


Stanford



Martin S. Angst

Professor of Anesthesiology, Perioperative and Pain Medicine (MSD)

 Curriculum Vitae available Online

CLINICAL OFFICE (PRIMARY)

- **Anesthesia**

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ACADEMIC CONTACT INFORMATION

- **Administrative Contact**

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Bio

CLINICAL FOCUS

- Anesthesia for Liver Transplantation
- Neuroanesthesia
- Anesthesia
- Perioperative Recovery

ACADEMIC APPOINTMENTS

- Professor - University Medical Line, Anesthesiology, Perioperative and Pain Medicine
- Member, Bio-X
- Member, Cardiovascular Institute
- Member, Wu Tsai Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Vice Chair Strategy and Initiatives, Stanford University School of Medicine, Department of Anesthesiology, (2022- present)
- Director of CTA Strategic Initiatives and Operations, Stanford University School of Medicine, (2019-2022)
- CVH Operations Leadership Group, Stanford University School of Medicine, CV Health Service Line, (2019-2022)
- Appointments and Promotions Committee, Stanford University School of Medicine, (2015-2021)
- Finance Committee, Stanford University School of Medicine, Department of Anesthesiology, (2019- present)
- Governance Committee, Stanford University School of Medicine, Department of Anesthesiology, (2019- present)

PROFESSIONAL EDUCATION

- Board Certification: Anesthesia, Swiss Medical Federation FMH (1993)
- Residency: University of Bern - Switzerland (1994) Switzerland
- Residency: Regionalspital Burgdorf (1990) Switzerland

- Medical Education: Berne University School of Medicine (1987) Switzerland

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

We investigate the biological and clinical characteristics that drive resilience in humans using surgery as an interventional injury model. The capacity to recover from injury, or alternatively, suffer from dire consequences, is at the very core of human health. The modern armamentarium in the natural, clinical, and computational sciences allows for an unprecedented exploration of the question as to what constitutes human fitness. Our efforts employ sophisticated multi-omic and computational approaches. Gained knowledge will permit individual patient consultation and management in the field of anesthesiology and perioperative care. Some patients may benefit most from complex and invasive surgical procedures, while others may be better served by minimally invasive or none-surgical interventions. Furthermore, novel strategies are on the horizon to render vulnerable patients fit for surgery with pre-surgical and perioperative interventions.

CLINICAL TRIALS

- A Human In-vivo Model for the Detection of Inflammatory and Nociceptive Biomarkers, Not Recruiting
- A Study to Evaluate the Effect of GRF6021 on Postoperative Recovery Following Primary Hip or Knee Arthroplasty, Not Recruiting
- Cocoa Flavanols for Modulating Immune Response and Accelerating Recovery, Not Recruiting
- Detection of Immune Changes as a Result of Surgical Trauma in Human Subject, Not Recruiting
- Effects of a Peripheral Nerve Block on Biomarkers of Pain and Inflammation, Not Recruiting
- Evaluation of Immune Signaling Networks in Healthy Human Volunteers, Not Recruiting
- Evaluation of Propranolol's Effect on Pain and Inflammation., Not Recruiting
- Heritability of Opioid Effects: A Twin Study, Not Recruiting
- Immune Modulation by Enhanced vs Standard Prehabilitation Program Before Major Surgery, Not Recruiting
- Immune-modulation Effects of an Arginine Rich Nutritional Supplement in Surgical Patients, Not Recruiting
- Optimization of Time-of-Flight Mass Cytometry (CyTOF) Analysis for Evaluation of Immune Changes Following Surgery, Not Recruiting
- Study of Experimental Models of Pain and Inflammation., Not Recruiting

