

Curriculum Vitae

A. Identifying Data

Name Martin S. Angst, MD
Current Position Professor of Anesthesiology, Perioperative and Pain
Medicine
Stanford University School of Medicine
Phone 650 4985109
Email ang@stanford.edu

B. Academic History

Colleges / Universities and Additional Training:

1987 MD, University of Berne, Switzerland

Residency and Fellowship Training:

1988-1990 Residency, Internal Medicine, Burgdorf Hospital, Burgdorf, Switzerland

1990-1994 Residency, Anesthesia and Intensive Care Medicine, University
Hospital of Berne, Berne, Switzerland

1994-1996 Postdoctoral Fellowship, Clinical Pharmacology, Department of
Anesthesiology, Perioperative and Pain Medicine, Stanford University
School of Medicine

Board Certification:

1993 European Board, European Academy of Anesthesiology

1993 Swiss Board, Swiss Society of Anesthesiologists

C. Employment

Academic Appointments:

3/1996-
10/1998 Clinical Instructor, Anesthesiology, Perioperative and Pain Medicine,
Stanford University School of Medicine, Stanford, CA

9/1998-
1/2006 Assistant Professor, Anesthesiology, Perioperative and Pain Medicine,
Stanford University School of Medicine, Stanford, CA

2/2006-
12/2010 Associate Professor, Anesthesiology, Perioperative and Pain Medicine,
Stanford University School of Medicine, Stanford, CA

1/2011- Professor, Anesthesiology, Perioperative and Pain Medicine, Stanford University School of Medicine, Stanford, CA

Other Appointments:

10/2019- Director of Cardiovascular and Thoracic Anesthesia, Department of
9/2022 Anesthesiology, Perioperative and Pain Medicine, Stanford University School of Medicine

6/2022- Vice Chair for Strategy and Initiatives, Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University School of Medicine

D. Teaching and Clinical Care

Students / Trainees / Mentorship:

7/2008- Nick Phillips, BS
6/2010

6/2009- Victor Wang, BS, FAER Medical Student Fellow Award
8/2009

6/2010- Jeremy Harris, BS, Medical Scholar Fellowship Award
9/2010

7/2012- Gabi Fragiadakis, BS, BioX Graduate Fellow Award
6/2014

6/2019- Xiaoxiao Gao, BS
7/2021

6/2020- Tiffany McAllister, BA

9/2024- Ayla Huhn, BA

9/2024- Gianna Delaney, BS

7/1997- Bhamini Rhamaswamy, MD
7/1998

9/1999- Yehuda Ginosar, MD
8/2001

8/2003- Larry F. Chu, MD, FAER Award, NIH K23 Award
7/2004

9/2005- Jason M. Cuellar, PhD, Medical Student, Stanford Scholar Fellowship Award
8/2007

9/2006- Brendan Carvalho, MD, BIRCWH Scholar, NIH K12 Award
8/2008

9/2009- David Ruau, PhD
8/2012

9/2013-8/2017 Alexander Butwick, MD, NIH K-23 Award

9/2013-8/2019 Quentin Barca, MD, PhD, FARM fellow, NIH T32 Award

9/2014-8/2018 Brice Gaudilliere, MD, PhD, FARM fellow, NIH T-32 Award, NIH K-23 Award

9/2015- Igor Feinstein, MD, PhD, FARM fellow, ADRC/NIA Award

9/2017-8/2019 Chris Rishel, MD, FARM Fellow, NIH T32 Award

9/2019-8/2020 Karen Hirsch, MD, AHA Award

9/2019-8/2021 Jessica Brodt, MD, SCA/IARS Award

Major Administrative Responsibilities or Committee Assignments:

7/2000-6/2006 Admissions Panel Medical School, Stanford University School of Medicine

1/2009-6/2012 Member of Stanford Hospital Committee for Establishing ICU CNS Pharmacotherapy Guidelines, Stanford Medicine

1/2011-12/2011 Search Committee Member: Chief of Multi-Specialty Division, Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University School of Medicine

1/2011-12/2011 Search Committee Member: Research Faculty, Stanford Neuroscience Institute, Stanford University School of Medicine

1/2012-12/2012 Search Committee Member: Clinician Scientist, Critical Care Division, Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University School of Medicine

1/2013-12/2013 Search Committee Member: Clinician Scientist in Clinical Pharmacology, Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University School of Medicine

1/2014-12/2014 Search Committee Chair: Clinician Scientist in Pain Medicine, Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University School of Medicine

1/2014-12/2014 Search Committee Member: Senior Scientist, Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University School of Medicine

1/2015-12/2015 Search Committee Member: Head Bio-banking and Population-based Genetic Research, Department of Medicine, Stanford University School of Medicine

6/2015-5/2021 Appointment and Promotion Committee, Stanford University School of Medicine

1/2016-12/2016 Member High Value Care Team for Spine Surgery, Stanford Medicine

1/2016-12/2020 Stanford Biobank Working Group Member, Representative for the Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University School of Medicine

1/2017-12/2018 Search Committee Chair: Division Chief Cardiovascular and Thoracic Anesthesia, Department of Anesthesiology, Perioperative and Pain Medicine,, Stanford University School of Medicine

1/2018-12/2021 Search Committee Member, UML Faculty Search, Department of Surgery, Stanford University School of Medicine

1/2019- Finance Committee Member, Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University School of Medicine

1/2019- Governance Committee Member, Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University School of Medicine

10/2019-9/2022 CVH Operations Leadership Group Member, Stanford Cardiovascular Health Service Line

1/2020-12/2021 Multi-Organ Transplantation Quality Project Member, Stanford University School of Medicine

1/2021- MCL Search Committee Member, Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University School of Medicine

1/2022- Data Science Initiative Committee Member, Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University School of Medicine

10/2022- Co-chair Data Governance Committee, Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University School of Medicine

10/2022- Executive Committee Member, Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University School of Medicine

11/2022-6/2023 Search Committee Chair: Anesthesia Division Chief of Critical Care Medicine, Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University School of Medicine

1/1995-12/2014 Member, American Pain Society

1/1995-12/2014 Member, International Association for the Study of Pain

1/1995- Member, American Society of Anesthesiologists
1/1995- Member, California Society of Anesthesiologists
1/1996- Member, International Anesthesia Research Society
1/1997- Member, American Society for Clinical Pharmacology and Therapeutics
12/2000
1/2009- Member (elected), Association of University Anesthesiologists
1/2015- Member, American Association of Immunologists
12/2022
1/2015- Member, Shock Society
12/2022

E. Public and Professional Service

Editorial Positions:

2007-2010 Associate Editor, Anesthesia & Analgesia
2010-2012 Editor, Anesthesia & Analgesia
2010-2019 Associate Editor, European Journal of Pain
2012-2014 Section Editor, Pain and Analgesic Mechanisms, Anesthesia & Analgesia

F. Post-Degree Honors and Awards

1/1994-1995 Research Fellowship Award, Ciba-Geigy-Jubilaeumsstiftung
1/1994-1995 Research Fellowship Award, Janggen-Poehn Stiftung
1/1994-1995 Research Fellowship Award, Swiss Society of Anesthesiologists
5/1996 Research Award, Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University School of Medicine
6/1997 Best Abstract, Analgesia and Headache Section, American Society of Clinical Pharmacology and Therapeutics
2001, 5/2007, Research Award, Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University School of Medicine (Mentor)
5/2008,
5/2009,
5/2010
6/2002 Monthly Resident Teaching Award, Department of Anesthesiology, Perioperative and Pain Medicine
7/2008 Elected Member, National Panel for Establishing Opioid Research Guidelines

