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## CURRICULUM VITAE

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### BIOGRAPHICAL

Name: **Sohail Z Husain**

**Professor of Pediatrics and Chief of  
Pediatric Gastroenterology**

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### PERSONAL STATEMENT

I am a Pediatric Gastroenterology Physician-Scientist whose overarching research goal is to come up with targeted therapies for exocrine pancreatic disorders, particularly pancreatitis. I serve as Professor of Pediatrics and Chief of the Division of Pediatric Gastroenterology at Stanford University. I came to Stanford to marry science and medicine. Prior to Stanford, I was at the University of Pittsburgh for 8 years, and before that, I was at Yale for 10 years. My research delves into three broad areas of the exocrine pancreas: (1) The crucial signaling pathways that initiate and transduce pancreatitis; (2) the factors that turn on pancreatic regeneration and recovery after pancreatic injury; and (3) the mechanisms underlying drug-induced pancreatitis. I was the first to identify a pathological role for pancreatic acinar cell Ca<sup>2+</sup> release from the intracellular Ca<sup>2+</sup> channel the ryanodine receptor (RyR). Thereafter, I was able to implicate a novel role for a downstream Ca<sup>2+</sup>-activated phosphatase calcineurin (Cn) in initiating and propagating the inflammatory signals that lead to pancreatitis. I have also deciphered a novel role for the epigenetic regulators the histone deacetylases (HDAC) in mediating pancreatic recovery and regeneration of the pancreas. I have published experience in clinical-translational work through active participation within an international, NIH-funded group of Pediatric Pancreatologists (called INSPPIRE). I have authored over 85 scientific papers and 10 book chapters related to pancreatic disorders. I have filed three patents that disclose a novel combination formulation for pancreatitis. I currently serve as principal investigator (PI) on an NIH R01 grant and a Department of Defense grant on calcineurin in pancreatitis. I also serve as PI on an investigator-initiated industry grant to perform a discovery metabolomic screen in children who succumbed to pancreatitis due to the cancer drug asparaginase. Relating to leadership in pancreatic disorders, I serve as Chair of the North American Pediatric GI Society's (NASPGHAN) Pancreas Committee and a Councilor on the American Gastroenterological Association's (AGA) Pancreatic Disorders Section. At Stanford, I serve as Chief of a Pediatric Gastroenterology Division that is poised to move the needle on science and medicine for our subspecialty. One of my greatest joys on the job has been to mentor, to date, eight post-doctoral fellows and two dozen pre-doctoral trainees. In summary, combined with a solid expertise into the molecular pathogenesis of pancreatitis, a translational understanding of the clinical entity, and a passion to awaken eager young minds, I believe that I am privileged to pursue the goal of identifying effective therapies for pancreatic disorders and to advance science and medicine in Pediatric Gastroenterology.

### ACADEMIC HISTORY

#### UNDERGRADUATE

09/1990-05/1994	Binghamton University, Binghamton, NY	BS, 1994	Biological Sciences
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#### GRADUATE

09/1994-05/1998	Tufts University School of Medicine, Boston, MA	MD, 1998	Medicine
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#### POSTGRADUATE

07/1998- 06/2001	New York University Medical Center, New York, NY	Internship and Residency, 2001 (Program Director: Dr. Robert Lembo)	General Pediatrics
7/2001- 6/2002	Yale University School of Medicine, New Haven, CT	Clinical Fellowship, 2002 (Program Director: Dr. M. Susan Moyer)	Pediatric Gastroenterology, Hepatology & Nutrition
7/2002- 6/2004	Yale University School of Medicine, New Haven, CT	Postdoctoral Research Fellow, 2004 (Research Mentor: Dr. Fred Gorelick)	Pediatric Gastroenterology, Hepatology & Nutrition

#### **OTHER PROFESSIONAL TRAINING EXPERIENCE**

2011	University of Pittsburgh Medical Center (UPMC), Pittsburgh, PA	Academic Leadership in Medicine Course
2012	MDI Biological Laboratory, Bar Harbor, ME	Quantitative Fluorescence (Course Director: Dr. Simon Watkins)
2014	Pitt Innovation Institute, University of Pittsburgh, Pittsburgh, PA	Bench to Bedside Course for Biomedical Entrepreneurs (Course Director: Babs Carryer)
2017	University of Pittsburgh Medical Center (UPMC), Pittsburgh, PA	Advanced Faculty Leadership Academy
2018	Carnegie Mellon University and the University of Pittsburgh	National Science Foundation I-Corps Short Course on Biomedical Entrepreneurship

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#### **APPOINTMENTS AND POSITIONS**

##### **ACADEMIC**

2004-2006	Department of Pediatrics, Yale University School of Medicine, New Haven, CT	Associate Research Scientist
2005-2011	Division of Gastroenterology, Department of Pediatrics, Yale University School of Medicine, New Haven, CT	Assistant Fellowship Director
2006-2011	Department of Pediatrics, Yale University School of Medicine, New Haven, CT	Assistant Professor
2011-2012	Department of Pediatrics, University of Pittsburgh, Pittsburgh, PA	Visiting Associate Professor
2012-2016	Department of Pediatrics, University of Pittsburgh, Pittsburgh, PA	Associate Professor
2011-2016	The Pediatric Exocrine Pancreatic Disorders Program, Children's Hospital of Pittsburgh of UPMC, Pittsburgh, PA	Co-Director
2014-2019	The McGowan Institute for Regenerative Medicine, University of Pittsburgh, Pittsburgh, PA	Member Faculty
2015-2019	Pediatric Gastroenterology Fellowship, Division of Gastroenterology, Department of Pediatrics, University of Pittsburgh, Pittsburgh, PA	Associate Program Director
2016-2019	Department of Pediatrics, University of Pittsburgh, Pittsburgh, PA	Associate Professor, with tenure
2016-2019	Exocrine Pancreas Research Program, Children's Hospital of Pittsburgh of UPMC, Pittsburgh, PA	Director
2018-2019	Department of Pediatrics, University of Pittsburgh, Pittsburgh, PA	Professor, with tenure
2019-present	Department of Pediatrics, Stanford University, Stanford, CA	Professor
2019-present	Division of Pediatric Gastroenterology, Hepatology, and Nutrition, Stanford University, Stanford, CA	Division Chief

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## CERTIFICATION AND LICENSURE

### SPECIALTY BOARD CERTIFICATION

American Board of Pediatrics, Board-eligible in General Pediatrics	2002
Board Certified in Pediatric Gastroenterology, Hepatology, and Nutrition	2005, Re-certified in 2015

### MEDICAL OR OTHER PROFESSIONAL LICENSURE

Medical License, CA	2019
DEA License	2002

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### MEMBERSHIP IN PROFESSIONAL AND SCIENTIFIC SOCIETIES

American Pancreatic Association (APA)	2002-present
North American Society for Pediatric Gastroenterology, Hepatology and Nutrition (NASPGHAN)	2002-present
American Gastroenterological Association (AGA)	2002-present
Society for Pediatric Research	2008-2010
Faculty of 1000 (F1000)	2012-2016

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### HONORS

Edgar Davis Memorial Scholarship in Medicine	1990
Case Western Reserve University Summer Undergraduate Research Scholarship	1992
Golden Key National Honor Society	1993
Graduated Magna Cum Laude from Binghamton University, Binghamton, NY	1994
American Gastroenterological Association (AGA) AstraZeneca Faculty Transition Basic Science Award	2004
Named "Junior Investigator Scholar" on a Yale Child Health Research Center Grant (NIH K12)	2004
NASPGHAN Fellow Abstract Travel Award	2004
Best Fellow Abstract Presentation Award, Department of Pediatrics, Yale University, New Haven, CT	2004
Humanitarian Achievement Award, from Humanity First USA (for role in Asian Tsunami and Katrina disaster relief)	2006
Governor's Citation Award from the State of Maryland for providing disaster relief during Katrina	2006
Children Digestive Health/Nutrition Foundation (CDHNF) Young Investigator Award	2006
NASPGHAN Faculty Abstract Travel Award for the 2008 Annual Meeting	2008
Yale Pediatric Department Mae Gailani Award for Junior Faculty Research and Mentorship	2009
Recognition Award as Medical Trip Leader to Haiti for Earthquake Relief, Humanity First USA	2010
Best Abstract in Experimental Pancreatitis of the Year Award, 2015 Annual APA Meeting	2015
Best Doctors, Pittsburgh Magazine	2012-2019
Best Doctors in America	2014-2019
Inaugural Annual Tjota Award for Pancreas Excellence, 2019 Annual NASPGHAN Meeting	2019
Best Abstract in Pancreatitis of the Year Award, 2019 Annual APA Meeting	2019
Hinda Kopelman Memorial Lecturer at Canadian Digestive Disease Week, Montreal, CA	2020

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### PUBLICATIONS

#### ORIGINAL PEER-REVIEWED PUBLICATIONS

1. Paramesh AS, **Husain SZ**, Shneider B, Guller J, Tokat I, Gondolesi GE, Moyer S, Emre S. Improvement of hepatopulmonary syndrome after transjugular intrahepatic portasystemic shunting: case report and review of literature. *Pediatric Transplant* 2003;7(2):157-62. PMID: 12654059.  
\*Participated extensively in the writeup and analysis of the case. Reviewed the final manuscript and edits.
2. **Husain SZ**, Prasad P, Grant WM, Kolodecik TR, Nathanson MH, Gorelick FS. The ryanodine receptor mediates early zymogen activation in pancreatitis. *Proc Natl Acad Sci U S A*. 2005 Oct 4;102(40):14386-91. PMID: PMC1242288.  
**[This was the first paper to implicate a role for the intracellular Calcium channel the ryanodine receptor in acinar cell pathology and pancreatitis.]**
3. Chaudhuri A, **Husain SZ**, Kolodecik TR, Grant WM, Gorelick FS. Cyclic AMP-dependent protein kinase and Epac mediate cyclic AMP responses in pancreatic acini. *Am J Physiol Gastrointest Liver Physiol* 2007;292(5):G1403-10. PMID: PMC2975017.  
\*Participated extensively in the experiments and data analysis of the case. Reviewed the final manuscript and edits.
4. **Husain SZ**, Grant WM, Gorelick FS, Nathanson MH, Shah AU. Caerulein-induced intracellular pancreatic zymogen activation is dependent on calcineurin. *Am J Physiol Gastrointest Liver Physiol* 2007;292(6):G1594-9. PMID: PMC1242288.  
**[This was the first paper to demonstrate that the calcium-activated phosphatase calcineurin is a key target in acinar cell pancreatitis responses.]**
5. Gathungu GN, Pashankar DS, Sarita-Reyes CD, Zambrano E, Reyes-Mugica M, Brueckner M, Mistry PK, and **Husain SZ**. Microvillus inclusion disease associated with coarctation of the aorta and bicuspid aortic valve. *Journal of Clinical Gastroenterology* 2008;42(4):400-3. PMID: 18277898
6. Bultron G, Seashore MR, Pashankar DS, and **Husain SZ**. Recurrent acute pancreatitis associated with propionic acidemia. *Journal of Pediatric Gastroenterology and Nutrition* 2008;47(3):370-1. PMID: 18728537.
7. Shah AU, Grant WM, Latif SU, Mannan ZM, Park A, **Husain SZ**. Cyclic-AMP Accelerates Calcium Waves in Pancreatic Acinar Cells. *Am J Physiology* 2008;294(6):G1328-34. PMID: 18388188.  
**[The importance of this paper was that it showed how cyclic-AMP signaling could affect calcium signals in the acinar cell and led us to link alcohol, a cause of pancreatitis, to aberrant calcium signaling.]**
8. Phatak UP, Park AJ, Latif SU, Bultron G, Pashankar DS, **Husain SZ**. Recurrent acute pancreatitis in a child with primary hyperparathyroidism. *J Pediatr Endocrinol Metab* 2008;21(12):1191-4. PMID: 19189694
9. Park AJ, Latif SU, Shah AU, Tian J, Hsiao A, Pashankar D, Bhandari V, Nagar A, **Husain SZ**. Changing Referral Trends of Acute Pancreatitis in Children: A 12-Year Single-Center Analysis. *J Pediatr Gastroenterol Nutr*. 2009 Sep;49(3):316-22. PMID: 19503003
10. Bultron G, Latif SU, Park AJ, Phatak U, Pashankar DS, **Husain SZ**. Acute Pancreatitis in a Child with Celiac Disease. *J Pediatr Gastroenterol Nutr*. 2009 Jul;49(1):137-8. PMID: 19711503.
11. Fairfax KC, Vermeire JJ, Harrison LM, Bungiro RD, Grant WM, **Husain SZ**, Cappello M. Characterization of a fatty acid and retinol binding protein orthologue from the hookworm *Ancylostoma ceylanicum*. *International Journal for Parasitology* 2009. PMID: PMC2760681.

