



FAER ... A Dozen People Who Might Change the Opioid Crisis

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The tragedy of the opioid crisis reflects a complex array of psychologic, biologic and social factors and we all recognize that addressing this crisis will require a multi-pronged approach. FAER has avoided targeting grants to certain topics, such as the opioid crisis. This is not to say that societal and clinical relevance of research is not valued by FAER, but our goal is to fund the best young investigators in the best environments studying all kinds of important topics. Having said that, I grabbed a dozen individuals from ten different institutions funded by FAER in the last eight years who are addressing some of the key factors in this crisis and whose work could move us forward in its resolution.

1. Why is there so much pain in America?

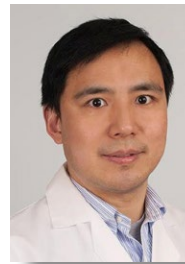
Opioid use disorder frequently begins with opioid prescriptions for pain, and we have an epidemic of chronic pain as well as an increasing rate of major surgery, which results in severe acute pain in the U.S. **Mieke A. Soens, M.D.**, (2019 Mentored Research Training Grant [MRTG], Brigham & Women's Hospital) is embarking on a



Mieke Soens, M.D.



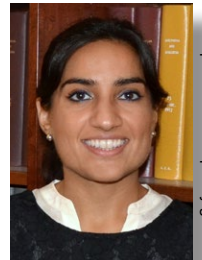
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Shiqian Shen, M.D.

study of biologic compounds which resolve pain pathology after surgery and reduce the chance of acute pain becoming chronic. **Shiqian Shen, M.D.**, (2016 MRTG, Massachusetts General Hospital) is asking how the gut microbiome reflects and may participate in the cause of chronic neuropathic pain. These are exciting examples of how better understanding of the pathophysiology of acute and chronic pain may lead to new treatments to avoid opioid prescriptions altogether.

Gunisha S. Kaur, M.D., (2016 Research in Education Grant, Weill Medical College of Cornell University) is addressing pain in foreign born U.S. residents by helping to develop resident education to better assess causes of pain we are hesitant to discuss, including previous torture or gender violence.



Gunisha Kaur, M.D.

2. When opioids are necessary, can we make them safer?



Mark Bicket, M.D.

A major focus by both states and the federal government is to reduce both the number of opioid prescriptions and the amount of opioids in each prescription and refill, as these amounts are tied to both substance use disorder and diversion. **Mark C. Bicket, M.D.**, (2017 MRTG, Johns Hopkins University), currently a White House Fellow, is examining the consequences of non-optimal opioid prescribing after surgery as part of the larger, national effort to change opioid prescribing after hospital discharge.

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Vivianne Tawfik, M.D., Ph.D.

In addition to the well-recognized tolerance and subsequent dose escalation from even acute administration of large doses of opioids, we now know that opioids can activate anti-analgesic responses which limit their chronic, and sometimes even acute use. **Vivianne Tawfik, M.D., Ph.D.**, (2013 Research Fellowship Grant [RFG] and subsequent MRTG, Stanford University) is examining sites and mechanisms in the spinal cord which underlie these detrimental effects of opioids and lead to the need for larger opioid doses in the hope of generating treatments to block them.

3. Avoiding opioids by targeting with drugs known non-opioid analgesic mechanisms



Katherine Gurba, M.D., Ph.D.

On the basic science side, **Katharine N. Gurba, M.D., Ph.D.**, (2018 RFG, Washington University) is evaluating a new class of drugs which modulates rather than directly stimulates a subclass of muscarinic cholinergic receptors to produce analgesia without side effects from direct cholinergic agonists. Cannabinoids to treat pain may be limited by cognitive side effects. **Jijun Xu, M.D., Ph.D.**, (2012 RFG, Cleveland Clinic) has examined the role of the subtype of cannabinoid receptors with little to no cognitive effects in the treatment of chronic regional pain syndrome.

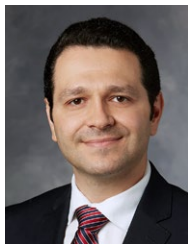


Jijun Xu, M.D., Ph.D.



Stephan Frangakis, M.D., Ph.D.

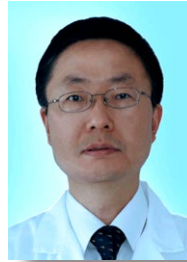
On the clinical side, **Stephan G. Frangakis, M.D., Ph.D.**, (2019 RFG, Duke University) is examining new uses for old drugs. In his case, the analgesic effects of an old and inexpensive drug, propranolol, after spine surgery, based on both basic science and small clinical studies suggesting a role for β -blockade in analgesia. For chronic pain, a barrier is the poor-quality information we have to guide the order or preference in the use of analgesics, many of which require weeks of therapy to determine efficacy in the individual patient. **Vafi Salmasi, M.D.**,



Vafi Salmasi, M.D.

(2018 MRTG, Stanford University) is applying a powerful, but rarely used clinical trial design in pain research, point-of-care randomization, in a pragmatic, real-world comparison of two non-opioid analgesics, duloxetine and desipramine in patients with chronic pain to help guide the order of use in individuals with pain.

4. New developments in regional anesthesia to avoid opioids



Xiaobing Yu, M.D.