- 6/2011 Stanford Society of Physician Scholars (SSPS) Collaborative Research Award (Mentor), Stanford University School of Medicine
- 6/2012 Best Abstract (Mentor), Society of Obstetric Anesthesia and Perinatology
- 2013 Kosaka Award for Best Abstract in Patient-oriented Research (Mentor), International Anesthesia Research Society
- 5/2013, 2015, 5/2017, 5/2018 Research Award (Mentor), Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University School of Medicine
- 6/2013 Best Abstract of Critical Care, Trauma and Resuscitation Category (Mentor), International Anesthesia Research Society
- 6/2015 Best New Investigator Poster Award (Mentor), Society of Reproductive Investigations on Immunology and Women's Health
- 2018 Best of Meeting Abstract Award (Mentor), American Society of Regional Anesthesia
- 6/2018 Finalist Kosaka Award (Mentor), International Anesthesia Research Society
- 6/2018 Team Science Leadership Workshop Nomination, Stanford Medicine's Office of Faculty Development and Diversity, Stanford University School of Medicine
- 6/2019 Best of Meeting Award (Mentor), American Society of Regional Anesthesia
- 6/2019 Best of Meeting Award (Mentor), Society of Cardiovascular Anesthesiologists
- 6/2023 Best of Abstracts - Clinical Science (Mentor), American Society of Anesthesiologists

G. Other Study and Research Opportunities

Past:

- 1/1995-12/1996 Funder: Organon Inc.
Title: ORG-9487 - A New Rapid Onset Muscle Relaxant
Role: Co-Investigator (PI: Dyck B.)
- 1/1996-1/1996 Funder: Neurobiological Technologies Inc.
Title: Pharmacokinetics of Corticotropin-Releasing Factor in Man
Role: PI
- 1/1996-12/1997 Funder: Abbott Inc.
Title: Analgesic Action of Dexmedetomidine in Humans
Role: PI

1/1997-12/2001 Funder: Knoll Pharmaceutical Company
Title: Pharmacokinetics and Pharmacodynamics of Slow Release Hydromorphone in Humans
Role: PI

1/2000-1/2001 Funder: Department of Anesthesia, Stanford University School of Medicine
Title: Experimental Model of Acute Opioid Tolerance and Withdrawal in Man
Role: PI

1/2000-1/2001 Funder: Cellergy Pharmaceuticals Inc.
Title: Pharmacokinetics of Anogestic in Patients with Anal Fissure
Role: Co-Investigator (PI: Drover D.)

1/2001-1/2002 Funder: Physiometrix Inc.
Title: Data Collection Study for PSA 4000 with Hypnos Software Upgrade
Role: Co-Investigator (PI: Drover D.)

1/2001-1/2002 Funder: Department of Anesthesia, Stanford University School of Medicine
Title: Gender and Rate Differences in Acute Tolerance and Withdrawal to the Analgesic, Sedative, and Respiratory Depressant Effects of Opioids
Role: PI

7/2002-6/2004 Funder: Foundation for Anesthesia Education and Research
Title: Differential Rate for the Development of Acute Tolerance to Opioid-induced Analgesia, Respiratory Depression and Sedation
Role: PI

7/2003-6/2004 Funder: Foundation for Anesthesia Education and Research
Title: Opiate-induced Tolerance and Hyperalgesia in Pain Patients
Role: Mentor (PI: Chu L.)

1/2004-1/2005 Funder: Department of Anesthesia, Stanford University School of Medicine
Title: Human Biomarkers of Inflammation and Nociception: Validation of an In-vivo Model
Role: PI

7/2004-6/2009 Funder: NIH, K23
Title: Opiate-induced Tolerance and Hyperalgesia in Pain Patients
Role: Mentor (PI: Chu L.)

1/2005-1/2006 Funder: Department of Anesthesia, Stanford University School of Medicine
Title: Effect of Nicotine on Inflammatory and Nociceptive Biomarkers in a Sunburn Model of Hyperalgesia in Healthy Volunteers
Role: PI

1/2005-1/2007 Funder: Organon Pharmaceuticals Inc.
Title: A Multi-center, Randomized, Assessor-blinded, Phase II, Parallel

Dose-finding Trial to Assess the Efficacy and Safety of Org 25969
Role: Co-Investigator (PI: NA)

1/2005-
1/2007 Funder: Department of Anesthesia, Stanford University School of
Medicine
Title: Effects of Trans-cranial Electro-stimulation on Pain Perception,
Cognition and Mood in Human Volunteers
Role: Mentor (PI: Nekhendzy V.)

1/2006-
1/2008 Funder: Organon Pharmaceuticals Inc.
Title: A Multi-center, Randomized, Phase III Trial Assessing the PK/PD
of Org 25969 in Subjects of Various Ages
Role: Co-Investigator (PI: NA)

7/2006-
6/2008 Funder: NIH, K12
Title: Chronic Persistent Pain Following Cesarean Delivery: The Role of
Wound Cytokines
Role: Mentor (PI: Carvalho B.)

1/2007-
1/2008 Funder: I-Flow Corporation
Title: Continuous Administration of Bupivacaine and Ketamine to
Surgical Wounds via the Follow-on Pain Buster System: Analgesic,
Anti-hyperalgesia and Anti-inflammatory Effects
Role: PI

6/2007-
7/2008 Funder: Department of Anesthesia, Stanford University School of
Medicine
Title: Pilot-Study - Heritability of Opioid Analgesia
Role: PI

7/2007-
6/2008 Funder: DARPA, W911NF0710462
Title: Feedback Regulated Drug Delivery System Based on Polymer
Hydrogels and Vesicles
7/2008-
6/2011 Role: Consortium Principal Investigator

1/2008-
6/2009 Funder: Scientific Imaginetics Inc.
Title: Analgesic and Anti-inflammatory Effects of Electromagnetic
Therapy in Humans
Role: PI

6/2008-
6/2010 Funder: NIH, 1R43DA026228
Title: Naso-cerebral Administration of Peptides for Temporo-mandibular
Joint Pain
Role: Consultant (PI: Trigemina Inc.)

7/2008-
6/2010 Funder: Stanford Institute for Immunity, Transplantation and Infection
Title: A Systems Biology Approach for Discovery of Biomarkers for
Inflammatory Pain
Role: PI

7/2008-
6/2012 Funder: NIH, R01DA023063
Title: Opioid Efficacy - A Twin-study
Role: PI

7/2009-6/2010 Funder: NIH, R43DA027259
Title: Intranasal Nociceptin for the Treatment of Migraine and Head Pain
Role: Consultant (PI: Trigemina Inc.)

7/2012-6/2017 Funder: Department of Anesthesia, Stanford University School of Medicine
Title: Mass cytometry - A Systems-based Approach for Studying Immune Health in Surgery and Anesthesia
Role: PI

1/2013-12/2015 Funder: March of Dimes
Title: Characterizing Immune Signatures in Preterm Labor with Single Cell Mass Cytometry
Role: Co-investigator (project leader) (PI: Stevenson D.)

7/2013-6/2014 Funder: NIH, T32GM089626
Title: Systems Analysis of the Human Immune Response to Surgical Trauma
Role: Mentor (PI: Gaudilliere B)

7/2013-6/2016 Funder: Stanford University School of Medicine, BioX Graduate Fellowship
Title: Systems-analysis of the Human Immune Response to Surgery
Role: Mentor (PI: Fragiadakis GK)

7/2013-6/2017 Funder: NIH, K23HD07097201
Title: Postpartum Hemorrhage and Anemia: Epidemiologic and Cost-Effectiveness Analyses
Role: Mentor (PI: Buttwick A.)

1/2014-12/2016 Funder: Bill and Melinda Gates Foundation
Title: Use of Molecular Features in Peripheral Blood to Understand Relationships between Microbiome and Host in the Setting of Preterm Birth
Role: Co-Investigator (PI: Stevenson D)

7/2014-6/2018 Funder: NIH, K23GM111657
Title: Role of Myeloid-derived Suppressor Cells in the Immune Response to Surgery
Role: Mentor (PI: Gaudilliere B.)

7/2014-6/2018 Funder: Stanford Neuroscience Institute
Title: The Stroke Collaborative Action Network: Redefining Stroke Recovery
Role: Co-Investigator (PI: Buckwalter M.)

1/2016-1/2017 Funder: SomaLogic Inc.
Title: Aptamer Technology to Infer Gestational Age in the Plasma Proteome
Role: PI

7/2016-6/2017 Funder: HPI Hasso Plattner Institute
Title: Human Technology Teamwork: Enabling Clinicians to Focus on

Complex Design Thinking Tasks through Advances in IT Systems
Engineering: Tools to Improve Human-centered Communication
between Patients and Providers
Role: Co-Investigator (PI: Berte N.)

