




Steven Shafer

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

 NIH Biosketch available Online

 Curriculum Vitae available Online

CLINICAL OFFICES

- **Dept of Anesthesiology, Perioperative and Pain Medicine**

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Bio

BIO

My professional interests are the clinical pharmacology of intravenous anesthetic drugs and publication policy and ethics.

My work in pharmacology includes studies of many of the intravenous opioids and hypnotics used in anesthetic practice. My focus has been mathematical models that characterize drug behavior. These range from conventional pharmacokinetic and pharmacodynamic models, inverse models (used to drive target controlled infusion systems), Bayesian models (used to handle model uncertainty), models of drug interaction, and models of receptor function that help elucidate mechanisms of drug action. My most recent work has explored whether neural networks offer any benefits over the standard engineering models used in pharmacokinetics and pharmacodynamics.

My work in publication policy and ethics follows my 10 years as Editor-in-Chief of Anesthesia & Analgesia. From 2006-2016 we uncovered two of the most prolific serial academic fraudsters in history. I finished my term as EIC with the unenviable record of retracting more papers than any previous journal editor. Fortunately, this led to a lasting interest in publication policy and ethics. In collaboration with others I continue to develop statistical models to detect fraud, and serve on multiple editorial boards to offer guidance on publication policy and ethics.

CLINICAL FOCUS

- Anesthesia

ACADEMIC APPOINTMENTS

- Professor - Med Center Line, Anesthesiology, Perioperative and Pain Medicine

HONORS AND AWARDS

- Fellowship by Election, The Royal College of Anaesthetists (2003)
- Bernard H. Eliasberg Medal, Mt. Sinai Medical Center, New York, NY (2006)
- Ellis Gillespie Lecture, Australian and New Zealand College of Anaesthetists (2008)

- Rank Visiting Lecturer, Royal College of Anaesthetists (2008)
- Virginia Apgar Lecture, Department of Anesthesiology, Columbia University (2008)
- FAER Honorary Research Lecture, American Society of Anesthesiologists (2008)
- Corresponding Member, German Society of Anaesthesiology and Intensive Care Medicine (2009)
- Stephen J. Prevoznik Lecture, Department of Anesthesiology, University of Pennsylvania (2009)
- Ralph Waters Visiting Professor, Department of Anesthesiology, University of Wisconsin (2009)
- Leon Goldberg Lecture, University of Chicago (2010)
- Lifetime Achievement Award, International Society of Anaesthetic Pharmacology (2011)
- Terry Davidson Plenary Lecture, Israel Society of Anesthesiologists (2011)
- Honorary Fellow, College of Anaesthetists of Ireland (2012)
- Sir Ivan Magill Inaugural Lecture, College of Anaesthetists of Ireland (2012)
- Honorary Member, German Society of Anaesthesiology and Intensive Care Medicine (2013)
- David M. Little Prize, Anesthesia History Association (2013)
- Gold Medal, Royal College of Anaesthetists (2013)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Chair, Anesthesia Advisory Panel on Sedasys, Ethicon Endo-Surgery (2003 - 2007)
- Editor-in-Chief, Anesthesia and Analgesia (2006 - 2016)
- Member, Committee on Drug Disposition, American Society of Anesthesiologists (1992 - 1999)
- Chair, Committee on Drug Disposition, American Society of Anesthesiologists (2000 - 2005)
- Member, NIGMS Pharmacological Sciences Review Committee (1993 - 1997)
- Member, Department of Veterans Affairs Merit Review Committee for Alcoholism and Drug Dependence (1995 - 1999)
- Member, FDA Anesthetic and Life Support Drugs Advisory Committee (2002 - 2004)
- Chair, FDA Anesthetic and Life Support Drugs Advisory Committee (2004 - 2006)
- Member, Academy of Anesthesia Mentors (2004 - present)
- Expert Reviewer, California Medical Board (2012 - present)
- Editor, Clinical Pharmacokinetics (1996 - 1997)
- Associate Editor, Anesthesiology (1998 - 1999)
- Editor, Anesthesiology (2003 - 2005)
- Associate Editor, Clinical Pharmacology and Therapeutics (1998 - 2008)
- Associate Editor, Journal of Pharmacokinetics and Biopharmaceutics (2000 - 2006)
- Incoming EIC, Anesthesia and Analgesia (2005 - 2006)
- Member, International Editorial Board, British Journal of Anaesthesia (2006 - present)
- Member, Advisory Board, Journal of Anesthesia (2009 - present)