Publications

PUBLICATIONS

- **Prediction of risk for early or very early preterm births using high-resolution urinary metabolomic profiling.** *BMC pregnancy and childbirth*
Zhang, Y., Sylvester, K. G., Wong, R. J., Blumenfeld, Y. J., Hwa, K. Y., Chou, C. J., Thyparambil, S., Liao, W., Han, Z., Schilling, J., Jin, B., Mari#, I., Aghaeepour, et al
2024; 24 (1): 783
- **Towards a new taxonomy of preterm birth.** *Journal of perinatology : official journal of the California Perinatal Association*
Stevenson, D. K., Chang, A. L., Wong, R. J., Reiss, J. D., Gaudillière, B., Sylvester, K. G., Ling, X. B., Angst, M. S., Shaw, G. M., Katz, M., Aghaeepour, N., Mari#, I.
2024
- **An immune signature of postoperative cognitive decline: A prospective cohort study.** *International journal of surgery (London, England)*
Verdonk, F., Cambriel, A., Hedou, J., Ganio, E., Bellan, G., Gaudilliere, D., Einhaus, J., Sabayev, M., Stelzer, I. A., Feyaerts, D., Bonham, A. T., Ando, K., Choisy, et al
2024
- **Generating pregnant patient biological profiles by deconvoluting clinical records with electronic health record foundation models.** *Briefings in bioinformatics*
Seong, D., Mataraso, S., Espinosa, C., Berson, E., Reincke, S. M., Xue, L., Kashiwagi, C., Kim, Y., Shu, C. H., Chung, P., Ghanem, M., Xie, F., Wong, et al
2024; 25 (6)

- **Uncovering newly identified aldehyde dehydrogenase 2 genetic variants that lead to acetaldehyde accumulation after an alcohol challenge.** *Journal of translational medicine*
Rwere, F., White, J. R., Hell, R. C., Yu, X., Zeng, X., McNeil, L., Zhou, K. N., Angst, M. S., Chen, C. H., Mochly-Rosen, D., Gross, E. R.
2024; 22 (1): 697
- **Predicting Preterm Birth Using Proteomics.** *Clinics in perinatology*
Mari#, I., Stevenson, D. K., Aghaeepour, N., Gaudillière, B., Wong, R. J., Angst, M. S.
2024; 51 (2): 391-409
- **Corrigendum: Advances and potential of omics studies for understanding the development of food allergy.** *Frontiers in allergy*
Sindher, S. B., Chin, A. R., Aghaeepour, N., Prince, L., Maecker, H., Shaw, G. M., Stevenson, D., Nadeau, K. C., Snyder, M., Khatri, P., Boyd, S. D., Winn, V. D., Angst, et al
2024; 5: 1373485
- **Discovery of sparse, reliable omic biomarkers with Stabl.** *Nature biotechnology*
Hédou, J., Mari#, I., Bellan, G., Einhaus, J., Gaudillière, D. K., Ladant, F. X., Verdonk, F., Stelzer, I. A., Feyaerts, D., Tsai, A. S., Ganio, E. A., Sabayev, M., Gillard, et al
2024
- **Deep representation learning identifies associations between physical activity and sleep patterns during pregnancy and prematurity.** *NPJ digital medicine*
Ravindra, N. G., Espinosa, C., Berson, E., Phongprecha, T., Zhao, P., Becker, M., Chang, A. L., Shome, S., Mari#, I., De Francesco, D., Mataraso, S., Saarunya, G., Thuraiappah, et al