- 7/2016-
6/2017 Funder: Robert Butler Columbia Aging Center
Title: Plasticity in Recovery from Surgery - The Effects of Exercise
Prehabilitation on Cognitive and Functional Recovery after Shoulder
Replacement Surgery in Older Adults
Role: Co-Investigator (PI: Sloan R.)
- 7/2016-
6/2019 Funder: NIH, T32GM089626
Title: The Effects of Lidocaine on Pain Trajectories and Immune
Responses after Hip Arthroplasty
Role: Role: Primary Mentor (PI: Bacca Q)
- 1/2017-
1/2018 Funder: Premature Research Center Stanford University School of
Medicine
Title: A Proteomic Signature of Preeclampsia
Role: PI
- 7/2017-
6/2018 Funder: Lukas Center Grant, Stanford University
Title: Cognitive Decline after Cardiac Surgery: A Multimodal Magnetic
Resonance Spectroscopy Approach
Role: Co-Investigator (PI: Feinstein I.)
- 9/2017-
8/2018 Funder: SPARK Translational Research Program Stanford University
Title: Cocoa Flavanols for Modulating the Immune Response to
Surgery and Accelerate Recovery
Role: PI
- 1/2018-
12/2020 Funder: Bill and Melinda Gates Foundation
Title: Maternal and Fetal Markers for New Biology and
Maternal/Fetal/Newborn Birth Risk
Role: Role: Co-investigator (project leader) (PI: Stevenson D.)
- 7/2018-
6/2020 Funder: American Heart Association
Title: A Systems-based Mass Cytometry Approach to Study the Post-
cardiac Arrest Immune Response
Role: Co-Investigator (PI: Hirsch K.)
- 7/2018-
6/2020 Funder: NIH, R21DE027728
Title: Identifying a Systemic Immune Signature of Periodontal Disease
with Mass Cytometry
Role: Co-Investigator (PI: Gaudilliere B.)
- 7/2018-
6/2022 Funder: NIH, R01HL139844
Title: Preeclampsia to Cardiovascular Disease - Life Course Analysis of
Biomarkers and Risks
Role: Co-Investigator (PI: Hlatky M.)
- 9/2018-
6/2024 Funder: NIH, R01AG058417
Title: Dietary Modulation of Neuro-inflammation in Age-Related Memory

Disorder
Role: Site PI (PI: Sloan R.)

9/2018-6/2024 Funder: NIH, R01AG058417-0251
Title: Dietary Modulation of Neuro-inflammation in Age-Related Memory Disorders
Role: Site PI (PI: Sloan R.)

3/2019-7/2022 Funder: Alkahest Inc.
Title: A Randomized, Placebo-controlled Pilot Study to Evaluate the Effect of GRF6019 on Intracellular Signaling Cascades in Blood Leukocytes and Post-surgery Recovery of Participants Undergoing Primary Hip or Knee Arthroplasty
Role: PI

7/2019-6/2020 Funder: ITI Center for Systems Immunology and the Bill and Melinda Gates Foundation
Title: Identifying a Predictive Immune Signatures of Preeclampsia
Role: Co-Investigator (PI: Gaudilliere B.)

7/2019-6/2020 Funder: ITI Center for Systems Immunology and the Bill and Melinda Gates Foundation
Title: Machine Learning for Integrated Multiomics Analysis of Preeclampsia
Role: Co-Investigator (PI: Aghaeepour N.)

7/2019-6/2020 Funder: Stanford Maternal and Child Health Research Institute
Title: Maternal Life Stress, Prenatal Inflammation, and the Developmental Origins of Child Temperament
Role: Co-Investigator (PI: Gotlib J.)

10/2019-9/2021 Funder: SCA/IARS Mid-Career Research Grant
Title: Enhanced Recovery after Cardiac Surgery with Erector Spinae Plane Catheters: A Prospective, Randomized, Placebo Controlled Trial
Role: Co-Investigator (PI: Brodt J.)

7/2020-6/2021 Funder: FIDL Award Department of Anesthesiology Stanford University
Title: Oxidative Stress and Surgical Outcomes
Role: Co-Investigator (PI: Clark D.)

7/2020-6/2021 Funder: RISE Stanford COVID-19 Crisis Response Program
Title: Using Micro-geographic Variability to Address Modifiable Factors Associated with COVID-19 Transmissibility, Hospitalization, and Death
Role: Co-Investigator (PI: Staudenmayer K.)

7/2020-6/2024 Funder: NIH, R01NS117340
Title: B Lymphocyte-Mediated Autoimmunity in Pain after Trauma
Role: Site PI (PI: Clark D.)

10/2021-6/2023 Funder: Bill and Melinda Gates Foundation
Title: Discovery Hubs and Network-Adjuvants
Role: Co-Investigator (PI: Davis M.)

1/2022-12/2023 Funder: March of Dimes
 Title: Immune Mechanisms and Proteomic Signatures Predicting and Determining Preterm Birth
 Role: Co-investigator (project leader) (PI: Stevenson D.)

4/2022-3/2024 Funder: ADRC Stanford and NIH, P30AG066515
 Title: Comprehensive Biomarker Analysis of Perioperative Neurocognitive Disorder and its Relationship to Latent Alzheimer's Disease Pathology
 Role: Mentor (PI: Feinstein I.)

Present/Pending:

9/2019-2025 Funder: NIH, R61NS114926
 Title: Signatures of Pain Recovery in Teens (SPRINT)
 Role: Co-Investigator (PI: Simons L.)

9/2020-6/2025 Funder: NIH, R35GM138353
 Title: Machine Learning for Integrative Modeling of the Immune System in Clinical Settings
 Role: Co-Investigator (PI: Aghaeepour N.)

9/2020-8/2025 Funder: NIH, R21/33AG065744
 Title: Building a Platform for Precision Anesthesia for the Geriatric Surgical Patient
 Role: Co-Investigator (PI: Drover D.)

9/2023-8/2025 Funder: Wu Tsai Neurosciences Institute
 Title: Biological Determinants of Brain Resilience in Cardiac Surgery
 Role: PI

10/2023-9/2026 Funder: NIH, R42NS129395
 Title: Developing Novel Technologies to Monitor Nociception and Opioid Administration during Surgery and General Anesthesia in order to Minimize Post-operative Opioid Requirements
 Role: Co-Investigator (PI: Patrick Purdon)

H. Patents

1/2012- Methods and compositions for treating aging-associated conditions, US14/562,401

1/2012- Methods for the treatment of headaches by administration of oxytocin, US 8,198,240

1/2012- Methods for the treatment of headaches by administration of oxytocin, US 8,202,838

1/2012- Methods for treatment of headaches by administration of oxytocin, US 8,252,745

1/2012- Therapy procedure for drug delivery for trigeminal pain, US 8,258,096

- 1/2013- Methods for the treatment of headaches by administration of oxytocin, US 8,501,691
- 1/2013- Methods for the treatment of pain, US 8,551,949
- 1/2016- Methods for the treatment of pain, US 9,238,053
- 1/2018- Compositions and methods of prognosis and classification for preeclampsia, US62/767,957
- 1/2020- Composition and methods of predicting time to onset of labor, US63/066,701
- 1/2021- Systems and methods to generate a surgical risk score and uses thereof, US63/162,912

I. Service as Grant Reviewer

- 1/2001-12/2006 NA, Research Grants Council of Hong Kong, China
- 1/2006 Ad hoc Reviewer, NIH, NAIDA
- 1/2009 ZRG1 SBIB-V Challenge Grant Panel, NIH, NINDS
- 1/2011 Somatosensory and Chemosensory Systems Study Section, NIH
- 1/2017 Special emphasis panel NCCIH - Phased Innovation Award for Mechanistic Studies to Optimize Mind Body Interventions in NCCIH High Priority Research Topics, NIH
- 1/2019 Special Emphasis Panel ZRG1 IFCN-L HEAL Initiative, NIH
- 1/2021 Neurological Sciences and Disorders A Study Section, NIH, NINDS

J. Bibliography

Peer-Reviewed Articles: (149 Total, 2 in press)