PROFESSIONAL EDUCATION

- Fellowship: Stanford University School of Medicine Registrar (1987) CA
- Residency: Hospital of the University of Pennsylvania (1986) PA
- Medical Education: Stanford University School of Medicine (1983) CA
- Board Certification: Anesthesia, American Board of Anesthesiology (1987)

- Internship: Hospital of the University of Pennsylvania (1984) PA
- Post-Doctoral, Stanford University , Clinical Pharmacology (1987)
- Residency, University of Pennsylvania , Anesthesiology (1986)
- MD, Stanford University , Medicine (1983)
- AB, Princeton University , Biology (1978)

LINKS

- Pharmacokinetics Software Page: <http://anesthesia.stanford.edu/pkpd>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Pharmacokinetics and pharmacodynamics of intravenous anesthetics, including drug interactions and continuous measures of drug effect; model-based drug development; target controlled drug delivery; advanced models of drug behavior.

Publications

PUBLICATIONS

- **Carfentanil: une arme de destruction massive.** *Canadian journal of anaesthesia = Journal canadien d'anesthesie*
Shafer, S. L.
2019
- **Non-steady State Modeling of the Ventilatory Depressant Effect of Remifentanil in Awake Patients Experiencing Moderate-to-severe Obstructive Sleep Apnea.** *Anesthesiology*
Doufas, A. G., Shafer, S. L., Rashid, N. H., Kushida, C. A., Capasso, R.
2018
- **Artificial Intelligence for Everyone** *ANESTHESIOLOGY*
Gambus, P., Shafer, S. L.
2018; 128 (3): 431–33
- **Narrative Review of Statistical Reporting Checklists, Mandatory Statistical Editing, and Rectifying Common Problems in the Reporting of Scientific Articles.** *Anesthesia and analgesia*
Dexter, F., Shafer, S. L.
2017; 124 (3): 943-947
- **Calculating the probability of random sampling for continuous variables in submitted or published randomised controlled trials** *ANAESTHESIA*
Carlisle, J. B., Dexter, F., Pandit, J. J., Shafer, S. L., Yentis, S. M.
2015; 70 (7): 848-858
- **Publication Bias, Retrospective Bias, and Reproducibility of Significant Results in Observational Studies** *ANESTHESIA AND ANALGESIA*
Shafer, S. L., Dexter, F.
2012; 114 (5): 931-932
- **Shadow of Doubt** *ANESTHESIA AND ANALGESIA*
Shafer, S. L.
2011; 112 (3): 498-500
- **You Will Be Caught** *ANESTHESIA AND ANALGESIA*
Shafer, S. L.
2011; 112 (3): 491-493
- **The need for a journal policy on intrathecal, epidural, and perineural administration of non-approved drugs** *PAIN*
Eisenach, J. C., Shafer, S. L., Yaksh, T.
2010; 149 (3): 417-419

