

WONG, CYNTHIA

Richard M. Green, MD
Associate Professor of Medicine
Director, Medical Student Summer Research and Research Thesis Programs

Dear Dr. Green,

I am very interested in participating in the Medical Student Summer Research Program as a mentor. I have participated in summer student research mentoring for the past three summers as a mentor for the Foundation for Anesthesia Education and Research (FAER) Medical Student Anesthesia Research Fellowship, a program for students between their first and second years. Our students have successfully participated in our clinical research endeavors, have presented their research at a special FAER program at the American Society of Anesthesiologist's Annual Meetings, and contributed to authorship on several papers.

The mentoring experience has been rewarding for me personally, for our department (including residents and faculty), and I hope, for the students. Mentoring allows me a chance to share my experiences as a clinical researcher and clinician with a student, and this will hopefully encourage bright and inquisitive students to think about a future in academic medicine, perhaps in anesthesiology. Teaching allows one to gain insight into what our group has accomplished, and with the help of a student, begin to work on new projects. Exposure to clinical research with our group gives the mentee exposure to the patient care environment, interactions with physicians and other caregivers in other specialties (thus exposure to collaboration), and of course, exposure to the discipline of research and evidence based medicine. I hope to increase the mentee's desire to excel clinically, and to be prepared to examine challenging questions, the answers to which will improve ultimately improve healthcare for all of us.

Thank you for your consideration.

Sincerely,

Cynthia A. Wong, M.D.
Associate Professor of Anesthesiology
Chief, Section of Obstetric Anesthesiology

Medical Student Summer Research Program (MSSRP) and Research Thesis Program (RTP): Mentor Information

- 1) Research description (maximum 1 page): Attached
 - a) General research description: nanotechnology, radiation biology
 - b) Description of potential MSSRP or RTP student projects -Studies of nanoparticle distribution in mammalian cells -Imaging studies of nanoparticles in whole animals -Analysis of gene expression following radiation exposure -Studies of radiation-induced mutations
- 2) Cover letter explaining the reasons for your interest in becoming a mentor--attached
- 3) Current Biosketch--attached
- 4) Trainees over the past 5 years (undergraduate, medical or graduate students; post-doctoral fellows) Undergraduate students--Approximately 20 over the past 5 years Medical students--2 Graduate students--currently 3 in the lab Post-doctoral fellows--currently 2 in the lab Residents--15 over the past 5 years

Research area (check all that apply):

- Basic Science
- Translational Science
- Clinical Science
- Other _____

Research Description

Project title: Role of microparticles in postpartum hemorrhage and coagulopathy

General Research Description: Project description: Cesarean delivery is associated with a mild consumptive coagulopathy and primary fibrinolysis, whereas patients who have postpartum hemorrhage requiring a hysterectomy have an exaggerated consumptive coagulopathy and fibrinolysis. We hypothesize that procoagulant microparticles, specifically platelet and endothelial microparticles, are released from placental and uterine tissue during postpartum hemorrhage and postpartum uterine manipulation, and that the release of these particles is associated with a consumptive coagulopathy.

Project scope: We plan an observational cohort-controlled study of patients requiring postpartum hysterectomy (total 20 subjects). Microparticles (MPs) are fragments of damaged or dying cells. They have been identified in many body fluids during other pathologic conditions (e.g., microangiopathies, preeclampsia, and myeloproliferative disorders and are thought to contribute to hemostatic and inflammatory responses to tissue damage. In particular, microparticles may affect coagulation by binding of coagulation factors to microparticle phospholipids and recruitment of cells to developing thrombi. In addition, they may also have anticoagulation effects. We hypothesize that microparticles released into the maternal circulation may play a role in the impaired hemostasis that develops during postpartum hemorrhage and postpartum hysterectomy.

Specific Goals and Objectives: The objective of this project is to determine if women undergoing an emergency postpartum hysterectomy release microparticles into their circulation. A second objective is to determine if the quantity of microparticles is associated with the severity of the coagulopathy. A final objective is to ascertain the degree of microparticle release in patients undergoing cesarean delivery without postpartum hemorrhage and hysterectomy.

