
BIOGRAPHICAL SKETCH

NAME: Kharga, Anil

eRA COMMONS USER NAME: n/a

POSITION TITLE: Research Fellow

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	Start Date MM/YYYY	Completion Date MM/YYYY	FIELD OF STUDY
Institute of Medical Sciences (IMS), Banaras Hindu University (BHU), Varanasi, India	MBBS	09/2013	12/2019	Medicine
Dhanusha Hospital Private Ltd., Janakpur, Dhanusha, Nepal	Medical Officer	03/2020	1/2022	General Surgery
Massachusetts General Hospital (MGH), Harvard Medical School, Boston, MA, USA	Research Fellow	02/2022	Present	Transplant Surgery

A. Personal Statement

I first became interested in human health and disease in high school and decided to get into medical school. I secured 9th, 3rd, and 1st positions in the medical entrance exam conducted by the Ministry of Education, Nepal; Embassy of India, Kathmandu, Nepal; and BPKIHS (B.P Koirala Institute of Health Sciences), Nepal respectively among the 10,000+ high school students who took these medical entrance tests. I was offered a scholarship for my medical education from these three places and decided to pursue my medical education at the Institute of Medical Sciences (IMS), Banaras Hindu University, India because of its ranking among the top 5 best medical schools in India.

My medical school training has provided me with an excellent background in multiple biological disciplines including molecular biology, immunology, microbiology, biochemistry, and genetics besides clinical subjects. During my final year of medical school, I received honors in different clinical rotations during my elective clerkships completed at academic hospitals in the US. For my second year of a research fellowship, I will continue to build on my first-year training in the perfusion of rat livers by moving into a large animal model perfusion that will allow me to simulate xeno-transplantation by perfusing genetically modified pig liver with human whole blood. My sponsor Dr. James Markmann is an internationally recognized leader in the abdominal organ transplantation field and has an extensive record of training postdoctoral fellows. The proposed research will provide me with new conceptual and technical training in large animal model liver perfusion. In addition, the proposed training plan outlines a set of career development activities and workshops – e.g., grant writing, abstract and manuscript writing, lab management, and mentoring students – designed to enhance my ability to become an independent investigator. My choice of sponsor, research project, and training will give me a solid foundation to reach my goal of simulating the transplantation process on a pump using different models of ischemic reperfusion injury with the opportunity to try different pharmacological interventions for the recovery of the liver on pump and testing modified versions of standard preservative solutions. Although the first year of the research fellowship has been very challenging for me because I had to spend a lot of time learning research methodology, the second year of the research fellowship seems very rewarding as I am able to apply the new skills I learned and now I am able to run multiple projects. I am confident this proposed research project and training plan will enhance my scientific knowledge in transplantation science and will come in

handy in the busy schedule of my future residency training and will enhance my research productivity in such a high pace environment. My long-term research goals involve becoming an independent clinician-scientist and applying my skills related to research during my future surgical residency training and clinical fellowship to improve patient outcomes through evidence-based medicine.

B. Positions, Scientific Appointments, and Honors

Positions and Scientific Appointments

2022 – Present	Research Fellowship, Massachusetts General Hospital (MGH), Harvard Medical School
2022 – Present	Trainee Member, American Society of Transplant Surgeons (ASTS)
2020 – 2022	Medical Officer, Dhanusha Hospital Private Ltd
2018 – 2019	Intern, Sir Sunderlal Hospital, Banaras Hindu University (BHU)
2019	Student Member, Society of Interventional Radiology (SIR)
2018 – 2019	Student Member, Society of Gastrointestinal Endoscopy of India (SGEI)
2018 – 2019	Student Member, Indian Society of Critical Care Medicine (ISCCM)
2018 – 2019	Student Member, Society of Endoscopic and Laparoscopic Surgeons of India

Board, Licensure, and Certification

2022	Permanent registration, Nepal Medical Council (NMC), Nepal
2021	Educational Commission for Foreign Medical Graduates (ECFMG) Certified, Philadelphia, PA, USA
2020	Temporary registration, Nepal Medical Council (NMC), Nepal
2019	Registered doctor, Uttar Pradesh Medical Council, India

Board Scores:

2021	USMLE Step 2 Clinical Knowledge (CK): 244 / 300, first attempt
2019	USMLE Step 2 Clinical Skill (CS): Passed, first attempt
2017	USMLE Step 1: 256 / 300, first attempt

Clinical experience

2020	Cardiovascular & Thoracic Surgery (CVTS), University of Texas Southwestern Medical Center, Dallas, TX, USA; Visiting Observer, 4 weeks
2019	Cardiovascular & Thoracic Surgery (CVTS), University of Texas Southwestern Medical Center, Dallas, TX, USA; Visiting Medical Student, 4 weeks
2019	Abdominal Imaging, University Hospital, Cleveland Medical Center, Case Western Reserve University (CWRU), Cleveland, OH, USA; Visiting Medical Student, 4 weeks
2019	Abdominal Imaging, Cleveland Clinic Foundation (CCF) Main Campus, Cleveland, OH, USA; Visiting Medical Student, 4 weeks
2019	Liver Transplant Surgery, Cleveland Clinic Foundation (CCF) Main Campus, Cleveland, OH, USA; Visiting Medical Student, 4 weeks