- **Consent Contraindicated?** *SCIENCE*
Yaksh, T. L., Eisenach, J. C., Shafer, S. L.
2010; 328 (5974): 45-45
- **Mathematical Modeling of the Pain and Progress of the First Stage of Nulliparous Labor** *Annual Meeting of the American-Society-of-Anesthesiologists*
Debiec, J., Conell-Price, J., Evansmith, J., Shafer, S. L., Flood, P.
LIPPINCOTT WILLIAMS & WILKINS.2009: 1093-1110
- **Additivity versus synergy: A theoretical analysis of implications for anesthetic mechanisms** *ANESTHESIA AND ANALGESIA*
Shafer, S. L., Hendrickx, J. F., Flood, P., Sonner, J., Eger, E. I.
2008; 107 (2): 507-524
- **Is synergy the rule? A review of anesthetic interactions a producing hypnosis and immobility** *ANESTHESIA AND ANALGESIA*
Hendrickx, J. F., Eger, E. I., Sonner, J. M., Shafer, S. L.
2008; 107 (2): 494-506
- **In silico pharmacogenetics of warfarin metabolism** *NATURE BIOTECHNOLOGY*
Guo, Y. Y., Weller, P., Farrell, E., Cheung, P., Fitch, B., Clark, D., Wu, S. Y., Wang, J. M., Liao, G. C., Zhang, Z. M., Allard, J., Cheng, J., Nguyen, et al
2006; 24 (5): 531-536
- **In silico genetics: Identification of a functional element regulating H2-E alpha gene expression** *SCIENCE*
Liao, G. C., Wang, J. M., Guo, J. S., Allard, J., Cheng, J., Ng, A., Shafer, S., Puech, A., McPherson, J. D., Foernzler, D., Peltz, G., Usuka, J.
2004; 306 (5696): 690-695
- **Pharmacodynamic interaction between propofol and remifentanil regarding hypnosis, tolerance of laryngoscopy, bispectral index, and electroencephalographic approximate entropy** *ANESTHESIOLOGY*
Bouillon, T. W., Bruhn, J., Radulescu, L., Andresen, C., Shafer, T. J., Cohane, C., Shafer, S. L.
2004; 100 (6): 1353-1372
- **Mixed-effects modeling of the intrinsic ventilatory depressant potency of propofol in the non-steady state** *Annual Meeting of the American-Society-of-Anesthesiologists*
Bouillon, T., Bruhn, J., Radu-Radulescu, L., Andresen, C., Cohane, C., Shafer, S. L.
LIPPINCOTT WILLIAMS & WILKINS.2004: 240-50
- **A model of the ventilatory depressant potency of remifentanil in the non-steady state** *ANESTHESIOLOGY*
Bouillon, T., Bruhn, J., Radu-Radulescu, L., Andresen, C., Cohane, C., Shafer, S. L.
2003; 99 (4): 779-787
- **Using the time of maximum effect site concentration to combine pharmacokinetics and pharmacodynamics** *ANESTHESIOLOGY*
Minto, C. F., Schnider, T. W., Gregg, K. M., Henthorn, T. K., Shafer, S. L.
2003; 99 (2): 324-333
- **Cephalad movement of morphine and fentanyl in humans after intrathecal injection** *ANESTHESIOLOGY*
Eisenach, J. C., Hood, D. D., Curry, R., Shafer, S. L.
2003; 99 (1): 166-173
- **Efficient trial design for eliciting a pharmacokinetic-pharmacodynamic model-based response surface describing the interaction between two intravenous anesthetic drugs** *ANESTHESIOLOGY*
Short, T. G., Ho, T. Y., Minto, C. F., Schnider, T. W., Shafer, S. L.
2002; 96 (2): 400-408
- **Propofol dosing regimens for ICU sedation based upon an integrated pharmacokinetic-pharmacodynamic model** *ANESTHESIOLOGY*
Barr, J., Egan, T. D., Sandoval, N. F., Zomorodi, K., Cohane, C., Gambus, P. L., Shafer, S. L.
2001; 95 (2): 324-333
- **Response surface model for anesthetic drug interactions** *Meeting of the American-Society-of-Anesthesiologists*
Minto, C. F., Schnider, T. W., Short, T. G., Gregg, K. M., Gentilini, A., Shafer, S. L.
LIPPINCOTT WILLIAMS & WILKINS.2000: 1603-16
- **The influence of age on propofol pharmacodynamics** *ANESTHESIOLOGY*