\*Participated in data analysis. Reviewed the final manuscript and edits.

12. Shah AU, Sarwar A, Orabi AI, Grant WM, Park AJ, Shah AU, Liu J, Mistry PK, Jain D, **Husain SZ**. Protease Activation during in vivo Pancreatitis is Dependent upon Calcineurin Activation. *Am J Physiology* 2009 Nov;297(5):G967-73. PMID: PMC2777459.  
[This was the first paper to demonstrate that calcineurin modulates in vivo acute pancreatitis.]
13. Phatak UP, Seo-Mayer P, Selbst M, **Husain SZ**, Pashankar DS. Colitis associated with Mycophenolate Mofetil treatment in Pediatric Renal Transplant patients. *Journal of Clinical Gastroenterology* 2009. PMID: 19609219.  
\*Participated extensively in the writeup and analysis of the case. Reviewed the final manuscript and edits.
14. Park AJ, Latif SU, Ahmad MU, Bultron G, Orabi AI, Bhandari V, **Husain SZ**. A Comparison of Presentation and Management Trends in Acute Pancreatitis Between Infants/Toddlers and Older Children. *Journal of Pediatric Gastroenterology & Nutrition* 2010 Aug;51(2):167-70. PMID: PMC3038663.
15. Orabi AI, Shah AU, Ahmad MU, Choo-Wing R, Parness J, Jain D, Bhandari V, **Husain SZ**. Dantrolene Mitigates Caerulein-Induced Pancreatitis in vivo in Mice. *Am J Physiology* 2010; 299(1):G196-204. PMID: PMC2904115.
16. Reed AM, **Husain SZ**, Thrower E, Alexandre M, Shah A, Gorelick FS, Nathanson MH. Low extracellular pH induces damage in the pancreatic acinar cell by enhancing calcium signaling. *J Biol Chem*. 2010 Nov 17. PMID: PMC3023488.
17. Cheng S, Pashankar D, Moss L, **Husain SZ**. Jejunal adaptation in a pre-pubertal boy after total ileal resection and jejunostomy placement: a 4 year follow-up. *Journal of Clinical Gastroenterology* 2011 2011 May;45:846-849. PMID: 21552141.
18. Orabi AI, Nathanson MH, **Husain SZ**. Measuring calcium dynamics in pancreatic acini using confocal microscopy. [Methods Page]. *The Pancreapedia: Exocrine Pancreas Knowledge Base*. Ann Arbor, MI: MPublishing at the University of Michigan Library, 2011.
19. Orabi AI, Shah AU, Muili K, Sarwar S, Luo Y, Mahmood M, Ahmad A, **Husain SZ**. Ethanol accelerates the speed of pancreatic acinar cell calcium waves and predisposes to pathologic protease activation. *J Biol Chem*. 2011 Apr 22;286(16):14090-7. PMID: PMC3077610.  
[This was the first paper to link ethanol to opening of intracellular calcium channels, subsequent changes in calcium signaling, and acinar cell pancreatitis responses.]
20. Hoque R, Sohail M, Malik A, Sarwar S, Luo Y, Shah A, Barrat F, Flavell R, Gorelick F, **Husain S**, Mehal W. TLR9 and the NLRP3 Inflammasome Link Acinar Cell Death With Inflammation in Acute Pancreatitis. *Gastroenterology* 2011 Jul;141(1):358-69. PMID: PMC3129497.  
\*Participated extensively in the data analysis and several key experiments. Reviewed the final manuscript and edits.
21. Bai HX, Ma M, Orabi AI, Park A, Latif SU, Bhandari V, **Husain SZ**. Novel Characterization of Drug-Associated Pancreatitis in Children. *Journal of Pediatric Gastroenterology & Nutrition* 2011 Jun;53:423-428. PMID: PMC3626448.

22. Phatak UP, Johnson S, **Husain SZ**, Pashankar DS. Two-day bowel preparation with polyethylene glycol 3350 and bisacodyl: a new, safe, and effective regimen for colonoscopy in children. *Journal of Pediatric Gastroenterology & Nutrition* 2011 Jul;53(1):71-4. PMID: 21694539.  
\*Participated in the data analysis. Reviewed the final manuscript and edits.
23. Ma MH, Bai X, Park AJ, Latif SU, Mistry PK, Pashankar D, Northrup VS, Bhandari V, **Husain SZ**. Risk Factors Associated with Biliary Pancreatitis in Children. *Journal of Pediatric Gastroenterology & Nutrition* 2012 May;54(5):651-6. PMID: PMC3626418.
24. Morinville VD\*, **Husain SZ**\* [**\*Shared first author**], Bai H, Barth B, Alhosh R, Durie PR, Freedman SD, Himes R, Lowe ME, Pohl J, Werlin S, Wilschanski M, Uc A; on behalf of the INSPPIRE Group. Definitions of Pediatric Pancreatitis And Survey Of Current Clinical Practices: Report From Inस्पpire (International Study Group Of Pediatric Pancreatitis: In Search For A Cure). *Journal of Pediatric Gastroenterology & Nutrition* 2012 Sep;55(3):261-5. PMID: PMC3626452.  
**[This was the first publication of the first-ever formed international Pediatric pancreatitis consortium, called INSPPIRE.]**
25. Muili KA, Ahmad MU, Orabi AI, Mahmood SM, Shah AU, Molkenntin JD, **Husain SZ**. Pharmacologic and genetic inhibition of calcineurin protects against carbachol-induced pathologic zymogen activation and acinar cell injury. *Am J Physiol Gastrointest Liver Physiol*. 2012 Apr 15;302(8):G898-905. PMID: PMC3355562.
26. **Husain SZ**, Orabi AI, Muili KA, Luo Y, Sarwar S, Mahmood SM, Wang D, Choo-Wing R, Singh VP, Parness J, Ananthanarayanan M, Bhandari V, Perides G. Ryanodine receptors contribute to bile acid-induced pathological calcium signaling and pancreatitis in mice. *Am J Physiol Gastrointest Liver Physiol*. 2012 Jun 15;302(12):G1423-33. PMID: PMC3774209.  
**[The importance of this paper is that it implicates ryanodine receptor-calcium in the pathogenesis of the most common cause of pancreatitis, gallstone-induced, or biliary pancreatitis.]**
27. Bai HX, Giefer M, Patel M, Orabi AI, **Husain SZ**. The association of primary hyperparathyroidism with pancreatitis. *J Clin Gastroenterol*. 2012 Sep;46(8):656-61. PMID: 22874807.
28. Orabi AI, Yuhuan L, Ahmad MU, Shah AU, Mannan ZM, Wang D, Sarwar S, Muili KA, Shugrue C, Kolodecik TR, Singh VP, Lowe ME, Thrower EC, Chen J, **Husain SZ**. IP3 receptor type 2 deficiency is associated with a secretory defect in the pancreatic acinar cell and an accumulation of zymogen granules. *PLoS One*. 2012;7(11):e48465. PMID: PMC3504040.
29. Muili KA, Wang D, Orabi AI, Sarwar S, Luo Y, Javed TA, Eisses JF, Mahmood SM, Jin S, Singh VP, Ananthanarayanan M, Perides G, Williams JA, Molkenntin JD, **Husain SZ**. Bile acids induce pancreatic acinar cell injury and pancreatitis by activating calcineurin. *J Biol Chem*. 2013 Jan 4;288(1):570-80. PMID: PMC3537054.  
**[The importance of this paper is that it suggests that calcineurin modulates biliary pancreatitis locally at the level of the acinar cell, a finding which points to the importance of calcineurin inhibitors are multi-modal therapy for pancreatitis.]**
30. Raizner A, Phatak UP, Baker K, Patel MG, **Husain SZ**, Pashankar DS. Acute Necrotizing Pancreatitis in Children. *J Pediatr*. 2013 Apr;162(4):788-92. PMID: 23102790.  
\*Participated in the analysis of the case. Reviewed the final manuscript and edits.