- 1.
2. Saxenhofer H, **Angst M**, Weidmann P, Shaw SG, Ferrier C. Corticosteroid-induced Stimulation of Atrial Natriuretic Peptide in Man. *Acta Endocrinol (Copenh)*. 1988 Jun;118(2):179-186. PMID: 2968749
3. Kahwaji R, Bevan DR, Bikhazi G, Shanks CA, Fragen RJ, Dyck JB, **Angst MS**, Matteo R. Dose-ranging Study in Younger Adult and Elderly Patients of ORG 9487, a new, rapid-onset, short-duration muscle relaxant. *Anesth Analg*. 1997 May;84(5):1011-1018. PMID: 9141923
4. **Angst MS**, Mackey SC, Zupfer GH**, Tataru CD**, Brock-Utne JG. Reduction of propofol injection pain with a double lumen i.v. set. *J Clin Anesth*. 1997 Sep;9(6):462-466. PMID: 9278832
5. **Angst MS**, Dyck JB, Azarnoff DL, Goldblum R, Ho B, Gfroerer T, Linton EA, Glynn BP, Shafer SL. Pharmacokinetics, cortisol release, and hemodynamics

- after intravenous and subcutaneous injection of human corticotropin-releasing factor in humans. *Clin Pharmacol Ther.* 1998 Nov;64(5):499-510. PMID: 9834042
6. Fisher DM, Kahwaji R, Bevan D, Bikhazi G, Fragen RJ, **Angst MS**, Ornstein E, Matteo RS. Factors Affecting the Pharmacokinetic Characteristics of Rapacuronium. *Anesthesiology.* 1999 Apr;90(4):993-991000. PMID: 10201669
 7. **Angst MS**, Brose WG, Dyck JB. The Relationship between the Visual Analog Pain Intensity and Pain Relief Scale Changes during Analgesic Drug Studies in Chronic Pain Patients. *Anesthesiology.* 1999 Jul;91(1):34-41. PMID: 10422926
 8. **Angst MS**, Ramaswamy B**, Riley ET, Stanski DR. Lumbar Epidural Morphine in Humans and Supraspinal Analgesia to Experimental Heat Pain. *Anesthesiology.* 2000 Feb;92(2):312-324. PMID: 10691216
 9. Claire RE**, Drover DD, Haddow GR, Esquivel CO, **Angst MS**. Orthotopic liver transplantation for carcinoid tumour metastatic to the liver: Anesthetic Management. *Can J Anaesth.* 2000 Apr;47(4):334-337. PMID: 10764178
Case report
 10. **Angst MS**, Bühner M, Lötsch J**. Insidious Intoxication after Morphine Treatment in Renal Failure: Delayed Onset of Morphine-6-Glucuronide Action. *Anesthesiology.* 2000 May;92(5):1473-1476. PMID: 10781294
Case report
 11. Lötsch J, Tegeder I, **Angst MS**, Geisslinger G. Antinociceptive Effects of Morphine-6-Glucuronide in Homozygous *mdr1a* P-Glycoprotein Knockout and in Wildtype Mice in the Hotplate Test. *Life Sci.* 2000 May 5;66(24):2393-2403. PMID: 10864101
 12. **Angst MS**, Drover DR, Lötsch J, Ramaswamy B**, Naidu S, Wada DR, Stanski DR. Pharmacodynamics of orally administered sustained- release hydromorphone in humans. *Anesthesiology.* 2001 Jan;94(1):63-73. PMID: 11135723
 13. Raj PP, Chado HN, **Angst M**, Heavner J, Dotson R, Brandstater ME, Johnson B, Parris W, Finch P, Shahani B, Dhand U, Mekhail N, Daoud E, Hendler N, Somerville J, Wallace M, Panchal S, Glusman S, Jay GW, Palliyath S, Longton W, Irving G. Painless Electrodiagnostic Current Perception Threshold and Pain Tolerance Threshold Values in CRPS Subjects and Healthy Controls: a multicenter study. *Pain Pract.* 2001 Jan;1(1):53-60. PMID: 17129284
 14. Li X, **Angst MS**, Clark JD. A Murine Model of Opioid-induced Hyperalgesia. *Brain Res Mol Brain Res.* 2001 Jan 31;86(1-2):56-62. PMID: 11165371
 15. Brodsky JB, Malott K, **Angst M**, Fitzmaurice BG, Kee SP, Logan L. The relationship between tracheal width and left bronchial width: Implications for left-sided double-lumen tube selection. *J Cardiothorac Vasc Anesth.* 2001 Apr;15(2):216-217. PMID: 11312482
 16. Li X, **Angst MS**, Clark JD. Opioid-induced Hyperalgesia and Incisional Pain. *Anesth Analg.* 2001 Jul;93(1):204-209. PMID: 11429366
 17. Drover DR, **Angst MS**, Valle M, Ramaswamy B**, Naidu S, Stanski DR, Verotta D. Input characteristics and bioavailability after administration of immediate and a

new extended-release formulation of hydromorphone in healthy volunteers. *Anesthesiology*. 2002 Oct;97(4):827-836. PMID: 12357147

18. Lötsch J**, **Angst MS**. The mu-opioid agonist remifentanil attenuates hyperalgesia evoked by blunt and punctuated stimuli with different potency: A Pharmacological Evaluation of the Freeze Lesion in Humans. *Pain*. 2003 Mar;102(1-2):151-161. PMID: 12620606
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36. 9/2007 Scuderi G, Cuellar J, Gabrovsky V, Yeomans D, **Angst MS**. A Cytokine Biomarker and Potential Therapeutic Target for Disc Herniation-induced Sciatica. North Am Spine Soc 2007.
37. 5/2008 Carvalho B, JD Clark, Qiao Y, Yeomans DC, **Angst MS**. The Effect of Continuous Wound Infiltration with Bupivacaine on the Local Release of

Nociceptive and Inflammatory Mediators Following Cesarean Delivery. SOAP 2008.

38. 9/2008 Carvalho B, JD Clark, Qiao Y, Yeomans DC, **Angst MS**. Surgical Wounds in Humans: In-vivo Cytokine Release Profile and Effects of Local Anesthetic Instillation. IASP 2008.
39. 10/2008 Scuderi G, Cuellar J, Gabrovsky V, Yeomans DC, **Angst MS**. A Cytokine Biomarker and Potential Therapeutic Target for Herniation-induced Sciatica. Orth Res Soc 2008.
40. 9/2009 Yeomans DC, Pascual CR, Jacobs A, **Angst MS**, Jacobs D, Winkle CC, Frey WH. Intranasal Oxytocin for Craniofacial Pain. Soc Neurosci 2009.
41. 10/2009 Phillips N, Clark DJ, Tingle M, Swan G, **Angst MS**. The Heritability of Opioid Effects – Preliminary Results of a Twin Study. ASA 2009.
42. 2010 Carvalho B, Aleshi P, Horstman DJ, Angst MS. Effect of a preemptive femoral nerve block on cytokine release and hyperalgesia in experimentally inflamed skin of human volunteers. Reg Anesth Pain Med. 2010;35(6):514-519. PMID: 20975465. <https://doi.org/10.1097/AAP.0b013e3181faa107>
43. 9/2010 Phillips NG, Clark JD, Swan GE, Lazzeroni L, **Angst MS**. Heritability of Opioid Effects: Preliminary Results of a Twin Study. IASP 2010.
44. 9/2010 Ruau D, Sinnott P, Butte AJ, Clark JD, **Angst MS**. Assessment of Disease-specific Pain Ranking Using Large Medical Databases. IASP 2010.
45. 9/2010 Yeomans DC, Manering N, Pascual C, **Angst MS**, Jacobs D, Mechanic J, Jacobs A, Qiao Y, Winkle C, Frey W. Nasal Oxytocin for Head Pain. IASP 2010.
46. 11/2010 Nekhendzy V, Lemmens HJ, Tingle M, Nekhendzy M, Angst MS. The Analgesic and Antihyperalgesic Effects of Transcranial Electrostimulation with Combined Direct and Alternating Current in Healthy Volunteers. Anesth Analg. 2010 Nov;111(5):1301-1307. PMID: 20530614. <https://doi.org/10.1213/ANE.0b013e3181e3697e>. Epub 2010 Jun 08
47. 4/2011 Ruau D, Liu L, Clark JD, **Angst MS**, Butte AJ. Sex Differences in Pain Across 386 Diseases in Electronic Medical Records AMIA 2011.
48. 5/2012 Carvalho B, Lemmens H, Ting V, **Angst MS**. Postoperative Subcutaneous Instillation of Ketorolac but Not Hydromorphone Reduces Pain, Analgesic Use and Wound Exudate concentrations of Interleukin-6 and Interleukin-10 following Cesarean Delivery. SOAP 2012.
49. 5/2012 Gaudillière B., Schubert R., Nolan GP., **Angst MS**. Phospho-flow Cytometry Reveals Direct Modulation of the ERK MAPK Pathway by Morphine in Human Monocytes. ESA 2012.
50. 5/2012 Ruau D, Dudley JT, Chen R, Phillips NG, Swan GE, Lazzeroni, David Clark JD, Butte AJ, **Angst MS**. Integrative Approach to Pain Genetics Identifies Pain Sensitivity Locus across Diseases. EMBL 2012.
51. 9/2012 Pepper A, Li W, Kingery WS, Curtin CM, **Angst MS**, Clark DJ. Extremity Surgery with Mobilization as a Model of CRPS. IASP 2012.