The spinal cord has been a primary target of analgesia, especially in chronic pain. Yet, prolonged drug treatment via intrathecal catheters and pumps is limited from many technical issues and adverse effects. **Xiaobing Yu, M.D.**, (2013 MRTG, University of California San Francisco) examined spinal injection of genetically altered pluripotent stem cells to enhance inhibition in the spinal cord as a prolonged, perhaps life-long treatment from a single injection. Spinal cord stimulation is effective in many chronic pain patients, yet its underlying mechanisms are unknown leading to a lack of guidance to further advance this method. **Andrei Sdrulla, M.D., Ph.D.**, (2016 MRTG Oregon Health and Science University) is investigating the spinal circuits activated by spinal cord stimulation, which could potentially lead to using drugs to enhance the analgesic effect of this treatment.



Andrei Sdrulla, M.D, Ph.D.

Ultrasound has revolutionized the use and efficacy of peripheral nerve block, and there is an emerging body of literature suggesting that focused ultrasound to apply energy rather than to image structures may be a non-pharmacologic treatment for pain. **T. Anthony Anderson, M.D., Ph.D.**, (2018 MRTG, Stanford University) is examining in the laboratory the ability of focused ultrasound at different intensities to selectively inhibit or block certain classes of fibers, which could further inform clinical trials which are beginning in this area.



T. Anthony Anderson, M.D., Ph.D.

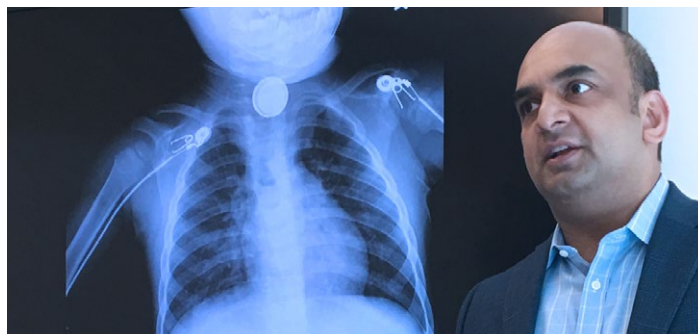
FAER supports young investigators to advance our specialty and the care of our patients. I can think of no more compelling reason for the important role FAER plays than these 12 individuals and how their work may transform our future practice.

East/West ViSiPAP exchange has been successful in this regard as five of the six junior faculty selected were female. Rita Agarwal, M.D., at Stanford, Debnath Chatterjee, M.D., at Children's Hospital Colorado, Genie Heitmiller, M.D., at Children's National, and Stephanie Black, M.D., at Children's Hospital of Philadelphia and others have been instrumental in establishing the East/West ViSiPAP faculty exchange.

As word has gotten out on how successful and well-received these ViSiPAP exchange programs are, other pediatric anesthesia divisions have initiated their own network of exchanges. Children's Hospital of Philadelphia, Children's National and Johns Hopkins have set up their own regional exchange program on the east coast. UC Davis and OHSU have set up their own faculty exchanges on the west coast. Other programs are currently working to set up future exchanges. The University of Miami, the University of Florida and the Medical University of South Carolina are working to set up a regional exchange in the southeast, and Oklahoma University is working to establish a regional exchange with two other programs in Texas.

I believe that ViSiPAP's growth indicates how beneficial the program is for both the visiting faculty and fellows and for the hosting institutions. Pediatric anesthesiology faculty participants in ViSiPAP overwhelmingly viewed the experience as enjoyable and valuable and felt that it contributed positively to their academic development and well-being. Many felt that ViSiPAP was an excellent venue for networking and finding colleagues and mentors with similar interests and that ViSiPAP helped to "jumpstart" their academic careers by providing national recognition and additional speaking opportunities. Comments from post-participation surveys include:

- "This program is an incredible opportunity for young faculty to develop important skills necessary to succeed in academic medicine. I was able to practice my public speaking skills, meet people in the field, learn about practices at other institutions, and collaborate with others that have similar interest."
- "I honestly believe that the best part of the whole experience was meeting people and sharing ideas. We all struggle with how to improve processes, but the chance to meet leaders in other institutions was invaluable."
- "This is what I think young faculty need to develop their skills – the opportunity to network and to collaborate with others outside of their own institution."
- "Although I've presented at national meetings, 'national recognition' was a gaping hole in my resume when compared to other parts of it. This has helped jumpstart this part of my career and has given me the confidence I needed to move forward."



Debnath Chatterjee from Children's Hospital Colorado giving a presentation on button battery ingestions in children at UCSF.

- "ViSiPAP is a fantastic springboard for presenting to an audience outside of one's home institution but in a non threatening setting. Thank you for the opportunity."
- "Great experience overall! Really facilitated academic exchange, networking and collaboration on a national level as a faculty member. Highly recommend."
- "The ViSiPAP speaker exchange program has opened so many doors for me. As a junior faculty member, you are often told that you need to build a 'regional and national reputation' in order to be promoted and are unsure of where to start. Giving these talks has allowed me to build confidence in public speaking and has given me additional speaking opportunities."
- "This is a great program and has been incredibly helpful for my career. I have recommended that other subspecialty groups start similar programs to encourage collaboration!"

In summary, the leaders in academic pediatric anesthesiology should work to support faculty and fellow well-being and career development and create a pediatric anesthesiology community. The ViSiPAP faculty and fellow exchange program can help achieve these goals. ViSiPAP exchange programs are simple to organize, relatively inexpensive and time-efficient. The vision of ViSiPAP is for each institution to create its own network of local, regional and/or national exchanges. The number and type of exchanges can be determined by the number of faculty in the division, the size of the fellowship and the budget of the division. The number of faculty exchanges should match faculty demand and help to facilitate on-time promotion.

The ViSiPAP faculty and faculty/fellow exchanges can serve as models for anesthesiology divisions other than pediatric anesthesiology. The concept of ViSiPAP can be expanded beyond anesthesiology to other departments and can assist with faculty well-being, promotion and retention.