31. Muili KA, Jin S, Orabi AI, Eisses JF, Javed TA, Le T, Bottino R, Jayaraman T, **Husain SZ**. Pancreatic acinar cell NF- $\kappa$ B activation due to bile acid exposure is dependent on calcineurin. *J Biol Chem*. 2013 Jul 19;288(29):21065-73. PMID: 23744075. PMCID: PMC3774373.  
**[The importance of this paper is that it links acinar cell calcineurin to critical early inflammatory pathways due to NF- $\kappa$ B activation.]**
32. Mishra V, Cline R, Noel P, Karlsson J, Baty CJ, Orlichenko L, Patel K, Trivedi RN, **Husain SZ**, Acharya C, Durgampudi C, Stolz DB, Navina S, Singh VP. Src Dependent Pancreatic Acinar Injury Can Be Initiated Independent of an Increase in Cytosolic Calcium. *PLoS One*. 2013 Jun 18;8(6):e66471. 2013. PMCID: PMC3688910.  
\*Participated in the data analysis. Reviewed the final manuscript and edits.
33. Orabi AI, Muili KA, Javed TA, Jin S, Jayaraman T, Lund FE, **Husain SZ**. Cluster of differentiation 38 (CD38) mediates bile-acid induced acinar cell injury and pancreatitis through cyclic ADP ribose and intracellular calcium release. *J Biol Chem*. 2013 Sep 20;288(38):27128-37. PMCID: PMC3779711.  
**[The importance of this work is that it implicates the synthesis of an upstream putative ligand of the ryanodine receptor, namely cADP ribose, to acinar cell calciums and cell injury due to bile acid exposure.]**
34. Paredes, JL, Orabi AI, Ahmad T, Benbourenane I, Tobita K, Tadros S, Bae, KT, **Husain SZ**. A Non-Invasive Method of Quantifying Pancreatic Volume in Mice using Micro-MRI. *PLoS One*. 2014 Mar 18;9(3):e92263. PMCID: PMC3958493.  
**[This is the first paper to quantify pancreatic volumes in mice using micro-MRI, a method which is a major advance for examining pancreatic growth and regeneration in experimental models of pancreatic disorders.]**
35. Reed A, Kolodecik TR, **Husain SZ**, Gorelick FS. Low pH enhances connexin32 degradation in the pancreatic acinar cell. *Am J Physiol Gastrointest Liver Physiol*. 2014 Jul 1;307(1):G24-32. PMCID: PMC4080162.  
\*Participated extensively in the data analysis and several key experiments. Reviewed the final manuscript and edits.
36. Morinville VD, Lowe ME, Ahuja M, Barth B, Bellin MD, Davis H, Durie PR, Finley B, Fishman DS, Freedman SD, Garipey CE, Giefer MJ, Gonska T, Heyman MB, Himes R, **Husain S**, Kumar S, Ooi CY, Pohl JF, Schwarzenberg SJ, Troendle D, Werlin SL, Wilschanski M, Yen E, Uc A. Design and Implementation of Inspire (International Study Group of Pediatric Pancreatitis: in Search for a Cure). *J Pediatr Gastroenterol Nutr*. 2014 Sep;59(3):360-4. PMCID: PMC4141003.  
\*Participated in the data analysis. Reviewed the final manuscript and edits.
37. Lewarchik CM, Orabi AI, Jin S, Wang D, Muili KA, Shah AU, Eisses JF, Malik A, Jayaraman T, **Husain SZ**. The ryanodine receptor is expressed in human pancreatic acinar cells and contributes to acinar cell injury. *Am J Physiol Gastrointest Liver Physiol*. 2014 Sep 1;307(5):G574-81. PMCID: PMC4154117.  
**[This is the first demonstration that a large calcium channel the ryanodine receptor, which has been characterized in murine models, is expressed in the human pancreas and that it exerts an important role in calcium signaling during pancreatic acinar cell injury.]**
38. Eisses JF, Davis A, Tosun AB, Dionise ZR, Cheng C, Ozolek JA, Rohde GK, **Husain SZ**. A Computer-Based Automated Algorithm for Assessing Acinar Cell Loss after Experimental Pancreatitis. *PLoS One*. 2014 Oct 24;9(10):e110220. PMID: 25343460.

39. Le T, Eisses JF, Lemon K, Ozolek JA, Pociask DA, Orabi AI, **Husain SZ**. Intra-ductal infusion of taurocholate followed by distal common bile duct ligation leads to a severe, necrotic model of pancreatitis in mice. *Pancreas*. 2015 Apr;44(3):493-9. PMID: 25469547. PMCID: PMC4357535.
40. Schwarzenberg SJ\*, Bellin M\*, **Husain SZ\*** [\*Shared first authorship], Ahuja M, Barth B, Davis H, Durie PR, Fishman DS, Freedman SD, Garipey CE, Giefer MJ, Gonska T, Heyman MV, Himes R, Kumar S, Morinville VD, Lowe ME, Nuehring NE, Ooi CY, Pohl JF, Troendle D, Werlin SL, Wilschanski M, Yen E, Uc A. Pediatric Chronic Pancreatitis is Associated with Genetic Risk Factors and Substantial Disease Burden: A Cross-Sectional Study. *J Pediatr*. 2015. Apr;166(4):890-896.e1. PMID: 25556020. PMCID: PMC4380827.
41. Orabi AI, Sah S, Javed TA, Lemon KL, Good ML, Guo P, Xiao X, Prasad K, Gittes GK, Jin S, **Husain SZ**. Dynamic imaging of pancreatic NF- $\kappa$ B activation in live mice using AAV infusion and bioluminescence. *J Biol Chem*. 2015. May 1;290(18):11309-20. PMID: 25802340. PMCID: PMC4416837.
42. Taylor CJ, Chen K, Horvath K, Hughes D, Lowe ME, Mehta D, Orabi AI, Screws J, Thomson M, Van Biervliet S, Verkade HJ, **Husain SZ\*** [\*Sole corresponding author and shared senior author], Wilschanski M. Espghan and Naspghan Report on the Assessment of Exocrine Pancreatic Function and Pancreatitis in Children. *J Pediatr Gastroenterol Nutr*. 2015. PMID: 25915425. PMC Journal–In Process.
43. Jin S, Orabi AI, Le T, Javed TA, Sah S, Eisses JF, Bottino R, Molkentin JD, **Husain SZ**. Exposure to Radiocontrast Agents Induces Pancreatic Inflammation by Activation of Nuclear Factor- $\kappa$ B, Calcium Signaling, and Calcineurin. *Gastroenterology*. 2015 May 13. pii: S0016-5085(15)00676-9. PMID: 25980752. PMCID: PMC4550538.
44. Eisses JF, Criscimanna A, Dionise ZR, Orabi AI, Javed TA, Sarwar S, Jin S, Zhou L, Singh S, Poddar M, Davis AW, Tosun AB, Ozolek JA, Lowe ME, Monga SP, Rohde GK, Esni F, **Husain SZ**. Valproic Acid Limits Pancreatic Recovery following Pancreatitis by Inhibiting Histone Deacetylases and Preventing Acinar Redifferentiation Programs. *Am J Pathol*. 2015. Dec;185(12):3304-15. PMID: 26476347. PMCID: PMC4729237.
45. **Husain SZ**, Morinville V, Pohl J, Abu-El-Haija M, Bellin MD, Freedman S, Hegyi P, Heyman MB, Himes R, Ooi CY, Schwarzenberg SJ, Usatin D, Uc A. Toxic-metabolic Risk Factors in Pediatric Pancreatitis: Recommendations for Diagnosis, Management, and Future Research. *J Pediatr Gastroenterol Nutr*. 2016. Apr;62(4):609-17. PMID: 26594832. PMC Journal–In Process.
46. Ting J, Wilson L, Schwarzenberg SJ, Himes R, Barth B, Bellin MD, Durie PR, Fishman DS, Freedman SD, Garipey CE, Giefer MJ, Gonska T, **Husain SZ**, Kumar S, Morinville VD, Lowe ME, Ooi CY, Pohl JF, Troendle D, Usatin D, Werlin SL, Wilschanski M, Heyman MB, Uc A. Direct Costs of Acute Recurrent and Chronic Pancreatitis in Children in the INSPPIRE Registry. *J Pediatr Gastroenterol Nutr*. 2016. Mar;62(3):443-9. PMID: 26704866.  
\*Participated in the data analysis. Reviewed the final manuscript and edits.
47. Xiao X, Fischbach S, Fusco J, Zimmerman R, Song Z, Nebres P, Ricks DM, Prasad K, Shiota C, **Husain SZ**, Gittes GK. PNA lectin for purifying mouse acinar cells from the inflamed pancreas. *Sci Rep*. 2016. Feb 17;6:21127. PMID: 26884345.  
\*Participated in the data analysis. Reviewed the final manuscript and edits.



48. Szabo FK, Hornung L, Oparaji JA, Alhosh R, **Husain SZ**, Liu QY, Palermo J, Lin TK, Nathan JD, Podberesky DJ, Lowe M, Fei L, Abu-El-Haija M. A prognostic tool to predict severe acute pancreatitis in pediatrics. *Pancreatology*. 2016. May-Jun;16(3):358-64. doi: 10.1016/j.pan.2016.03.002. Epub 2016 Mar 11. PMID: 27051062.  
\*Participated in the data analysis. Reviewed the final manuscript and edits.
49. Kumar S, Ooi CY, Werlin S, Abu-El-Haija M, Barth B, Bellin MD, Durie PR, Fishman DS, Freedman SD, Gariepy C, Giefer MJ, Gonska T, Heyman MB, Himes R, **Husain SZ**, Lin TK, Lowe ME, Morinville V, Palermo JJ, Pohl JF, Schwarzenberg SJ, Troendle D, Wilschanski M, Zimmerman MB, Uc A. Risk Factors Associated With Pediatric Acute Recurrent and Chronic Pancreatitis: Lessons From INSPPIRE. *JAMA Pediatr*. 2016 Jun 1;170(6):562-9. PMID: 27064572.  
\*Participated in the data analysis. Reviewed the final manuscript and edits.
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\*Participated in the data analysis. Reviewed the final manuscript and edits.
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**[The purpose of this paper is to share with the research community a comprehensive method by video and text of acinar cell preparations for measuring the key responses of cytosolic Calcium signals and cell injury and to reliably infect with adenoviral vectors.]**
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#### NON-PEER REVIEWED PUBLICATIONS – BOOK CHAPTERS

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## NON-PEER REVIEWED PUBLICATIONS – LETTERS TO THE EDITOR

1. Srinath A, Rao M, **Husain SZ**. NASPGHAN's New Research Agenda to Target the Public. *Journal of Pediatric Gastroenterology & Nutrition*. 2014 Feb;58(2):144-5. PMID: 24458217  
[This editorial was an announcement about the North American Pediatric GI Society's two year pro-active agenda at raising awareness for the need to conduct research in Pediatric Gastroenterology.]
2. Pohl J, Morinville V, **Husain SZ**, Uc A. Toxic-Metabolic Risk Factors Are Uncommon in Pediatric Chronic Pancreatitis. *J Pediatr Gastroenterol Nutr*. 2016. Jun;62(6):e66-7. PMID: 27213250.
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## SPECIAL MATERIALS

1. Srinath A, Rao M, **Husain SZ**. NASPGHAN Research Agenda. 2014.  
<https://www.naspgghan.org/content/6/en/research>.  
[This colorful graphic booklet was the product of a two year pro-active agenda at raising awareness in the lay public for the need to conduct research in Pediatric Gastroenterology. It was written when I served as Chair of the Research Chair of NASPGHAN.]

## PUBLISHED ABSTRACTS

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10. Grant WM, Shah AU, Thrower EC, **Husain SZ**. Caerulein-induced Intracellular Pancreatic Zymogen Activation is Dependent upon Calcineurin. American Pancreatic Association Annual Meeting. 2006.
11. Grant WM, Shah AU, Latif SU, **Husain SZ**. Cyclic-AMP is an Important Signaling Molecule in the Aberrant Calcium Signal Associated with Pathologic Pancreatic Zymogen Activation and Pancreatitis. North American Society for Pediatric Gastroenterology, Hepatology and Nutrition Annual Meeting. 2007. \*Poster of distinction
12. Grant WM, Shah AU, Latif SU, **Husain SZ**. Cyclic-AMP Increases the Speed of Carbachol-Induced Apical to Basal Calcium Waves in Pancreatic Acinar Cells. American Pancreatic Association Annual Meeting. 2007. \*Selected for oral presentation
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14. Shah AU, Grant WM, Latif SU, Park AJ, **Husain SZ**. Cyclic-AMP Accelerates Carbachol- and Caerulein-Stimulated Calcium Waves in Pancreatic Acinar Cells. Digestive Diseases Week. 2008.
15. Park A, Latif SU, Shah AU, Hsiao A, Pashankar D, Bhandari V, Nagar A, **Husain SZ**. Presentation and Hospital Course of Children with Acute Pancreatitis. Society for Pediatric Research. 2008.
16. **Husain SZ**, Park AJ, Grant WM, Mannan ZM, Shah AU. Pathologic Protease Activation during In Vivo Pancreatitis is Dependent upon Calcineurin Activation. North American Society for Pediatric Gastroenterology, Hepatology and Nutrition Annual Meeting. 2008.
17. **Husain SZ**, Grant WM, Latif SU, Mannan ZM, Park AJ, Shah AU. Cyclic-AMP Accelerates Calcium Waves in Pancreatic Acinar Cells via the Ryanodine Receptor. North American Society for Pediatric Gastroenterology, Hepatology and Nutrition Annual Meeting. 2008.
18. Gautam S, Shah AU, Orabi AI, Shah AU, Luthra S, Gautam G, **Husain SZ**. Three-dimensional Culture in Collagen Matrix Preserves Polarity and Secretory Function of Pancreatic Acini. American Pancreatic Association Annual Meeting. 2008. \*Selected for oral presentation
19. Shah AU, Orabi AI, Shah AU, Mannan ZM, **Husain SZ**. Ethanol Sensitizes Pancreatic Acinar Cells to Carbachol-Induced Protease Activation via The Ryanodine Receptor. American Pancreatic Association Annual Meeting. 2008.
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48. Wen L, Shalbueva N, Mareninova OA, Orabi AI, Javed TA, Gukovkaya AS, **Husain SZ**. Radiocontrast induces pancreatic mitochondrial dysfunction in pancreatic acinar cells and mitophagy in a mouse model of post-ERCP pancreatitis through the dephosphorylation of Drp1 by the calcium-activated phosphatase calcineurin. 47th Annual Meeting of American Pancreatic Association. Boston, USA.