2023; 6 (1): 171
- **Variability and relative contribution of surgeon and anesthesia specific time components to total procedural time in cardiac surgery.** *The Journal of thoracic and cardiovascular surgery*
Vanneman, M. W., Thuraiappah, M., Feinstein, I., Fielding-Singh, V., Peterson, A., Kronenberg, S., Angst, M. S., Aghaeepour, N.
2023
- **Comparative predictive power of serum vs plasma proteomic signatures in feto-maternal medicine.** *AJOG global reports*
Espinosa, C., Ali, S. M., Khan, W., Khanam, R., Pervin, J., Price, J. T., Rahman, S., Hasan, T., Ahmed, S., Raqib, R., Rahman, M., Aktar, S., Nisar, et al
2023; 3 (3): 100244
- **Multomic signals associated with maternal epidemiological factors contributing to preterm birth in low- and middle-income countries.** *Science advances*
Espinosa, C. A., Khan, W., Khanam, R., Das, S., Khalid, J., Pervin, J., Kasaro, M. P., Contrepolis, K., Chang, A. L., Phongprecha, T., Michael, B., Ellenberger, M., Mehmood, et al
2023; 9 (21): eade7692
- **STABL Enables Reliable and Selective biomarker Discovery in Predictive Modeling of High Dimensional Omics Data**
Verdonk, F., Hedou, J., Maric, I., Bellan, G., Einhaus, J., Gaudilliere, D., Ladant, F., Stelzer, I., Feyaerts, D., Tsai, A., Bonham, A., Angst, M., Aghaeepour, et al
LIPPINCOTT WILLIAMS & WILKINS.2023: 814-821
- **Large-scale correlation network construction for unraveling the coordination of complex biological systems.** *Nature computational science*
Becker, M., Nassar, H., Espinosa, C., Stelzer, I. A., Feyaerts, D., Berson, E., Bidoki, N. H., Chang, A. L., Saarunya, G., Culos, A., De Francesco, D., Fallahzadeh, R., Liu, et al
2023; 3 (4): 346-359
- **Advances and potential of omics studies for understanding the development of food allergy.** *Frontiers in allergy*
Sindher, S. B., Chin, A. R., Aghaeepour, N., Prince, L., Maecker, H., Shaw, G. M., Stevenson, D. K., Nadeau, K. C., Snyder, M., Khatri, P., Boyd, S. D., Winn, V. D., Angst, et al
2023; 4: 1149008
- **Data-driven longitudinal characterization of neonatal health and morbidity.** *Science translational medicine*
De Francesco, D., Reiss, J. D., Roger, J., Tang, A. S., Chang, A. L., Becker, M., Phongprecha, T., Espinosa, C., Morin, S., Berson, E., Thuraiappah, M., Le, B. L., Ravindra, et al
2023; 15 (683): eadc9854
- **In-Silico Generation of High-Dimensional Immune Response Data in Patients using a Deep Neural Network.** *Cytometry. Part A : the journal of the International Society for Analytical Cytology*
Fallahzadeh, R., Bidoki, N. H., Stelzer, I. A., Becker, M., Mari#, I., Chang, A. L., Culos, A., Phongprecha, T., Xenochristou, M., De Francesco, D., Espinosa, C., Berson, E., Verdonk, et al