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- Schnider, T. W., Minto, C. F., Shafer, S. L., Gambus, P. L., Andresen, C., Goodale, D. B., Youngs, E. J.
1999; 90 (6): 1502-1516
- **Population pharmacokinetics of midazolam administered by target controlled infusion for sedation following coronary artery bypass grafting** *ANESTHESIOLOGY*
Zomorodi, K., Donner, A., Somma, J., Barr, J., Sladen, R., Ramsay, J., Geller, E., Shafer, S. L.
1998; 89 (6): 1418-1429
 - **Population pharmacodynamics of midazolam administered by target controlled infusion in SICU patients after CABG surgery** *ANESTHESIOLOGY*
Somma, J., Donner, A., Zomorodi, K., Sladen, R., Ramsay, J., Geller, E., Shafer, S. L.
1998; 89 (6): 1430-1443
 - **Cerebrospinal fluid pharmacokinetics and pharmacodynamics of intrathecal neostigmine methylsulfate in humans** *American-Society-of-Anesthesiologists Annual Meeting*
Shafer, S. L., Eisenach, J. C., Hood, D. D., Tong, C. Y.
LIPPINCOTT WILLIAMS & WILKINS.1998: 1074-88
 - **The influence of method of administration and covariates on the pharmacokinetics of propofol in adult volunteers** *ANESTHESIOLOGY*
Schnider, T. W., Minto, C. F., Gambus, P. L., Andresen, C., Goodale, D. B., Shafer, S. L., Youngs, E. J.
1998; 88 (5): 1170-1182
 - **Pharmacokinetics and pharmacodynamics of remifentanil .2. Model application** *ANESTHESIOLOGY*
Minto, C. F., Schnider, T. W., Shafer, S. L.
1997; 86 (1): 24-33
 - **A comparison of spectral edge, delta power, and bispectral index as EEG measures of alfentanil, propofol, and midazolam drug effect** *CLINICAL PHARMACOLOGY & THERAPEUTICS*
Billard, V., Gambus, P. L., Chamoun, N., Stanski, D. R., Shafer, S. L.
1997; 61 (1): 45-58
 - **Influence of age and gender on the pharmacokinetics and pharmacodynamics of remifentanil .1. Model development** *ANESTHESIOLOGY*
Minto, C. F., Schnider, T. W., Egan, T. D., Youngs, E., Lemmens, H. J., Gambus, P. L., Billard, V., Hoke, J. F., Moore, K. H., Hermann, D. J., Muir, K. T., Mandema, J. W., Shafer, et al
1997; 86 (1): 10-23
 - **Remifentanil versus alfentanil - Comparative pharmacokinetics and pharmacodynamics in healthy adult male volunteers** *ANESTHESIOLOGY*
Egan, T. D., Minto, C. F., Hermann, D. J., Barr, J., Muir, K. T., Shafer, S. L.
1996; 84 (4): 821-833
 - **THE PHARMACOKINETICS OF THE NEW SHORT-ACTING OPIOID REMIFENTANIL (GI87084B) IN HEALTHY ADULT MALE-VOLUNTEERS** *ANESTHESIOLOGY*
Egan, T. D., Lemmens, H. J., Fiset, P., Hermann, D. J., Muir, K. T., Stanski, D. R., Shafer, S. L.
1993; 79 (5): 881-892
 - **COMPUTER-CONTROLLED INFUSION OF INTRAVENOUS DEXMEDETOMIDINE HYDROCHLORIDE IN ADULT HUMAN VOLUNTEERS** *ANESTHESIOLOGY*
Dyck, J. B., Maze, M., Haack, C., Azarnoff, D. L., Vuorilehto, L., Shafer, S. L.
1993; 78 (5): 821-828
 - **APPLICATION OF SEMILINEAR CANONICAL CORRELATION TO THE MEASUREMENT OF OPIOID DRUG EFFECT** *JOURNAL OF PHARMACOKINETICS AND BIOPHARMACEUTICS*
Gregg, K. M., VARVEL, J. R., Shafer, S. L.
1992; 20 (6): 611-635
 - **ALGORITHMS TO RAPIDLY ACHIEVE AND MAINTAIN STABLE DRUG CONCENTRATIONS AT THE SITE OF DRUG EFFECT WITH A COMPUTER-CONTROLLED INFUSION PUMP** *JOURNAL OF PHARMACOKINETICS AND BIOPHARMACEUTICS*
Shafer, S. L., Gregg, K. M.
1992; 20 (2): 147-169
 - **MEASURING THE PREDICTIVE PERFORMANCE OF COMPUTER-CONTROLLED INFUSION PUMPS** *JOURNAL OF PHARMACOKINETICS AND BIOPHARMACEUTICS*
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- VARVEL, J. R., Donoho, D. L., Shafer, S. L.
1992; 20 (1): 63-94
- **A SIMPLE ANALYTICAL SOLUTION TO THE 3-COMPARTMENT PHARMACOKINETIC MODEL SUITABLE FOR COMPUTER-CONTROLLED INFUSION PUMPS** *IEEE TRANSACTIONS ON BIOMEDICAL ENGINEERING*
Bailey, J. M., Shafer, S. L.
1991; 38 (6): 522-525
 - **PHARMACOKINETICS, PHARMACODYNAMICS, AND RATIONAL OPIOID SELECTION** *1989 ANNUAL MEETING OF THE AMERICAN SOC OF ANESTHESIOLOGISTS*
Shafer, S. L., VARVEL, J. R.
LIPPINCOTT-RAVEN PUBL.1991: 53-63
 - **ABSORPTION CHARACTERISTICS OF TRANSDERMALLY ADMINISTERED FENTANYL** *ANESTHESIOLOGY*
VARVEL, J. R., Shafer, S. L., Hwang, S. S., COEN, P. A., Stanski, D. R.
1989; 70 (6): 928-934
 - **TESTING COMPUTER-CONTROLLED INFUSION PUMPS BY SIMULATION** *ANESTHESIOLOGY*
Shafer, S. L., Siegel, L. C., Cooke, J. E., Scott, J. C.
1988; 68 (2): 261-266
 - **Falling Dominoes. Anesthesia and analgesia**
Polaner, D. M., Shafer, S. L.
2019; 128 (4): 613-14
 - **Non-steady State Modeling of the Ventilatory Depressant Effect of Remifentanyl in Awake Patients Experiencing Moderate-to-severe Obstructive Sleep Apnea** *ANESTHESIOLOGY*
Doufas, A. G., Shafer, S. L., Rashid, N., Kushida, C. A., Capasso, R.
2019; 130 (2): 213-26
 - **"Think. Check. Submit." to avoid predatory publishing.** *Critical care (London, England)*
Cortegiani, A., Shafer, S. L.
2018; 22 (1): 300
 - **Letter to the Editor on "Local Infiltration Analgesia With Liposomal Bupivacaine Improves Pain Scores and Reduces Opioid Use After Total Knee Arthroplasty: Results of a Randomized Controlled Trial".** *The Journal of arthroplasty*
Shafer, S. L.
2018
 - **Writing Research Reports** *ANESTHESIA AND ANALGESIA*
Sessler, D. I., Shafer, S.
2018; 126 (1): 330-37
 - **Dr Ted Eger Obituary** *ANESTHESIA AND ANALGESIA*
Gropper, M. A., Shafer, S. L.
2017; 125 (6): 1829-30
 - **Pharmacokinetics and Pharmacodynamics of Drugs Commonly Used in Pregnancy and Parturition.** *Anesthesia and analgesia*
Ansari, J., Carvalho, B., Shafer, S. L., Flood, P.
2016; 122 (3): 786-804
 - **Threats to safety during sedation outside of the operating room and the death of Michael Jackson** *CURRENT OPINION IN ANESTHESIOLOGY*
Webster, C. S., Mason, K. P., Shafer, S. L.
2016; 29: S36-S47
 - **Authorship wanting: dead or alive.** *Paediatric anaesthesia*
Anderson, B. J., Shafer, S. L., Dare, T.
2016; 26 (10): 949-50
 - **Target-Controlled Infusions: Surfing USA Redux.** *Anesthesia and analgesia*
Shafer, S. L., Egan, T.