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53. Wen L, Javed TA, Orabi AI, **Husain SZ**. A role for pancreatic NFAT in pancreatitis. *Annual Meeting of American Pancreatic Association*. 2017. San Diego, USA.
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55. Wen L, Javed TA, Orabi AI, **Husain SZ**. Novel calcineurin inhibitor strategies to prevent radiocontrast-induced organ injury, using the pancreas as a prototypic organ. *Annual Meeting of American Pancreatic Association*. 2017. San Diego, USA.
56. Mukherjee A, Ahmed N, Rose F, Wen L, Ahmad A, Javed TA, **Husain SZ**. Asparagine synthetase is highly expressed in the pancreatic acinar cells and upregulates with asparaginase exposure to mitigate cellular injury. *PancreasFest*. 2018. Pittsburgh, USA.
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58. Wen L, Deng L, Mukherjee A, **Husain SZ**. Novel mechanism of radiocontrast-induced NF-kB activation via calcineurin-mediated dephosphorylation of Bcl10, but not NFAT. *NASPGHAN Annual Meeting*, 2018. Hollywood, USA.
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62. Wen L, Javed TA, Dobbs AK, Brown R, Byersdorfer CA, **Husain SZ**. A unique role for calcineurin derived from bone marrow versus pancreas in the setting of acute pancreatitis. Annual Meeting of American Pancreatic Association. 2018, Miami, USA.
63. Mukherjee A, Ahmed N, Turay F, Javed TA, Wen L, Ahmad A, **Husain SZ**. In the setting of asparaginase exposure in pancreatic acinar cells, asparagine synthetase maintains acinar cell homeostasis at baseline and upregulates to mitigate cell injury. American Pancreatic Association. 2018. Miami, USA.
64. Li Wen, Tanveer Javed, Andrea Dobbs, Rebecca Brown, Xiangwei Xiao, Craig Byersdorfer, **Sohail Z. Husain**. Pancreatic and hematopoietic calcineurin independently mediate pancreatic local injury and distant organ damage during acute pancreatic. Digestive Diseases Week. 2019. San Diego, USA.
65. Aliye Uc<sup>1</sup>, Emily Perito<sup>2</sup>, John Pohl<sup>3</sup>, Uzma Shah<sup>4</sup>, Maisam Abu-El-Haija<sup>5</sup>, Savitri Appana<sup>22</sup>, Bradley Barth<sup>6</sup>, Melena Bellin<sup>7</sup>, Kate Ellery<sup>12</sup>, Douglas S. Fishman<sup>8</sup>, Cheryl E. Garipey<sup>9</sup>, Matthew J. Giefer<sup>10</sup>, Tanja Gonska<sup>11</sup>, Mel Heyman<sup>2</sup>, Ryan Himes<sup>8</sup>, **Sohail Z. Husain**<sup>12</sup>, Asim Maqbool<sup>13</sup>, Maria R. Mascarenhas<sup>13</sup>, Brian Arthur McFerron<sup>14</sup>, Veronique D. Morinville<sup>15</sup>, Tom K. Lin<sup>5</sup>, Jaimie D. Nathan<sup>5</sup>, Chee Yee Ooi<sup>16</sup>, Sarah Jane Schwarzenberg<sup>7</sup>, Zachary M. Sellers<sup>17</sup>, Jose Serrano<sup>18</sup>, David M. Troendle<sup>6</sup>, Steven Werlin<sup>19</sup>, Michael Wilschanski<sup>20</sup>, Yuhua Zheng<sup>21</sup>, Ying Yuan<sup>22</sup>, Mark Lowe<sup>23</sup>. International study group of Pediatric Pancreatitis: In search for a cure (inspire 2) cohort study: Design and rationale from the consortium for the study of chronic pancreatitis, diabetes, and pancreatic cancer (CPDPC). Digestive Diseases Week. 2019. San Diego, USA.
66. Yuhua Zheng, **Sohail Z. Husain**, Bridget Zimmerman, Douglas S. Fishman, Brian Arthur McFerron, Uzma Shah, Michael Wilschanski, Steven Werlin, David M. Troendle, Sarah Jane Schwarzenberg, Sue Rhee, John Pohl, Emily Perito, Chee Y. Ooi, Jaimie D. Nathan, Veronique D. Morinville, Maria R. Mascarenhas, Asim Maqbool, Quin Liu, Tom K. Lin, Ryan Himes, Melvin B. Heyman, Tanja Gonska, Matthew J. Giefer, Cheryl E. Garipey, Steven D. Freedman, Melena Bellin, Bradley Barth, Maisam Abu-El-Haija, Mark Lowe, Aliye Uc . Association of autoimmune diseases in children with acute recurrent or chronic pancreatitis. Digestive Diseases Week. 2019. San Diego, USA.
67. Mukherjee Amitava, Nayyar Ahmed, Tanveer Javed, Li Wen, **Sohail Z Husain**. The drug complication of pancreatic injury with asparaginase is related to pancreatic levels of the endogenous counteracting enzyme asparagine synthetase and intra-pancreatic nutrient stress. NASPGHAN Annual Meeting. 2019. Chicago, IL, USA. *\*Oral presentation, received the 2019 Amin Tjota Prize for Excellence in Pancreatic Research.*
68. Li Wen, Yue (Luna) Wei, Chaitanya Srinivasan, Paul Fogle, Sameer Agnihotri, Ying Ding, **Sohail Husain**. Exploiting global metabolomic and lipidomic plasma profiling to identify biomarkers that will predict the risk of developing the complication of pancreatitis with the anti-leukemic drug asparaginase. NASPGHAN Annual Meeting. 2019. Chicago, IL, USA. *\*Oral presentation.*
69. Mukherjee Amitava\*, Nayyar Ahmed\*, Tanveer Javed, Li Wen, **Sohail Z Husain**. Asparaginase-Associated Pancreatic Injury is Related to Pancreatic Levels of the Endogenous Counteracting Enzyme

Asparagine Synthetase and Intra-Pancreatic Nutrient Stress. American Pancreatic Association (APA) Annual Meeting. 2019. Maui, Hawaii, USA. *\*Oral presentation.*

70. L. Wen, Y. Wei, C. Srinivasan, P. Fogle, S. Agnihotri, Y. Ding, **S.Z. Husain**. Global Metabolomic and Lipidomic Plasma Profiling Reveals Unique Biomarkers that Predict the Risk of Developing Pancreatitis with Asparaginase. American Pancreatic Association (APA) Annual Meeting. 2019. Maui, Hawaii, USA. *\*Oral presentation.*

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## PROFESSIONAL ACTIVITIES

### TEACHING

<b>Instructor</b> for the Translational Medicine Course (Course Director: Dr. Susan Baserga)	Yale University School of Medicine, New Haven, CT	Precepted 20-30 Yale medical student small group classes in translational research case discussions	2001
<b>Instructor</b> for the Digestive Diseases Module (Course Directors: Drs. Anil Nagar [2003-3008] and Clara Abraham [2009-2011])	Yale University School of Medicine, New Haven, CT	Taught 15-25 second year Yale medical students the Pediatric GI course module	2003-2011
<b>Lecturer</b> to Physician Assistants for the Annual Pediatric Gastrointestinal Disease (PA) Students (Course Director: Dr. Allen Hsiao)	Yale University School of Medicine, New Haven, CT	Gave an annual case-based lecture in Pediatric GI to 50 Yale PA students; <b>consistently rated as a top lecturer</b>	2004-2011
<b>Assistant Fellowship Director</b>	Division of Pediatric Gastroenterology, Yale University School of Medicine, New Haven, CT	Served as an external research advisor to each of the Pediatric GI fellows at Yale (totaling eight fellows over the six year span) and functioned as an Scholarship Oversight Committee member for them as well	2005-2011
<b>Instructor</b> for the Bedside to Bench (Course Director: Dr. Cliff Bogue)	Yale University School of Medicine, New Haven, CT	Precepted second year Yale medical students in a course that makes them examine clinical case questions using laboratory tools	2006-2011
<b>Preceptor</b> for the Pediatric Residency Journal Club	Department of Pediatrics, Yale University School of Medicine, New Haven, CT	Precepted Yale Pediatric residents in the critical analysis and presentation of high impact papers in general pediatrics or the GI subspecialty	2009-2011
<b>Faculty Preceptor</b> for the Pediatric Gastroenterology Module	University of Pittsburgh School of Medicine, Pittsburgh, PA	Precept Pitt medical students (20 per session) in interactive cases in Pediatric GI.	2011-2019
<b>Instructor</b> for the Annual National Pediatric Gastroenterology Third Year	NASPGHAN-Organized Annual	Delivered lectures on Grant writing and Career Development to 60 fellows	2011-2014

Fellows Conference Faculty (Course Director: Dr. David Rudnick)	Fellows Meeting, Scottsdale, AZ		
<b>Course Director</b> for the Annual National Pediatric Gastroenterology (NASPGHAN) Third Year Fellows Conference	NASPGHAN-organized Annual Fellows Meeting, Scottsdale, AZ	Organized the proceedings of the overall 3-day course, including invited faculty, lecture topics, abstract review, judging, breakout sessions to 60 fellows	2012-2014
<b>Director</b> for the Monthly Pitt/Children's Joint Pancreatic Research Seminar Series	University of Pittsburgh School of Medicine, Pittsburgh, PA	Organize monthly presentations from labs within the University and the Children's Research Institute that are relevant to pancreatic disorders. Attendance had ranged from 20-40 members.	2012-2019
<b>Director</b> for the Pediatric Exocrine Pancreatic Research Invited Speakers Seminar Series	University of Pittsburgh School of Medicine, Pittsburgh, PA	Organized an educational CME-based, grant-funded, and live webinar-aired quarterly seminar series from internationally recognized speakers that are invited to the University of Pittsburgh to speak on a variety of topics related to pediatric pancreatic disorders. Attendance has averaged 45 members.	2016-2020
<b>Associate Fellowship Program Director</b> in Pediatric Gastroenterology	University of Pittsburgh School of Medicine, Pittsburgh, PA	Oversight on the research experience of the fellows in their second and third years	2011-2017
<b>Course Director</b> for a NASPGHAN Single Topic Symposium on "Frontiers in Pediatric Pancreatology"	NASPGHAN Annual Meeting, Las Vegas, NV	As one of the three Course Directors, my role was to help organize the program, oversee the R13 submission, help recruit speakers, and oversee the awards review process	2017
<b>Course Director</b> for Pancreasfest	Pittsburgh, PA	Plan out the topics and format for a national annual meeting of pancreatologists in Pittsburgh.	2017-2018

