

SOURAV KUMAR BOSE
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TRAINING

POSTDOCTORAL

TEXAS CHILDREN'S HOSPITAL, BAYLOR COLLEGE OF MEDICINE

Resident, Pediatric Surgery

Houston, TX

8/2024-Present

BRIGHAM AND WOMEN'S HOSPITAL, HARVARD MEDICAL SCHOOL

Resident, General Surgery

Boston, MA

6/2018 – 6/2024

Awards:

- Clinical Poster Award - 2020, Massachusetts Chapter of the American College of Surgeons
- M. Judah Folkman Award, Best Basic Science Podium Presentation - 2021, American Pediatric Surgical Association
- Joe Leigh Simpson Award for Best Early Career Investigator - 2021, International Soc. for Prenatal Diagnosis and Therapy
- Esther Tsai Sugg Award, Highest Scoring Abstract, Academic Surgical Congress - 2021, Soc. of Asian Academic Surgeons
- Class of 1963 Research Award – 2022, Brigham and Women's Department of Surgery
- Edward Kwasnick Clinical Merit Award – 2023, South Shore Hospital, Brigham and Women's Department of Surgery
- Grant V. Rodkey Clinical Merit Award – 2023, Veterans Affairs Boston Healthcare System
- John A. Mannick Research Award – 2020 & 2023, Brigham and Women's Department of Surgery

CHILDREN'S HOSPITAL OF PHILADELPHIA

Fetal Surgery Research & Pediatric Surgery Moonlighter, Center for Fetal Diagnosis and Treatment

Philadelphia, PA

7/2019 – 6/2021

LEONARD DAVIS INSTITUTE OF HEALTH ECONOMICS

Associate Fellow

Philadelphia, PA

7/2019 – 6/2021

BRIGHAM AND WOMEN'S HOSPITAL

Intern, General Surgery

Boston, MA

6/2017 – 6/2018

PREDOCTORAL

THE WHARTON SCHOOL, UNIV. OF PENN.

MBA Healthcare Management; Captain, Wharton Rowing Team

Awards: Dean's List 2015-2016, Kaiser Family Foundation Grant Recipient

Philadelphia, PA

8/2015 – 5/2017

PERELMAN SCHOOL OF MEDICINE, UNIV. OF PENN.

MD; President, Agnew Surgical Society

Philadelphia, PA

8/2012 – 5/2017

THOURON SCHOLAR: LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE

MSc Public Health

Thesis: Management and Communication in Teams Managing Randomized Control Trials: A Case Study of the LSHTM TCC

London, England

9/2011 – 11/2012

THE WHARTON SCHOOL & COLLEGE OF ARTS AND SCIENCES, UNIV. OF PENN.

BSc Economics & BA Biology - magna cum laude, Civic Scholar, University Scholar

Awards: Thouron Fellowship for study in the UK, Fox Leadership Award; Rose Research Award; Alumni Award of Merit

Philadelphia, PA

9/2007 – 5/2011

RESEARCH

CHILDREN'S HOSPITAL OF PHILADELPHIA

Postdoctoral Fellow | W. Peranteau MD & H. Hedrick MD, Faculty Mentors

Philadelphia, PA

7/2019 – 7/2021

- Designed and implemented *in vitro* and *in vivo* experiments employing CRISPR-Cas9 approaches in 5 fetal disease models culminating in multiple peer-reviewed publications, oral presentations, and abstracts (see publications)
- Employed mixed-methods techniques culminating in multiple publications pertaining to enteral nutritional support for patients with pulmonary hypoplasia, management of congenital cystic adenomatoid malformations, ethics considerations in artificial womb technology, financial implications of COVID-related procedural cancellations, and legal intervention in pediatric trauma
- Managed day-to-day laboratory operations including optimizing experimental workflows, fostering research partnerships with industry and academic collaborators, and developing protocols for animal use
- Mentored 7 medical, PhD, master's, and undergraduate students and provided experimental and academic guidance
- Techniques: design of CRISPR guide RNA/homology template/mRNA/RNP, bioinformatics for gene editing detection/whole genome sequencing, viral/nanoparticle optimization via primary cell nucleofection and fetal murine and ovine injections

