

## Curriculum Vitae: Ajay Kumar Jain, MD, DNB

### Personal Information

Professional Address: 1465 S Grand Blvd. Saint Louis, MO 63104. Phone: 314-666-0288;  
Fax: 314-268-2775. Email: ajaykj11@gmail.com

### Position, Institution

<i>Associate Division Chief:</i> Pediatric Gastroenterology Hepatology and Nutrition, Saint Louis University, St Louis	2018-present
<i>Professor, Tenured:</i> Pediatrics, Secondary appointment Department of Pharmacology And Physiology Saint Louis University, St Louis	2020-present
<i>Section Head: Pediatric Nutrition:</i> Saint Louis University, St Louis	2018-present
<i>Masters in Health Administration</i> (enrolled in executive MHA program), Saint Louis University, St Louis (Completion 2020)	2017-present
<i>Medical Director:</i> Pediatric Liver Transplantation, Saint Louis University, St Louis	2012-present
<i>Associate Professor, Tenured:</i> Pediatrics, Secondary appointment Department of Pharmacology And Physiology Saint Louis University, St Louis	2017-2020
<i>Assistant Professor:</i> Tenure Track: Division of Pediatric Gastroenterology Hepatology and Nutrition, Saint Louis University, St Louis	2009-2016

### Education

Postgraduate training:	
<i>Postdoctoral Research:</i> Baylor College of Medicine, Houston, TX, USA.	07/2007-06/2009
<i>Post Doctoral Clinical Fellow:</i> Pediatric Gastroenterology, Hepatology and Nutrition, Baylor College of Medicine, Texas Children's Hospital, Houston, TX, USA.	07/2006-06/2009
<i>Senior Research Fellow:</i> Indian Council of Medical Research, Ansari Nagar, New Delhi, India.	08/2001-07/2004
<i>Pediatric Resident:</i> Medical College of Georgia, Augusta, GA.	07/2004-06/2006
<i>Research Fellow, Indian Council of Medical Research (ICMR).</i>	08/2001-07/2004
<i>Diplomate of National Board (DNB, India), Pediatrics</i>	08/2001-07/2003
<i>Pediatric Resident:</i> Maulana Azad Medical College, New Delhi, India	05/1999-04/2001
House Officer, GB Pant Hospital, New Delhi, India	1998-1999
Medical School: Maulana Azad Medical College, New Delhi, India	1992-1998

### Previous Professional experience

Clinical Fellow, Texas Childrens Hospital	07/2006-06/2009
Medical College of Georgia, Resident	07/2004-06/2006
Senior Research Fellow: Indian Council of Medical Research	08/2001-07/2004
SR, Sir Gangaram Hospital	05/2001-07/2001
Lok Nayak Hospital	05/1999-04/2001

### Hospital and Clinical Staff appointments

Cardinal Glennon Hospital, Saint Louis University, Faculty	07/2009-Current
Texas Children's Hospital, Clinical Fellow	07/2006-06/2009
Medical College of Georgia, Resident	07/2004-06/2006
Sir Gangaram Hospital, SR	05/2001-07/2001
Lok Nayak Hospital, Resident	05/1999-04/2001

## **Honorary Societies, Honors and Awards**

### **Awards:**

- National Award - Stanley J Dudrick Research Scholar Award 2020 [National Award - Recognizing Excellence in Nutrition – ASPEN]
- Best Doctor Award: 2020, National Institute of Health R13: March 2020
- Naomi Judd Award in Hepatology: 2019
- Best Doctor Award: 2019
- National Institute of Health R03
- National Award - NASPGHAN Nutrition Award: Oct 2018 [National Award - Recognizing Excellence in Nutrition]
- National Award: Harry M Vars Award: Jan 2018 [National Award - Recognizing Excellence in Liver and Nutrition Research]
- National Institute of Health R13 Award: Feb 2017
- National Institute of Health K08 Award: Feb 2016
- National Institute of Health R03 (Co-I): 2015
- Fleur-De-Lis Award: Jul 2016
- ASPEN Rhoads Research Foundation Award: Jan 2015
- NASPGHAN Young Investigator Award/Nestle Nutrition Award: Nov 2014
- A.S.P.E.N. Rhoads Research Foundation Award: Jan 2014
- President's Research Award: Jan 2014
- Fleur-De-Lis Award: Jul 2014
- American Liver Foundation: Alexander M. White, III Memorial Postdoctoral Research Fellowship Award. Jul 2008
- Oral presentation award: Texas Gulf Coast Gastroenterological Society Meeting: 2008
- Resident Research Award : Department of Pediatrics, Medical College of Georgia: 2004
- Senior Research Fellowship Award: Indian Council of Medical Research: 2001 (Three consecutive years)

### **Honors:**

- ASPEN Premier Paper Harry M Vars Session: Jan 2018
- World Congress of Pediatric Gastroenterology Hepatology and Nutrition: Plenary platform oral presentation. Montreal, Oct 2016.
- ASPEN Premier Paper Harry M Vars Session Presentation: Jan 2016
- ASPEN Premier Paper Harry M Vars Session Presentation: Feb 2015
- AASLD Presidential Plenary: Oct 2013
- Chairperson, International Conference: 'IBD: Current Perspectives and Future Challenges': April 2013
- National Institute of health (NIH): Pediatric Committee : July 2011
- Flavors of Houston: Honored by the American Liver Foundation at the Houston event: 2008
- Certificate of appreciation: NASPGHAN: Professional Development Committee: 2006
- Delegate: Ped Gastro Con 2001, Sub specialty chapter of the Indian Academy of Pediatrics: 2001
- Delegate: CME in Gastroesophageal reflux in infancy and childhood. Department of pediatrics, division of gastroenterology, Maulana Azad Medical College: 2000
- Scholarship: Awarded at the National Level Science Talent Search Examination, India.

## **Board Certification and Licensure**

### **Board Certification:**

- |  |                    |
|--|--------------------|
| • Diplomate of American Board of Pediatrics:<br>Sub Board : Pediatric Gastroenterology (USA) | 11/2009-Current    |
| • Diplomate of American Board of Pediatrics (USA)  | 01/2006-Current    |
| • Diplomate of National Boards (Pediatrics, India)   | 12/2003-Indefinite |

### **Licensure:**

Unrestricted Physician Licensure: Missouri State, Number: 2008021135, Issue Date: 7/17/2008  
 Delhi Medical Council, (# 4297), Aug 2000; Medical Council of India, (# 16999), Jan 1998.  
 Texas Physician in Training Permit (2006-2009); State of Georgia, Composite State Board of  
 Medical Examiners: TMP Residency Training (2004-2006)

