 beta** *DIABETES*  
Gross, E. R., Hsu, A. K., Gross, G. J.  
2007; 56 (1): 127-136
- **Ischemic Preconditioning And Myocardial Infarction: An Update and Perspective.** *Drug discovery today. Disease mechanisms*  
Gross, E. R., Gross, G. J.  
2007; 4 (3): 165-74
- **The JAK/STAT pathway is essential for opioid-induced cardioprotection: JAK2 as a mediator of STAT3, Akt, and GSK-3 beta** *AMERICAN JOURNAL OF PHYSIOLOGY-HEART AND CIRCULATORY PHYSIOLOGY*  
Gross, E. R., Hsu, A. K., Gross, G. J.  
2006; 291 (2): H827-H834
- **Ligand triggers of classical preconditioning and postconditioning** *CARDIOVASCULAR RESEARCH*  
Gross, E. R., Gross, G. J.  
2006; 70 (2): 212-221
- **Association of intravenous morphine use and outcomes in acute coronary syndromes: results from the CRUSADE Quality Improvement Initiative.** *American heart journal*  
Gross, G. J., Gross, E. R., Peart, J. N.  
2005; 150 (6)
- **Untitled** *AMERICAN HEART JOURNAL*  
Gross, G. J., Gross, E. R., Peart, J. N.  
2005; 150 (6)
- **Cytochrome P450 and arachidonic acid metabolites: Role in myocardial ischemia/reperfusion injury revisited** *CARDIOVASCULAR RESEARCH*  
Gross, G. J., Falck, J. R., Gross, E. R., Isbell, M., Moore, J., Nithipatikom, K.  
2005; 68 (1): 18-25
- **Extending the cardioprotective window using a novel delta-opioid agonist fentanyl isothiocyanate via the PI3-kinase pathway** *AMERICAN JOURNAL OF PHYSIOLOGY-HEART AND CIRCULATORY PHYSIOLOGY*  
Gross, E. R., Peart, J. N., Hsu, A. K., Auchampach, J. A., Gross, G. J.  
2005; 288 (6): H2744-H2749
- **Opioid-induced preconditioning: Recent advances and future perspectives** *VASCULAR PHARMACOLOGY*  
Peart, J. N., Gross, E. R., Gross, G. J.  
2005; 42 (5-6): 211-218

- **Sarcolemmal K-ATP channel triggers delayed ischemic preconditioning in rats** *AMERICAN JOURNAL OF PHYSIOLOGY-HEART AND CIRCULATORY PHYSIOLOGY*  
Patel, H. H., Gross, E. R., Peart, J. N., Hsu, A. K., Gross, G. J.  
2005; 288 (1): H445-H447
- **Cytochrome P450 omega-hydroxylase inhibition reduces infarct size during reperfusion via the sarcolemmal K-ATP channel** *JOURNAL OF MOLECULAR AND CELLULAR CARDIOLOGY*  
Gross, E. R., Nithipatikom, K., Hsu, A. K., Peart, J. N., Falck, J. R., Campell, W. B., Gross, G. J.  
2004; 37 (6): 1245-1249
- **Inhibition of cytochrome P450 omega-hydroxylase - A novel endogenous cardioprotective pathway** *CIRCULATION RESEARCH*  
Nithipatikom, K., Gross, E. R., Endsley, M. P., Moore, J. M., Isbell, M. A., Falck, J. R., Campbell, W. B., Gross, G. J.  
2004; 95 (8): E65-E71
- **Acute aspirin treatment abolishes, whereas acute ibuprofen treatment enhances morphine-induced cardioprotection: Role of 12-lipoxygenase** *JOURNAL OF PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS*  
Gross, E. R., Hsu, A. K., Gross, G. J.  
2004; 310 (1): 185-191
- **Opioid-induced cardioprotection occurs via glycogen synthase kinase beta inhibition during reperfusion in intact rat hearts** *CIRCULATION RESEARCH*  
Gross, E. R., Hsu, A. K., Gross, G. J.  
2004; 94 (7): 960-966
- **Effect of exogenous kappa-opioid receptor activation in rat model of myocardial infarction** *JOURNAL OF CARDIOVASCULAR PHARMACOLOGY*  
Peart, J. N., Gross, E. R., Gross, G. J.  