- Philadelphia, PA**
3/2015 – 6/2017
- CHILDREN’S HOSPITAL OF PHILADELPHIA**
Research Associate | T. Blinman MD & M. Nance MD, Faculty Mentors
- Participated in data collection and employed analyses to evaluate risk factors in blunt cerebrovascular injury and the efficacy of various surgical ligation devices in a porcine model culminating in two peer reviewed publications
- Guatemala**
6/2009 – 9/2010
- GUATEMALA HEALTH INITIATIVE**
Field Researcher | K. Bream MD & R. Band MD, Faculty Mentors
- Designed methodology for geographic randomization to investigate prehospital care financing in rural Guatemala
 - Lived and worked with local firefighters for 6 months to develop language proficiency and implement survey instruments
- Philadelphia, PA**
10/2008 – 5/2011
- THE WHARTON SCHOOL**
Research Assistant | H. Kunreuther PhD & M. Useem PhD, Faculty Mentors
- Collaborated with faculty to design and conduct CEO/CRO interviews that culminated in a catastrophic risk management summit with executives from the top-50 S&P 500 firms

NON-CLINICAL ENGAGEMENTS

PROFESSIONAL WORK

- MCKINSEY AND COMPANY** **New York, NY**
Summer Business Associate **5/2016 – 9/2016**
- Collaborated with C-level executives, contributed to design of key Phase IV trials, and developed a Medical Affairs Go-to-Market strategy for a rare disease drug launch
 - Designed and implemented analyses including price factor, contract life cycle, and therapeutic equivalence to identify \$80M in cost savings opportunity in hospital supply chain and pharmacy procurement for a large health system; conducted deep dives into price trends in key surgical supply chain areas

RELEVANT ACTIVITIES

- ONOM FOUNDATION, WHARTON GLOBAL IMPACT CONSULTING** **Mongolia**
Project Leader **3/2017 – 6/2017**
- Led group of 5 consultants in defining priorities, developing strategic plan, and providing market insights regarding Hepatitis C treatment access in Mongolia
- WHARTON LEADERSHIP PROGRAM** **Philadelphia, PA**
MBA Venture Fellow | Preston Cline EdD & Jules Roy MS, Faculty Mentors **12/2015 – 5/2017**
- One of three students selected from 50+ applicants to lead an immersive management and communication experience involving a 1-week circumnavigation of Grenada and Carriacou on 4 sailboats with 18 MBA students without prior sailing experience
 - Participated in a 2-week experiential leadership and outdoor skills training involving wilderness medicine education, off-trail navigation, and tentless camping on Wildcat Mountain, NJ
 - Participated in a 10-day experiential leadership trek involving the ascent of Pico Navarino on Isla Navarino, Chilean Patagonia with a team of 30+ MBA students with limited trekking and technical ascent experience
 - Organized multiple workshops with management experts on crisis communication and team dynamics for MBA students

ADDITIONAL INTERESTS

Volunteer Work: Penn Surgery mission, Santiago Atitlan, Guatemala (2017); CHOP surgical mission, Guatemala City, Guatemala (2017), Leonia Volunteer Ambulance (2005-2010); Philadelphia Animal Welfare Society Foster (2008-2012)
Interests: healthcare management, pediatric surgery; polo, trekking; carpentry & DIY, travel

MENTEES

Mentee	Years	Nature of work	Degree	Current Role
Pallavi Menon	2019-2023	Undergraduate and master’s research	MS ‘22	MSc student, Oxford University Medical Student, Johns Hopkins Univ.
Rohan Palanki	2019-2023	PhD research		MD/PhD Student, Univ. of Penn.
Kevin Wang	2019-2020	Undergraduate research	BA/BS ‘20	Analyst, Clearview Healthcare Partners
Brandon White	2019-2022	Medical school year out	MD ‘22	Surgery Resident, Johns Hopkins Univ.
Shiva Teerdhala	2019-2022	Undergraduate research	BA/BS ‘23	Consultant, Simon Kucher and Partners