Scientific Methods: We plan to measure coagulation parameters and microparticle concentration at specific time points in the peripartum period in women undergoing a postpartum hysterectomy (study group, N = 10) and women with similar risk factors who do not need a hysterectomy (cohort control, N = 10). Plasma for assays will be obtained by peripheral venipuncture at pre-specified intervals: time of decision for hysterectomy (time 0), and at 1, 2, 4, 8, 24h. In vitro tests of coagulation will include prothrombin time (PT), activated partial thromboplastin time (aPTT), fibrinogen, d-dimer, platelet count, antithrombin, thrombin-antithrombin complex, plasminogen, plasminogen-antiplasminogen complex and thrombelastography. Microparticle assays will test for platelet microparticles expressing the CD42b, CD41, and CD62P antigens, as well as endothelial microparticles containing tissue factor (TF). Microparticle quantification and the expression of these procoagulant antigens on the platelet microparticle surface will be determined.

Expected outcomes: We expect there to be an association with the degree of coagulopathy as assessed by standard in vitro measurements of coagulation factors, and the concentration of systemic microparticles. We also anticipate that these particles will be rich in thrombomodulin and express procoagulant platelet surface antigens.

Potential MSSRP Student Involvement: Student involvement will include identification of subjects in both the study and cohort groups, assistance in collection of samples and sample preparation. Students will assist in special coagulation laboratory (Dr. David Green) and in the

flow cytometry laboratory (James Marvin). In these laboratories they will learn the methods involved in quantification of serum proteins and antibody labeling of procoagulants antigens.

Trainees (Past 5 Years)

1. Paloma Toledo, M.D. Fellow in Obstetric Anesthesiology - 2007 to present
2. Nicole Higgins, M.D., Fellow in Obstetric Anesthesiology - 2006 to 2007
3. Kyle Wojciechowski, M.D. Fellow in Obstetric Anesthesiology – 2006 to 2007
4. Jeanette Bauchat, M.D., Fellow in Obstetric Anesthesiology – 2006 to 2007
5. Elizabeth Sanchez, B.S. – Foundation for Anesthesia Education and Research Summer Student 6-2007 to 9-2007
6. Anisiia Doytchinova , B.S. - Foundation for Anesthesia Education and Research Summer Student 6-2007 to 9-2007
7. John Ratliff, M.D., Fellow in Obstetric Anesthesiology – 2004 to 2005
8. Bradley Hewlett, B.S. - Foundation for Anesthesia Education and Research Summer Student 6-2006 to 9-2006
9. Nathaniel Diaz, M.D. - Fellow in Obstetric Anesthesiology – 2003 to 2004
10. Matthew Bokermann, B.S. - Foundation for Anesthesia Education and Research Summer Student 6-2005 to 9-2005
11. Arthur Calmarian, M.D. - Fellow in Obstetric Anesthesiology – 2002 to 2003

Research Area

- Basic Science
- Translational Science
- Clinical Science
- Other _____

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Wong, Cynthia Alice	POSITION TITLE Associate Professor of Anesthesiology		
eRA COMMONS USER NAME Wongc			
EDUCATION/TRAINING (<i>Begin with baccalaureate or other initial professional education, such as</i>			
INSTITUTION AND LOCATION	DEGREE (<i>if applicable</i>)	YEAR(s)	FIELD OF STUDY
Indiana University, Bloomington, IN University of Chicago, Chicago, IL	B.A. M.D.	1979 1984	Chemistry/Biology Medicine

Please refer to the application instructions in order to complete sections A, B, and C of the Biographical Sketch.

A. Positions and Honors.

Positions and Employment

1984-1988 Instructor, Rush University, Anesthesia; Resident, Anesthesiology
 1988-1995 Associate, Northwestern University, Clinical Anesthesia
 1995-2003 Assistant Professor, Northwestern University, Anesthesiology
 2003- Associate Professor, Northwestern University, Anesthesiology

Other Experience and Professional Memberships

Chief Resident, Anesthesiology, Rush-Presbyterian-St. Luke's Medical
 1991-1997 Assistant Medical Director, Northwestern Malignant Hyperthermia Testing
 Center
 1992- Malignant Hyperthermia Hotline Consultant
 1996- Chief, Section of Obstetric Anesthesiology, Northwestern University and Northwestern
 Medical Faculty Foundation
 1996- Medical Director Obstetrical Anesthesiology, Northwestern Memorial Hospital
 1998- Program Director, Obstetric Anesthesiology Fellowship, McGaw Medical Center
 2003- ABA/ASA Joint Council on In-Training Examinations: Junior Editor
 2004- Editorial board: *International Journal of Obstetric Anesthesia*
 2005- Editorial board: *Obstetric Anesthesia Digest*
 2006- Associate editorial board: *Anesthesia & Analgesia*
 2006- Member, Association of University Anesthesiologists
 2006- State of Illinois Maternal Mortality Review Committee