**MENTOR OR ADVISOR TO THE FOLLOWING TRAINEES**

Primary Research Mentor to the following medical students at Yale

Alexander J. Park, MD (fifth year thesis advisor)	2007-2008
Samir Gautam, MD, PhD	Summer 2008
Michael Ma, MD (fifth year thesis advisor)	2010-2011
Harrison X. Bai, MD (fifth year thesis advisor)	2010-2011

Primary Research Mentor to the following pre-doctoral trainees at Yale

Ahsan Shah, MD	2004-2009
Zahir Mannan, BS	2007-2008
Abraham Orabi, PhD (continued with me at Pitt, even after I moved from Yale)	2008-2016

Maham Mahmood, BS (received a full year NIH Supplement from ARRA)	2009
Sheharyar Sarwar, DO (continued with me at Pitt, even after I moved from Yale)	2010-2012
Amna Shah, BS	2009
 <i><u>Primary Research Mentor to the following post-doctoral trainees at Yale</u></i>	
Sahibzada Usman Latif, MD	2008
Kamaldeen Muili, PhD (continued with me at Pitt, even after I moved from Yale)	2010-2013
Dong Wong, PhD (continued with me at Pitt, even after I moved from Yale)	2011-2012
Yuhuan Luo, MD	2010-2011
 <i><u>Scholarship Oversight Committee Advisor to the following post-doctoral fellows in Pedi GI at Yale</u></i>	
Grace Gathungu, MD	2006-2008
Gilberto Bultron, MD	2007-2009
Uma Phatak, MD	2008-2010
Philip Stein, MD	2009-2011
Sam Cheng, MD, PhD	2010-2011
 <i><u>Primary Research Mentor to the following medical students at Pitt</u></i>	
Judy-April Oparaji, MD (continued mentorship during her residency)	2013-2017
 <i><u>Primary Research Mentor to the following pre-doctoral trainees at Pitt</u></i>	
Tanveer Javed, BS, MS	2011-2014
Adeel Malik, MD	2013
Swati Sah, BS	2014-2105
 <i><u>Primary Research Mentor to the following post-doctoral trainees at Pitt</u></i>	
Jose Paredes, MD	2013-2014
Christopher Lewarchik, PhD	2013-2014
Tianming Le, MD	2013-2015
Li Wen, MD, PhD	2015-2017
Nayyar Ahmad, PhD	2016-2017
Li-Hui Deng, MD, PhD	2017-2018
 <i><u>Scholarship Oversight Committee Advisor to the following post-doctoral fellows or associates at Pitt</u></i>	
Wendy Sevilla, MD	2011-2013
John F. Eisses, MD, PhD (also served as primary research mentor)	2012-2014
Payal Patel, MD	2014-2016
Fateema Turay, MD (also served as primary research mentor)	2015-2017
Eric N. Anderson, PhD (Pandey Lab)	2017
Kristen Critelli, MD	2017-2018
 <i><u>Scholarship Oversight Committee Advisor to the following junior faculty at Pitt</u></i>	
Arvind Srinath, MD	2012-2016
John F. Eisses, MD, PhD (primary research advisor)	2014-2016
Kristy Boggs, PhD (primary research advisor)	2015=2017
Amitava Mukherjee (primary research advisor)	2016-2017
 <i><u>External Scholarship Oversight Committee Advisor to the following fellows or junior faculty</u></i>	
Matthew Giefer, MD, Pedi GI Fellow at Seattle Children's Hospital, Seattle, WA	2010-2011
Maisam Abu-El-Haija, MD, Junior Faculty at Cincinatti Children's Medical Center, Cincinatti, OH	2015-2017

**TRAINEES WHO RECEIVED AWARDS RESULTING FROM THEIR WORK IN THE HUSAIN LAB**

Ahsan U. Shah, MD	Received an AGA Summer Research Grant (2006); moved on as a medical student at Ross University; co-authored eight papers from our lab.	2004-2009
Abraham I. Orabi, BS	Received an AGA Summer Research Grant (2009), an American Pancreatic Association (APA) Mini-Sabbatical Scholarship (2011), a full APA Annual Meeting Travel Award (2011), and the best Pancreas Abstract Award at NASPGHAN (2015); co-authored 19 papers from our lab, including 7 first authored papers.	2008-2016
Alexander J. Park, MD	Received a NASPGHAN Summer Medical Student Research Grant (2008); Yale Medical Student Thesis Year poster of distinction; co-authored seven papers from our lab.	2007-2008
Sahibzada Usman Latif, MD	Received the Johns Hopkins Recognition Award Honorable Mention for Clinical Research in Pediatric Pancreatitis based on his work in our lab; co-authored 7 papers from our lab.	2007
Samir Gautam, MD, PhD	Received a full APA Annual Meeting Travel Award to present an oral abstract on his work with a 3D acinar cell culture system (2008); moved on as a Yale medical student; co-authored one paper from our lab.	2008
Maliha Luqman, PhD	Received the Best Overall Presentation Award for Mathematics & Competitions Sciences at the Louisiana State University Annual Symposium for Undergraduate Research (2010), based on her work from our lab.	2010
Asim Ahmad, BS	Received an AGA Summer Research Grant (2010); co-authored one paper from our lab.	2010-2011
Michael Ma, MD	Spent his Yale Medical Student Thesis Year in our lab examining biliary pancreatitis; co-authored three papers from our lab.	2010-2011
Harrison X. Bai, MD	Spent his Yale Medical Student Thesis Year examining Pediatric pancreatitis. Received a NASPGHAN Summer Medical Student Research Grant (2011); co-authored eight papers from our lab.	2010-2011
John Eisses, MD, PhD	Awarded a one year National Pancreas Foundation (NPF) grant to study HDACs in pancreatic recovery. Received an APA travel award for the 2013 Annual Meeting; co-authored five papers from our lab, including two first authored papers.	2013-2015
Li Wen, MD, PhD	Received a full APA travel award for 2016 and 2017, Young Investigators Travel Scholarship for the Pediatric GI World Congress for 2016, a Pancreasfest CAPER travel award for 2016, 2017, and 2018 and for the NASPGHAN Frontiers in Pediatric Pancreatology in 2017. In 2018, awarded a full one year post-doctoral fellowship grant on “NFAT in pancreatitis” from the Children’s Hospital of Pittsburgh Foundation. Co-authored two shared first-authored papers from our lab and another middle-authored paper.	2015-2018
Haris Qureshi, BS	Awarded the Best Abstract of 2016 for the Children’s Hospital of Pittsburgh Summer Undergraduate Internship, for work on the role calcineurin in radiocontrast-induced nephropathy.	2016



Kristy Boggs, PhD	Received a two year startup grant from the Children's Hospital of Pittsburgh Foundation to characterize the epigenetic landscape of pancreatic recovery after pancreatitis.	2017-2018
Amitava Mukherjee, PhD	Received a two year startup grant from the Children's Hospital of Pittsburgh Foundation to perform preliminary work on the role of asparaginase synthetase (ASNS) in asparaginase pancreatitis	2018-2019

## RESEARCH

### Current Grant Support

**DoD PRMRP Technology/Therapeutic Development Award Log Number PR181014 Husain 9/24/2019 - 9/23/2023 (Role: PI)**

Department of Defense (DoD), Optimizing a novel intraductal delivery of calcineurin inhibitors as a radiocontrast infusion formulation to prevent post-ERCP pancreatitis

The major goal the current proposal is to perform investigational new drug (IND)-enabling preclinical safety and efficacy studies of two novel calcineurin inhibitor-radiocontrast formulations that have established proof-of-concept data in preventing post-ERCP pancreatitis.

**R01 DK093491 Husain (Role: PI) 7/01/16 – 6/30/21**

Optimizing a novel intraductal delivery of calcineurin inhibitors as a radiocontrast infusion formulation to prevent post-ERCP pancreatitis

**Servier Oncology Husain (Role: PI) 9/01/19 – 8/30/21**

Preventing asparaginase-associated pancreatitis using the novel dimension of metabolomics and proteomics  
The major goal of this project is to decipher the metabolic dyscrasias that predispose some patients to the development of pancreatitis with the cancer drug asparaginase. This will be achieved by performing targeted and non-targeted metabolomic and lipidomic and proteomic studies in patients and matched controls.

**Stanford SPARK Biomedical Translational Research Grant Husain (Role: PI) 01/01/20 – 12/31/20**

The major goal of this project is to provide infrastructural support to commercialize calcineurin inhibitors as a preventative for post-ERCP pancreatitis.

### Pending Grant Support

**R01DK121963 Husain (Role: PI)**

NIH, Mechanisms of drug-induced pancreatitis due to the chemotherapeutic asparaginase

The major goal of this project is to probe the mechanisms underlying the development of the most troublesome disease associated with the crucial anti-leukemia drug asparaginase.

### Prior Grant Support

**U01 DK1038834 Husain (Role: Site PI) 9/28/15 – 8/31/20 (left the Site at Pittsburgh in 3/31/2019)**

NIH/NIDDK, INSPPIRE to Study Pediatric Chronic Pancreatitis

The major goal of this large multicenter grant is to examine the natural history and progression of recurrent acute and chronic pancreatitis in children.

**Abbie Educational Grant Husain (Role: PI) 6/1/18 – 5/30/21 (transferred grant to another PI in Pittsburgh upon moving in 3/31/2019)**

The funds are for a renewal of an unrestricted educational grant to host a Pediatric Pancreatic Disorders Webinar-Based Seminar Series at the Children's Hospital of Pittsburgh of UPMC and the University of Pittsburgh.

**R01 DK103002 Husain (Role: PI) 7/1/14 - 6/30/19**

NIH/NIDDK, HDACs in pancreatic recovery after injury

The major goal of this project is to examine the role of histone deacetylases as major epigenetic regulators of pancreatic recovery after injury.

**T32 DK071492 Husain (Role: PI 8/1/11 - 7/31/17  
as of 4/17)**

NIH/NIDDK, Institutional Research Training in Pediatric Gastroenterology

**R01 DK103002 Husain (Role: PI) 7/1/14 - 6/30/19**

NIH/NIDDK, HDACs in pancreatic recovery after injury

The major goal of this project is to examine the role of histone deacetylases as major epigenetic regulators of pancreatic recovery after injury.

**The McCune Foundation PI: Stephen Badylak (Husain 8/1/16 - 7/31/17  
Role: Co-I)**

Prevention of Esophageal Strictures after Caustic Esophageal Injury with an ECM Hydrogel

The major goal of this exploratory grant is to devise both preclinical and clinical studies that will examine the efficacy of a novel ECM hydrogel in preventing esophageal strictures after caustic ingestions.

**Abbie Educational Grant Husain (Role: PI) 3/1/16 - 3/1/17**

The funds are for an unrestricted educational grant to host a Pediatric Pancreatic Disorders Webinar-Based Seminar Series at the Children's Hospital of Pittsburgh of UPMC and the University of Pittsburgh.

