

**BIOGRAPHICAL SKETCH**

Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2. Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME <b>Juan Carlos Puyana, MD</b>		POSITION TITLE <b>Associate professor of Surgery</b>	
eRA COMMONS USER NAME (credential, e.g., agency login) <b>PUYANAJC</b>			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	MM/YY	FIELD OF STUDY
Javeriana University Bogota Colombia	MD	1983	Medicine
McGill University Montreal Canada		1989	Surgery
Yale University		1992	Trauma & Critical Care

**A. Personal Statement**

Juan Carlos Puyana, MD is Associate Professor of Surgery, Critical Care Medicine and Clinical Translational Science at the University of Pittsburgh. He is the Past-President of the Pan-American Trauma Society, and Director of Global Health for the Dept. of Surgery at Pitt. Over the past 10 years he has participated in several International Research and Training Collaborations in Latin America. He is currently the PI of the Fogarty International Center (FIC) D43 Informatics Training for Global Health (ITGH) in Colombia (1D43TW008443-01), the PI/PD of an R21 on Capacity Building for Decompressive Craniotomy in Colombia (1R21TW009332-01A1) and was former PD/PI of a D43 on International Collaborative Trauma and Injury Research Training Grant (D43 TW 007560 01) also in Colombia. Dr. Puyana is involved in promoting research, educational opportunities, and clinical collaboration in Latin America. Dr. Puyana has been the mentor of 14 Colombians that have returned to their country to participate in many areas of clinical research. He was originally born in Colombia where he finished Medical School before completing his residency training at McGill in Montreal and his Trauma Fellowship at Yale. He is well aware of the many challenges facing the health system in Colombia and his experience places him in a unique and advantageous position to identify major gaps in the areas of clinical medical research, education and provision. As a clinician, Dr. Puyana is an active trauma and Critical Care Surgeon working at the Largest Level One Trauma center and Acute Care Center in Pennsylvania. He participates in, Fellowship, Resident and Student mentoring. He is a vicechairman for Pennsylvania at the Committee on Trauma of the American College of Surgeons. Dr. Puyana’s exceptional people skills, organizational proficiency, proven leadership and mentoring capabilities as well as his dedication and commitment to build human capacity in his country of origin guarantee the success of this D43 application.

**B. Positions and Honors**

- 2010-2011 Vice-President Pan-American Trauma Society
- 2002 – 2009 Secretary Pan-American Trauma Society
- 2001- Present: Associate Professor of Surgery and Critical Care Medicine UPMC
- 1998-2001 Co-Director, Surgical ICU Brigham and Women’s Hospital Boston, Harvard Medical School Boston, Massachusetts, Assistant Professor of Surgery
- 1998–2001 Program Leader, Trauma and Casualty Care CIMIT Center for Integration of Medicine and Innovative Technology, Harvard Medical School, Partners Health Care Boston, Massachusetts
- 1992-1998 Assistant Professor of Surgery, University of Massachusetts Medical Center, Worcester, Massachusetts

**Honors**

- 1989 Fellow Royal College of Physician and Surgeons of Canada
- 1993 Fellow, American College of Surgeons
- 1994 Fellow, American College of Chest Physicians Heart Association
- 2003 The Independent Insurance Agents of Pittsburgh. Outstanding Public Service. The Big I Award. 4-24, 2003
- 2006 First Place Region XIV, Clinical Science Category Committee on Trauma Resident’s Paper Competition Prehospital And First Hospital System Response At A Trauma Center Due To A Terrorist Attack In A Developing Country 2008
- 2007 Pitt INNOVATOR Award 2007, Intelomed – Pitt Start up company 2007
- 2009 Pitt INNOVATOR Award 2009 Intelomed – Pitt Start up company 2009

**D. Selected peer-reviewed publications (in chronological order).** Do not include publications submitted or in preparation. For publicly available citations, URLs or PMC submission identification numbers may accompany the full reference. Note copies of these publications are no longer accepted as appendix material.

**D. Research Support.** List selected ongoing or completed (during the last three years) research projects (federal and non-federal support). Begin with the projects that are most relevant to the research proposed in this application. Briefly indicate the overall goals of the projects and your role (e.g. PI, Co-Investigator, Consultant in the research project. Do not list award amounts or percent effort in projects.