## Research Support

### Active Research

- 1 NIH-1 R03 DK121046-01. Role of gut microbiota in total parenteral nutrition associated injury. 04/01/2019 – current. Role: Principal Investigator: Ajay Jain. \$227,250
- 2 NIH-1U01-DK61718, NIH NASH CRN Neuschwander-Tetri, PI 07/01/2011 – current  
Multicenter studies on the etiology, contributing factors, natural history, and treatment of nonalcoholic steatohepatitis (NASH) Site, Role: Saint Louis University, Co-Investigator. \$10,479.
- 3 NIH - R13DK124950-01. Novel Nutritional Status Biomarkers. 03/01/2020 – 02/28/2021. Role: Principal Investigator: Ajay Jain. \$12,500
- 4 Zealand Pharmaceuticals: Role of novel gut growth promoters in intestinal rehabilitation: April 2018-Aug 2020. Role: Principal Investigator: Ajay Jain. \$87,000
- 5 Clinical Innovation Fund: Role of ferroptosis in mitigating ischemia-reperfusion injury in marginal livers using a novel PROTECT model. 07/01/2020-06/30/2023  
Role: Co-Principal Investigator: Ajay Jain. \$297,090
- 6 NIH K08DK098623-01A1: Role of the bile acid activated receptors FXR and TGR5 in Total Parenteral Nutrition associated hepatic and gut disease: 02/01/2016 – 2/01/2021  
Role: Principal Investigator: Ajay Jain. \$703,620
- 7 Clinical Innovation Fund: Cytokeratin 18 as a biomarker for rejection in liver transplantation. Mid America Transplant Foundation. 07/01/2018-06/30/2021  
Role: Principal Investigator: Ajay Jain. \$161,173
- 8 NIH-NIDDK, NIEHS: CHEAR: The Children's Health Exposure Analysis Resource (CHEAR) to develop a proposal for the study, 'Role of environmental toxicants in modulating disease severity in children with NAFLD'. 2018 – current.  
Role: Principal Investigator: Ajay Jain. \$9,000. NIEHS – Sample analysis (approx. \$500,000)
- 9 Presidents Research Fund. Role of Testosterone in Young Males with Non-Alcoholic Steatohepatitis. 07/01/2019-06/30/2020  
Role: Principal Investigator: Ajay Jain. \$50,000
- 10 SLU Liver Center Grant: 07/01/2020-06/30/2021  
'Recirculating enteral feeds to mitigate liver and gut injury in bowel syndrome.  
Role: Principal Investigator: Ajay Jain. \$25,000.
- 11 NIH NIDDK (NCT NCT03467217): STOP-NAFLD trial, Losartan for the Treatment of Pediatric NAFLD: A Phase 2, Randomized, Placebo-Controlled Clinical Trial. Principal Investigator: Role: Site Principal Investigator: Ajay Jain
- 12 Bill and Melinda Gates Foundation, Jain SK, PI, 11/01/2017 – 11/01/2019  
Grand Challenges Explorations, "Improving Childhood Immunizations with Cellular Technology"  
Site, Role: Saint Louis University, Co-Investigator. \$100,000
- 13 DeNardo (Health Sciences) Education and Research Foundation: Heuertz R, PI, 2017-2019  
Active Learning Through Research.  
Site, Role: Saint Louis University, Co-Investigator. \$24,000.
- 14 Fleur-de-lis: Role of fecal transplantation in parenteral nutrition associated injury. 07/01/2019 – 10/30/2020. Role: Principal Investigator: Ajay Jain. \$25,000
- 15 Fleur-de-lis: Profiling the gut microbiome in individuals with Prader-Willi Syndrome, PI Whitman B  
07/01/2017 – 10/30/2020  
Role: Co- Investigator: Ajay Jain. \$25,000

16. SPLIT: Studies of Pediatric Liver Transplantation: SPLIT works to identify emerging trends in care, focusing on short- and long-term outcomes with a goal of gaining new knowledge that can be translated into changes in clinical practice. This research also generates new ideas for translational research/clinical trials which SPLIT actively pursues. 05/2013-Current  
 Role: Principal Investigator: Ajay Jain.

### **Completed Research**

17. NIH-1R03EB015955-01, Jain SK, PI, 09/30/2015 – 07/31/2017. Enhancing Health Care Access with Cellular Technology. Site, Role: Saint Louis University, Co-Investigator. \$13,318.
18. NIH R13DK109671-01: *Gastric Bypass: Role of the Gut. 2017: March 2018*  
 Title: A.S.P.E.N. 2017 Research Workshop. Role: Principal Investigator: Ajay Jain. \$10,000
19. NASPGHAN Young Investigator Award/Nestle Nutrition Award: (North American Society for Pediatric Gastroenterology, Hepatology and Nutrition): Nov 2014-Nov 2016  
 'Role of Bile Acids in Preventing Parenteral Nutrition Associated Disorders'  
 Site, Role: Principal Investigator: Ajay Jain. \$150,000.
20. A.S.P.E.N. Rhoads Research Foundation: (American Society for Parenteral and Enteral Nutrition): 01/01/2014-12/31/2015  
 'Novel Interventions Modulating the FXR-FGF19 Axis and the TGR5-GLP Axis as Therapeutic Approaches for TPN Associated Pathologies'  
 Site, Role: Principal Investigator: Ajay Jain. \$50,000
21. Fleur-de-lis: Role of FXR-FGF19 and TGR5-GLP2 axis in parenteral nutrition associated pediatric liver and gut injury. 07/01/2017 – 06/30/2018  
 Role: Principal Investigator: Ajay Jain. \$25,000
22. Synageva (Lexington, MA): Industry Supported: 2014-2018  
 'Determination of Lysosomal Acid Lipase Activity and Cholesterol Ester Storage Disease Prevalence'  
 Site, Role: Principal Investigator: Ajay Jain. \$25,000.
23. Thrasher Fund: Shear wave sonoelastography for the noninvasive evaluation of hepatic fibrosis in the pediatric population. May 2015. Role: Collaborator.
24. NIH/NIDDK, National Institute of Health, National Institute of Diabetes and Digestive and Kidney Diseases - Longitudinal Study of Genetic Causes of Intrahepatic Cholestasis (LOGIC) Childhood Liver Disease Research and Education network (ChiLDREN). Jun 2011  
 Role: Site Sub-Investigator.
25. SLU Liver Center Grant: 03/01/2015-06/30/2017  
 'Role of Glucagon Like Peptides (GLPs) in Total Parenteral Nutrition'  
 Site, Role: Principal Investigator: Ajay Jain. \$25,000.
26. Fleur-de-lis: Role of enteral bile acids as gut growth promoters in an animal model of short bowel syndrome. 07/01/2016 – 06/30/2017  
 Role: Co- Principal Investigator: Ajay Jain. \$25,000
27. Fleur-de-lis Grant Award: 07/1/2014-06/30/2015  
 'Role of Glucagon-Like Peptides and Oleanolic Acid in Total Parenteral Nutrition (TPN) associated gut and hepatic dysfunction'  
 Site, Role: Principal Investigator: Ajay Jain. \$25,000
28. Presidents Research Fund: 03/01/2014-02/28/2015  
 'New Strategies for Parenteral Nutrition Associated Liver and Gut Disease'  
 Site, Role: Principal Investigator: Ajay Jain. \$47,000
29. Departmental Funds from Chairman – Jain PI 07/01/12 – 03/30/2014  
 'A newer modality of total parenteral nutrition infusion in piglets'  
 Site, Role: Principal Investigator: Ajay Jain. \$20,000

30. American Liver Foundation Jain, PI 2008-2009  
'Role of Farnesoid X Receptor (FXR) and Fibroblast Growth Factor 19 (FGF19) In Parenteral Nutrition Associated Liver Disease (PNALD)'  
*Site, Role: Principal Investigator: Ajay Jain. \$12,500*
31. Indian Council of Medical Research Jain, PI 2001-2004  
'Seroefficacy of Hepatitis B Vaccine Administered in The Expanded Programme of Immunization at 0, 6 wks and 9 months'  
*Site, Role: Maulana Azad Medical College, Delhi. Principal Investigator: Ajay Jain. \$10,000*

### **Pending Grants**

1. MacArthur Foundation: Jain AK, Co-I. Innovative Solutions for Universal Childhood Immunizations.
2. Mid America Transplant: PROTECT (Perfusion Regulated Organ Therapeutics with Enhanced Controlled Testing): Novel human model to mitigate ischemia reperfusion injury.
3. NIH R01, Jain AK, PI. Role of gut derived signaling in mitigating injury in Short Bowel Syndrome.

### **Professional Services**

#### **National Committee Leadership:**

**Chair:** Research Committee, American Society for Parenteral and Enteral Nutrition (2018-Current) (>6500 members)

**National Board Member:** ASPEN Foundation (2018-Current)

**Co-Chair:** American Liver Foundation, Mid America Advisory Board (Jul 2018-Current)

**Co-Chair:** NASPGHAN Research Resources Sub-Committee (Oct 2015-2018)

**NASPGHAN Research Committee:** (Aug 2015-Current)

**US Expert Panel on Lysosomal Acid Lipase Deficiency:** (Dec 2014-Current)

**American Society for Parenteral and Enteral Nutrition:** (May 2014-Current)

**Studies of Pediatric Liver Transplantation (SPLIT):** (Sep 2013-Current)

#### **National/International Conference Organizer – NIH R13:**

**NIH R13: American Society for Parenteral and Enteral Nutrition: Research Workshop.**

**'Gastric Bypass: Role of the Gut'. Principal Investigator**

Synopsis: Obesity is a global health problem and its ameliorative strategies remain a major research focus. Though several interventions have been trialed, the mainstay of current therapy anchors on lifestyle modification inclusive of nutrition and exercise. Primary criticisms of the current treatment modalities question the efficacy and long-term sustainability of such interventions. Thus, there remains an unfilled void for more viable therapeutic options. With surgical advances, a select obese population tends to have significant improvement in obesity related co-morbidities with bariatric surgery. Post-surgery improvement in insulin, glucose metabolism, hepatic steatosis as well as Non-Alcoholic Fatty Liver Disease (NASH) has all been noted. Given the remarkable success, the underlying mechanisms leading to improved outcomes after bariatric surgery are the focus of a burgeoning field of research that may lead to novel non-surgical interventions. Recent data suggests that improvement post-surgery may not merely be an effect of weight loss; there may be a significant influence of altered gut derived signals in modulating the disease pathology.