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- 2016; 122 (1): 1–3
- **All Boxes Are Black.** *Anesthesia and analgesia*
Cannesson, M., Shafer, S. L.
2016; 122 (2): 309–17
 - **Broken Hearts.** *Anesthesia and analgesia*
Shafer, S. L.
2016; 122 (5): 1231–33
 - **Allometry, Shallometry!** *Anesthesia and analgesia*
Fisher, D. M., Shafer, S. L.
2016; 122 (5): 1234–38
 - **Thank You, Thank You, Thank You.** *Anesthesia and analgesia*
Shafer, S.
2016; 122 (6): 1731–33
 - **Plagiarism Is Ubiquitous.** *Anesthesia and analgesia*
Shafer, S. L.
2016; 122 (6): 1776–80
 - **Truth is elusive.** *Acta anaesthesiologica Scandinavica*
Shafer, S. L.
2016; 60 (6): 691–92
 - **Experience = Education: Time for the Next Step.** *A & A case reports*
Schwartz, A. J., Nussmeier, N. A., Shafer, S.
2015; 5 (2): 15-16
 - **Dittrick's Missing Editorial About Apgar's Score** *ANESTHESIA AND ANALGESIA*
Wong, C. A., Shafer, S. L.
2015; 120 (5): 962
 - **Anesthesia & Analgesia's 2015 Collection on the Perioperative Surgical Home.** *Anesthesia and analgesia*
Shafer, S. L.
2015; 120 (5): 966–67
 - **In response.** *Anesthesia and analgesia*
Shafer, S. L.
2015; 120 (2): 492–93
 - **Anesthesiologists make a difference.** *Anesthesia and analgesia*
Shafer, S. L.
2015; 120 (3): 497–98
 - **Making a difference in perioperative infection.** *Anesthesia and analgesia*
Shafer, S. L.
2015; 120 (4): 697–99
 - **The World Federation of Societies of Anaesthesiologists, International Anesthesia Research Society, and Anesthesia & Analgesia: a shared global vision.** *Anesthesia and analgesia*
Walker, I. A., Shafer, S. L.
2015; 120 (4): 721–24
 - **A & a case reports: a progress report and an update on requirements for patient consent.** *A & A case reports*
Nussmeier, N., Saidman, L. J., Shafer, S.
2014; 3 (11): 141-?
 - **Impact of Cervical Effacement and Fetal Station on Progress during the First Stage of Labor: A Biexponential Model** *AMERICAN JOURNAL OF PERINATOLOGY*