1. **R21 on Capacity Building for Decompressive Craniotomy in Colombia** (1R21TW009332-01A1)  
3/1/2012 -3/1/2014  
PI Pilot trial in three trauma centers in Colombia. Developing of a check list for Decompressive Craniotomy in austere environments. Fogarty International Center. \$ 196,000
2. **Informatics Training for Global Health (ITGH) (D43) 1D43TW008443-01**  
9/2009 – 9/2014  
PI Training Grant global health informatics \$ 1,2500.000  
Fogarty International center
3. **International Trauma Research Training Grant**  
Fogarty International Collaborative Trauma and Injury Research Training Program (**ICTIRT**) Co-PI and Co-Director Training program Fogarty Institute NIH Fogarty International center  
2006-2011 Indirect Cost \$750,000.00
4. **R01 HL076157-01 NHLBI**  
Metabolic-Inflammatory Systems in Irreversible Shock  
Principal Investigator  
I-4/1/04-3/31/08 Direct \$1,100,000.00 Indirect: \$366,737.00
5. **ARDSnet**  
Source/Grant Number N01-HR-15162 NIH  
Grant Title: Clinical Centers for the Clinical Network for the Treatment of Adult Respiratory Distress Syndrome, Co-Investigator - Years Inclusive 6/26/03-10/30/05;

1. Rubiano AM, Sanchez AI, Guyette F, Puyana JC. Trauma care training for National Police nurses in Colombia. Prehospital emergency care : official journal of the National Association of EMS Physicians and the National Association of State EMS Directors 2010;14:124-30.
2. Ordonez CA, Sanchez AI, Pineda JA, et al. Deferred primary anastomosis versus diversion in patients with severe secondary peritonitis managed with staged laparotomies. World journal of surgery 2010;34:169-76.
3. Namas R, Ghuma A, Torres A, et al. An adequately robust early TNF-alpha response is a hallmark of survival following trauma/hemorrhage. PloS one 2009;4:e8406.
4. Torres A, Bentley T, Bartels J, et al. Mathematical modeling of posthemorrhage inflammation in mice: studies using a novel, computer-controlled, closed-loop hemorrhage apparatus. Shock 2009;32:172-8.
5. Rubiano AM, Villarreal W, Hakim EJ, et al. Early decompressive craniectomy for neurotrauma: an institutional experience. Ulusal travma ve acil cerrahi dergisi = Turkish journal of trauma & emergency surgery : TJTES 2009;15:28-38.
6. Poggetti R, Leppanemi A, Ferrada P, et al. WSES SM (World Society of Emergency Surgery Summer Meeting) highlights: emergency surgery around the world (Brazil, Finland, USA). World journal of emergency surgery : WJES 2009;4:11.
7. Peitzman AB, Ferrada P, Puyana JC. Nonoperative management of blunt abdominal trauma: have we gone too far? Surgical infections 2009;10:427-33.
8. Zenker S, Polanco PM, Torres A, et al. Very low frequency variability in the peripheral circulation: the possibility of plethysmographic quantification. European journal of anaesthesiology 2009;26:522-4; author reply 4.
9. Macias CA, Rosengart MR, Puyana JC, et al. The effects of trauma center care, admission volume, and surgical volume on paralysis after traumatic spinal cord injury. Annals of surgery 2009;249:10-7.