Thus, signaling secondary to altered anatomy, gut microbiota, modulation of the enterohepatic circulation, influence of the FXR-FGF19, the TGR5-GLP axis, nutrition, energy balance as well as other potential gut derived signals regulating homeostasis post gastric bypass surgery are the focus of this research workshop.

#### **National Program: Nutrition for the Practicing Pediatric Clinician:**

**(Phoenix, AZ: Organizer/PI – Ajay Jain, 2018)**

Patients with intestinal failure (IF) represent a challenging group. Their nutrition support and management needs to be tailored based on the bowel segment resected, the amount of resection as well as underlying disease etiology. There is also ongoing debate for intestinal lengthening procedures and their timing for maximizing nutrient absorption. Enteral or parenteral nutrition (EN) support and their respective percentages to promote Parenteral Nutrition (PN) autonomy as well as the optimal surgical procedures to enable enteral nutrition delivery like gastrostomy / gastro-jejunostomy or jejunostomy tube and bolus vs continuous feeds present significant challenges. Challenges also remain in treating small bowel bacterial overgrowth as well as instituting gut motility modulators in such patients. Recent data also presents new evidence of alteration in nutrient absorption and assimilation based on influences by the gut microbiota, bile acids and systemic effects modulated by downstream targets with key gut luminal receptor activation. This preconference proposes to present current evidence supporting clinical practices and highlight potential pitfalls in the management of this patient population.

#### **National Program Committee:**

American Society for Parenteral and Enteral Nutrition (ASPEN) Program Committee: (Jan 2018-Current); NIH Research Workshop 2020: Principal Investigator

Pediatric Program Committee: American Society for Parenteral and Enteral Nutrition: (Jan 2018-Current)

NIH Nonalcoholic steatohepatitis Pediatric Committee: (2011- Current)

**Moderator (National Liver and GI Meeting):**

Moderator: A new era of research: NASPGHAN 2018

Moderator: Nutrition and Metabolism Research Paper Session: Malnutrition, Obesity, Practice Concepts: Clinical Nutrition Week (CNW): Feb 2017

Moderator: Studies of Pediatric Liver Transplantation (SPLIT): Liver Cancers: Sep 2016

Moderator: 'US Pediatric Hepatology Meeting: LAL-D: Saint Louis 2015

Moderator: 'Clinical patterns and Early Influences on NAFLD': NASPGHAN 2015

State of Art Research Session: 'Pediatric Liver Research': NASPGHAN 2014

**Board Member (Midwest region):**

ASPEN Rhoads Research Foundation, Board Member: (2018-Current)

Liver Review Board Member: United Network for Organ Sharing (UNOS) / Organ Procurement And Transplantation Network /(OPTN): (Mar 2013 – Current)

**Professional Development Committee (National):**

North American Society for Pediatric Gastroenterology, Hepatology and Nutrition (2007-2009)

**Resident Curriculum Committee:**

Department of Pediatrics, Medical College of Georgia (2005-2006)

**International:** Indian Academy of Pediatrics: GI and Liver Reviewer

**Saint Louis University:**

SLUCare Governing Board : July 2020- Current

Chairman: Nutritional Advisory Committee: Cardinal Glennon Children's Medical Center (Jan 2011- Current)

Compensation Committee, SLU Feb 2018 – Current

Finance Committee, SLU Feb 2018 – Current

Program Evaluation Committee, 2016- Current

Clinical Competency Committee, 2016 - Current

Member: Hospital Mission Committee 2015-2016

Moderator (Platform Session): Pediatric Science Days Research Symposium. 2014, 2018, 2019

**Grant Reviewer / Study Section:**

National Institute of Health (SBIR) NIDDK: 2019

American Society for Parenteral and Enteral Nutrition Vars Award Reviewer, 2017, 2019

NASPGHAN Foundation Young Investigator Grants, 2016, 2017, 2018

Studies of Pediatric Liver Transplantation (SPLIT): Organizational Research Grants, 2016, 2017

Studies of Pediatric Liver Transplantation (SPLIT): Organizational Research Grants, Jun 2015

Grant Reviewer: President Research Fund, Saint Louis University, Jun 2015

**Journal Reviewer:**

Pediatrics, Indian Pediatrics, Journal of Physiology and Pharmacology, US Gastroenterology and Hepatology Review, American Journal of Gastroenterology and Gastrointestinal Endoscopy, Digestive Diseases and Sciences, BMC Pediatrics, Journal of Pediatric Gastroenterology and Nutrition

**Administrative and Teaching Responsibilities**

**Administration**

*Associate Division Chief of Pediatric Gastroenterology Hepatology and Nutrition.*

*Section Head – Pediatric Nutrition.*

*Medical Director – Pediatric Live Transplantation.*

*(Work on Divisional Finances, Expansion, Patient Satisfaction Metrics, Teaching Academic / Scholarly activities, Recruitment, Procedural Coverage)*

Fellow Competency Committee

2016 - Current

**GI/Liver Teaching**

GI Course: Pediatric Hepatology, SLU medical students: 03/2014-present

Pediatric Liver Transplantation Teaching: Trainees gain progressive clinical knowledge in a broad range of hepatology problems including management of portal hypertension; evaluation for transplantation; biliary diseases; vascular insults; liver cancers and nutrition. 2012-present

Nutrition Teaching: For residents, dietitians, nutritionists: 2011-present  
(Monthly)

**Courses and Lectures**

## Medical Students

Research Teaching (Weekly lab meeting) 10/2014-present  
 Pediatrics Student Rotation: Gastroenterology clinics 07/2009-present  
 Pediatrics Student Rotation: Liver clinic 07/2009-present

## Residents

Pediatric Resident Rotation: GI and Liver clinics 07/2009-present  
 Pediatric Resident Noon conference lecture series: 07/2009-present

## Graduate Students

Research Teaching (Weekly lab meeting) 10/2014-present

## Faculty

CME Courses 05/2010-present

**Clinical Service and on call teaching**

Liver Transplantation on call and teaching: 10/2012-present  
 Gastroenterology Clinical Service call and teaching: 07/2009-present

Procedures: Liver, GI Procedures and teaching: 07/2009-present  
 (Procedures: Upper endoscopy, Colonoscopy, Polypectomy, Foreign body removal, Rectal biopsy, Endoscopic gastrostomy tube placement, Liver biopsy, NG and NJ tube placement, Esophageal dilation, pH probe, Bravo pH probe placement, Variceal banding, Sclerotherapy, Capsule endoscopy)

**Protégé**

**Fellow: Christine Denton, MD:** Mentor Ajay Jain; Role of fecal transplantation in TPN associated injury. Recognizing and mitigating central venous line infections.

**Fellow: Jeffrey Salomon, MD:** Mentor Ajay Jain; Effect of Cardiopulmonary Bypass During Surgery on the Pediatric Intestinal Microbiome. (*Several Intramural and extramural presentations*)

**Student, Abhineet Sharma:** Mentor Ajay Jain; Bile Acid Treatment of Total Parenteral Nutrition (TPN) infused animals induces divergence in gut microbial flora.

**Student, Timothy Blaufuss:** Mentor Ajay Jain; Glucagon-Like Peptides ameliorate Total Parenteral Nutrition associated gut atrophy.

**Student, Sumit Arora:** Mentor Ajay Jain; Development and validation of a novel ultra-mobile ambulatory Total Parenteral Nutrition model.