2022

- **Early prediction and longitudinal modeling of preeclampsia from multiomics.** *Patterns (New York, N.Y.)*
Maric, I., Contrepois, K., Moufarrej, M. N., Stelzer, I. A., Feyaerts, D., Han, X., Tang, A., Stanley, N., Wong, R. J., Traber, G. M., Ellenberger, M., Chang, A. L., Fallahzadeh, et al
2022; 3 (12): 100655
- **Integrated plasma proteomic and single-cell immune signaling network signatures demarcate mild, moderate, and severe COVID-19.** *Cell reports. Medicine*
Feyaerts, D., Hédou, J., Gillard, J., Chen, H., Tsai, E. S., Peterson, L. S., Ando, K., Manohar, M., Do, E., Dhondalay, G. K., Fitzpatrick, J., Artandi, M., Chang, et al
2022: 100680
- **Signature for Pain Recovery IN Teens (SPRINT): protocol for a multisite prospective signature study in chronic musculoskeletal pain.** *BMJ open*
Simons, L., Moayedi, M., Coghill, R. C., Stinson, J., Angst, M. S., Aghaeepour, N., Gaudilliere, B., King, C. D., López-Solà, M., Hoeppli, M. E., Biggs, E., Ganio, E., Williams, et al
2022; 12 (6): e061548
- **A data-driven health index for neonatal morbidities.** *iScience*
De Francesco, D., Blumenfeld, Y. J., Maric, I., Mayo, J. A., Chang, A. L., Fallahzadeh, R., Phongpreecha, T., Butwick, A. J., Xenochristou, M., Phibbs, C. S., Bidoki, N. H., Becker, M., Culos, et al
2022; 25 (4): 104143
- **MULTIOMICS LONGITUDINAL MODELING OF PREECLAMPTIC PREGNANCIES**
Espinosa, C., Maric, I., Contrepois, K., Moufarrej, M., Stelzer, I. S., Feyaerts, D., Han, X., Tang, A., Wong, R. J., Darmstadt, G. L., Winn, V. D., Shaw, G. M., Relman, et al
BMJ PUBLISHING GROUP.2022: 309
- **Revealing the impact of lifestyle stressors on the risk of adverse pregnancy outcomes with multitask machine learning.** *Frontiers in pediatrics*
Becker, M., Dai, J., Chang, A. L., Feyaerts, D., Stelzer, I. A., Zhang, M., Berson, E., Saarunya, G., De Francesco, D., Espinosa, C., Kim, Y., Maric, I., Mataraso, et al
2022; 10: 933266
- **Maternal stress and its consequences - biological strain.** *American journal of perinatology*
Stevenson, D. K., Gotlib, I. H., Buthmann, J. L., Maric, I., Aghaeepour, N., Gaudilliere, B., Angst, M. S., Darmstadt, G. L., Druzin, M. L., Wong, R. J., Shaw, G. M., Katz, M.
2022
- **Integrated Single-Cell and Plasma Proteomic Modeling to Predict Surgical Site Complications: A Prospective Cohort Study.** *Annals of surgery*
Rumer, K. K., Hedou, J., Tsai, A., Einhaus, J., Verdonk, F., Stanley, N., Choisy, B., Ganio, E., Bonham, A., Jacobsen, D., Warrington, B., Gao, X., Tingle, et al
1800
- **Preoperative Opioid Utilization Patterns and Postoperative Opioid Utilization: A Retrospective Cohort Study.** *Anesthesiology*
Rishel, C. A., Angst, M. S., Sun, E. C.
2021; 135 (6): 1015-1026
- **Plasma Biomarkers of Tau and Neurodegeneration During Major Cardiac and Noncardiac Surgery.** *JAMA neurology*
Feinstein, I., Wilson, E. N., Swarovski, M. S., Andreasson, K. I., Angst, M. S., Greicius, M. D.
2021
- **Integrated trajectories of the maternal metabolome, proteome, and immunome predict labor onset.** *Science translational medicine*
Stelzer, I. A., Ghaemi, M. S., Han, X., Ando, K., Hedou, J. J., Feyaerts, D., Peterson, L. S., Rumer, K. K., Tsai, E. S., Ganio, E. A., Gaudilliere, D. K., Tsai, A. S., Choisy, et al
2021; 13 (592)
- **Stimulant use for self-management of pain among safety-net patients with chronic non-cancer pain.** *Substance abuse*
Beliveau, C. M., McMahan, V. M., Arenander, J., Angst, M. S., Kushel, M., Torres, A., Santos, G., Coffin, P. O.
2021: 1–8
- **Understanding how biologic and social determinants affect disparities in preterm birth and outcomes of preterm infants in the NICU.** *Seminars in perinatology*
Stevenson, D. K., Aghaeepour, N., Maric, I., Angst, M. S., Darmstadt, G. L., Druzin, M. L., Gaudilliere, B., Ling, X. B., Moufarrej, M. N., Peterson, L. S., Quake, S. R., Relman, D. A., Snyder, et al