52. 2/2013 Gaudilliere B , Fragiadakis GK, , Tingle M, Silva J, Yeh C, Nolan GP, **Angst MS**. Single-cell Mass Cytometry Reveals a Highly Structured Cellular Immune Response in Patients with Surgical Trauma. Front Single Cell Anal 2013.
53. 3/2013 Fragiadakis GK, Gaudilliere B, **Angst MS**, and Nolan GP. Single cell mass cytometry of human peripheral blood reveals an endogenous immune response to surgical trauma. AAI 2013.
54. 5/2013 Gaudilliere B, Fragiadakis GK, **Angst MS**, Nolan GP. Mass Cytometry Reveals an Endogenous Immune Response to Physiological Perturbation in Humans. CYTO 2013.
55. 5/2013 Gaudilliere B, Fragiadakis GK, Nolan GP, **Angst MS**. System-wide Analysis of the Endogenous Immune Response to Surgical Trauma Using Mass Cytometry (CyTOF). IARS 2013.
56. 9/2013 Cuellar JM, Marlen N, Cuellar VG, **Angst MS**, Yeomans DC, Montesano PX. Spinal intervertebral disc cytokines of patients undergoing lumbar anterior discectomy and interbody fusion for degenerative disc disease. Scol Res Soc 2013.
57. 10/2013 Gaudilliere B , Fragiadakis GK, , Tingle M, Silva J, Yeh C, Nolan G, **Angst MS**. Systems Immunology Reveals Massive Expansion of Myeloid Derived Suppressor Cells in Patients Undergoing Surgery. ASA 2013.
58. 4/2014 Samusik N, Gaudilliere B, **Angst MS**, Nolan GP. Fast and accurate mapping of phenotypic space in single-cell data with X-shift. Eur Conf Comp Biol 2014
59. 8/2014 Acupuncture for Inflammatory Pain and Central Sensitization. Phillips N, Hershowitz J, **Angst MS**, Langevin H. IASP 2014.
60. 9/2014 Yeomans DC, **Angst MS**, Frey WH, Jacobs D. Therapeutic Effects of Nasal Oxytocin in Chronic Migraine Patients. Am Headache Soc 2014.
61. 10/2014 Yeomans D, Jacobs D, Mechanic J, J Miller J, Pascual C, Manering N, Frey W, **Angst MS**. Cytokine dependence of the analgesic effect of nasal oxytocin in chronic migraineurs. APS 2014
62. 1/2015 Fragiadakis GK, Gaudilliere B, Bruggner RV, **Angst MS**, Nolan GP. Immune capacity for surgical recovery quantified by single-cell mass cytometry. Winter q-bio Meeting 2015.
63. 2/2015 Baca QJ, Gaudilliere B, MD, Nolan GP, **Angst MS**. Immune Signatures of Women with Preterm Birth. SRI 2015.
64. 5/2015 Baca QJ, Nolan GP, **Angst MS**, Gaudilliere B. Immune Signatures of Neonates. SOAP 2015.
65. 5/2015 Gaudilliere B, Fragiadakis G, Ganio E, Tingle M. Nolan GP, **Angst MS**. A Pre-operative Immune “Stress-Test” to Predict Clinical Recovery from Surgery. IARS 2015.
66. 7/2015 Gaudilliere B , Fragiadakis G , Ganio E , Tingle M, Lancero H , Nolan G , **Angst MS**. Preoperative Immune Signatures Correlate with Recovery from Surgical Trauma. AAI 2015.

67. 5/2016 Complex modulation of the immune response to surgery by immune enhancing nutrients. Gaudilliere B, Aghaeepour N, Ganio EA, McNeil L, Tingle M, **Angst MS**. AUA 2016 & IARS 2016.
68. 5/2016 J Baca QJ, Fragiadakis G, Nima Aghaeepour, Carvalho B, **Angst MS**, Gaudilliere B. Maternal blood: a window into the neonatal immune system. SOAP 2016.
69. 5/2016 Tawfik VL, Ganio E, **Angst MS**, Clark JD, Gaudilliere B. Perioperative TLR4 modulation in a mouse model of surgical trauma: A systems-wide analysis by single-cell mass cytometry. AUA 2016 & IARS 2016.
70. 9/2017 Global Plasma Metabolic Profiles in Term and Preterm Birth. Lee-McMullen B; Kevin Contrepolis K; **Angst MS**, Gaudilliere B, Quake S, Relman DA; Shaw G; Stevenson DK, Snyder M. ASMS 2017.
71. 3/2018 Aghaeepour N, Ganio E, McIlwain D, Tsai A, Tingle M, Van Gassen S, Gaudilliere D, Baca Q, McNeil L, Okada R, Ghaemi MS, Furman D, Wong R, Wing V, Druzin M, El-Sayed Y, Quaintance C, Gibbs R, Darmstadt G, Shaw G, Stevenson D, Tibshirani R, Nolan G, Lewis D, **Angst MS**, Gaudilliere B. An Immune Clock of Human Pregnancy. RECOMB 2018.
72. 3/2018 Ando, K., Han, X., Ghaemi, S., Tsai, A., Ganio, E., Gaudilliere, D., Culos, T., Shaw, G., Wong, R., Stevenson, D., Carvalho, B., Tingle, M., **Angst, MS**., Aghaeepour, N., Gaudilliere, B. Mass Cytometry and Proteomic Based Prediction of the Onset of Labor. SOAP 2018.
73. 4/2018 Ganio EA, Choisy B, Gaudillière D, Tsai AS, Han X, Ando K, Tingle M, McNeil L, **Angst MS**, Aghaeepour N, Gaudillière B. Systematic examination of whole blood sample handling procedure for analysis of immune cell function. CYTO 2018.
74. 4/2018 Gaudillière D, Djebali K, Culos T, Tsai AS, Ganio EA, Choi W, Ahmad A, Okada R, Tingle M, **Angst MS**, Aghaeepour N, Gaudillière B. Identifying a Peripheral Immune Signature of Chronic Periodontitis Using Mass Cytometry. CYTO 2018.
75. 4/2018 Han X , Ando K, Ghaemi S, Tsai AS, Ganio EA, Gaudillière D, Culos T, Tanada A, Shaw G, Stevenson D, Carvalho B, Tingle M, **Angst MS**, Aghaeepour N, Gaudillière B. Assessment of Maternal Peripheral Immune System by Mass Cytometry to Predict the Onset of Labor. CYTO 2018.
76. 4/2018 Spatz J, Tsai AS, Gaudillière D, Ganio EA, **Angst MS**, Hughes-Fulford M, Aghaeepour N, Gaudillière B. Immunosuppression in Space: System-level, single-cell human adaptations to microgravity. CYTO 2018.
77. 5/2018 Predictors of postoperative pain in 1,008 spine surgery patients. Baca QJ, Marti F, Gaudilliere B, Aghaeepour N, **Angst MS**. ASRA 2018.
78. 5/2018 Rishel C, **Angst MS**, Sun E. Association between preoperative opioid weaning and postoperative outcomes among chronic opioid users: a retrospective analysis. WARD 2018.
79. 1/2019 Ghaemi MS, DiGiulio DB, Contrepolis K, Callahan B, Ngo TTM, Lee-McMullen B, Lehallier B, Robaczewska A, Mcilwain D, Rosenberg-Hasson Y,