**R01 DK093491 Husain (Role: PI) 6/01/11 – 5/30/16**

NIH/NIDDK, Calcineurin in Pancreatitis

The major goal of this project is to examine the role of the Calcium-activated phosphatase calcineurin in clinically relevant models of pancreatitis.

**R01 DK083327 Husain (Role: PI) 5/30/09 - 5/30/15**

NIH/NIDDK, Ryanodine Receptor in Pancreatitis

The major goal of this project is to examine the role that phosphorylation of the ryanodine receptor calcium channel plays in mediating premature intracellular zymogen activation and pancreatitis.

**R03 DK078707 Husain (Role: PI) 6/1/08 - 5/31/10**

NIH/NIDDK, Calcineurin and Pancreatic Zymogen Activation

The major goal of this project is to examine the role of the calcium-activated phosphatase calcineurin as a mediator of premature intracellular zymogen activation, an early phase of acute pancreatitis.

**K08 DK06811601 Husain (Role: PI) 9/1/04 - 9/1/10**

NIH/NIDDK, Ryanodine Receptor and Pancreatic Zymogen Activation

The major goal of this project is to examine the role of the calcium release channel, the ryanodine receptor, in mediating premature intracellular zymogen activation, an early phase of acute pancreatitis.

**Young Investigator Development Award Husain (Role: PI) 7/1/07 – 6/30/09**

Children's Digestive Health and Nutrition Foundation (CDHNF)

## Ryanodine Receptor and Pancreatic Zymogen Activation

The major goal of this project is to examine the role of the ryanodine receptor ligand CD38, or cADP ribose, in mediating the aberrant calcium signal observed with stimuli that cause pancreatic zymogen activation and pancreatitis.

### **AGA Aztra Zeneca Transition Award      Husain (Role: PI)      7/1/04 – 6/30/06**

American Gastroenterological Association (AGA), Ryanodine Receptor and Pancreatic Zymogen Activation  
Using pharmacologic tools, the major goal of this project is to examine the role of the calcium release channel, the ryanodine receptor, in mediating pancreatitis.

### **K12 HD001401      PI: Margaret Hostetter (Husain Role: Junior Investigator)      7/1/04 - 6/30/06**

NIH/NICHD, Ryanodine Receptor and Pancreatic Zymogen Activation

The major goal of this project is to examine the role of the calcium release channel, the ryanodine receptor, in mediating premature zymogen activation, an early phase of acute pancreatitis.

### **T32 DK07017      PI: Henry Binder (Husain Role: Research Fellow)      7/1/02 - 6/30/04**

NIH/NIDDK, Digestive Diseases Research Training Grant

## **SEMINARS AND INVITED LECTURESHIPS RELATED TO MY RESEARCH**

### National/International

- 2020 Invited keynote speaker for the Hinda Kopelman Memorial Lecture, Canadian Digestive Disease Week 2020, Montréal, Canada. "Making inroads into drug-induced pancreatitis."
- 2019 Invited speaker, Special session on Organellar Disorders in Pancreatitis, American Pancreatic Association (APA) Annual Meeting, Maui, Hawaii. "Unraveling the Black Box of Drug-induced Pancreatitis."
- 2019 Invited speaker, Pancreatic Disorders Plenary Session, Digestive Diseases Week. 2019. San Diego. "Pediatric pancreatic: How does it differ from its adult counterpart?"
- 2019 Invited Faculty Lecture, National Post-Graduate Course, NASPGHAN Annual Meeting, Chicago, IL. "Solving a pediatric dilemma: Drug-induced pancreatitis."
- 2019 Invited lecture, P01 Research Symposium on Organellar Dysfunction in Pancreatitis (host Dr. Anna Gukovskaya), Los Angeles, CA. "Metabolic derangements underlying asparaginase-associated pancreatitis."
- 2019 Visiting Professor, Pediatric Grand Rounds, (host Dr. Jeannie S. Huang), University of San Diego, San Diego, CA. "Inroads into Pediatric Pancreatitis."
- 2018 Invited Lecture, American Pancreatic Association (APA) Annual Meeting, Miami Beach, FL. "Role of Calcium in early Inflammatory and Mitochondrial Events in Pancreatitis."
- 2018 Visiting Professor, Defense Opponent Seminar, (host Dr. Kjeld Schmiegelow), University of Copenhagen, Copenhagen, Denmark. "Asparaginase-associated pancreatitis."
- 2018 Visiting Professor, Pediatric Seminar (host Dr. Dan Bernstein), Stanford University, Palo Alto, CA. "Exploiting epithelial-specific calcineurin signaling to combat acute pancreatitis."
- 2018 Visiting Professor, Pediatric Seminar (host Dr. Marie Egan), Yale University, New Haven, CT. "Translating calcium and calcineurin signaling in pancreatitis to the bedside."
- 2018 Visiting Professor, Pediatric Research Alliance (host Dr. Subra Kugathasan), Emory University, Atlanta, GA. "Molecular Signaling in Pancreatic Inflammation and Translating Findings to the Bedside."
- 2018 Visiting Professor, Pediatrics Seminar (host Dr. Stephen Skapek), University of Texas Southwestern Medical Center, Dallas, TX. "Translating molecular calcium signals in acute pancreatitis to the bedside."

- 2017 Invited lecture, Frontiers in Pediatric Pancreatology, NASPGHAN Single Topic Symposium, Las Vegas, NV. “Why do some drugs cause pancreatitis?”
- 2017 Visiting Professor, Pediatrics Seminar (host Dr. Teresa Quattrin), University at Buffalo, Buffalo, NY. “Turning investigational therapies into clinical reality: Pancreatitis in the spotlight.”
- 2017 Visiting Professor, Mayo Clinic Cancer Seminar Series (host Dr. Baoan Ji), Mayo Clinic, Jacksonville, FL. “Epithelial Cell Calcineurin Signaling in Pancreatitis.”
- 2017 Invited lecture, NASPGHAN Essentials Pediatric GI Review (Course Director: Dr. Chris Liacouras), Scottsdale, AZ. Lectures on “Pancreatitis,” “Pancreatic anatomy and anomalies,” and “Hereditary disorders of the pancreas.”
- 2016 Invited lecture, American Pancreatic Association (APA) Annual Meeting, Boston, MA. “Probing the mechanisms underlying post-ERCP pancreatitis.”
- 2016 Invited lecture, P01 Research Symposium on Advances in Pancreatitis Mechanisms: Focus on Organelle Disordering in Pancreatitis (host Dr. Anna Gukovskaya), Boston, MA. “Calcineurin mediates acinar cell events required for post-ERCP pancreatitis.”
- 2016 Invited lecture, West China Pancreas International Forum (hosts Drs. Qing Xia and Robert Sutton), Chengdu, China. “Mechanistic insights into acute pancreatitis in the pediatric population.”
- 2016 Invited state of the art lecture, World Congress of Pediatric Gastroenterology Hepatology and Nutrition, Montreal, Canada. “Inflammatory responses and healing in pancreatic injury.”
- 2016 Invited lecture, Fourth Annual Pediatric IBD Research Day (host Dr. Neera Gupta), Cornell University, New York, NY. “Probing the Association of Pancreatitis with IBD: Perspectives of the Pediatric Pancreatologist.”
- 2016 Invited lecture, 9th International Symposium on Inherited Diseases of the Pancreas, Pancreasfest, Pittsburgh, PA. “Deciphering Mechanisms for Post-ERCP Pancreatitis.”
- 2016 Visiting Professor, Frontiers in Pediatric Research (host Dr. Aliye Uc), University of Iowa, Iowa City, IA. “Preventing Post-ERCP Pancreatitis.”
- 2016 Invited lecture, Cincinnati Children’s Hospital Digestive Disease Center Seminar Series (host Dr. Jorge Bezerra), Cincinnati, OH. “Targetting calcineurin to prevent post-ERCP pancreatitis.”
- 2016 Visiting Professor, Pediatric Grand Rounds (host Drs. Sam Cheng and Scott Rivkees), University of Florida, Gainesville, FL. “The conundrum of pancreatitis in children: New light on a hidden organ.”
- 2015 Visiting Professor, Nobel Laureate Abdus Salam Research Forum, Rabwah, Pakistan. “Current Updates in Pancreatitis Management.”
- 2015 Invited plenary presentation (**\*Best abstract of the year in pancreatitis award**), American Pancreatic Association (APA) Annual Meeting, San Diego, CA. “Targetting pancreatic calcineurin in post-ERCP pancreatitis.”
- 2015 State of the art lecture, NASPGHAN Annual Meeting, Washington, DC. “Mechanisms underlying drug-induced pancreatitis.”
- 2015 Invited lecture, International Association of Pancreatology (IAP) Annual Meeting, Shanghai, China. “Why do children develop chronic pancreatitis?”
- 2015 Visiting Professor (host Dr. Miklos Sahin-Toth), Molecular Medicine Seminar Series, Boston University, Boston, MA. “Calicum and calcineurin pathways mediate NF-kB and pancreatic injury in post-ERCP pancreatitis.”
- 2015 Visiting Professor (host Dr. Ashok Saluja), Surgical Grand Rounds Research Series, University of Minnesota, Minneapolis, MN. “Preventing radiocontrast-induced ERCP pancreatitis by targeting calcium and calcineurin.”
- 2014 Invited lecture at NASPHAN Meeting, “Getting NIH Funded,” Atlanta, GA
- 2014 Visiting Professor (host Dr. Anupama Chawla), SUNY Stony Brook Health Sciences Center, Stony Brook, NY. “What have we learned about acute pancreatitis in children.”
- 2014 GI Seminar Series (host Dr. Anupama Chawla), SUNY Stony Brook Health Sciences Center, Stony Brook, NY. “The pathogenesis of chronic pancreatitis in children.”
- 2014 Pediatric Grand Rounds, Winthrop Hospital (host Dr. Robert Lee), Garden City, NY. “The conundrum of chronic pancreatitis in children.”