10. Gomez H, Mesquida J, Simon P, et al. Characterization of tissue oxygen saturation and the vascular occlusion test: influence of measurement sites, probe sizes and deflation thresholds. *Crit Care* 2009;13 Suppl 5:S3.
11. Beilman GJ, Blondet JJ, Nelson TR, et al. Early hypothermia in severely injured trauma patients is a significant risk factor for multiple organ dysfunction syndrome but not mortality. *Annals of surgery* 2009;249:845-50.
12. Polanco P, Leon S, Pineda J, et al. Hepatic resection in the management of complex injury to the liver. *The Journal of trauma* 2008;65:1264-9; discussion 9-70.
13. Moore FA, Nelson T, McKinley BA, et al. Massive transfusion in trauma patients: tissue hemoglobin oxygen saturation predicts poor outcome. *The Journal of trauma* 2008;64:1010-23.
14. Moore FA, Nelson T, McKinley BA, et al. Is there a role for aggressive use of fresh frozen plasma in massive transfusion of civilian trauma patients? *American journal of surgery* 2008;196:948-58; discussion 58-60.
15. Gomez H, Torres A, Polanco P, et al. Use of non-invasive NIRS during a vascular occlusion test to assess dynamic tissue O(2) saturation response. *Intensive care medicine* 2008;34:1600-7.
16. Clavijo JA, van Bastelaar J, Pinsky MR, Puyana JC, Mayevsky A. Minimally invasive real time monitoring of mitochondrial NADH and tissue blood flow in the urethral wall during hemorrhage and resuscitation. *Medical science monitor : international medical journal of experimental and clinical research* 2008;14:BR175-82.
17. Zenker S, Polanco PM, Kim HK, et al. Thresholded area over the curve of spectrometric tissue oxygen saturation as an indicator of volume resuscitability in porcine hemorrhagic shock. *The Journal of trauma* 2007;63:573-8; discussion 8-80.
18. Harbrecht BG, Zenati MS, Ochoa JB, Puyana JC, Alarcon LH, Peitzman AB. Evaluation of a 15-year experience with splenic injuries in a state trauma system. *Surgery* 2007;141:229-38.
19. Cohn SM, Nathens AB, Moore FA, et al. Tissue oxygen saturation predicts the development of organ dysfunction during traumatic shock resuscitation. *The Journal of trauma* 2007;62:44-54; discussion -5.
20. Ordonez CA, Puyana JC. Management of peritonitis in the critically ill patient. *The Surgical clinics of North America* 2006;86:1323-49.
21. Harbrecht BG, Zenati MS, Alarcon LH, et al. Is outcome after blunt splenic injury in adults better in high-volume trauma centers? *The American surgeon* 2005;71:942-8; discussion 8-9.
22. Clavijo-Alvarez JA, Sims CA, Pinsky MR, Puyana JC. Monitoring skeletal muscle and subcutaneous tissue acid-base status and oxygenation during hemorrhagic shock and resuscitation. *Shock* 2005;24:270-5.
23. Macias CA, Kameneva MV, Tenhunen JJ, Puyana JC, Fink MP. Survival in a rat model of lethal hemorrhagic shock is prolonged following resuscitation with a small volume of a solution containing a drag-reducing polymer derived from aloe vera. *Shock* 2004;22:151-6.
24. Harbrecht BG, Zenati MS, Ochoa JB, et al. Management of adult blunt splenic injuries: comparison between level I and level II trauma centers. *Journal of the American College of Surgeons* 2004;198:232-9.
25. Clavijo-Alvarez JA, Sims CA, Menconi M, Shim I, Ochoa C, Puyana JC. Bladder mucosa pH and Pco2 as a minimally invasive monitor of hemorrhagic shock and resuscitation. *The Journal of trauma* 2004;57:1199-209; discussion 209-10.
26. Boelens PG, Houdijk AP, Fonk JC, et al. Glutamine-enriched enteral nutrition increases in vitro interferon-gamma production but does not influence the in vivo specific antibody response to KLH after severe trauma. A prospective, double blind, randomized clinical study. *Clin Nutr* 2004;23:391-400.
27. Soller BR, Khan T, Favreau J, Hsi C, Puyana JC, Heard SO. Investigation of muscle pH as an indicator of liver pH and injury from hemorrhagic shock. *The Journal of surgical research* 2003;114:195-201.
28. Boelens PG, Houdijk AP, Fonk JC, et al. Glutamine-enriched enteral nutrition increases HLA-DR expression on monocytes of trauma patients. *The Journal of nutrition* 2002;132:2580-6.
29. Blood CG, Puyana JC, Pitlyk PJ, et al. An assessment of the potential for reducing future combat deaths through medical technologies and training. *The Journal of trauma* 2002;53:1160-5.
30. Soller BR, Heard SO, Cingo NA, et al. Application of fiberoptic sensors for the study of hepatic dysoxia in swine hemorrhagic shock. *Critical care medicine* 2001;29:1438-44.
31. Soller BR, Cingo N, Puyana JC, et al. Simultaneous measurement of hepatic tissue pH, venous oxygen saturation and hemoglobin by near infrared spectroscopy. *Shock* 2001;15:106-11.
32. Sims C, Seigne P, Menconi M, et al. Skeletal muscle acidosis correlates with the severity of blood volume loss during shock and resuscitation. *The Journal of trauma* 2001;51:1137-45; discussion 45-6.