QI: Improving Nutrition in the ICU patients. (Working with the ICU team)

**Other Research Trainees Presentations:**

ASPEN 2108: CPB and gut microbiota. Jeffery Salomon (Phoenix , AZ)

PSD 2019: Presentations by Salim Munoz, Vindhya, Hector, Christine: Mentor Jain AK

AOA Presentation 2018: Role of bile acids in TPN injury: Student, Vindhya: Mentor Ajay Jain

USCAPS 2017 (Canada): Histopathology of TPN injury: Student, Niraja: Mentor Ajay Jain

49th Annual AOA Medical Student Research Forum: Student, Victor Liou : Mentor Ajay Jain

NASPGHAN 2013: Resident, Jonathan Rodrigues : Mentor Ajay Jain

2012 CIS Annual Meeting: Resident, Ki Lee Milligan: Mentor Ajay Jain

NASPGHAN 2011: Student, Melissa Mavers : Mentor Ajay Jain

**Trainees on research grants:** (Mentor Ajay Jain): Jun Ik, David Westrich, Robert Leuong, Nitin Tillam, Eric Kim, Pranusha Naidu, Matthew Westrich, Aditya Suresh, Katie Forest, Julie Friend, Shruthika Ponchopally, Salim Munoz, Vindhya Karkala, Joey Krebs, Benjamin Crawford, Nicole Heafner, Yogi Patel, Pranjali Rajalakshmi, Mausam Maru

**Extramural Trainees:** Aayush Mittal (Wayne State, MI); Niraja Korremala (NTR University, Andhra Pradesh); Denise Sallee (University of Kansas, MO): Mentor Ajay Jain

**Mentee Academic Advancement - Current Positions:**

**Jeffery Salomon, MD:** Assistant Professor of Pediatrics, University of Nebraska

1. **Salomon JD**, Price A, Manithody C, **Jain AK**. Cardiopulmonary bypass surgery drives clonal proliferation of pro-inflammatory gut bacteria and alters gut permeability. (NASPGHAN 2019)
2. **Salomon JD**, Price A, Manithody C, **Jain AK**. Effect of Cardiopulmonary Bypass on the Pediatric Intestinal Microbiome. Society of Critical Care Medicine. (Oct 2018)

**Thomas Ratchford, MD:** Assistant Professor of Pediatrics, University of Wisconsin

1. Villalona G, Price A, Blomenkamp KS, Manithody C, **Ratchford T**, Saxena, Saurabh, Westrich M, Kakarla V, Pochampally S, Phillips W, Heafner N, Korremala N, Greenspon J, Guzman M, **Jain AK**. No gut no gain! Enteral bile acid treatment preserves gut growth but is not protective for TPN associated liver injury in a novel extensive short bowel animal model. *Premier Research Paper. J Parenter Enteral Nutr.* 2018; Apr:1-14

**Jonathan Rodrigues, MD:** Faculty, Sanford Health

1. **Jain AK**, Wen JX, Blomenkamp KS, Arora S, Blaufuss TA, **Rodrigues J**, Long JP, Neuschwander-Tetri BA, Teckman, JH. Oleanolic Acid improves gut atrophy induced by Total Parenteral Nutrition (TPN). *JPEN J Parenter Enteral Nutr.* 2015 Apr 28: 2015 *Premier Research Paper*
2. **Jain AK**, Wen JX, Arora S, Blomenkamp KS, **Rodrigues J**, Blaufuss TA, Liou VD, Burrin DB, Long JP, Teckman JH. Validating hyperbilirubinemia and gut mucosal atrophy with a novel ultra-mobile ambulatory Total Parenteral Nutrition piglet model. *Nutrition Research.* 2015 Feb;35(2):169-74.
3. **Rodrigues J**, Braddock S, **Jain AK**. Eosinophilic Esophagitis in a child with Juvenile Polyposis associated with SMAD4 mutation. (NASPGHAN 2013)
4. **Rodrigues J**, Sycamore K, Knutsen A, **Jain AK**. Lymphocytic esophagitis and celiac disease presenting after coin impaction: An incidental, exclusive or concomitant disease? (NASPGHAN 2013)

**Timothy Blaufuss, MD:** Faculty, Sanford Health

1. **Jain AK**, Wen JX, Blomenkamp KS, Arora S, **Blaufuss TA**, Rodrigues J, Long JP, Neuschwander-Tetri BA, Teckman, JH. Oleanolic Acid improves gut atrophy induced by Total Parenteral Nutrition (TPN). *JPEN J Parenter Enteral Nutr.* 2015 Apr 28: 2015 *Premier Research Paper*
2. Mavers M, **Blaufuss T**, Friedman H, Becker BA, **Jain AK**. Eosinophilic esophagitis in a pediatric patient with Herpes simplex virus esophagitis. A cause or a consequence? *OJCMR*, Vol 1, Issue 6: Oct 2015
3. **Jain AK**, Wen JX, Arora S, Blomenkamp KS, Rodrigues J, **Blaufuss TA**, Liou VD, Burrin DB, Long JP, Teckman JH. Validating hyperbilirubinemia and gut mucosal atrophy with a novel ultra-mobile ambulatory Total Parenteral Nutrition piglet model. *Nutrition Research.* 2015 Feb;35(2):169-74.

**Jun Ik, David Westrich, Robert Leuong, Nitin Tillam, Matthew Westrich, Salim Munoz, Hector Osei Aditya Suresh:** Entered Fellowship / Residency Positions  
**Julie Friend, Shruthika Ponchopally, Nicole Heafner:** Entered Medical School

**STARS Student Mentor (Ajay Jain):** 2018, 2019. First prize 2018.

**Physician Collaborator for Nurse Practitioner:**

Laura Hote, CPNP

07/2012-present

Kathleen Sparanitis, CPNP

07/2009-present

**Professional Society memberships**

North American Society of Pediatric Gastroenterology, Hepatology and Nutrition  
American Gastroenterology Association;  
American Academy of Pediatrics;  
American Liver Foundation;  
ASPEN (American Society for Parenteral and Enteral Nutrition);  
AASLD (The American Association for the Study of Liver Diseases);  
AMA (American Medical Association),



**Bibliography****PEER REVIEWED MANUSCRIPTS**

1. **Jain AK**, Anand R, Lerret S, Yanni G, Chen J, Mohammad S, Doyle M, Telega G, Horslen S. Outcomes following Liver Transplantation in Young Infants: Data from the SPLIT. American Journal of Transplantation. Accepted for publication August 2020. IF- 7.163
2. Xanthakos S, Lavine J, Yates K, Schwimmer J, Molleston J, Rosenthal P, Murray K, Bos MB, **Jain AK**, Scheimann AO, Miloh T, Fishbein M, Behling C, Brunt E, Sanyal A, Tonascia J. Progression of Fatty Liver Disease in Children Receiving Standard of Care Lifestyle Advice. Gastroenterology. 2020 Jul 23; S0016-5085(20)34996-9. PMID: 32712103. IF – 20.877
3. Guzman M, Manithody C, Krebs J, Denton C, Besmer S, Jain S, Villalona GS, **Jain AK**. Impaired gut-systemic signaling drives Total Parenteral Nutrition associated injury. Nutrients. 2020 May; 12(5): 1493. PMID: PMC7284746
4. Newton KP, Lavine J, Wilson L, Behling CA, Vos MB, Molleston JP, Rosenthal P, Miloh T, Fishbein MH, **Jain AK**, Murray KF, Schwimmer JB. Alanine Aminotransferase and Gamma Glutamyl Transpeptidase Predict Histologic Improvement in Pediatric Nonalcoholic Steatohepatitis, Hepatology. (Accepted May 16 2020). PMID: 32416645 DOI: 10.1002/hep.31317. IF 14.91.
5. Manithody C, Denton C, Price A, Blomenkamp K, Patel Y, Welu A, Gilbert E, Madnawat H, Jain S, Villalona G, **Jain AK**. Development and validation of an ambulatory piglet model for short bowel syndrome with ileo-colonic anastomosis. Exp Biol Med (Maywood). 2020;1535370220915881. PMID: 32264693
6. Manithody C, Van Nispen J, Murali V, Jain S, Samaddar A, Armstrong A, **Jain AK**. Role of Bile Acids and Gut Microbiota in Parenteral Nutrition Associated Injury. J Hum Nutr 4(1):75-79.
7. Madnawat H, Welu A, Gilbert E, Taylor D, Jain S, Manithody C, Blomenkamp K, **Jain AK**. Mechanisms of Parenteral Nutrition Associated Liver and Gut Injury. Nutr Clin Pract. 2020 Feb;35(1):63-71. PMID: PMC7014933
8. Part of NASH CRN: Feldman AG, Sundaram SS, Beaty BL, Torres R, Curtis DJ, Kempe A. Immunization Status at the Time of Liver Transplant in Children and Adolescents. JAMA. 2019 Nov 12;322(18):1822-1824.
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  41. **Jain AK**, Kumar A, Antiretroviral Therapy in Children, Pediatrics Today, 2000,3: pg 820-828
  42. **Jain AK**, BETARU: An indigenously designed cordless stethoscope, Indian Pediatrics, May 2000, Volume 37, pg 566-567. PMID: 10820562

#### **CONTRIBUTION TO SCIENCE: KEY MANUSCRIPT DESCRIPTION**

**Gut-Liver Crosstalk:** Our lab has reported on many aspects of the molecular mechanisms of hepatocellular and gut injury associated with TPN. Our key publication in the American Journal of Physiology for the first time explored the unique hypothesis that TPN associated injury is a result of a disruption of the Gut-systemic cross talk due to a lack of luminal nutrient induced signaling. This work raised the provocative prospect that bile acids, which were generally thought of as toxic agents may have therapeutic utility in the clinical context of TPN associated pathology as regulated by key hepatobiliary nuclear receptors and transporters. Using bile acids as a gut nuclear receptor - Farnesoid X Receptor agonist (FXR), significant improvement in hepatic dysfunction was established.