Wong RJ, Quaintance C, Culos A, Stanley N, Tanada A, Tsai A, Gaudilliere D, Ganio E, Han X, Ando K, McNeil L, Tingle M, Wise P, Maric I, Sirota M, Wyss-Coray T, Winn VD, Druzin ML, Gibbs R, Darmstadt GL, Lewis DB, Partovi Nia V, Agard B, Tibshirani R, Nolan G, Snyder MP, Relman DA, Quake SR, Shaw GM, Stevenson DK, Angst MS, Gaudilliere B, Aghaeepour N. Multiomics modeling of the immunome, Transcriptome, Microbiome, proteome and metabolome adaptations during human pregnancy. *Bioinformatics*. 2019 Jan 1;35(1):95-9103. PMID: 30561547. PMCID: PMC6298056. <https://doi.org/10.1093/bioinformatics/bty537>

80. 2/2019 Ganio E, Stanley N, Einhaus J, Tsai A, Culos A, Rumer K, Fallahzadeh R, Lindberg-Larsen V, Kehlet H, **Angst MS**, Aghaeepour N, Gaudillière B. Deep Immune Profile of Preoperative Glucocorticoid Administration in Patients Undergoing Surgery. AUA/IARS 2019, Shock 2019, CYTO 2019.
81. 2/2019 Ghaemi M, Becker M, Culos A, Fallahzadeh R, Hamad GB, Hedou J, Phongpreecha T, Stanley N, Tanada A, Ando K, Baca Q, Ganio E, Gaudilliere D, Han X, Peterson L, Rumer K, Stelzer I, Tsai A, Tsai E, Wong R, Shaw G, Stevenson D, Snyder M, Relman D, Quake S, Angst MS, Gaudilliere B, Aghaeepour N. Machine Learning for Integration of Mass Cytometry with the Transcriptome, Microbiome, Proteome, and Metabolome for Prediction of Clinical Outcomes. CYTO 2019.
82. 2/2019 Han, X., Ghaemi, M. S., Ando, K., Peterson, L., Ganio, E. A., Tsai, A. S., Gaudilliere, D., Einhaus, J., Tsai, E. S., Stanley, N. M., Culos, A., Tanada, A. H., Fallahzadeh, R., Wong, R. J., Winn, V. D., Stevenson, D. K., **Angst, MS.**, Aghaeepour, N., Gaudilliere, B. Differential Dynamics of the Maternal Immune System in Healthy Pregnancy and Preeclampsia. SRI 2019, CYTO 2019.
83. 2/2019 Stanley N, Han X, Fallahzadeh R, Ganio E, Becker M, Culos A, Hamad GB, Hedou J, Phongpreecha T, Tanada A, Ando K, Baca Q, Gaudilliere D, Peterson, Rumer K, Stelzer I, Tsai A, Tsai E, **Angst MS**, Gaudilliere B, Aghaeepour N. Multi-view Machine Learning Increases Predictive Power in Clinical Flow and Mass Cytometry Datasets. CYTO 2019
84. 3/2019 Stelzer I, Becker M, Han X, Ganio E, Tsai E, Peterson L, Shaw G, Stevenson DK, **Angst MS**, Aghaeepour N, Gaudillière. Fetal sex influences maternal immune system dynamics over the course of pregnancy. ISIR 2019.
85. 4/2019 Baca QJ, McNeil L, Okada R, Tingle M, Aghaeepour A, Gaudilliere B, **Angst MS**. Lidocaine Infusion during Hip Arthroplasty Modulates the Surgical Immune Response and Decreases Postoperative Pain. ASRA 2019.
86. 4/2019 Feinstein I, Yutsis M, Fischbein MP, Oakes DA, **Angst MS**. Investigating Cognitive Decline after Cardiac Surgery: A Magnetic Resonance Spectroscopy Approach. SCA 2019.
87. 4/2019 Tsai AS, Beneyto MM, Berry K, Ganio EA, Baca QD, Gaudillière D, Han X, Ando K, **Angst MS**, Lansberg MG, Buckwalter MS, Gaudillière B, Aghaeepour N. Systemic Immune Profile of Stroke Recovery. Cyto 2018, Shock 2019.

88. 5/2019 Rishel C, **Angst MS**, Sun E. Association between the Trajectory of Preoperative Opioid Use and Postoperative Opioid Use, Adverse Events, and Economic Outcomes: A Retrospective Analysis. IARS 2019.
89. 6/2019 Tsai ES, Rumer K, Wong KD, Warrington B, Shelton E, Ganio E, Ando K, Tsai AS, Kebebew E, Shelton A, Morris A, Kirilcuk N, Gurland B, Folk-Tolbert M, Shankar K, Kin C, **Angst MS**, Aghaeepour N, Brice G. Immune profiling to predict recovery outcomes after surgery. Shock 2019.
90. 7/2020 Kristen Rumer K, Ganio E, Stanley N, Tsai E, Kin S, Shelton A, Morris A, **Angst MS**, Aghaeepour N, Gaudilliere B. Deep immune profiling of patients with inflammatory bowel disease reveal disordered immune cell frequencies before and in response to major abdominal surgery. Scientific Forum 2020
91. 3/2021 Marić I, Contrepolis K, Moufarrej M, Stelzer I, Feyaerts D, Han X, Tang A, Stanley N, Wong RJ, Winn VD, Shaw GM, Relman DA, Quake SR, **Angst MS**, Snyder MP, Stevenson DK, Gaudilliere B, Aghaeepour N. Multiomics Data Analysis Predicts Risk of Preeclampsia. Pediatric Academic Societies 2021 Virtual Meeting.
92. 7/2021 Protocol for a multisite prospective biomarker study in adolescent chronic musculoskeletal pain. Simons L, Coghill R, Moayedi M, Stinson J, King C, Lopez-Sola M, **Angst MS**, Gaudilliere B, Aghaeepour N. NIH 2021 HEAL meeting.
93. 3/2022 Becker M, Nassar H, Espinosa CA, Stelzer IA, Feyaerts D, Berson E, Bidoki N, Chang AL, De Francesco D, Fallahzadeh R, Maric I, Mataraso SJ, Phongpreecha T, Ravindra NG, Stanley N, Thuraiappah M, Shaw G, Stevenson DK, **Angst MS**, Gaudilliere B, Aghaeepour N. Next-generation Network Construction Algorithm Reveals Changes in Coordination between Multiomics Biological Pathways during Pregnancy. PAS 2022.
94. 3/2022 Chang AL, Reiss JD, Culos A, Becker M, Mayo JA, Marić I, Fallahzadeh R, Bidoki NH, De Francesco D, Phongpreecha T, Espinosa CA, Xenochristou M, Zhang M, Stanley N, Lee HC, Gaudillière B, **Angst MS**, Stevenson DK, Shaw GM, Sylvester KG, Aghaeepour N. Quantitative assessment of neonatal health using dried blood spot metabolite profiles and deep learning. SRI and PAS 2022.
95. 3/2022 Feyaerts D, Stelzer IA, Maric I, Hedou J, Diop M, Ganio EA, Han X, Ando K, Aghaeepour N, Hlatky MA, **Angst MS**, Winn VD, Stevenson DK, Romero R, Gaudilliere B, Gomez-Lopez N. Cross-tissue Assessment of Local and Peripheral Immune Determinants of Preeclampsia. PAS 2022.
96. 3/2022 Multiomics Longitudinal Modeling of Preeclamptic Pregnancies Marić I, Contrepolis K, Moufarrej M, Stelzer, Feyaerts D, Han H, Tang A, Wong RJ, Darmstadt GL, Winn VD, Shaw GM, Relman DA, Quake SR, **Angst MS**, Snyder MP, Stevenson DK, Brice Gaudilliere G, Aghaeepour N. SRI 2022.
97. 5/2022 Choisy B, Hedou GH, Verdonk F, Gaudilliere D, Tsai AS, Shankar K, Sato M, Einhaus J, Ganio E, Bonham A, Warrington B, Ahmad S, Tingle M, Ando K, Bruckman S, S. **Angst MS**, Kin C, Gaudilliere B. Multimodal, coached telehealth prehabilitation has high compliance and improves exercise and cognitive capacity prior to surgery: a pilot study. IARS 2022.