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- Quincy, M. M., Weng, C., Shafer, S. L., Smiley, R. M., Flood, P. D., Mirza, F. G.
2014; 31 (9): 745-751
- **Deadly heat: economics of continuous temperature monitoring during general anesthesia.** *Anesthesia and analgesia*
Shafer, S. L., Dexter, F., Brull, S. J.
2014; 119 (6): 1235-37
 - **A&A case reports: a progress report and an update on requirements for patient consent.** *Anesthesia and analgesia*
Nussmeier, N., Saidman, L. J., Shafer, S.
2014; 119 (6): 1251
 - **Plagiarism is plagiarism is plagiarism.** *Anesthesia and analgesia*
Shafer, S. L.
2014; 118 (1): 1-2
 - **Anesthesia & Analgesia's collection on the perioperative surgical home.** *Anesthesia and analgesia*
Shafer, S. L., Donovan, J. F.
2014; 118 (5): 893-95
 - **Education and management case reports.** *Anesthesia and analgesia*
Shafer, S. L.
2014; 118 (5): 915
 - **Thank you, Larry Saidman!** *Anesthesia and analgesia*
Shafer, S. L.
2014; 119 (6): 1227-29
 - **Anesthesia & Analgesia Case Reports ANESTHESIA AND ANALGESIA**
Shafer, S. L.
2013; 116 (3): 513-514
 - **Bispectral Index Dynamics During Propofol Hypnosis Is Similar in Red-Haired and Dark-Haired Subjects ANESTHESIA AND ANALGESIA**
Doufas, A. G., Orhan-Sungur, M., Komatsu, R., Lauber, R., Akca, O., Shafer, S. L., Sessler, D. I.
2013; 116 (2): 319-326
 - **Caveat Lector ANESTHESIA AND ANALGESIA**
Eldawlatly, A., Shafer, S. L.
2012; 114 (6): 1160-1162
 - **Caveat lector. Saudi journal of anaesthesia**
Eldawlatly, A., Shafer, S. L.
2012; 6 (2): 99-101
 - **Validation of Statistical Methods to Compare Cancellation Rates on the Day of Surgery (vol 101, pg 465, 2005) ANESTHESIA AND ANALGESIA**
Dexter, F., Shafer, S. L.
2012; 114 (3): 693-693
 - **Happy 25th Anniversary, FAER! ANESTHESIA AND ANALGESIA**
Shafer, S. L.
2011; 113 (4): 675-676
 - **From d-tubocurarine to sugammadex: the contributions of T. Cecil Gray to modern anaesthetic practice BRITISH JOURNAL OF ANAESTHESIA**
Shafer, S. L.
2011; 107 (1): 97-102
 - **beta 2-Adrenergic Receptor Genotype and Other Variables that Contribute to Labor Pain and Progress ANESTHESIOLOGY**
Reitman, E., Conell-Price, J., Evansmith, J., Olson, L., Drosinos, S., Jasper, N., Randolph, P., Smiley, R. M., Shafer, S., Flood, P.
2011; 114 (4): 927-939
 - **Anesthesia & Analgesia Policy on Institutional Review Board Approval and Informed Consent for Research ANESTHESIA AND ANALGESIA**
Shafer, S. L.