2021: 151408

- **Integrated plasma proteomic and single-cell immune signaling network signatures demarcate mild, moderate, and severe COVID-19.** *bioRxiv : the preprint server for biology*
Feyaerts, D., Hédou, J., Gillard, J., Chen, H., Tsai, E. S., Peterson, L. S., Ando, K., Manohar, M., Do, E., Dhondalay, G. K., Fitzpatrick, J., Artandi, M., Chang, et al
2021
- **Proteomic signatures predict preeclampsia in individual cohorts but not across cohorts - implications for clinical biomarker studies.** *The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians*
Ghaemi, M. S., Tarca, A. L., Romero, R. n., Stanley, N. n., Fallahzadeh, R. n., Tanada, A. n., Culos, A. n., Ando, K. n., Han, X. n., Blumenfeld, Y. J., Druzin, M. L., El-Sayed, Y. Y., Gibbs, et al
2021: 1–8
- **Deleterious and Protective Psychosocial and Stress-Related Factors Predict Risk of Spontaneous Preterm Birth.** *American journal of perinatology*
Becker, M. n., Mayo, J. A., Phogat, N. K., Quaintance, C. C., Laborde, A. n., King, L. n., Gotlib, I. H., Gaudilliere, B. n., Angst, M. S., Shaw, G. M., Stevenson, D. K., Aghaeepour, N. n., Dhabhar, et al
2021
- **Human immune system adaptations to simulated microgravity revealed by single-cell mass cytometry.** *Scientific reports*
Spatz, J. M., Fulford, M. H., Tsai, A., Gaudilliere, D., Hedou, J., Ganio, E., Angst, M., Aghaeepour, N., Gaudilliere, B.
2021; 11 (1): 11872
- **Objective Activity Parameters Track Patient-Specific Physical Recovery Trajectories After Surgery and Link With Individual Preoperative Immune States.** *Annals of surgery*
Fallahzadeh, R., Verdonk, F., Ganio, E., Culos, A., Stanley, N., Mari#, I., Chang, A. L., Becker, M., Phongpreecha, T., Xenochristou, M., De Francesco, D., Espinosa, C., Gao, et al
2021
- **A Peripheral Immune Signature of Labor Induction.** *Frontiers in immunology*
Ando, K., Hédou, J. J., Feyaerts, D., Han, X., Ganio, E. A., Tsai, E. S., Peterson, L. S., Verdonk, F., Tsai, A. S., Mari#, I., Wong, R. J., Angst, M. S., Aghaeepour, et al
2021; 12: 725989
- **Measuring the human immune response to surgery: multiomics for the prediction of postoperative outcomes.** *Current opinion in critical care*
Verdonk, F., Einhaus, J., Tsai, A. S., Hedou, J., Choisy, B., Gaudilliere, D., Kin, C., Aghaeepour, N., Angst, M. S., Gaudilliere, B.
2021
- **Proposed domains for assessing postpartum recovery: A concept elicitation study.** *BJOG : an international journal of obstetrics and gynaecology*
Sultan, P., Jensen, S. E., Taylor, J., El-Sayed, Y., Carmichael, S., Cella, D., Angst, M. S., Gaudilliere, B., Lyell, D. J., Carvalho, B.
2021
- **Single-Cell Analysis of the Neonatal Immune System Across the Gestational Age Continuum.** *Frontiers in immunology*
Peterson, L. S., Hedou, J., Ganio, E. A., Stelzer, I. A., Feyaerts, D., Harbert, E., Adusumelli, Y., Ando, K., Tsai, E. S., Tsai, A. S., Han, X., Ringle, M., Houghteling, et al
2021; 12: 714090
- **Patient phenotyping in clinical trials of chronic pain treatments: IMPACT recommendations** *PAIN REPORTS*
Edwards, R. R., Dworkin, R. H., Turk, D. C., Angst, M. S., Dionne, R., Freeman, R., Hansson, P., Haroutounian, S., Arendt-Nielsen, L., Attal, N., Baron, R., Brell, J., Bujanover, et al
2021; 6 (1)
- **Data-Driven Modeling of Pregnancy-Related Complications.** *Trends in molecular medicine*
Espinosa, C. n., Becker, M. n., Mari#, I. n., Wong, R. J., Shaw, G. M., Gaudilliere, B. n., Aghaeepour, N. n., Stevenson, D. K.
2021
- **Integration of mechanistic immunological knowledge into a machine learning pipeline improves predictions** *NATURE MACHINE INTELLIGENCE*
Culos, A., Tsai, A. S., Stanley, N., Becker, M., Ghaemi, M. S., McIlwain, D. R., Fallahzadeh, R., Tanada, A., Nassar, H., Espinosa, C., Xenochristou, M., Ganio, E., Peterson, et al
2020