2004; 43 (3): 410-415
- **K-ATP opener-induced delayed cardioprotection: involvement of sarcolemmal and mitochondrial K-ATP channels, free radicals and MEK1/2** *JOURNAL OF MOLECULAR AND CELLULAR CARDIOLOGY*  
Gross, E. R., Peart, J. N., Hsu, A. K., Grover, G. J., Gross, G. J.  
2003; 35 (8): 985-992
- **Reactive oxygen species modulate coronary wall shear stress and endothelial function during hyperglycemia** *AMERICAN JOURNAL OF PHYSIOLOGY-HEART AND CIRCULATORY PHYSIOLOGY*  
Gross, E. R., LaDisa, J. F., Weihrauch, D., Olson, L. E., Kress, T. T., Hettrick, D. A., Pagel, P. S., Warltier, D. C., Kersten, J. R.  
2003; 284 (5): H1552-H1559
- **12-lipoxygenase in opioid-induced delayed cardioprotection - Gene array, mass spectrometric, and pharmacological analyses** *CIRCULATION RESEARCH*  
Patel, H. H., Fryer, R. M., Gross, E. R., Bunday, R. A., Hsu, A. K., Isbell, M., Eusebi, L. O., Jensen, R. V., Gullans, S. R., Insel, P. A., Nithipatikom, K., Gross, G. J.  
2003; 92 (6): 676-682
- **Stent implantation alters coronary artery hemodynamics and wall shear stress during maximal vasodilation** *JOURNAL OF APPLIED PHYSIOLOGY*  
LaDisa, J. F., Hettrick, D. A., Olson, L. E., Guler, I., Gross, E. R., Kress, T. T., Kersten, J. R., Warltier, D. C., Pagel, P. S.  
2002; 93 (6): 1939-1946
- **Heat shock protein 90 mediates the balance of nitric oxide and superoxide anion from endothelial nitric-oxide synthase** *JOURNAL OF BIOLOGICAL CHEMISTRY*  
Pritchard, K. A., Ackerman, A. W., Gross, E. R., Stepp, D. W., Shi, Y. H., Fontana, J. T., Baker, J. E., Sessa, W. C.  
2001; 276 (21): 17621-17624
- **Diabetes and hyperglycemia impair activation of mitochondrial K-ATP channels** *AMERICAN JOURNAL OF PHYSIOLOGY-HEART AND CIRCULATORY PHYSIOLOGY*  
Kersten, J. R., MONTGOMERY, M. W., Ghassemi, T., Gross, E. R., Toller, W. G., Pagel, P. S., Warltier, D. C.  
2001; 280 (4): H1744-H1750
- **Ethanol enhances the functional recovery of stunned myocardium independent of K-ATP channels in dogs** *ANESTHESIA AND ANALGESIA*  
Gross, E. R., Gare, M., Toller, W. G., Kersten, J. R., Warltier, D. C., Pagel, P. S.  
2001; 92 (2): 299-305

- **K-ATP channels mediate the beneficial effects of chronic ethanol ingestion** *AMERICAN JOURNAL OF PHYSIOLOGY-HEART AND CIRCULATORY PHYSIOLOGY*  
Pagel, P. S., Toller, W. G., Gross, E. R., Gare, M., Kersten, J. R., Warltier, D. C.  
2000; 279 (5): H2574-H2579
- **Sarcolemmal and mitochondrial adenosine triphosphate-dependent potassium channels - Mechanism of desflurane-induced cardioprotection** *ANESTHESIOLOGY*  
Toller, W. G., Gross, E. R., Kersten, J. R., Pagel, P. S., Gross, G. J., Warltier, D. C.  
2000; 92 (6): 1731-1739
- **Isoflurane preconditions myocardium against infarction via activation of inhibitory guanine nucleotide binding proteins** *ANESTHESIOLOGY*  
Toller, W. G., Kersten, J. R., Gross, E. R., Pagel, P. S., Warltier, D. C.  
2000; 92 (5): 1400-1407
- **Diabetes abolishes ischemic preconditioning: role of glucose, insulin, and osmolality** *AMERICAN JOURNAL OF PHYSIOLOGY-HEART AND CIRCULATORY PHYSIOLOGY*  
Kersten, J. R., Toller, W. G., Gross, E. R., Pagel, P. S., Warltier, D. C.  
2000; 278 (4): H1218-H1224