- 2019 Interventional Radiology (IR), University Hospital, Cleveland Medical Center, Case Western Reserve University (CWRU), Cleveland, OH, USA; Visiting Medical Student, 4 weeks
- 2019 Interventional Radiology (IR), Louisiana State University Health Science Center (LSUHSC), Shreveport, LA, USA; Visiting Medical Student, 4 weeks
- 2019 Vascular Surgery, University of Texas Health Science Center (UTHSC), San Antonio, TX, USA; Visiting Medical Student, 4 weeks
- 2019 Surgical Trauma ICU, University of Texas Health Science Center (UTHSC), San Antonio, TX, USA; Visiting Medical Student, 4 weeks
- 2019 Interventional Radiology (IR), Cleveland Clinic Foundation (CCF) Main Campus, Cleveland, OH, USA; Visiting Medical Student, 4 weeks
- 2018 Internal Medicine (IM), Louisiana State University Health Science Center (LSUHSC), Shreveport, LA, USA; Visiting Medical Student, 4 weeks

Honors

- 2019 Honors in Liver Transplant Surgery, Cleveland Clinic Foundation (CCF) Main Campus
- 2019 Honors in Interventional Radiology, Cleveland Clinic Foundation (CCF) Main Campus
- 2019 Honors in Interventional Radiology, University Hospital, Cleveland Medical Center, Case Western Reserve University (CWRU)
- 2013 Scholarship, 1st position in medical entrance exam, B.P. Koirala Institute of Health Science (BPKIHS)
- 2013 Scholarship, 3rd position in medical entrance exam, Embassy of India
- 2013 Scholarship, 9th position in medical entrance exam, Ministry of Education- Nepal

C. Contributions to Science

Early career: During my internship in medical school, I was able to manage my patients under the supervision of my attending and apply the basic science knowledge and clinical skills developed throughout medical school. The elective clerkship rotation in the US as a final year visiting international medical student exposed me to the research methodology used in evidence-based medicine practiced in the American healthcare setup. This has inspired me to pursue a research fellowship at MGH. My rotations in vascular surgery, trauma & acute care surgery, cardio-vascular & thoracic surgery, and liver transplant surgery at various academic hospitals in the US exposed me to different surgical sub-specialties, and this has inspired me to pursue residency training in General Surgery.

Case presentation in student conference during elective clerkship:

- Presented liver masses imaging characteristics during abdominal imaging rotation
- Presented a TIPS case during interventional radiology rotation
- Presented chest wall protocol for rib fracture management during Surgical Trauma ICU rotation.
- Presented a case of popliteal artery stent thrombosis requiring thrombolysis using tPA & fasciotomy later & finally needing TP trunk to PT artery bypass during vascular surgery rotation

Post-doctoral career: During my first year of research fellowship at MGH, I have been trained on various perfusion devices ranging from a manual system for a small animal model to a semi-automatic "Liver Assist" device for a large animal model for perfusing a liver. I have used a Poly pharmacological drug cocktail-CEPT with various mechanisms to inhibit apoptosis in recovering a rat liver damaged from warm ischemia. Recently, I

have developed a protocol for slow oxygenated flushing of the liver graft to minimize cold ischemia time during procurement of graft in donor and back-benching, as well as minimize warm ischemia time during implantation phase in the recipient to prevent ischemic reperfusion injury (IRI). I am planning to improve this protocol by using different oxygen hemoglobin-based oxygen carriers in modified standard preservative solutions for the liver to find the best combination and use it on genetically modified pig liver perfusion with whole human blood to simulate xeno-transplant on a pump.

D. Scholastic Performance

YEAR	COURSE TITLE	GRADE
Institute of Medical Sciences (IMS), Banaras Hindu University (BHU)		
2017	Medicine with psychiatry, dermatology & STD	P
2017	Surgery with orthopedics, anesthesiology, dental science, radiology	P
2017	Obstetrics & Gynecology	P
2017	Pediatrics with neonatology	P
2016	Ophthalmology	P
2016	Otorhinolaryngology	P
2016	Community Medicine with humanities	P
2015	Pharmacology	P
2015	Pathology	P
2015	Forensic Medicine	P
2015	Microbiology	P
2014	Physiology with Biophysics	P
2014	Anatomy	P
2014	Biochemistry	P

Institute of Medical Sciences (IMS), Banaras Hindu University (BHU) medical school courses are graded P (pass) or F (fail). A minimum passing score is 50 in a subject. The student has to pass both practical exam including viva and theoretical exams to have a passing performance in a subject.