33. Rogers S, Puyana JC. Bedside percutaneous tracheostomy in the critically ill patient. *International anesthesiology clinics* 2000;38:95-110.
34. Puyana JC, Soller BR, Parikh B, Heard SO. Directly measured tissue pH is an earlier indicator of splanchnic acidosis than tonometric parameters during hemorrhagic shock in swine. *Critical care medicine* 2000;28:2557-62.
35. Pellegrini JD, De AK, Kodys K, Puyana JC, Furse RK, Miller-Graziano C. Relationships between T lymphocyte apoptosis and anergy following trauma. *The Journal of surgical research* 2000;88:200-6.
36. Kelly JJ, Puyana JC, Callery MP, Yood SM, Sandor A, Litwin DE. The feasibility and accuracy of diagnostic laparoscopy in the septic ICU patient. *Surgical endoscopy* 2000;14:617-21.
37. Heard SO, Puyana JC. The anti-inflammatory effects of perfluorocarbons: let's get physical. *Critical care medicine* 2000;28:1241-2.
38. Puyana JC, Soller BR, Zhang S, Heard SO. Continuous measurement of gut pH with near-infrared spectroscopy during hemorrhagic shock. *The Journal of trauma* 1999;46:9-15.
39. Heard SO, Longtine K, Toth I, Puyana JC, Potenza B, Smyrniotis N. The influence of liposome-encapsulated prostaglandin E1 on hydrogen peroxide concentrations in the exhaled breath of patients with the acute respiratory distress syndrome. *Anesthesia and analgesia* 1999;89:353-7.
40. Puyana JC, Pellegrini JD, De AK, Kodys K, Silva WE, Miller CL. Both T-helper-1- and T-helper-2-type lymphokines are depressed in posttrauma anergy. *The Journal of trauma* 1998;44:1037-45; discussion 45-6.
41. Heard SO, Wagle M, Vijayakumar E, et al. Influence of triple-lumen central venous catheters coated with chlorhexidine and silver sulfadiazine on the incidence of catheter-related bacteremia. *Archives of internal medicine* 1998;158:81-7.
42. De AK, Kodys K, Puyana JC, Fudem G, Pellegrini J, Miller-Graziano CL. Only a subset of trauma patients with depressed mitogen responses have true T cell dysfunctions. *Clinical immunology and immunopathology* 1997;82:73-82.
43. Pellegrini JD, Puyana JC, Lapchak PH, Kodys K, Miller-Graziano CL. A membrane TNF-alpha/TNFR ratio correlates to MODS score and mortality. *Shock* 1996;6:389-96.
44. Krishna M, Banner BF, Puyana JC, Khan A. Intraductal papillary mucinous neoplasm of the pancreas presenting as acute pancreatitis. *Archives of pathology & laboratory medicine* 1996;120:981-4.
45. De AK, Kodys K, Puyana JC, Fudem G, Savoie P, Miller-Graziano CL. Elevated IL-8 production by trauma patients' monocytes is associated with elevated secretion of TNF alpha. *Shock* 1995;4:171-7.
46. Keaney JF, Jr., Puyana JC, Francis S, Loscalzo JF, Stamler JS, Loscalzo J. Methylene blue reverses endotoxin-induced hypotension. *Circulation research* 1994;74:1121-5.
47. Puyana JC, Rode HN, Christou NV, Meakins JL, Gordon J. Induction of an immune response to keyhole-limpet hemocyanin in surgical patients with anergy. *Surgery* 1990;107:442-8.
48. Rode HN, Puyana JC, Macphee M, Meakins JL, Christou N, Gordon J. Role of cytokines in the restoration of the delayed-type hypersensitivity reaction of anergic patients. *Clinical and experimental immunology* 1988;71:159-63.
49. Puyana JC, Rode H, Gordon J, Meakins JL, Chartrand L, Christou NV. Lack of cytokine-induced skin reaction correlates with acute physiology score and mortality in patients receiving intensive care. *Arch Surg* 1988;123:1474-6.
50. Rubiano AM, Puyana JC, Mock CN, Bullock MR, Adelson PD. Strengthening neurotrauma care systems in low and middle income countries. *Brain injury : [BI]* 2013;27:262-72.
51. Klune JR, Amesur NB, Bautz JT, Puyana JC. Identifying occult arterial bleeding by a relaxing (loosening) pelvic stabilization device in severe pelvic fracture. *The American surgeon* 2013;79:80-2.
52. Sanchez AI, Krafty RT, Weiss HB, Rubiano AM, Peitzman AB, Puyana JC. Trends in survival and early functional outcomes from hospitalized severe adult traumatic brain injuries, pennsylvania, 1998 to 2007. *The Journal of head trauma rehabilitation* 2012;27:159-69.
53. Rubiano AM, Sanchez AI, Estebanez G, Peitzman A, Sperry J, Puyana JC. The effect of admission spontaneous hypothermia on patients with severe traumatic brain injury. *Injury* 2012.
54. Ordonez CA, Badiel M, Pino LF, et al. Damage control resuscitation: early decision strategies in abdominal gunshot wounds using an easy "ABCD" mnemonic. *The journal of trauma and acute care surgery* 2012;73:1074-8.
55. Ordonez C, Pino L, Badiel M, et al. The 1-2-3 approach to abdominal packing. *World journal of surgery* 2012;36:2761-6.