1. Denton C, Price A, Friend J, Manithody C, Blomenkamp K, Westrich M, Kakarla V, Philips W, Krebs J, Abraham S, Osei H, **Jain AK**. Role of the Gut-Liver Axis in Driving Parenteral Nutrition Associated

- Injury. *Children (Basel)*. 2018 Sep 25;5(10).
2. Villalona G, Price A, Blomenkamp KS, Manithody C, Ratchford, Thomas, Saxena, Saurabh, Westrich M, Kakarla V, Pochampally S, Phillips W, Heafner N, Korremla N, Greenspon J, Guzman M, **Jain AK**. No gut no gain! Enteral bile acid treatment preserves gut growth but is not protective for TPN associated liver injury in a novel extensive short bowel animal model. *Premier Research Paper. J Parenter Enteral Nutr.* 2018; Apr:1–14
  3. **Jain AK**, Stoll B, Burrin DG, Holst JJ, Moore DD. Enteral bile acid treatment improves parenteral nutrition-related liver disease and intestinal mucosal atrophy in neonatal pigs. *Am J Physiol Gastrointest Liver Physiol.* 2012 Jan 15;302(2): G218-24.

**Novel Ambulatory TPN and SBS Model:** The manuscripts presented below detail our major advancement to the current model systems used for research in the field of SBS and TPN. Because TPN involves intravenous infusion over long duration of time, stability and feasibility of long-term indwelling catheters in animal models is a big concern. Current technology has allowed human patients on TPN to use a portable, ambulatory, unobtrusive mobile pump as the method of delivery. However, prevailing TPN infusion animal models involve tethering of the animals to maintain catheters, which is stressful for animals and known to alter hepatobiliary receptors and transporters. Using ultra-small ambulatory pumps, tunneled catheters, customized animal jackets and gut resection, our lab has established, for the first time a new untethered ambulatory animal model which recapitulates human injury and nutrition delivery.

4. Price A, Blomenkamp KS, Manithody C, Saxena S, Abraham S, Greenspon J, Villalona G, **Jain AK**. Developing a novel ambulatory total parenteral nutrition dependent short bowel syndrome animal model. *Journal of Surgical Research. J Surg Res.* 2019 Feb; 234:13-19
5. **Jain AK**, Wen JX, Arora S, Blomenkamp KS, Rodrigues J, Blaufuss TA, Liou VD, Burrin DB, Long JP, Teckman JH. Validating hyperbilirubinemia and gut mucosal atrophy with a novel ultramobile ambulatory Total Parenteral Nutrition piglet model. *Nutrition Research.* 2015 Feb;35(2):169-74.
6. **Jain AK**, Teckman JH. Controversies in the mechanism of Total Parenteral Nutrition induced pathology. *Children*, Jul 2015, 2, 358-370.

**Regulations of Gut Growth and Gut Microbiota:** Our work further explored gut growth related to luminal signals during TPN. Regulation of gut proliferative effects due to the bile acid activated gut G-coupled receptor (TGR5) and downstream Glucagon Like Peptides (GLPs) was pioneered and published as a premier research paper. For the first time existence of divergent pathways regulating hepatocellular integrity via the FXR-Fibroblast Growth Factor 19 axis and gut mucosal proliferation via the TGR5-GLP axis in the context of TPN were established. Additionally, our work was novel in describing the gut microbial changes during TPN and its modulation by exogenous bile acid analogues. The existence of complimentary pathways regulating gut proliferation was speculated based on responses noted with TGR5 signaling. Our studies demonstrated a proliferation of phylum Bacteroidetes along with decreased Firmicutes and microbial diversity in animals on TPN along with an alteration of key hepato-biliary receptors and transporters. This presented a paradigm change in our understanding of TPN associated injury.

7. **Jain AK**, Sharma A, Arora S, Blomenkamp KS, Jun I, Luong R, Westrich, DJ, Mittal A, Buchanan PM, Guzman MA, Long JP, Neuschwander-Tetri BA, Teckman JH. Preserved gut microbial diversity accompanies upregulation of TGR5 and hepatobiliary transporters in bile acid treated animals on Parenteral Nutrition. *JPEN J Parenter Enteral Nutr.* 2017 Feb;41(2):198-207. *Premier Research Paper*
8. **Jain AK**, Wen JX, Blomenkamp KS, Arora S, Blaufuss TA, Rodrigues J, Long JP, Neuschwander-Tetri BA, Teckman, JH. Oleanolic Acid improves gut atrophy induced by Total Parenteral Nutrition (TPN). *JPEN J Parenter Enteral Nutr.* 2015 Apr 28: *2015 Premier Research Paper*
9. **Jain AK**, Teckman JH. Newly identified mechanisms of Total Parenteral Nutrition (TPN) related liver injury. *Advances in Hepatology.* Volume 2014, ID 621380, 7, 2014.

#### **ABSTRACTS/POSTERS/PLATFORM PRESENTATION**

1. **Oral Platform Presentation:** Manithody, Chandrashekhara; Blomenkamp, Keith; Krebs, Joey; Patel, Yogi, Denton, Christine; Villalona, Gustavo; Greenspon, Jose; Guzman, Miguel, Besmer, Sherri, Teckman Jeffrey, Long John, **Jain AK**. Novel dual GLP-1/GLP-2 receptor agonist ZP7570 mitigates TPN-associated intestinal mucosal atrophy and liver injury in piglets. (World Congress of Pediatric Gastroenterology, Hepatology and Nutrition 2020).
2. **Oral Platform Presentation:** Denton C, Guzman M, Price A, Manithody C, Blomenkamp K, Korremla N, Krebs J, Villalona G, **Jain AK**. Gut-derived signalling drives total parenteral nutrition associated