98. 5/2023 Verdonk F, Hedou J, Marić I, Bellan G, Einhaus J, Gaudilliere D, Bonham A, **Angst MS**, Gaudilliere B. An Immune Signature of Surgical Site Infections (SSI), a Retrospective Study with a Novel Machine Learning Pipeline for Biomarker Identification. IARS 2023.
99. 5/2023 Verdonk F, Hedou J, Marić I, Bellan G, Einhaus J, Gaudilliere D, Ladant FX, Stelzer I, Feyaerts D, Tsai A, Bonham A, **Angst MS**, Aghaeepour N, Stevenson DK, Tibshirani R, Gaudilliere B. STABL Enables Reliable and Selective Biomarker Discovery in Predictive Modeling of High-dimensional Omics Data. IARS 2023.
100. 5/2023 Verdonk F, Tsai AS, Hedou J, Heifets B, Gaudilliere D, Bellan G, Feyaerts F, Stelzer I, Ganio E, Sato M, Bonham A, Ando A, Aghaeepour N, **Angst MS**, Gaudilliere B. An immune signature of postoperative cognitive dysfunction (POCD). IARS 2022.

Special Materials: (9 Total)

1. **Angst MS**. Dose-response Function of Epidural Fentanyl versus Sufentanil. *Anesth Analg*. 1998 Apr;86(4):918-919. PMID: 9539633
Letter
2. Maze M, **Angst MS**. Dexmedetomidine and opioid interactions: defining the role of dexmedetomidine for intensive care unit sedation. *Anesthesiology*. 2004 Nov;101(5):1059-1061. PMID: 15505438
Editorial
3. **Angst MS**, Clark DJ. Comment on Koltzenburg et al.: Differential Sensitivity of Three Experimental Pain Models in Detecting the Analgesic Effects of Transdermal Fentanyl and Buprenorphine. *Pain* 2006;126:165-74. *Pain*. 2007 Apr;128(3):292-294. PMID: 17276008. <https://doi.org/10.1016/j.pain.2006.12.024>.
Epub 2007 Feb 02
Letter
4. **Angst MS**. Intrathecal cyclooxygenase inhibitors in humans: don't throw in the towel!. *Anesthesiology*. 2010 May;112(5):1082-1083. PMID: 20418688. <https://doi.org/10.1097/ALN.0b013e3181d94e41>
Editorial
5. **Angst MS**, Clark JD. Ketamine for managing perioperative pain in opioid-dependent patients with chronic pain: a unique indication?. *Anesthesiology*. 2010 Sep;113(3):514-515. PMID: 20683248. <https://doi.org/10.1097/ALN.0b013e3181e9092d>
Editorial
6. **Angst MS**, Clark JD. In reply. *Anesthesiology*. 2013 Jan;118(1):230-231. PMID: 23249943. <https://doi.org/10.1097/ALN.0b013e318278e4e4>
Letter
7. **Angst MS**. Editorial comment: Challenges in the Perioperative Management of the Patient Receiving Extended-Release Naltrexone. *A A Case Rep*. 2014 Dec 1;3(11):145. PMID: 25612100. <https://doi.org/10.1213/XAA.000000000000104>

Editorial comment

8. Gaudilliere B, **Angst MS**, Hotchkiss RS. Deep Immune Profiling in Trauma and Sepsis: Flow Is the Way to Go!. Crit Care Med. 2017 Sep;45(9):1577-1578. PMID: 28816846. PMCID: PMC6294342. <https://doi.org/10.1097/CCM.0000000000002594>
Editorial
9. Berger M, **Angst MS**, Culley DJ, Price CE, Scott DA, Whittington RA, Eckenhoff RG, Perioperative Neurotoxicity Working Group. In Response. Anesth Analg. 2019 Sep;129(3):e112-e113. PMID: 31425253. PMCID: PMC7153730. <https://doi.org/10.1213/ANE.0000000000004300>
Letter

Digital Publications: (4 Total)

1. Carvalho B**, Clark DJ, Yeomans D, **Angst MS**. Collecting and measuring nociceptive and inflammatory mediators in surgical wounds. J Vis Exp. 2008 Oct 29;962. PMID: 19078937. PMCID: PMC3234158. <https://doi.org/10.3791/962>. Epub 2008 Oct 29
2. **Angst MS**, Tingle M, Schmelz M, Carvalho B**, Yeomans DC. Human in-vivo bioassay for the tissue-specific measurement of nociceptive and inflammatory mediators. J Vis Exp. 2008 Dec 1;1074. PMID: 19229167. PMCID: PMC2762925. <https://doi.org/10.3791/1074>. Epub 2008 Dec 01
3. **Angst MS**, Tingle M, Phillips NG**, Carvalho B**. Determining heat and mechanical pain threshold in inflamed skin of human subjects. J Vis Exp. 2009 Jan 14;1092. PMID: 19229176. PMCID: PMC2763295. <https://doi.org/10.3791/1092>. Epub 2009 Jan 14
4. Carvalho B**, Clark DJ, Yeomans D, **Angst MS**. Collecting and Measuring Wound Exudate Biochemical Mediators in Surgical Wounds. J Vis Exp. 2012 Oct 20;50133. PMID: 23117346. PMCID: PMC3490314. <https://doi.org/10.3791/50133>. Epub 2012 Oct 20

K. Invited Presentations and Workshops (64 Total)

Local presentations: (9 Total)

Grand Rounds: (2 Total)

1. 9/2003 "Do Painkillers Cause Pain?", Department of Psychiatry and Behavioral Sciences
Stanford
2. 1/2014 "Immunity in the Context of Surgery and Anesthesia",
Department of Anesthesiology, Pain and Perioperative
Medicine
Stanford

Speaker: (7 Total)

1. 6/2002 "Opioid-induced Hyperalgesia", Brain Research Institute
Stanford
2. 1/2015 "Implementing Mass Cytometry at the Bedside: Single-cell
Immune Signatures of Clinical Recovery from Surgical
Trauma", Stroke Collaborative Action Network
Stanford
3. 1/2015 "Single-cell Analysis of the Peripheral Immune System in
Patients with a History of Term and Preterm labor",
Department of Pediatrics
Stanford
4. 1/2017 "A Proteomic Clock of Pregnancy", Stanford Prematurity
Research Center
Stanford
5. 1/2018 "A Proteomic Signature of Preeclampsia", Stanford Prematurity
Research Center
Stanford
6. 1/2018 "Cocoa Flavanols for Modulating the Surgical Immune
Response and Accelerating Clinical Recovery" SPARK
Stanford
7. 7/2019 "Cocoa Flavanols for Modulating the Surgical Immune
Response and Accelerating Clinical Recovery – Final Results",
SPARK
Stanford

Regional presentations: (7 Total)

Grand Rounds: (1 Total)

1. 1/2014 "Clinical Recovery from Surgery Strongly Correlates with
Single-Cell Immune Signatures, CCR UCSF
San Francisco

Speaker: (6 Total)

1. 3/2004 "Opioid-induced Hyperalgesia in Humans", UCSF Pain Interest
Group
San Francisco
2. 5/2006 "Opioid-induced Hyperalgesia", Forum at the Center for Health
Care Evaluation, Department of Veteran Affairs
Menlo Park

3. 8/2008 "From Mice to Men: Translational Experimental Protocol to Study Nociception and Inflammation in Tissue Injury", Stanford Scientific Conference of Immunology and the Institute of Immunity, Transplantation and Infection
Asilomar
4. 1/2015 "Single-Cell Immune Signatures Predict Clinical Recovery after Surgery", UCSF/Stanford Anesthesia Research Retreat
Millbrae
5. 1/2018 "Deep Multiomic Profiling in Clinical Studies", UCSF/Stanford Research Retreat
Millbrae
6. 2/2023 "Modulating the Inflammatory Response to Surgery", Alkahest
SanCarlos

National presentations: (34 Total)

Visiting Professorship: (3 Total)