2007- Section Editor, Obstetric Anesthesiology, *Anesthesia & Analgesia*

Honors

- 1974 AFS International Scholarship, Germany
- 1978 Phi Beta Kappa
- 1979 German Academic Exchange Service Fellowship
- 1984 Alpha Omega Alpha
- 1988 Robert D. Dripps, M.D. Memorial Award--Outstanding Graduate Anesthesia Resident
- 1990 Teacher of the Year, NUMS Department of Anesthesia
- 2000 Malignant Hyperthermia Association of the United States, Hotline Partnership Award
- 2004 Northwestern University All Campus Research Day, 2004: Clinical Science First Place Award
- 2004 Northwestern University, Feinberg School of Medicine, Dept. of Anesthesiology CA-2 Golden Apple Award

B. Peer-reviewed publications (in chronological order).

1. Feinstein JM, Gruszka M, **Wong C**, Carey A, Berkelhammer JE. Early cessation of breastfeeding in an urban population. *Pediatrics* 1986;78:210-15.
2. Spiess BD, **Wong CA**, Tuman KT, Ivankovich AD. High frequency positive pressure ventilation for anterior spine fusion after a previous pneumonectomy. *Anesth Analg* 1988;67:411-4.
3. Tuman KT, Spiess BD, **Wong CA**, Ivankovich AD. Use of sufentanil-midazolam anesthesia in malignant hyperthermia. *Anesth Analg* 1988;67:405-8.
4. Tuman KT, McCarthy RJ, **Wong CA**, Labarge AM, Spiess BD, Ivankovich AD. Comparative effects of esmolol and verapamil in a model of supraventricular tachycardia. *Anesthesiology* 1990;73:467-73.
5. **Wong CA**, Franklin ML, Wade LD. Coagulation tests, blood loss, and transfusion requirements in platelet-rich plasmapheresed vs. nonpheresed cardiac surgery patients. *Anesth Analg* 1994;78:29-36.
6. Benzon HT, **Wong CA**, Wong HY, Brooke C, Wade L. The effect of low-dose bupivacaine on post-operative epidural fentanyl analgesia and thrombelastography. *Anesth Analg* 1994;79:911-7.
7. **Wong CA**, Liu SL, Glassenberg R. Comparison of thromboelastography with common coagulation tests in pre-eclamptic and healthy parturients. *Reg Anesth* 1995;20:521-7.
8. Green D, Sanders J, Eiken M, **Wong CA**, Frederiksen J, Joob A, Palmer A, Trowbridge A, Woodruff B, Moersch M, Tabanera R, Edsberg B. Recombinant aprotinin in coronary artery bypass graft surgery. *J Thorac Cardiovasc Surg* 1995;110:963-70.
9. **Wong CA**, Slavenas P. The incidence of transient radicular irritation after spinal anesthesia in obstetric patients. *Reg Anesth Pain Med* 1999;24:55-58.
10. Traynor JD, Dooley SL, Seyb S, **Wong CA**, Shadron A. Is the management of epidural analgesia associated with an increased risk of cesarean delivery? *Am J Obstet Gynecol* 2000;182:1058-62.
11. **Wong CA**, Scavone BM, Loffredi M, Wang WY, Peaceman AM, Ganchiff JN. The dose-response of intrathecal sufentanil added to bupivacaine for labor analgesia. *Anesthesiology* 2000;92:1553-8.