- **Integration of mechanistic immunological knowledge into a machine learning pipeline improves predictions.** *Nature machine intelligence*
Culos, A., Tsai, A. S., Stanley, N., Becker, M., Ghaemi, M. S., McIlwain, D. R., Fallahzadeh, R., Tanada, A., Nassar, H., Espinosa, C., Xenochristou, M., Ganio, E., Peterson, et al
2020; 2 (10): 619-628
- **Towards personalized medicine in maternal and child health: integrating biologic and social determinants.** *Pediatric research*
Stevenson, D. K., Wong, R. J., Aghaeepour, N., Maric, I., Angst, M. S., Contrepolis, K., Darmstadt, G. L., Druzin, M. L., Eisenberg, M. L., Gaudilliere, B., Gibbs, R. S., Godlib, I. H., Gould, et al
2020
- **Peritoneal Surgery** *Anesthesiologist's Manual of Surgical Procedures*
Norton, J. A., Angst, M. S.
edited by Jaffe, R. A., Schmiesing, C. A., Golianu, B.
Lippincott, Williams & Wilkins.2020; 6: 707-728
- **Discovery and validation of biomarkers to aid the development of safe and effective pain therapeutics: challenges and opportunities.** *Nature reviews. Neurology*
Davis, K. D., Aghaeepour, N. n., Ahn, A. H., Angst, M. S., Borsook, D. n., Brenton, A. n., Burczynski, M. E., Crean, C. n., Edwards, R. n., Gaudilliere, B. n., Hergenroeder, G. W., Iadarola, M. J., Iyengar, et al
2020
- **A longitudinal study of the post-stroke immune response and cognitive functioning: the StrokeCog study protocol.** *BMC neurology*
Drag, L. L., Mlynash, M. n., Nassar, H. n., Osborn, E. n., Kim, D. E., Angst, M. S., Aghaeepour, N. n., Buckwalter, M. n., Lansberg, M. G.
2020; 20 (1): 313
- **Systematic Immunophenotyping Reveals Sex-Specific Responses After Painful Injury in Mice.** *Frontiers in immunology*
Tawfik, V. L., Huck, N. A., Baca, Q. J., Ganio, E. A., Haight, E. S., Culos, A. n., Ghaemi, S. n., Phongpreecha, T. n., Angst, M. S., Clark, J. D., Aghaeepour, N. n., Gaudilliere, B. n.
2020; 11: 1652
- **Multionics Characterization of Preterm Birth in Low- and Middle-Income Countries.** *JAMA network open*
Jehan, F. n., Sazawal, S. n., Baqui, A. H., Nisar, M. I., Dhingra, U. n., Khanam, R. n., Ilyas, M. n., Dutta, A. n., Mitra, D. K., Mehmood, U. n., Deb, S. n., Mahmud, A. n., Hotwani, et al
2020; 3 (12): e2029655
- **Author Correction: Preferential inhibition of adaptive immune system dynamics by glucocorticoids in patients after acute surgical trauma.** *Nature communications*
Ganio, E. A., Stanley, N. n., Lindberg-Larsen, V. n., Einhaus, J. n., Tsai, A. S., Verdonk, F. n., Culos, A. n., Ghaemi, S. n., Rumer, K. K., Stelzer, I. A., Gaudilliere, D. n., Tsai, E. n., Fallahzadeh, et al
2020; 11 (1): 4495
- **Preferential inhibition of adaptive immune system dynamics by glucocorticoids in patients after acute surgical trauma.** *Nature communications*
Ganio, E. A., Stanley, N. n., Lindberg-Larsen, V. n., Einhaus, J. n., Tsai, A. S., Verdonk, F. n., Culos, A. n., Ghaemi, S. n., Rumer, K. K., Stelzer, I. A., Gaudilliere, D. n., Tsai, E. n., Fallahzadeh, et al
2020; 11 (1): 3737
- **Changes in pregnancy-related serum biomarkers early in gestation are associated with later development of preeclampsia.** *PloS one*
Hao, S. n., You, J. n., Chen, L. n., Zhao, H. n., Huang, Y. n., Zheng, L. n., Tian, L. n., Maric, I. n., Liu, X. n., Li, T. n., Bianco, Y. K., Winn, V. D., Aghaeepour, et al
2020; 15 (3): e0230000
- **VoPo leverages cellular heterogeneity for predictive modeling of single-cell data.** *Nature communications*
Stanley, N. n., Stelzer, I. A., Tsai, A. S., Fallahzadeh, R. n., Ganio, E. n., Becker, M. n., Phongpreecha, T. n., Nassar, H. n., Ghaemi, S. n., Maric, I. n., Culos, A. n., Chang, A. L., Xenochristou, et al
2020; 11 (1): 3738
- **Pancreatic Surgery** *Anesthesiologist's Manual of Surgical Procedures*
Norton, J. A., Angst, M. S.
edited by Jaffe, R. A., Schmiesing, C. A., Golianu, B.
Lippincott, Williams & Wilkins.2020; 6: 687-706