56. Guyette FX, Gomez H, Suffoletto B, et al. Prehospital dynamic tissue oxygen saturation response predicts in-hospital lifesaving interventions in trauma patients. *The journal of trauma and acute care surgery* 2012;72:930-5.
57. Gomez H, Mesquida J, Hermus L, et al. Physiologic responses to severe hemorrhagic shock and the genesis of cardiovascular collapse: can irreversibility be anticipated? *The Journal of surgical research* 2012;178:358-69.
58. Ordonez CA, Pino LF, Badiel M, et al. Safety of performing a delayed anastomosis during damage control laparotomy in patients with destructive colon injuries. *The Journal of trauma* 2011;71:1512-7; discussion 7-8.
59. Ordonez CA, Badiel M, Sanchez AI, et al. Improving mortality predictions in trauma patients undergoing damage control strategies. *The American surgeon* 2011;77:778-82.
60. Mi Q, Constantine G, Ziraldo C, et al. A dynamic view of trauma/hemorrhage-induced inflammation in mice: principal drivers and networks. *PloS one* 2011;6:e19424.
61. Mena JH, Sanchez AI, Rubiano AM, et al. Effect of the modified Glasgow Coma Scale score criteria for mild traumatic brain injury on mortality prediction: comparing classic and modified Glasgow Coma Scale score model scores of 13. *The Journal of trauma* 2011;71:1185-92; discussion 93.
62. Guyette F, Suffoletto B, Castillo JL, Quintero J, Callaway C, Puyana JC. Prehospital serum lactate as a predictor of outcomes in trauma patients: a retrospective observational study. *The Journal of trauma* 2011;70:782-6.
63. Klune JR, Amesur NB, Bautz JT, Puyana JC. Identifying occult arterial bleeding by a relaxing (loosening) pelvic stabilization device in severe pelvic fracture. *The American surgeon* 2013;79:E80-2.
64. Sanchez AI, Villaveces A, Krafty RT, et al. Policies for alcohol restriction and their association with interpersonal violence: a time-series analysis of homicides in Cali, Colombia. *International journal of epidemiology* 2011;40:1037-46.
65. Puyana JC, Pinsky MR. Searching for non-invasive markers of tissue hypoxia. *Crit Care* 2007;11:116.