12. **Wong CA**, Loffredi M, Ganchiff JN, Zhao J, Wang Z, Avram MJ. Gastric emptying of water in term pregnancy. *Anesthesiology* 2002;96:1395-1400.
13. **Wong CA**, Scavone BM, Dugan S, Smith JC, Prather H, Ganchiff JN, McCarthy RJ. The incidence of postpartum lumbosacral spine and lower extremity nerve injuries. *Obstet Gynecol* 2003;101:279-88.
14. Calimaran AL, **Wong CA**, Strauss-Hoder TP, Wang WY, McCarthy RJ. Effect of epidural test dose on motor function after a combined spinal-epidural technique for labor analgesia. *Anesth Analg* 2003;96:1167-72.
15. Plunkett BA, Lin A, Wong CA, Grobman WA, Peaceman AM. Management of the second stage of labor in nulliparas with continuous epidural analgesia. *Obstet Gynecol* 2003;102:109-14.
16. **Wong CA**, Cariaso D, Johnson EC, Leu D, McCarthy RJ. Body habitus does not influence spread of sensory blockade after the intrathecal injection of a hypobaric solution in term parturients. *Can J Anaesth* 2003;50:689-93.
17. **Wong CA**, Scavone BM, Slavenas JP, Vidovich MI, Peaceman AM, Ganchiff JN, Strauss-Hoder T, McCarthy RJ. Efficacy and side effect profile of varying doses of intrathecal fentanyl added to bupivacaine for labor analgesia. *Int J Obstet Anesth* 2004;13:19-24.
18. Scavone BM, **Wong CA**, Sullivan JT, Yaghmour E, Sherwani SS, McCarthy RJ. Efficacy of a prophylactic epidural blood patch in preventing post dural puncture headache in parturients after inadvertent dural puncture. *Anesthesiology* 2004;101:1422-7.
19. **Wong CA**, RJ Fragen, PC Fitzgerald, RJ McCarthy. Association between propofol-induced loss of consciousness and the SNAP™ index. *Anesth Analg* 2005;100:141-148.
20. **Wong CA**, Scavone BM, Peaceman AM, et al. The risk of cesarean delivery with early versus late labor neuraxial analgesia. *N Eng J Med* 2005;352:655-65.
21. Marcus RL, **Wong CA**, Lehor A, McCarthy RJ, Yaghmour E, Yilmaz. Epidural morphine for postpartum tubal ligation postoperative analgesia. *Anesth Analg* 2005;101:876-81.
22. **Wong CA**, Ratliff JT, Scavone BM, Sullivan JT, Toledo P, McCarthy RJ. A randomized comparison of programmed intermittent epidural bolus with continuous epidural infusion for labor analgesia. *Anesth Analg* 2006;102:904-9.
23. **Wong CA**, Fragen RJ, Fitzgerald P, McCarthy RJ. A comparison of the SNAP II™ and BIS XP™ indices during sevoflurane and nitrous oxide anaesthesia at 1 and 1.5 MAC and at awakening. *Br J Anaesth* 2006;97:181-6.
24. Scavone BM, Sproviero MT, McCarthy RJ, **Wong CA**, Sullivan JT, Siddall VJ, Wade LD. Development of an objective scoring system for measurement of resident performance on the human patient simulator. *Anesthesiology* 2006;105:260-6.
25. Sullivan JT, Grouper S, Walker MT, Parrish MB, McCarthy RJ, **Wong CA**. Lumbosacral cerebrospinal fluid volume in humans using three-dimensional magnetic resonance imaging. *Anesth Analg* 2006;103:1306-1310.
27. **Wong CA**, McCarthy RJ, Fitzgerald PC, Raikoff K, Avram MJ. Gastric emptying of water in obese pregnant women at term. *Anesth Analg* 2007;105:751-5

C. Research Support

Peer-reviewed grant funding

International Anesthesia Research Society Clinical Scholar Research Award: 2004-2005, Wong CA (PI): Neuraxial vs. systemic analgesia for latent phase labor analgesia in nulliparous parturients with induction of labor: effect on rate of operative delivery

Eleanor Wood-Prince Grant Initiative, Woman's Board of Northwestern Memorial Hospital:
2004, Wong CA (PI): Coagulation factor changes associated with postpartum hysterectomies

Eleanor Wood-Prince Grant Initiative, Woman's Board of Northwestern Memorial Hospital:
2007, Wong CA (PI): Role of microparticles in postpartum hemorrhage and coagulopathy

Contracts

Nicolet Biomedical, Inc.: 2001, Wong CA (PI): High frequency EEG signal detection in patients during anesthesia.

Nicolet Biomedical, Inc.: 2002, Wong CA (PI): Association between propofol-induced sedation/loss of consciousness and SNAP index.

Everest Biomedical Instruments Company: 2005, Wong CA (PI): Association of the SNAP index and depth of anesthesia induced by sevoflurane with and without nitrous oxide at 1 and 1.5 MAC and at awakening.