- injury in a novel ambulatory piglet model. (World Congress of Pediatric Gastroenterology, Hepatology and Nutrition 2020).
3. Denton C, Price A, Manithody C, Osei H, Pattamon S, Ilahi O, Munoz S, Long J, **Jain AK**. Enteral antibiotics drive clonal expansion of gut inflammatory microbiota and significant hepatic cholestasis in animals on Total Parenteral Nutrition. (NASPGHAN 2019)
  4. Salomon J, Price A, Manithody C, **Jain AK**. Cardiopulmonary bypass surgery drives clonal proliferation of pro-inflammatory gut bacteria and alters gut permeability. (NASPGHAN 2019)
  5. Nazzal MD, Madsen E, Nguyen M, Price A, Manithody C, Welu A, Munoz S, Madnawat H, Denton C, Guzman M, Blackall D, Teckman JH, Varma C, **Jain AK**. PROTECT (Perfusion Regulated Organ Therapeutics with Enhanced Controlled Testing): Novel human model to mitigate ischemia reperfusion injury. (NASPGHAN 2019)
  6. **Oral Platform Presentation:** Abraham AS, Price A, Blomenkamp K, Manithody C, Osei H, Rajalakshi P, Kakarla V, Denton C, Krebs, J, Friend J, Philips W, Westrich M, Villalona G, **Jain AK**. Role of Luminal Signaling in Parenteral Nutrition Associated Injury. (Annual Academic Surgical Congress, Nov 2018)
  7. **Oral Platform Presentation:** Guzman M, Price A, Manithody C, Blomenkamp K, Korremla N, Krebs J, Abraham S, Friend J, Osei H, Denton C, Villalona G, Greenspon J, **Jain AK**. Gut-systemic signaling drives total parenteral nutrition associated injury.(NASPGHAN 2018)
  8. Salomon JD, Price A, Manithody C, **Jain AK**. Effect of Cardiopulmonary Bypass on the Pediatric Intestinal Microbiome. Society of Critical Care Medicine. (Oct 2018)
  9. **Presidential Poster of Distinction: Jain AK**, Anand R, Lerrett S, Yanni GS, Mohammad S, Doyle M, Telega GW, Horslen SP. Outcomes Following Liver Transplantation in Young Infants. American Society for the Study of Liver Diseases (AASLD, Nov 2018)
  10. Seth R, Akinboyo I, Chhabra A, Qaiyum Y, Shet A, Gupte N, **Jain AK**, Jain SK. Mobile-Phone Incentives for Childhood Immunizations in Rural India. NIH - 2018 mHealth Technology Showcase Committee. May 2018
  11. **Premier Paper Session: Oral Presentation:** Villalona G, Price A, Blomenkamp KS, Manithody C, Westrich M, Kakarla V, Pochampally S, Phillips W, Heafner N, Korremla N, Guzman M, Greenspon J, **Jain AK**. No gut no gain! Enteral bile acid treatment preserves gut growth but is not protective for TPN associated liver injury in a novel extensive short bowel animal model. (ASPEN Jan 2018)
  12. Puri P, Price A, Gillevet Patrick, Blomenkamp K, Sikaroodi M, Heafner N, Westrich M, Pochampally S, Kakarla V, Greenspon J, Villalona G, Guzman M, Long J, Tetri B, Teckman, JH, **Jain AK**. Firmicutes dominance is associated with lower serum bilirubin level in a novel ambulatory model of parenteral nutrition induced liver injury and gut atrophy. (NASPGHAN 2017)
  13. Shapiro WL, Africa J, **Jain AK**, Schwimmer J et al. Approach to the Management of Pediatric NAFLD by Pediatric Gastroenterologists and Hepatologists across the United States. (NASPGHAN 2017)
  14. Schwimmer JB, Wilson LA, Fishbein MH, **Jain AK**, Karpen SJ, Molleston JP, Murray KF, Newton KP, Rosenthal P, Vos MB, Xanthakos SA, Hoofnagle JH, Behling C, Clark JM, Lavine JE. Improvements in serum aminotransferase levels are associated with improvements in liver histology in children with nonalcoholic fatty liver disease (NAFLD). (AASLD 2017)
  15. Xanthakos SA, Lavine JE, Yates K, Schwimmer JB, Molleston JP, Rosenthal P, Murray KF, Vos MB, **Jain AK**, Fishbein M, Behling C, Brunt EM, Tonascia J and Doo E. Natural history of nonalcoholic fatty liver disease (NAFLD) in children receiving standard lifestyle counseling and placebo in NASH Clinical Research Network (CRN) trials. (AASLD 2017)
  16. **Best Faculty Presentation Award:** Oral Presentation: **Jain AK**, Sharma A, Blomenkamp KS, Garrett M, Jain A, Long JP, Neuschwander-Tetri BA, Teckman JH. Preserved gut microbial diversity

- accompanies upregulation of TGR5 in bile acid treated animals on Parenteral Nutrition. (Oral Presentation: Pediatric Science Days, May 2017)
17. Farmakis SG, Guzman M, Buchanan P, **Jain AK**, Teckman JH. Shear wave sonoelastography correlates with liver biopsy fibrosis scores in pediatric patients with liver disease. The Society for Pediatric Radiology. (Vancouver, British Columbia, Canada, May 2017)
  18. **Jain AK**, Sharma A, Blomenkamp KS, Kornfeld D, Suresh A, Nitin T, Garrett M, Jain A, Long JP, Neuschwander-Tetri BA, Teckman JH. Enteral Bile Acid Treatment Preserves Gut Microbial Diversity and Regulates Hepatobiliary Transporters in Animals on Parenteral Nutrition. (SLU, AOA: Jan 2017)
  19. **World Congress Plenary Presentation: Jain AK**, Sharma A, Blomenkamp KS, Suresh A, Nitin T, Garrett M, Jain A, Long JP, Neuschwander-Tetri BA, Teckman JH. Role of Bile Acids in Preventing Parenteral Nutrition associated disorders. (World Congress of Pediatric Gastroenterology Hepatology and Nutrition, Montreal, Oct 2016)
  20. Africa J, **Jain AK**, Schwimmer J et al Application of the NHLBI dyslipidemia guidelines in children with nonalcoholic fatty liver disease. World Congress Oct 2016
  21. **Jain AK**, Sharma A, Arora S, Blomenkamp KS, Luong R, Shainoju Korrempla N, Suresh A, Westrich M, Kim E, Long JP, Teckman JH. Enteral Bile Acid Treatment Preserves Gut Microbial Diversity and Regulates Hepatobiliary Transporters In Animals on Parenteral Nutrition (Oral Presentation: Pediatric Science Days, Apr 2016)
  22. **Premier Paper Session: Oral Presentation: Jain AK**, Sharma A, Arora S, Blomenkamp KS, Jun I, Luong R, Westrich D, Mittal A, Long JP, Teckman JH. Preserved gut microbial diversity accompanies upregulation of TGR5 and hepatobiliary transporters in bile acid treated animals on Total Parenteral Nutrition (TPN) (ASPEN Jan 2016)
  23. **Jain AK**, Luong R, Tallam N, Blomenkamp KS, Arora S, Blaufuss T, Rodrigues J, Long JP, Tetri B, Teckman JH. Oleanolic Acid Improves Gut Atrophy Induced by Parenteral Nutrition. (AOA, Jan 2016)
  24. Schwimmer JB, Lavine JE, Tetri BN, Wilson L, Xanthakos SA, Barlow SE, Vos MB, Molleston JP, Whittington PF, Rosenthal P, **Jain AK**, Murray KF, Brunt EM, Kleiner DE, Van Natta ML, Clark JM, Tonascia J, Doo E. Cysteamine Bitartrate Delayed-Release (DR) for the Treatment of Nonalcoholic Fatty Liver Disease (NAFLD) in Children (CyNch) Trial. NIH Nonalcoholic Steatohepatitis Clinical Research Network. AASLD Nov 2015.
  25. **Poster of Distinction:** Sharma A, Ripa M, Blomenkamp KS, Jun IC, Teckman JH, **Jain AK**. Bile Acid Treatment of Total Parenteral Nutrition (TPN) infused animals induces divergence in gut microbial flora. (NASPGHAN, Oct 2015)
  26. **Poster of Distinction:** Wen JX, Arora S, Blomenkamp KS, Blaufuss TA, Teckman JH, Long JP, **Jain AK**. Glucagon-Like Peptides ameliorate Total Parenteral Nutrition associated gut atrophy. (Digestive Disease Week 2015)
  27. **Premier Paper Session: Oral Presentation: Jain AK**, Wen JX, Arora S, Blomenkamp KS, Blaufuss TA, Long JP, Teckman JH. Oleanolic Acid improves gut atrophy induced by Total Parenteral Nutrition (TPN) (ASPEN Feb 2015)
  28. **Oral Platform Presentation: Jain AK**, Wen JX, Arora S, Blomenkamp KS, Sharma A, Iqbal S, Rodrigues J, Liou V, Blaufuss TA, Long JP, Teckman JH. Total Parenteral Nutrition (TPN) causes gut mucosal atrophy and hyperbilirubinemia: We describe a novel ultra-mobile ambulatory model. (Oral Presentation, NASPGHAN 2014)
  29. **AASLD Presidential Plenary Oral Platform Presentation: Jain AK**, Deppe R, Yates KP, Comerford M, Masuoka HC, Molleston JP, Schwimmer JB, Lavine JE, Brunt EM, Tonascia J, Kleiner DE, Chalasani NP. Serum keratin fragment 18 (CK18) levels significantly predict changes in liver histology in children and adolescents with nonalcoholic fatty liver disease (NAFLD): Results from the TONIC trial.