- 2014 Guest Lecture (host Dr. Neera Gupta), Pediatric IBD Series, Columbia University, New York, NY. “Investigating the link between pancreatitis and inflammatory bowel disease.”
- 2014 Pediatric GI Seminar (host Dr. Neera Gupta), Columbia University, New York, NY. “Writing a research grant.”
- 2014 Annual Pancreatic Fellows Symposium, National Pancreas Foundation (NPF). “Update on pancreatitis in children.”
- 2014 Visiting Professor, UCLA Pancreatic Disorders Group Lecture (host Dr. Stephen Pandol), Los Angeles, CA. “Targeting calcineurin in pancreatitis.”
- 2014 Invited Faculty Lecture, Annual North American 3<sup>rd</sup> Year Pediatric GI Fellows Conference, Scottsdale, AZ. “The art of grant writing.”
- 2013 Invited Faculty Lecture, National Post-Graduate Course, NASPGHAN Annual Meeting, Chicago, IL. “Pancreatic function testing in children.”
- 2013 Invited Faculty Lecture, Annual North American 3<sup>rd</sup> Year Pediatric GI Fellows Conference, Scottsdale, AZ. “Writing successful grants.”
- 2012 Invited Faculty Lecture, Annual North American 3<sup>rd</sup> Year Pediatric GI Fellows Conference, Scottsdale, AZ. “Grant writing 101.”
- 2011 Yale Pediatric Faculty and Joint Digestive Disease Research Seminar Series, New Haven, CT. “Ryanodine receptor mediates biliary pancreatitis.”
- 2011 Pediatric GI Seminar (host Dr. Peter Durie), Hospital for Sick Kids, Toronto, Canada. “Calcium pathways are viable targets in pancreatitis.”
- 2011 Faculty Lecture, Annual North American 3<sup>rd</sup> Year Pediatric GI Fellows Conference, Scottsdale, AZ. “Grant writing in the 21<sup>st</sup> century.”
- 2010 GI Seminar Series (host Dr. John Anderson), Dallas Children’s Hospital, Dallas, TX. “Targeting calcium in pancreatitis.”
- 2009 Pediatric GI Seminar Series (host Dr. Mitch Cohen), Cincinnati Children’s Hospital, Cincinnati, OH. “Targeting calcium in pancreatitis.”
- 2008 Pediatric Grand Rounds (host Dr. Frederic Daum), Winthrop Hospital, Garden City, NY. “Acute pancreatitis in children.”
- 2007 NASPGHAN Young Investigator Award Lecture, Salt Lake City, IA. “Calcium flux in pancreatitis.”
- 2007 Pediatric Research Lecture (host Dr. Shahzad Saeed), University of Alabama, Birmingham, AL. “Calcium flux in pancreatitis.”
- 2007 Pediatric Research in Progress (host Dr. Phillip Tarr), Washington University School of Medicine, St. Louis, MO. “Calcium flux in pancreatitis.”
- 2006 Invited lecture, Pediatric Gastroenterology Grand Rounds (host Dr. Elyanne Ratcliffe), Columbia University College of Physicians and Surgeons, New York, NY. “Calcium flux in pancreatitis.”
- 2006 Invited lecture, Pancreas Research Lecture (host Dr. Ashok Saluja), University of Massachusetts, Amherst, MA. “Ryanodine receptor and calcineurin in pancreatitis.”
- 2006 Invited lecture (host Dr. Michael Steer), Pancreatitis Core Lecture, Tufts University School of Medicine, Boston, MA. “Ryanodine receptor in pancreatitis.”

Regional/Local

- 2020 Faculty Speaker, 11<sup>th</sup> Annual Pediatrics Research Retreat, Stanford University.
- 2019 Faculty Lecture, Stanford Diabetes Research Core, Stanford University. “Cracking the code on the drug-induced complication of asparaginase-pancreatitis.”
- 2019 Keynote Lecture, Stanford Adult GI Retreat, Stanford University. “Mechanism underlying asparaginase-associated pancreatitis.”
- 2019 Faculty Lecture, Pediatric Clinical Update – South Bay 2019 CME conference (host Dr. David Maahs), Stanford University and Lucille Packard Children’s Hospital. “Common Pediatric GI Diagnoses and When to Refer.”

- 2018 GI Basic Science Conference (host Dr. Dean Yimlamai), Children's Hospital of Pittsburgh and the University of Pittsburgh. "Elucidating the black box of pancreatitis due to the leukemia drug asparaginase."
- 2018 Faculty Lecture, Unified Fellows Conference at the Children's Hospital of Pittsburgh. "Grant writing for dummies."
- 2017 Faculty Lecture, Unified Fellows Conference at the Children's Hospital of Pittsburgh. "Manuscript writing made easy."
- 2017 Faculty Lecture, Unified Fellows Conference at the Children's Hospital of Pittsburgh. "A Mock Study Section in Action."
- 2017 Faculty Lecture, Unified Fellows Conference at the Children's Hospital of Pittsburgh. "Writing an outstanding grant."
- 2016 Molecular Medicine Research Seminar (host Dr. Jay Kolls), Children's Hospital of Pittsburgh, Pittsburgh, PA. "Advances in Preventing Radiocontrast-Induced ERCP Pancreatitis by Targeting Calcium and Calcineurin."
- 2016 Faculty Lecture, Internal Medicine Gastroenterology Grand Rounds. "Preventing Post-ERCP Pancreatitis by Targeting Calcineurin."
- 2016 Faculty Lecture, Unified Fellows Conference at the Children's Hospital of Pittsburgh. "Getting published."
- 2015 Faculty Lecture, Unified Fellows Conference at the Children's Hospital of Pittsburgh. "Writing an outstanding grant."
- 2015 Faculty Lecture, Pediatric GI Clinico-pathology Lecture Series. "Chronic pancreatitis in children."
- 2015 Faculty Lecture, Unified Fellows Conference at the Children's Hospital of Pittsburgh. "The alphabet soup of the NIH and other grants."
- 2014 Molecular Medicine Research Seminar (host Dr. Mark Lowe), Children's Hospital of Pittsburgh, Pittsburgh, PA. "Targeting calcium-calcineurin to prevent post-ERCP pancreatitis."
- 2014 Faculty Lecture, Unified Fellows Conference at the Children's Hospital of Pittsburgh. "The inner workings of a grant study section."
- 2014 Faculty Lecture, Unified Fellows Conference at the Children's Hospital of Pittsburgh. "The ABCs of grants at the NIH."
- 2013 Faculty Lecture, Unified Fellows Conference at the Children's Hospital of Pittsburgh. "Grant writing made easy."
- 2012 Medical Grand Rounds, Children's Hospital of Pittsburgh, Pittsburgh, PA. Pancreatitis: "A view from Mount Washington."
- 2011 Molecular Medicine Research Seminar (host Dr. Mark Lowe), Children's Hospital of Pittsburgh, Pittsburgh, PA. "The ryanodine receptor in biliary pancreatitis."
- 2010 Molecular Medicine Research Seminar (host Dr. Mark Lowe), Children's Hospital of Pittsburgh, Pittsburgh, PA. "Targeting calcium in pancreatitis."
- 2010 Yale-New Haven Hospital Pediatric Lecture Series, New Haven, CT. "Pancreatic development: Its relevance to pancreatic inflammatory disorders."
- 2009 Yale Pediatric Gastroenterology Lecture Series, New Haven, CT. "Pancreatic disorders of inflammation and insufficiency."
- 2009 Bridgeport Hospital Pediatric Lecture Series, Bridgeport, CT. "Pediatric pancreatic disorders."
- 2009 Yale Pediatric Faculty Research in Progress Seminar Series, New Haven, CT. "Ethanol sensitizes to pancreatitis via activation of the calcium release channel the ryanodine receptor."
- 2008 Bridgeport Hospital Pediatric Lecture Series, Bridgeport, CT. "Nutritional issues in pancreatitis."
- 2008 Yale Pediatric Gastroenterology Lecture Series, New Haven, CT. Celiac Disease: "Diagnosis and management."
- 2008 Yale Pediatric Faculty Research in Progress Seminar Series, New Haven, CT. "Calcineurin mediates protease activation and pancreatitis."

- 2007 Pediatric Grand Rounds, Yale University School of Medicine, New Haven, CT. Acute pancreatitis in children.
- 2007 Yale Pediatric Gastroenterology Lecture Series, New Haven, CT. "GERD: Management Updates."
- 2007 Bridgeport Hospital Grand Rounds, Bridgeport, CT. GERD in Children.
- 2007 Yale Pediatric Faculty Research in Progress Seminar Series, New Haven, CT. "Ryanodine receptor calcium signals can be modulated by biologically relevant cAMP signaling"
- 2006 Yale Pediatric Gastroenterology Lecture Series, New Haven, CT. "Inflammation of the pancreas."
- 2006 Yale Pediatric Faculty Research in Progress Seminar Series, New Haven, CT. "Ryanodine receptor calcium signals modulate protease activation in pancreatitis"
- 2006 Waterbury Hospital Grand Rounds, Waterbury, CT. "Acute pancreatitis in children."
- 2005 Yale Pediatric Faculty Research in Progress Seminar Series, New Haven, CT. "Ryanodine receptor calcium signals determine basolateral calcium spikes."
- 2004 Norwalk Hospital Grand Rounds, Norwalk, CT. "Acute pancreatitis in children."
- 2004 Yale Pediatric Research in Progress Seminar, New Haven, CT. "The role of the ryanodine receptor in acinar cell calcium signaling."

## **OTHER RESEARCH RELATED ACTIVITIES**

### Conference Director/Moderator/Meet the Professors

- 2006 Moderator for Basic Sciences Oral Sessions, NASPGHAN Annual Meeting, Orlando, FL.
- 2007 Invited faculty for a 'Meet the Professors Breakfast' on Nutritional Issues in Pediatric Pancreatitis, NASPGHAN Annual Meeting, Salt Lake City, IA.
- 2007 Moderator for Acute Pancreatitis Oral Session I  
American Pancreatic Association Annual Meeting, Chicago, IL.
- 2008 Moderator for Acute Pancreatitis Oral Session II  
American Pancreatic Association Annual Meeting, Chicago, IL.
- 2008 Moderator for Pancreatic Disorders Oral Session, NASPGHAN Annual Meeting, San Diego, CA.
- 2009 Moderator for a Pediatric Pancreatitis Session, NASPGHAN Annual Meeting, Washington, DC.
- 2009 Moderator for a Basic Science Oral Session, NASPGHAN Annual Meeting, Washington, DC.
- 2009 Moderator for Acute Pancreatitis Oral Session,  
American and Japanese Pancreatic Association Joint Annual Meeting, Honolulu, Hawaii.
- 2010 Moderator for a Basic Science Oral session, NASPGHAN Annual Meeting, New Orleans, LA.
- 2010 Moderator for Acute Pancreatitis Oral Session,  
American Pancreatic Association Annual Meeting, Chicago, IL.
- 2011 Invited faculty, Annual NASPGHAN Pediatric GI fellows' research conference, Scottsdale, AZ.
- 2011 Invited faculty for a 'Meet the Professors Breakfast' on Grant Writing Skills,  
NASPGHAN Annual Meeting, Orlando, FL.
- 2011 Moderator for Pancreatic Disorders Oral Session, NASPGHAN Annual Meeting, Orlando, FL.
- 2011 Moderator for the Opening Plenary Session, NASPGHAN Annual Meeting, Orlando, FL.
- 2011 Moderator for Posters of Distinction Tour, American Pancreatic Association Annual Meeting, Chicago, IL.
- 2012 Director, Annual NASPGHAN Third year Pediatric GI fellows' research conference, Scottsdale, AZ.
- 2012 Moderator for the Opening Plenary Session, NASPGHAN Annual Meeting, Salt Lake City, UT.
- 2013 Director, Annual NASPGHAN Third year Pediatric GI fellows' research conference, Scottsdale, AZ.
- 2013 Moderator for a Pediatric Gastroenterology Disorders Session, DDW Annual Meeting, Orlando, FL.
- 2013 Moderator for a Genetic Pancreatic Disorders Session, Pancreasfest, Pittsburgh, PA.
- 2013 Moderator for the Opening Plenary Session, NASPGHAN Annual Meeting, Chicago, IL.
- 2014 Director, Annual NASPGHAN Third year Pediatric GI fellows' research conference, Scottsdale, AZ.
- 2014 Moderator for Pancreatic Duct Cell Physiology Session, American Pancreatic Association Annual Meeting, Hawaii.
- 2014 Moderator for the Pancreatic Disorders Session, NASPGHAN Annual Meeting, Atlanta, GA.