PATENTS

Peranteau, William H., **Bose, Sourav K.**, and White, Brandon M. "In utero and postnatal gene editing and therapy for treatment of monogenic diseases, including mucopolysaccharidosis type 1h and other disorders." U.S. Patent Application No. 18/006,975.

PUBLICATIONS

PEER REVIEWED MANUSCRIPTS

Bose, Sourav K., Bream, Kent D.W., Barg, Frances K., Band, Roger A. "Willingness to pay for emergency referral transport in a developing setting: a geographically randomized study." *Academic Emergency Medicine*, 19(7), 793-800 (2012).

Tharakan, Sasha J., Hiller, Dennis, Shapiro, Rachel M., **Bose, Sourav K.**, Blinman, Thane A. "Vessel sealing comparison: old school is still hip." *Surgical endoscopy*, 30(1), 4653-4658 (2016).

Rossidis, Avery C., Tharakan, Sasha J., **Bose, Sourav K.**, et al. "Predictors of pediatric blunt cerebrovascular injury." *Journal of Pediatric Surgery*, 53(1), 141-145 (2018).

Mahvi, David A., Pak, Linda M., **Bose, Sourav K.**, et al. "Ultra-Fast Track Pancreaticoduodenectomy: Who Qualifies?" *Journal of the American College of Surgeons*, 227(4) S182-S183 (2018).

Mahvi, David A., Pak, Linda M., **Bose, Sourav K.**, et al. Fast-track pancreaticoduodenectomy: factors associated with early discharge. *World Journal of Surgery*, 43(5), 1332-1341 (2019).

Bose, Sourav K. and Peranteau, W.H. "Surgical and nonsurgical management of congenital lung malformations. American Thoracic Society Core Curriculum 2020. *Pediatric Pulmonary Medicine*." *ATS Scholar*, 1(4), 456-475 (2020).

Riley, Rachel S., Kashyap, Meghana V., Billingsley, Margaret M., White, **Bose, Sourav K.**, et al. "Ionizable lipid nanoparticles for in utero mRNA delivery." *Science Advances*, 7(3) (2021).

Bose, Sourav K., Dasani, Serena S., Roberts, Sanford, et al. (2021). "The Cost of Quarantine: Projecting the Financial Impact of Canceled Elective Surgery on the Nation's Hospitals." *Annals of Surgery*, 273(5), 844-849 (2021).

Bose, Sourav K., Menon, Pallavi, Peranteau, William. "In utero gene therapy: Progress and Challenges." *Trends in Molecular Medicine*, 27(8), 728-730 (2021).

Bose, Sourav K., White, Brandon M., Kashyap, Meghana V. et al. "In utero split AAV9 adenine base editing corrects the multi-organ pathology in a lethal lysosomal storage disease." *Nature Communications*, 12(1), 1-16 (2021).

Gibbs, Elizabeth., Schomberg, John, Wallace, Elizabeth L., **Bose, Sourav K.**, et al. "The Role of Race in Pediatric Legal Intervention as a Cause of Injury." *Journal of Pediatric Surgery*, 57(1), 158-167 (2021).

Swingle, Kelsey L., Billingsley, Margaret M., **Bose, Sourav K.**, et al. Amniotic fluid stabilized lipid nanoparticles for *in utero* intra-amniotic mRNA delivery." *Journal of Controlled Release*, 341, 616-633 (2021).

De Bie, Felix, Kim, Sarah D., **Bose, Sourav K.**, et al. "Ethics Considerations Regarding Artificial Womb Technology for the Fetotate." *American Journal of Bioethics*, 23(5), 67-78 (2023).