- **Multimic immune clockworks of pregnancy.** *Seminars in immunopathology*
Peterson, L. S., Stelzer, I. A., Tsai, A. S., Ghaemi, M. S., Han, X. n., Ando, K. n., Winn, V. D., Martinez, N. R., Contrepois, K. n., Moufarrej, M. N., Quake, S. n., Relman, D. A., Snyder, et al
2020
- **CytoNorm: A Normalization Algorithm for Cytometry Data.** *Cytometry. Part A : the journal of the International Society for Analytical Cytology*
Van Gassen, S., Gaudilliere, B., Angst, M. S., Saeys, Y., Aghaeepour, N.
2019
- **In Response.** *Anesthesia and analgesia*
Berger, M., Angst, M. S., Culley, D. J., Price, C. E., Scott, D. A., Whittington, R. A., Eckenhoff, R. G., Perioperative Neurotoxicity Working Group
2019
- **Differential Dynamics of the Maternal Immune System in Healthy Pregnancy and Preeclampsia** *FRONTIERS IN IMMUNOLOGY*
Han, X., Ghaemi, M. S., Ando, K., Peterson, L. S., Ganio, E. A., Tsai, A. S., Gaudilliere, D. K., Stelzer, I. A., Einhaus, J., Bertrand, B., Stanley, N., Culos, A., Tanada, et al
2019; 10
- **A year-long immune profile of the systemic response in acute stroke survivors.** *Brain : a journal of neurology*
Tsai, A. S., Berry, K., Beneyto, M. M., Gaudilliere, D., Ganio, E. A., Culos, A., Ghaemi, M. S., Choisy, B., Djebali, K., Einhaus, J. F., Bertrand, B., Tanada, A., Stanley, et al
2019
- **Deep Immune Profiling of the Post-Stroke Peripheral Immune Response Reveals Tri-phasic Response and Correlations With Long-Term Cognitive Outcomes**
Tsai, A. S., Berry, K., Beneyto, M. M., Gaudilliere, D., Ganio, E. A., Choisy, B., Djebali, K., Baca, Q., Quach, L., Drag, L., Lansberg, M. G., Angst, M. S., Gaudilliere, et al
LIPPINCOTT WILLIAMS & WILKINS.2019
- **Design Thinking Pain Management: Tools to Improve Human-centered Communication between Patients and Providers** *Design Thinking Research - Understanding Innovation.*
Berte, N., Shluzas, L. A., Beigi, B., Albaniel, M., Angst, M. S., Pickham, D., Leifer, L.
edited by Meinel, C.
Springer Cham.2019: 179–197
- **Multimics modeling of the immunome, transcriptome, microbiome, proteome and metabolome adaptations during human pregnancy.** *Bioinformatics (Oxford, England)*
Ghaemi, M. S., DiGiulio, D. B., Contrepois, K., Callahan, B., Ngo, T. T., Lee-McMullen, B., Lehallier, B., Robaczewska, A., Mcilwain, D., Rosenberg-Hasson, Y., Wong, R. J., Quaintance, C., Culos, et al
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