- 2015 Faculty Discussant and Mentor, Pediatric Pancreatic Disorders, Annual Pancreatic Fellows Symposium, National Pancreas Foundation (NPF), Baltimore, MD.
- 2015 Moderator for the Pediatric Pancreatic Disorders Session, Pancreasfest, Pittsburgh, PA.
- 2016 Moderator and Faculty Mentor for the Pediatric Pancreatology Panel, National Pancreas Foundation (NPF) Annual Fellows Symposium, Chicago, IL.
- 2016 Moderator for the Regenerative Medicine: Emerging Therapy for Pancreatic and GI Tract Disorders Session, Digestive Diseases Week (DDW), San Diego, CA.
- 2016 Moderator for the Novel Targets for Treating Acute Pancreatitis Session, Digestive Diseases Week (DDW), San Diego, CA.
- 2016 Abstract Poster Judge for Pancreatitis: Inflammation, Fibrogenesis and Immunology Posters, Digestive Diseases Week (DDW), San Diego, CA.
- 2016 Planning Committee Member for the NIDDK Sections and Internal Course Faculty, Pancreasfest, Pittsburgh, PA
- 2016 Oversight Committee Member, Fourth Annual Pediatric IBD Research Day, Cornell University, New York, NY.
- 2016 Moderator, Acute Pancreatitis Session, West China Pancreas International Forum, Chengdu, China.
- 2017 Moderator, Inflammatory GI Disorders Session, NASPGHAN Essentials Pediatric GI Review, Scottsdale, AZ.
- 2017 Invited faculty for a ‘Meet the Professors Breakfast’ on Pediatric Pancreatic Disorders Cases, NASPGHAN Essentials Pediatric GI Review, Scottsdale, AZ.
- 2017 Poster Judge for the 16<sup>th</sup> Annual McGowan Regenerative Institute Retreat, Farmington, PA.
- 2017 Faculty Mentor in Pediatric Pancreatology, National Pancreas Foundation (NPF) Annual Fellows Symposium, Dallas, TX.
- 2017 Faculty Poster Discussant for Pancreasfest, Pittsburgh, PA.
- 2017 Planning Committee Member, Annual Meeting of the American Pancreatic Association (APA), San Diego, CA.
- 2017 Co-Director, Frontiers in Pediatric Pancreatology, NASPGHAN Single Topic Symposium, Las Vegas, NV.
- 2018 Course Director, Pancreasfest, Pittsburgh, PA.
- 2018 Moderator, Parallel Session: Preventing Drug-Induced Pancreatitis, American Pancreatic Association, Miami, FL.
- 2019 Planning Committee Member, Pancreasfest, Pittsburgh, PA.

**PATENTS**

- 1. Pitt Ref No. 03436 (PCT/US2016/034841) Compositions and methods for reducing the risk of post-imaging pancreatitis
- 2. Pitt Ref No. 04024 Acute use of calcineurin pathway inhibitors to prevent radiocontrast-induced nephropathy
- 3. Pitt Ref No. 04025 Novel combination of calcineurin inhibitor and indomethacin administered locally to the pancreas to prevent post-ERCP pancreatitis

**EDITORSHIPS**

Editorial Board	Pancreapedia	2010-present
Editor	Pediatric GI Research Agenda, North American Society of Pediatric Gastroenterology, Hepatology, and Nutrition	2013
Editor	Pancreas Section, NASPGHAN Pediatric GI Board Review Series	2016

**JOURNAL REFEREEING**

Gastroenterology  
Journal of Biological Chemistry



American Journal of Physiology - Gastrointestinal and Liver Physiology  
Journal of Clinical Gastroenterology (2004-2010)  
Journal of the Pancreas  
Critical Care Medicine  
Journal of Cellular and Molecular Medicine  
The Open Pediatric Medicine Journal  
Journal of Pathology  
JPGN - Journal of Pediatric Gastroenterology and Nutrition  
Open Access Animal Physiology (2009)  
Cellular Physiology and Biochemistry (2009)  
Pediatric Health (2010)  
PLOS One (2011-2014)  
Pancreapedia (2011-2014)  
FEBS Journal (2012)  
Faculty of 1000 (F1000; 2012-2014)  
Cell Communication and Signaling (2013-2014)  
Pancreatology (2012-2017)  
Scientific Reports (2015-2017)  
British Journal of Pharmacology (2016-2017)

#### **ABSTRACT REVIEWER OR PRESENTATION/POSTER JUDGE**

American Pancreatic Association (APA) Annual Meeting Abstract Reviewer (2007-present)  
APA Poster Judge (2010-2011, 2017-2018)  
NASPGHAN Annual Meeting Abstract Reviewer (2007-present)  
AGA Pancreatic Disorders Section Abstract Reviewer (2014-present)  
Digestive Diseases Week (DDW) Poster Judge for Pancreatitis and Inflammation Abstracts (2015-2019)

#### **AD HOC GRANT REVIEWER**

NIH Challenge Grant External Reviewer (2008)  
FDA Orphan Products Grant Reviewer (2010)  
NIDDK Special Emphasis Panel Reviewer (2011-2012)  
R13 Grant Reviewer (2011-2012)  
United Kingdom Medical Research Council ad hoc Grant Reviewer (2011)  
NIH CIMG (Clinical, Integrative and Molecular Gastroenterology) Study Section ad hoc Member (2013)  
University of Nebraska Research Initiative Grant Reviewer (2014)  
Leverhulme Trust International Academic Fellowship Grant Reviewer (2014)  
Department of Defense Peer Reviewed Medical Research Program (PRMPR) Study Section Member (2015-2018)

#### **STANDING STUDY SECTION MEMBERSHIP**

NASPGHAN Foundation Standing Study Section Member (2008-2013) and Chair (2009-2010)  
Research Advisory Committee (RAC) Study Section Member, Children's Hospital of Pittsburgh Foundation (2012-present)  
*NIH CIMG (Clinical, Integrative and Molecular Gastroenterology) Standing Study Section Member (2014-2018)*

#### **LIST OF CURRENT RESEARCH INTERESTS**

##### **The crucial signaling pathways that initiate and transduce pancreatitis**

My early work demonstrated that abnormal acinar cell calcium signals play a crucial role in initiating and transducing acute pancreatitis. We showed for the first time that abnormally elevated calcium signals in the basal region are associated with pathologic intra-acinar protease activation, an early and critical event in the

development of pancreatitis. This calcium signal is mediated by an endoplasmic reticulum (ER) calcium channel, the ryanodine receptor (RyR). We went on to examine mechanisms that regulate this pathologic RyR calcium release in the acinar cell and showed that increasing cAMP in acinar cells caused RyR opening, likely through RyR phosphorylation. We also found that the RyR was an important trigger for alcohol, a leading cause of pancreatitis. We further demonstrated that human acinar cells express functional RyRs which mediate acinar pathology.

Our studies on pathologic calcium signals progressed to determining potent calcium targets leading to pancreatic injury and pancreatitis. We discovered that the calcium-dependent serine, threonine phosphatase calcineurin (Cn) is a novel target of this pathological calcium signal. We used genetic and pharmacologic strategies to examine the role of Cn in clinically relevant experimental models of pancreatitis in vivo and specifically within the pancreatic acinar cell. We believe that this emerging and highly translationally relevant work will provide a basis for understanding the role of Cn in various forms of pancreatitis and will lay the framework for novel clinical trials that target pancreatitis using Cn inhibitors.

### **The factors that turn on pancreatic regeneration and recovery after pancreatic injury**

In the hot pursuit of pancreatitis therapies, we hypothesized that a novel, alternate strategy to treating pancreatitis would be to examine the factors that turn on pancreatic regeneration and recovery in response to injury. Based on three key observations: (1) that valproic acid, a drug which is definitely associated with pancreatitis, is an inhibitor of an important class of epigenetic proteins the histone deacetylases (HDACs); (2) that HDACs mediate pancreas development; and (3) that elements of pancreas development are recapitulated during pancreatic recovery—we hypothesized that HDACs are crucial for activating the programs necessary for pancreatic recovery. We have thus far determined that HDACs appear to mediate the redifferentiation of intermediate regenerative structures, which are formed during the recovery process, back to mature pancreatic acinar cells. We are currently examining the nuclear HDAC complexes that appear to mediate this role in completing the recovery process. On a broader level, we are in the process of performing a large-scale characterization of the epigenomic and transcriptomic landscape during pancreatic recovery after injury. We believe these insights about new gene signatures will unravel novel discoveries that will help us devise treatments to counteract organ injury or boost recovery from injury.

### **The mechanisms underlying specific forms of drug-induced pancreatitis (DIP)**

Drug-induced pancreatitis (DIP) is a leading etiology for pancreatitis in children. However, the mechanisms underlying DIP in the overwhelming majority of drug exposures is completely unknown. A leading culprit in DIP is the crucial cancer drug asparaginase. Using both clinical samples and experimental models, we have currently focused our efforts on deciphering the mechanisms by which asparaginase predisposes patients to pancreatitis. We anticipate that this work will help us devise novel therapies to prevent or mitigate asparaginase-associated pancreatitis and, on a broader level, will help elucidate how drugs can cause pancreatitis.

## **SERVICE ACTIVITIES**

### University and Medical School

Pediatric Residency and GI Fellowship Candidate Interviewer	2005-present
Preceptor for medical students, residents, fellows, and post-doctoral fellows	2004-present

### Professional Society and Community

Physician Responder for Disaster Relief, Humanity First USA	2005-present
Member, NASPGHAN Research Committee	2007-2013
Chair, Study Section for NASPGHAN Foundation grants	2009-2010
Chair, Research Sessions Committee for the NASPGHAN Annual Meeting	2010-2013
Chair, NASPGHAN Research Committee	2010-2013

***[The Chair position was a multifaceted task. It required that I oversee the review and upkeep of our NASPGHAN Foundation grants applications and our Annual Meeting abstracts. I was in charge of the Research Sessions during our Annual Meeting. In 2012, I was asked to take charge of drafting our NASPGHAN Pediatric GI Research Agenda, to facilitate a Society-wide Clinical Trials Registry as well as a White Paper on the status of our grants applications.]***

Advisory Board, NASPGHAN Foundation	2010-2013
Member, INSPPIRE (International Study Group Of Pediatric Pancreatitis: In Search For A Cure)	2010-present
Chair, INSPPIRE Pediatric Pancreatitis Study Group Survey Sub-Committee	2010
Consultant, National Pancreas Foundation (NPF) strategy to address Pediatric pancreatitis	2010
Physician Board Member, Western Pennsylvania, National Pancreas Foundation (NPF)	2011-2019
Member, INSPPIRE Publications Committee	2012
Member, Selection Committee for the NASPGHAN Shwachman and Distinguished Service Awards	2013
Member, AGA Growth, Development & Child Health (GDCH) Section Nominating Committee	2013-2014
Chair-Elect AGA Abstract Review for “Pancreatitis: Inflammation, Fibrogenesis and Immunology”	2014
Vice-Chair, NASPGHAN Pancreas Committee	2014-2017
Chair, AGA Abstract Review for “Pancreatitis: Inflammation, Fibrogenesis and Immunology”	2015-2018
Member, Program Planning Committee for the Annual Meeting of the APA	2017-2018
Councillor, Pancreatic Disorders Section, AGA Institute Council	2015-2019
<b><i>Chair, NASPGHAN Pancreas Committee</i></b>	<b><i>2017-2020</i></b>
Member, NIH NIDDK Organizing Committee for a 2018 single topic workshop on “Accelerating the Drug Delivery Pipeline for Acute and Chronic Pancreatitis”	2017-2018
Member, APA Annual Meeting Program Committee for Pancreatitis	2018