30. **Jain AK**, Blomenkamp KS, Rodrigues J, Blaufuss TA, Carl MA, Liou VD, Wen JX, Stoll B, Burrin DG, Long JP, Teckman, JH. Development and validation of a novel ultra-mobile ambulatory Total Parenteral Nutrition model. (Digestive Disease Week 2014)
31. Rodrigues J, Braddock S, **Jain AK**. Eosinophilic Esophagitis in a child with Juvenile Polyposis associated with SMAD4 mutation. (NASPGHAN 2013)
32. Rodrigues J, Sycamore K, Knutsen A, **Jain AK**. Lymphocytic esophagitis and celiac disease presenting after coin impaction: An incidental, exclusive or concomitant disease? (NASPGHAN 2013)
33. Milligan KL, **Jain AK**, Foy T, Sigfried E, Knutsen A. Mesalamine treatment for colitis in ectodermal dysplasia with immunodeficiency. 2012 CIS Annual Meeting. May 2012, Chicago
34. Waterhouse K, Katta A, Teckman J, Foy T, Derdoy J, **Jain AK**, Knutsen A, Becker B. Vitamin D Levels in Children with Eosinophilic Esophagitis and Gastroesophageal Reflux Disease. American Academy of Allergy Asthma and Immunology (2011 AAAAI)
35. Mavers M, Shah A, Kumar S, Becker B, **Jain AK**. Eosinophilic esophagitis (EE) in a pediatric patient with Herpes simplex virus esophagitis (HSVE). A cause or a consequence? The dilemma continues. (2010 NASPGHAN)
36. **Jain AK**, Barbara S, Burrin DG, Moore DD. "Enteral Bile Acids improve TPN related cholestasis and gut mucosal atrophy: Potential Role of FXR and FGF19" (2009 NASPGHAN)
37. **Jain AK**, Barbara S, Burrin DG, Moore DD. Metabolic Alterations in Parenteral Nutrition Associated Liver Disease : Potential roles of Farnesoid X Receptor (FXR) and Fibroblast Growth Factor 19 (FGF19). (2008 NASPGHAN)
38. **Jain AK**, Ma K, Moore DD. Replacement of zinc by copper in nuclear receptors may contribute to the pathogenesis of Wilson's disease. (2008 Digestive Disease Week)
39. **Jain AK**, Romero JJ, Lichtenberger LM. Phosphatidylcholine (PC)-conjugated 5ASA accelerates recovery from dextran sulfate sodium (DSS) colitis in rats. (2007 Crohns and Colitis Foundation)
40. **Jain AK**, Eldin KW, Garner DK, Karpen S, Fishman DS. Non-Caseating granulomas in lymph nodes of a pediatric liver transplant recipient associated with parvovirus B19 infection. Texas Children's Hospital, Houston, Texas, USA. (2007 NASPGHAN)
41. **Jain AK**, Motil K, Olutoye O, Tatevian N. Signet Ring Cell Carcinoma without Microsatellite Instability - An Unusual Suspect. (2007 NASPGHAN)
42. **Jain AK**, Goei V, Arora P, Mittal SK. Newer Duodenal Biopsy Norms in Apparently Normal Children in Comparison to Those with Celiac Disease – Data from a Tertiary Care Center. Department of Pediatrics, Medical College of Georgia, Augusta, USA. (2005 NASPGHAN)
43. **Jain AK**, Mittal SK, Ramji S, Chakravarti A. Incorporating Hepatitis B vaccine in the EPI, for Indian Infants: Seroefficacy of 0, 6 weeks and 9 months immunization schedule (along with DPT and measles vaccine). (2004 World Congress of Pediatric Gastroenterology, Hepatology and Nutrition. Paris, France)

## **Presentations and Talks**

### **INVITED INTERNATIONAL / NATIONAL SPEAKER / PRESENTER**

1. Role of Gut-Systemic signaling in Total Parenteral Nutrition Associated Injury (Visiting Investigator Series, Baylor College of Medicine, Texas Children's Hospital, Houston, 2020)
2. Overview of Novel Nutritional Status Biomarkers (Tampa, FL, 2020)
3. 'Viral Hepatitis in Children'. CME Talk – American Liver Foundation (St. Louis, Nov 2019)
4. New Horizons Childhood Obesity and NASH. (Des Peres, MO), Jul 2019
5. NPPC: New Horizons: Bugs, drugs and biomarkers in intestinal rehabilitation and liver injury. (ASPEN Meeting: Phoenix AZ, Mar 2019)
6. Gut-systemic cross talk: Deciphering the code: (ASPEN Meeting: Phoenix AZ, Mar 2019)

7. Role of environmental toxicants in modulating disease severity in children with NAFLD. NASH CRN. Baltimore Oct 2018.
8. Invited Faculty: Role of the gut-liver cross talk and bile acids in parenteral nutrition associated injury (Virginia Commonwealth University, Feb 2018)
9. Invited Faculty: Role of Enteral Bile Acids in Parenteral Nutrition (PN) Associated Pathology Liver and Gut Injury (Georgetown University, Washington DC, July 2017)
10. CME Presentation: 'Diagnosis and Management of Gastrointestinal and Liver Disorders in B-Cell Primary Immune Deficiency Disorders', Jeffrey Modell Conference, May 2017
11. Invited Faculty: University of Louisville: Role of Enteral Bile Acids in Parenteral Nutrition (PN) Associated Pathology. (Louisville, March 2017)
12. CME Talk: Overview of Enterohepatic Circulation, Gut Microbiota and Metabolic Pathways Relevant to the Gut-liver Axis. (Orlando, Feb 2017, Jain AK: PI NIH R13)
13. CME Talk: Pediatric Intestinal Failure and Parenteral Nutrition Associated liver disease. (Orlando, Feb 2017)
14. Invited Faculty: University of Arkansas: Role of Bile Acids in Parenteral Nutrition (PN) Associated Liver and Gut Injury. (Arkansas, May 2016)
15. Faculty Speaker: Kansas University, Lysosomal Acid Lipase Deficiency. (Kansas, 2015)
16. CME Presentation: 'Diagnosis and Management of Gastrointestinal and Liver Disorders in B-Cell Primary Immune Deficiency Disorders', Jeffrey Modell Conference, May 2015
17. Faculty Speaker: Institute of Liver and Biliary Sciences, Delhi, India: Alteration in FXR-FGF19 axis in TPN Liver and Gut Disease. (Delhi, Apr 2013)
18. Chairperson, Pediatric Inflammatory Bowel Disease: GB Pant Hospital, Delhi, India. (Delhi, Apr 2013)
19. Speaker: Pushpanjali CrossLay Hospital, Ghaziabad, India: Current Perspectives in Pediatric Obesity - NAFLD and NASH. (Delhi, Apr 2013)
20. Speaker: Incorporating Hepatitis B vaccine in the EPI, for Indian Infants: Seroefficacy of 0, 6 weeks and 9 months immunization schedule (along with DPT and measles vaccine). (Paris, France 2004)
21. CME Presentation: 'Diagnosis and Management of Gastrointestinal Disorders in B-Cell Primary Immune Deficiency Disorders', Jeffrey Modell Conference, May 2014.
22. Cincinatti Children's Hospital: 'New strategies for preventing parenteral nutrition associated liver and gut disorders.' (Cincinatti, Dec 2013)
23. Baltimore, NIH Clinical Research Network: 'Serum keratin fragment 18 (CK18) levels in Pediatric NAFLD'. (Baltimore, Nov 2013)
24. *CME Presentation:* Diagnosis and Management of Gastroesophageal Reflux Disease in Pediatric Patients, Webcast, NASPGHAN (September 2012)
25. CME Presentation, Washington University: Geriatrics and Nutritional Science Lecture: Washington University, 'Enteral bile acids improve TPN related cholestasis and gut mucosal atrophy: Potential role of FXR and FGF19.' (May 2010)

#### **MEDICAL SCHOOL / RESIDENT LECTURES**

1. Pediatric Viral Hepatitis. Feb 2020
2. Lysosomal Acid Lipase Deficiency. Aug 2019
3. Pediatric Science Days: Gut-Systemic Signaling Drives Total Parenteral Nutrition Associated Injury (2019)
4. Pathology LRC Lecture: Role of Bile acids in parenteral nutrition associated injury (Saint Louis University, Oct 2018)
5. Pediatric Liver Disease: Saint Louis University: (Jul 2016)
6. Bile Acids in Total Parenteral Nutrition (TPN) Associated Pathology, Surgery: (March 2016)
7. Pediatric Endoscopic Procedures: Saint Louis University: (Dec 2015)
8. Procedures in Gastroenterology and Liver Pathology: Saint Louis University: (Aug 2015)
9. Pediatric Endoscopy: Saint Louis University: (September 2014)
10. Medical School Curriculum Lecture: Pediatric Hepatology: Saint Louis University: (Feb 2013)
11. General Academic Meeting Lecture: Current Perspectives in Pediatric Obesity: Saint Louis University: (Jan 2013)
12. Gastrointestinal Endoscopy in Pediatrics: Resident noon conference, Saint Louis University. (Sep 2012)
13. Pancreatitis in the pediatric population: Saint Louis University: (October 2010)
14. Pediatric Surgery Conference: Lower Gastrointestinal Bleed: Saint Louis University: (Apr 2011)
15. CME Presentation: Wireless Capsule Endoscopy: Webcast, Pediatrics on Demand, Saint Louis University (March 2010)
16. Gastrointestinal Endoscopy: Faculty Presentation: Resident noon conference, Saint Louis University. (Jan 2010)