Bose, Sourav K. and White, Brandon M., Cook, Robin C., et al. "Enteral Nutritional Support for Infants with Pulmonary Hypoplasia: A Qualitative Evaluation of Caregiver and Provider Perspectives." *Nutrition in Clinical Practice*, 37(4), 955-965 (2022).

Bose, Sourav K. and Sonderman, Kristin A. "Trauma Considerations for the Pregnant Patient." *Global Medical Knowledge Alliance*, (2022).

Bose, Sourav K., Kennedy, Kara, Peranteau, William. "Foetal Genome Editing." *Current Opinion in Obstetrics and Gynecology*, 35(2), 134-139 (2023).

Dave, Apeksha, Berkowitz, Cara, Luks, Valerie, White, Brandon, Palanki, Rohan, Carpenter, Marco, **Bose, Sourav**, et al. "Comment on: Premature delivery in the domestic sow in response to in utero delivery of AAV9 to fetal piglets." *Gene Therapy*, 30(3-4), 232-235 (2023)

Bose, Sourav K., Stratigis, John D., Ahn, Nicholas, et al. "Prenatally Diagnosed Large Lung Lesions: Timing of Resection and Perinatal Outcomes." *Journal of Pediatric Surgery*, 58(12):2384-90 (2023).

Riley, John S., McClain, Lauren E., Stratigis, John D., Coons, Barbara C., **Bose, Sourav K.**, et al. Fetal allotransplant recipients are resistant to graft-versus-host disease. *Experimental Hematology*, 118:31-39 (2023).

Palanki, Rohan and **Bose, Sourav K.**, Dave, Apeksha et al. "Ionizable lipid nanoparticles for therapeutic base editing of congenital brain disease." *ACS Nano*, 17 (14), 13594-13610 (2023)

Dave, Apeksha, Liu, Suying, Riley, John S., **Bose, Sourav K.**, et al. "In Utero Hematopoietic Cell Transplantation Leads to Sustained Engraftment in a Mouse Model of Fanconi Anemia." *Blood Advances*, 8 (3), 624-628 (2024).

Palanki, Rohan, Riley, John S., **Bose, Sourav K.**, et al. "In utero delivery of targeted ionizable lipid nanoparticles facilitates in vivo gene editing of hematopoietic stem cells." *Proceedings of the National Academy of Sciences*, 121 (32), e2400783121 (2024).

Sullivan, Brittany, Schomberg, John, Haduong, Josephine, **Bose, Sourav K.**, et al.. Cancer and Trauma Collide: Injury Patterns and Outcomes in the Pediatric Trauma Patient With Cancer. *The American Surgeon*, 91(6), 961-966 (2025).

ORAL PRESENTATIONS

Bose, Sourav K., White, Brandon M., Kashyap, Meghana V., Li, Haiying, Zoltick, Philip W., Peranteau, William. "Fetal Base Editing Ameliorates Cardiac Pathology in a Mouse Model of Mucopolysaccharidosis Type I." Massachusetts Chapter of the American College of Surgeons 2020.

Bose, Sourav K., White, Brandon M., Kashyap, Meghana V., Li, Haiying, Zoltick, Philip W., Peranteau, William. "Fetal Base Editing Ameliorates Cardiac Pathology in a Mouse Model of Mucopolysaccharidosis Type I." Academic Surgical Congress 2021.

Dasani, Serena S., **Bose, Sourav K.**, Roberts, Sanford, Wirtalla, Chris, Kelz, Rachel. "The Cost of Quarantine: "Projecting the Financial Impact of Canceled Elective Surgery on the Hospitals." Academic Surgical Congress 2021.

Bose, Sourav K., White, Brandon M., Menon, Pallavi, Teerdhala, Shiva, Li, Haiying, Zoltick, Philip W., Peranteau, W. "In Utero Base Editing Ameliorates Musculoskeletal Pathology in a Mouse Model of Mucopolysaccharidosis Type I." American Pediatric Surgical Association 2021.