1. 1/2016 "Immune Correlates of Delayed Surgical Recovery",
Department of Anesthesia, Washington University
St. Louise
2. 9/2022 "Anesthetic Management of Aneurysms and Vascular
Malformations", Grand Round Stony Brook Medicine
Stony Brook
3. 9/2022 "Biological Determinants of Postoperative Recovery", Grand
Round Stony Brook Medicine
Stony Brook

Grand Rounds: (1 Total)

1. 9/2023 The Stanford experience - Implementing OKRs, a goal-setting
strategy to create an aspirational, transparent, and inclusive
work culture
Online: University of Arkansas for Medical Sciences

Speaker: (28 Total)

1. 3/1997 "Quantification of Opioid Analgesia with a New Experimental
Pain Model in Man", Analgesiology and Headache Section,
Annual Meeting of the American Society of Clinical
Pharmacology and Therapeutics
San Diego
2. 6/1997 "Quantitative Sensory Testing: What is Abnormal and what are
Clinical Standards?", Workshop on Quantitative Sensory
Testing, Massachusetts General Hospital
Boston

3. 6/2000 "The Pharmacodynamics of Oral Sustained Release Hydromorphone", Investigator Meeting Knoll Pharmaceutical Company
Orlando
4. 5/2003 "Human Studies on Acute Opioid Tolerance", American Society of Regional Anesthesia and Pain Medicine
San Diego
5. 5/2004 "Acute Opioid Tolerance: No Evidence in Models of Acute Experimental Pain?", Association of University Anesthesiologists
Sacramento
6. 10/2004 "Opioid-induced Hyperalgesia: What Does It Mean for Pain Treatment?", American Society of Anesthesiology
New Orleans
7. 4/2006 "Electrical Experimental Pain Models in Humans. International Experimental Pain Model", Advisory Board to Eli Lilly and Company
Indianapolis
8. 8/2006 "Opioid-induced Hyperalgesia. Symposium Interface between Pain and Opioids", American Academy of Addiction Society
St. Pete Beach
9. 3/2008 "Opioid-induced Hyperalgesia, a Newly Recognized Side Effect of Opioid Therapy?:", Department of Physiology and Pharmacology, Oregon Health & Science University
Portland
10. 3/2008 "Pharmacokinetic Considerations for the Rational Use of Opioids", Department of Physiology and Pharmacology, Oregon Health & Science University
Portland
11. 8/2008 "Towards a Definitive Evidence Base for Opioid Management of Chronic Non-cancer Pain: Clinical Assessment of Opioid-induced Hyperalgesia:", National Panel at the Pain Research Center of the University of Utah
Salt Lake City
12. 10/2008 "Update on Opioid Safety and Tolerability: Current Concepts to Minimize Side Effects and Risks", Annual Meeting of the American Society of Anesthesiology
Orlando
13. 5/2009 "The Relevance of Descending Inhibition to Understanding and Treatment of Neuropathic Pain: Experimental Assessment of Descending Inhibition in Normal Humans and those with Neuropathic Pain", Annual Meeting of the American Pain Society
San Diego

14. 10/2009 "The Heritability of Opioid Effects – Preliminary Results of a Twin Study", Annual Meeting of the American Society of Anesthesiology
New Orleans
15. 10/2009 "Update on Opioid Safety and Tolerability: Current Concepts to Minimize Side Effects and Risks", Annual Meeting of the American Society of Anesthesiology
New Orleans
16. 10/2010 "Update on Opioid Safety and Tolerability: Current Concepts to Minimize Side Effects and Risks", Annual Meeting of the American Society of Anesthesiology
San Diego
17. 1/2011 "All about Opioids: Opioid-induced Hyperalgesia", American Academy of Pain Medicine
Washington DC
18. 1/2011 "Opioid Pharmacogenomics in a Twin-Study Paradigm", Laboratory of the Biology of Addictive Diseases, Rockefeller University
New York
19. 1/2012 "Opioid-induced Hyperalgesia: Clinical Presentation and Implication", World Institute of Pain
Miami, FL
20. 1/2013 "The Role of Pharmacologic Challenge in Patient Phenotyping for Phase 2 and 3 Trials", IMMPACT
Washington DC
21. 1/2015 "The Resolution of Pain after Surgery and Trauma - New Concepts Bring New Opportunities: Immunologic Aspects of Recovery from Surgery", American Society of Anesthesiology
New Orleans
22. 1/2016 "New Thoughts on Predicting and Preventing Chronic Pain after Surgery: An Immune Biomarker for Slow Recovery and How to Modify Risk in Slow Recovery", International Anesthesia Research Society
San Francisco
23. 1/2018 "Emerging Tools and Approaches in Biomarker Discovery and Development", Panel Chair NIH Workshop
Washington DC
24. 1/2018 "Multiomic and Computational Approaches to Biomarker Discovery: Mass Cytometry and Data Integration", NIH Workshop
Washington DC
25. 1/2019 "Persistent Postsurgical Pain - Pathophysiology and Preventive Strategies: Perioperative Inflammation and Immune

Response”, American Society of Anesthesiology
Orlando

26. 1/2019 “Shifting Gears – Biological Hall Marks of Surgical Recovery”,
Shock Society
San Diego
27. 1/2019 “Signals to Begin Labor – Inflammation and PTL, March of
Dimes
Washington DC
28. 5/2019 "Shifting Gears – Biological Hall Marks of Surgical Recovery",
Shock Society
San Diego

Moderator: (1 Total)

1. 4/2000 "Total Intravenous Anesthesia in Cardiac Surgery", Annual
Meeting of the Society of Cardiovascular
Anesthesiologists
Orlando

Workshop: (1 Total)

1. 1/2013 “TIVA - Implications on Pain Management”, Mylan Roundtable
Trenton

International presentations: (14 Total)

Visiting Professorship: (4 Total)

1. 8/2002 "Apparent Acute Analgesic Opioid Tolerance: A Reflection of
Opioid-induced Hyperalgesia", Department of Anesthesia,
Hospital of Lucerne
Lucerne, Switzerland
2. 1/2015 “Immune Signatures of Clinical Recovery from Surgical
Trauma: Mass Cytometry to Comprehensively Surveil the
Entire Immune System with Single-cell Resolution at the
Bedside”, Rigshospitalet, Copenhagen University
Copenhagen, Denmark
3. 1/2017 “Immune Correlates of Surgical Recovery, Grand Round
DeGroot Institute, McMaster University
Hamilton, Canada
4. 1/2019 “Immune Signatures for Risk Profiling of Surgical Patients”,
Intensive Care Symposium
Schwyz, Switzerland

Grand Rounds: (1 Total)

1. 8/1997 "The Measurement of Pain in Clinical Pharmacology", 41st Symposium in Anesthesiology
Lucerne, Switzerland

Speaker: (7 Total)

1. 11/2001 "Computer Controlled Infusions: A Useful Tool for Analgesic Drug Trials", Institute of Physiology, University of Nuernberg-Erlangen
Erlangen, Germany
2. 11/2001 "Opioid-induced Hyperalgesia", Institute of Physiology, University of Nuernberg-Erlangen
Erlangen, Germany
3. 5/2008 "Altered Sensitivity to Opioids – Hyperalgesia and Tolerance", Annual Meeting of the European Society of Anesthesiology
Copenhagen, Denmark
4. 5/2008 "Pain Assessment in Experimental Medicine", Annual Meeting of the European Society of Anesthesiology
Copenhagen, Denmark
5. 4/2010 "Surrogate Markers of Opioid-induced Hyperalgesia in Humans: Are they Valid and where Do We Stand?" Spring Pain Conference
Grand Cayman Island
6. 1/2016 "Cellular and Proteomic Signatures of Term/preterm Birth", March of Dimes
Montreal, Canada
7. 1/2019 "Intraoperative Opioids: Postoperative Consequences, Opioid-free Anesthesia, and Nociception-Index Guided Anesthesia", International Anesthesia Research Society
Montreal, Canada

Moderator: (1 Total)

1. 1/2021 "Symposium on Immune Health in Surgery and Critical Care – Challenges and Novel Opportunities (organizer and moderator)", International Anesthesia Research Society
Online (due to COVID-19)

Workshop: (1 Total)

1. 5/2009 "Difficult Airway Workshop: Flexible Fiberoptic Bronchoscopy", Annual Meeting of JAEPE
Recife, Brazil