17. Principles of Endoscopy: Saint Louis University: (November 2009)
18. Pediatric Surgery Conference: Capsule endoscopy in Pediatrics: Saint Louis University: (October 2009)
19. Diversion Colitis: Baylor College of Medicine, Texas Children's Hospital: (February 2009)
20. Gastrointestinal Tuberculosis: Baylor College of Medicine, Texas Children's Hospital: (December 2008)
21. Whipple Disease: Baylor College of Medicine, Texas Children's Hospital: (March 2008)
22. Presentation: Randomized, double-blind, placebo-controlled trial of corticosteroids after Kasai portoenterostomy for biliary atresia, USA (Feb 2008)
23. Wilson disease and the role of nuclear receptors, Baylor College of Medicine, Texas, USA (Aug 2007)
24. Presentation: Prognostic Value of Portal Pressure at the Time of Kasai Operation in Patients With Biliary Atresia, Baylor College of medicine, USA (Jun 2007)
25. Journal Club: Improvement of Fitness, Body Composition, and Insulin Sensitivity in Overweight Children in a School-Based Exercise Program. Medical College of Georgia, USA. (Feb 2006)
26. Neonatal Hirschsprung's Disease: Medical College of Georgia, USA (Jan 2006)
27. Tracheo Esophageal Fistula: Medical College of Georgia, USA (Aug 2004)
28. Incorporating Hepatitis B Vaccine in the EPI: Johns Hopkins University, USA (June 2003)
29. Hirschsprungs disease: Lok Nayak Hospital, Maulana Azad Medical College, India: (Feb 2003)
30. Idiopathic Hyper Eosinophilic Syndrome: Lok Nayak Hospital, Maulana Azad Medical College, India: (Sep 2002)
31. Fibrodysplasia Ossificans Progressiva - Department of Pediatrics, Lok Nayak Hospital, India: (Nov 2001)
32. Betaru : Cordless Stethoscope - Department of Pediatrics, Lok Nayak Hospital, India : (Dec 2000)
33. The Guidelines Of Therapy In Disseminated Intravascular Coagulation - Lok Nayak Hospital, Maulana Azad Medical College, India: (June 2000)

#### **GRAND ROUNDS**

1. Grand Rounds: Improving Childhood Immunizations with Cellular Technology (Jan 2020)
2. Grand Rounds: CPC - 11-year-old boy with mildly elevated BMI and elevated liver enzymes. Saint Louis University: (March 2017)
3. Extramural Grand Rounds: University of Missouri, Columbia: Clinical presentations of Lysosomal Acid Lipase Deficiency. (Columbia, 2015)
4. Hepatic Artery Stenosis: Saint Louis University: (Feb 2014)
5. Childhood Obesity NAFLD and NASH: Saint Louis University: (Feb 2013)
6. Diagnosis and management of Gastroesophageal Reflux Disease in Pediatric Patients: Saint Louis University: (Apr 2012)
7. Capsule Endoscopy in Pediatrics: Saint Louis University: (Jan 2011)
8. Varicella Zoster induced gastric ulceration: Saint Louis University: (Jan 2011)

#### **RESEARCH COLLOQUIUM / LIVER CENTER/COMPARATIVE MEDICINE**

- 1 Role of gut microbiota in mitigating parenteral nutrition associated injury. (Liver Center, Mar 2019)
- 2 Role of microbiota in driving total parenteral nutrition associated injury. Mar 2019
- 3 Gut-liver cross talk in parenteral nutrition associated injury (Liver Center, Feb 2018)
- 4 Bile Acid in parenteral nutrition associated injury (Comparative Medicine, Jan 2018)
- 5 Enteral Bile Acid Treatment Preserves Gut Microbial Diversity and Regulates Hepatobiliary Transporters in Animals on Parenteral Nutrition. (Comparative Medicine, Jan 2017)
- 6 Role of Bile Acids in Parenteral Nutrition (PN) Associated Pathology, Feb 2016.
- 7 Lysosomal Acid Lipase Deficiency Clinical Trial, May 2015.
- 8 Oleanolic Acid in Parenteral Nutrition Associated Disorders, Jul 2014.
- 9 New Strategies for preventing Parenteral Nutrition Associated Liver and Gut Injury, Liver Center Presentation, SLU Liver Center May 2014.
- 10 Pediatric Research Colloquium: Childhood Obesity and NASH: Saint Louis University: (Dec 2012)
- 11 Pediatric Research Colloquium: Enteral Bile Acid Treatment Improves Parenteral Nutrition Related Liver Disease and Intestinal Mucosal Atrophy: Saint Louis University: (Sep 2011)
- 12 Research Presentation: 'Total Parenteral Nutrition Associated Liver Injury', Saint Louis University. (May 2010)
- 13 CME Presentation: Wireless Capsule Endoscopy: Webcast, Pediatrics on Demand, Saint Louis University (March 2010)

#### **Consulting**

## **Community Service/Civic Activities**

### **Community Service:**

1. Lunch to Grow: Ambassador: 2018
2. Multinational Immunization Project: Aims to enhance childhood immunization in developing countries. International trips for implementation and work with local government and community. 2016-Current
3. Carle Clinic Talk (Local Community and Pediatricians): Childhood Nutrition and Obesity: Jan 2019
4. Marion Illinois Talk: (Local Community and Pediatricians): General Gastroenterology, Nutrition, Obesity. 2019
5. Talk in Springfield, MO: Community Physicians, Nurses: Fatty Liver Disease (Jul 2018)
6. Local Community Leaders Childhood Immunization Discussion, Haryana, India 2016
7. Talk at American Liver Foundation for GI community: Intestinal Failure and Liver Disease
8. Community Talk : Childhood Obesity (2013)
9. Community Talk : Liver Disease (2013)
10. The Friends of the Saint Louis University Liver Center: The ABC's of Liver Disease : Panel Faculty (Jan 2010)
11. Blood donation camps organized by the Red Cross (2003)
12. National Social Service (NSS): Participated as a member of a team –
  - Voluntary Immunization camps organized in slums of Delhi and surrounding areas (1998)
13. Visits and lectures to orphanages, juvenile delinquent homes, villages in and around Delhi (1998)

### **Press and Media:**

1. Best Doctors Award: 2019-2020
2. Featured on television Fox2 News: Pediatric Liver Transplantation, April 2018
3. Featured on television Fox2 News: Pediatric Short Bowel Syndrome and TPN, April 2018
4. Cover Page: Featured in Town and Style, Cover Page, 'Biliary Atresia and Liver Transplantation', 2016
5. Cover Page: Featured in Town and Style, Cover Page, 'Pediatric Liver Transplantation', 2014
6. Saint Louis Post Dispatch: Featured in article, 'Healthy Kids: Fighting Fatty Liver Disease', Saint Louis Post Dispatch (Sep 2013)
7. Featured in article on 'Fatty Liver Disease': Health Wellness. (Aug 2013)
8. Featured in USDA Article: 'Tiny Doses of Bile Acids May Blunt Preemie Liver Disease'. (Jun 2013)
9. Featured in article 'Underaged, Oversized: Fatty Liver Disease confronts obese youths. Saint Louis Post Dispatch (Feb 2012)
10. Featured in the local press as faculty for 'Rise in Obesity in Children'. Saint Louis Post Dispatch (Feb 2010)

## **Patents and Technology Transfer**

Betaru: A cordless Stethoscope (Telemedicine): **Jain AK**

Doctor 3.0 Medical Software: Jain SK, **Jain AK** (GOI - Copyright Office Reg. No. L-15696/96)