Bose, Sourav K., White, Brandon M., Dave, Apeksha, et al. "In Utero Genome Editing Restores Cardiac Function and Improves Survival in Mucopolysaccharidosis Type I." 25th International Conference on Prenatal Diagnosis and Therapy 2021.

Bose, Sourav K., Dave, Apeksha, White, Brandon W., Dasani, Serena S., Palanki, R., Teerdhala, Shiva, Rintoul, Natalie, Laje, Hedrick, Holly L., Peranteau, W.H. "National CDH Outcomes: Assessing Volume-Outcome Relationships Using the 2016 KID Database." American College of Surgeons Clinical Congress 2021.

Bose, Sourav K., Dasani, Serena S., White, Brandon M., Dave, Apeksha, Adzick, N.S., Peranteau, William H. "Hospital Financial Risk Due to Procedural Cancellations During the COVID-19 Pandemic." American College of Surgeons Clinical Congress 2021.

White, Brandon M., **Bose, Sourav K.**, Palanki, Rohan, Dave, Apeksha, Mitchell, Michael J., Peranteau, William H. "Fetal Pulmonary Genome Modification via Direct Intratracheal Injection in the Mouse." American College of Surgeons Clinical Congress 2021.

Bose, Sourav K., White, Brandon M., Peranteau, William. "Fetal Base Editing Ameliorates Cardiac Pathology in a Mouse Model of Mucopolysaccharidosis Type I." The Society of Asian American Surgeons 2021.

Gibbs, Elizabeth, Schomberg, John, Wallace, Elizabeth, **Bose, Sourav K.**, et al. Legal Intervention in Children Disproportionately Affects the African American Population. American Pediatric Surgical Association & the International Pediatric Endosurgery Group Meeting 2021.

Bose, Sourav K., Stratigis, John, Ahn, Nicholas, Pogoriler, Jenny, Hedrick, Holly L., Flake, Alan W., Moldenhauer, Julie, Adzick, N.S., Peranteau, William H. "Timing of Resection for Prenatally Diagnosed Large Congenital Lung Lesions." Academic Surgical Congress 2022.

Schomberg, John, Goodman, Laura F., Wallace, Elizabeth L., **Bose, Sourav K.**, et al. Disparities in Race and Law Enforcement Tactics Among Youths Involved in Violent And Non-Violent Encounters Who Died As A Result Of Legal Intervention. American Pediatric Surgical Association 2022.

Bose, Sourav K., Dave, Apeksha, Palanki, Rohan, White, Brandon M., Menon, William H. “Fetal Liver-directed Gene Editing Results in Supratherapeutic Enzyme Levels in a Lysosomal Storage Disease.” American Pediatric Surgical Association Meeting 2022.

Bose, Sourav K., White, Brandon M., Peranteau, William H. Correction of Multiorgan Pathology in Hurler Syndrome by Directed Genome Editing. International Fetal Medicine and Surgery Society Meeting 2022.

Bose, Sourav K., Stratigis, John, Ahn, Nicholas, Pogoriler, Jenny, Hedrick, Holly L., Flake, Alan W., Moldenhauer, Julie, Adzick, N.S., Peranteau, William H. Prenatally Diagnosed Large Lung Lesions: Timing of Resection and Perinatal Outcomes. International Fetal Medicine and Surgery Society Meeting 2023.

Bose, Sourav K., Palanki, Rohan, White, Brandon M., Peranteau, William H. In- and ex-vivo delivery of nanoparticles targeting the fetal pulmonary system facilitates organ-specific optimization. American Pediatric Surgical Association Meeting 2024.

POSTER PRESENTATIONS

Dasani, Serena S., Lee, Jean S., Dashdorj, Naranbaatar., Dashdorj, Naranjargal, Bungert, Andreas, **Bose, Sourav K.** “A systematic decision tool to support the selection of innovative financing mechanism for treatment access programs in resource-limited settings utilizing Hepatitis C in Mongolia as a case study.” Global Hepatitis Summit. Toronto, CA. 6/14/18.