2011; 112 (3): 494-495

- **The Scott Reuben Saga: One Last Retraction** *ANESTHESIA AND ANALGESIA*
White, P. F., Rosow, C. E., Shafer, S. L.
2011; 112 (3): 512-515
- **Pitfalls in Chronobiology: A Suggested Analysis Using Intrathecal Bupivacaine Analgesia as an Example** *ANESTHESIA AND ANALGESIA*
Shafer, S. L., Lemmer, B., Boselli, E., Boiste, F., Bouvet, L., Allaouchiche, B., Chassard, D.
2010; 111 (4): 980-985
- **Walk a Mile in My Shoes** *ANESTHESIA AND ANALGESIA*
Fisher, D. M., Shafer, S. L.
2010; 111 (2): 264-265
- **Computational Genetic Mapping in Mice: The Ship Has Sailed** *SCIENCE TRANSLATIONAL MEDICINE*
Zheng, M., Shafer, S., Liao, G., Liu, H., Peltz, G.
2009; 1 (3)
- **Neuromuscular Block Differentially Affects Immobility and Cortical Activation at Near-Minimum Alveolar Concentration Anesthesia** *ANESTHESIA AND ANALGESIA*
Doufas, A. G., Komatsu, R., Orhan-Sungur, M., Sengupta, P., Wadhwa, A., Mascha, E., Shafer, S. L., Sessler, D. I.
2009; 109 (4): 1097-1104
- **Automated Responsiveness Monitor to Titrate Propofol Sedation** *ANESTHESIA AND ANALGESIA*
Doufas, A. G., Morioka, N., Mahgoub, A. N., Bjorksten, A. R., Shafer, S. L., Sessler, D. I.
2009; 109 (3): 778-786
- **2009 Anesthesia & Analgesia Guide for Authors** *ANESTHESIA AND ANALGESIA*
Brull, S. J., Capdevila, X., Chan, V. W., Cohen, N., Csete, M. E., Davis, P. J., Dexter, F., Donati, F., Durieux, M. E., Fukuda, K., Gal, T. J., Gan, T. J., Gelb, et al
2009; 109 (1): 217-231
- **Critical Thinking In Anesthesia Eighth Honorary FAER Research Lecture** *ANESTHESIOLOGY*
Shafer, S. L.
2009; 110 (4): 729-737
- **No evidence for the development of acute tolerance to analgesic, respiratory depressant and sedative opioid effects in humans** *PAIN*
Angst, M. S., Chu, L. F., Tingle, M. S., Shafer, S. L., Clark, J. D., Drover, D. R.
2009; 142 (1-2): 17-26
- **Is a new paradigm needed to explain how inhaled anesthetics produce immobility?** *ANESTHESIA AND ANALGESIA*
Eger, E. I., Raines, D. E., Shafer, S. L., Hemmings, H. C., Sonner, J. M.
2008; 107 (3): 832-848
- **Inhaled anesthetics do not combine to produce synergistic effects regarding minimum alveolar anesthetic concentration in rats** *ANESTHESIA AND ANALGESIA*
Eger, E. J., Tang, M., Liao, M., Laster, M. J., Solt, K., Flood, P., Jenkins, A., Raines, D., Hendrickx, J. F., Shafer, S. L., Yasumasa, T., Sonner, J. M.
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