Bose, Sourav K., Dasani, Serena S., Roberts, Sanford E., Wirtalla, Chris, Kelz, Rachel R. “The Cost of Quarantine: Projecting the Financial Impact of Canceled Elective Surgery on the Hospitals.” Massachusetts Chapter of the American College of Surgeons. 12/5/20.

Sullivan Brittany, Schomberg John, HaDuong, Josephine, **Bose Sourav K.**, et al. “When Cancer and Trauma Collide: Injury Patterns, Health-Care Utilization, and Outcomes in the Pediatric Oncology Patient After Trauma.” CHOC Research Day; 2020 Nov 18; Orange, CA.

Gibbs, Elizabeth, Schomberg, John, Wallace, Elizabeth, **Bose, Sourav K.**, et al.. “Legal Intervention Resulting in Pediatric Injury Disproportionately Affects the African American Population.” CHOC Research Day; 2020 Nov 18; Orange, CA.

White, Brandon M., **Bose, Sourav K.**, Hayes, Kevin B., Palanki, Rohan, Hwang, Rosa, Dave, Apeksha, Teerdhala, Shiva, Peranteau, William H., Laje, Pablo. “Assessing the Relationships Between Spatial Reasoning, VR Motor Mimicry, and Robotic Surgery Simulation Performance.” Society of American Gastrointestinal and Endoscopic Surgeons 2021.

White, Brandon M., **Bose, Sourav K.**, Palanki, Rohan, Dave, Apeksha, Billingsley, Margaret M., Li, Haying, Frank. David B., Mitchell, Michael J., Peranteau, William H. “Surgical lung specimens can be maintained ex-vivo and serve as a high-throughput and cost-effective platform for therapeutic discovery.” American College of Surgeons Clinical Congress 2021.

Bose, Sourav K., Dave, Apeksha, Palanki, Rohan, White, Brandon M., Menon, Pallavi, Peranteau, William H. “Fetal Liver-directed Gene Editing Results in Supratherapeutic Enzyme Levels in a Lysosomal Storage Disease.” Massachusetts Chapter of the American College of Surgeons 2021.

ABSTRACTS

Singh, Kshitiz, Riley, Rachel R., Kashyap, Meghana V., White, Brandon M., **Bose, Sourav K.** et al. “In Utero Lipid Nanoparticle Delivery of CRISPR Technology to Correct Hereditary Tyrosinemia Type 1.” 24th Annual Meeting of the American Society of Gene and Cell Therapy 2021.

Dave, Apeksha, Liu, Suying, Riley, John, **Bose, Sourav K.** et al. “Sustained Engraftment in Fanconi Anemia (FA) Mice Using in Utero Hematopoietic Cell Transplantation (IUHCT).” 64th Annual Meeting of the American Society of Hematology.

BOOK CHAPTERS

Bose, S.K., Basseyn, S., Burns, L. “Balloon Angioplasty.” Managing Discovery in the Life Sciences: Harnessing Creativity to Drive Biomedical Innovation. Cambridge University Press, 2018.

Bose, Sourav K. and Yu, Peter T. “Intestinal Atresia.” Fundamentals of Pediatric Surgery. Cham: Springer International Publishing, 2022. 561-566.

Bose, Sourav K. and Palanki, Rohan. Drug Discovery and Development. Translational Surgery. Academic Press, 2023. 35-41.

Bose, Sourav K. and White, Brandon M. Procedural Technique Development. Translational Surgery. Academic Press, 2023. 93-96.

Bose, Sourav K. and Dasani, Serena S. Orphan Drugs. Translational Surgery. Academic Press, 2023. 529-534.

Bose, Sourav K. and Dasani, Serena S. Biopharmaceuticals. Translational Surgery. Academic Press, 2023. 535-538.