Ishaan Kumar

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EDUCATION

Duke University Durham NC; May 2022
Bachelor of Arts in Philosophy (Chemistry Minor & Science and Society Certificate)
Honors: *Huang Fellow*. One of 20 first-years selected for rigorous four-year research fellowship that integrates science and society, which includes a summer research placement, seminar programming and leadership development.
ReImagine Medicine Fellow. One of 18 students selected for fellowship that includes weekly programming to examine questions of equity and morality in modern medicine.
GPA: 3.88 (*Cum Laude; Graduation With Distinction*)
Graduation with Distinction Thesis: Examining the relationship between social identity motivation and anti-vaccine beliefs in varying policy environments across the United States

RESEARCH EXPERIENCE

Bluesmith, Research Manager Durham, NC; March 2020 – May 2022

- Transform CAD Models to 3D physical objects for doctors, researchers, and entrepreneurs by assisting in material and printer selection, facilitating print jobs, and maintaining 3-D printers
    - Materials include PLA, ABS, paper, carbon fiber, and crystal
    - Printers include FDM, CFF, SLA, IRIS, MULTIJET, and POLYJET
- Developed novel methods to visualize and manufacture brain CT and MRI data for application in epilepsy ablation surgery with Dr Muhammed Zafar. *[Publication in Progress]*
- Assisting Disney Lab with manufacturing of in vivo surgical implants for primate experimentation.
- Manufactured nasal cavities for Frank-Ito lab for airway dispersion experimentation.
- Collaborate with Duke Children's Hospital to 3D print heart models for the majority of planned paediatric cardiac surgery patients. Work featured in Duke Stories.

Bass Connections, Research Assistant Durham, NC; September 2020 – December 2020

- Evaluated the state and prevalence of online patient communities to enable health innovations outside of the clinic.
- Contributed to and managed a large dataset of aggregate patient community group data.

BRITE Lab, Research Assistant Durham, NC; January 2020 – December 2020

- Conducting a preliminary study assessing vocabulary usage and stress mindsets using Amazon Mechanical Turk (MTurk).
- Developing a study examining the relationship between Adverse Childhood Experiences (ACEs) and stress mindsets in college students.

PrefER Research Group, Research Assistant Durham, NC; June 2019 – June 2020

- Conducted a cost-analysis of a decision-making tool for patients with prostate cancer to determine cost impact using a decision analytic model.
- Held pre-test interviews to refine survey instruments.
- Refined potential surveys through building graphics and re-writing text.

Pandey Lab, Research Intern Buffalo, NY; Summer 2016 & 2017

- Conducted research in the lab Dr. Pandey, Distinguished Professor in charge of a Photodynamic Therapy lab at RPCI.
- Investigated whether conjugating a sugar molecule with a cancer drug would increase the efficacy of that drug.

TEACHING EXPERIENCE

Academic Tutor Durham, NC; August 2021 – January 2022

- Tutored students in Biochemistry and Physics 1 (Mechanics and Fluids)

Vaccines, Explained, Course Instructor Durham, NC; January 2021 – May 2021

- Designed and co-taught a course on vaccine policy, hesitancy, and historical context under the supervision of Dr Misha Angrist.
- Featured in the Duke Chronicle.

Narratives of Illness and Health, Course Instructor Durham, NC; January 2021 – December 2021

- Designed and co-taught a course on narrative medicine, the intersection of identity and medicine and the medical humanities under the supervision of Dr Deborah Jenson.

Innovation Co-Lab, Student Technician Durham, NC; September 2019 – March 2020

- Advise and assist projects in digital fabrication, fast prototyping, product manufacture, and design analysis.
- Supervise use of 3D printers, laser cutters, CNC machines, water-jet cutter, circuit-design tools.
- Identify and repair technical complications for clients and troubleshoot for roadblocks.

Communicating Science and Bioethics, Teaching Assistant Durham, NC; January 2020 – May 2020

- Serving as Teaching Assistant for Bioethics 502S under Dr Ariana Eily.
- Presented in-class case studies on vaccine hesitancy for the discussion component of the course.
- Hold weekly office hours to assist students with coursework.
- Assisted with homework grading.

LEADERSHIP EXPERIENCE

Community Empowerment Fund, Advocate & Board Member Durham, NC; January 2020 – May 2022

- Connect members with resources to increase income, move into stable housing, save significant assets and secure financial stability.
- Helped raise over $6000 dollars for a member who was facing eviction during the COVID-19 pandemic.
- Assisted a young couple to find new employment, build credit and save $10,000 to purchase a house.
- Served on the housing team and developed resource guides for advocates and members experiencing a range of housing insecurity issues.
- Managed fiscal and operational responsibilities, set strategic targets, and collaborated with other board members to build 5-year plan.

Student Representative, Duke University Board of Trustees Durham, NC; August 2019– May 2020

- Served as student representative for the Research, Translation, and Commercialization sub-panel on the Duke University Board of Trustees
- Met with industry leaders from across the USA.
- Worked with other members of the board to develop Duke's ongoing strategic plans surrounding research commercialization.

CERTIFICATIONS

North Carolina Basic Emergency Medical Technician

- National Registry and North Carolina Certification awarded in September 2021
- Skills include: First Aid & CPR, Patient Assessment, Medicine Administration, Airway Management, Cardiac Emergencies
- Professional experience of 50 hours on Franklin County (NC) paramedic-level ambulance and New Hanover Emergency Room (NC)

PUBLICATIONS

Kumar, I. (2020). Hacking Disease: The Ethics of DIY Medicine. Voices in Bioethics, 6. https://doi.org/10.7916/vib.v6i.5908

Presentation at national biohacking conference Biohack The Planet cancelled due to the COVID-19 Pandemic.

Kumar, I., Ayvaz, B., Khapuria, A., Subei, M., Zafar, M. (2022) Comparison of Different 3D Printing Methods in High-Resolution Modeling for Epilepsy Surgery. *[Manuscript in prep]*

Presentations: American Epilepsy Society (December 2021); North Carolina Neurological Society (February 2022) – awarded 2nd place in NCNS Poster Competition; University of Kentucky Grand Rounds May 2022.

Seth, D., **Kumar, I**. and Richards, M., 2020. *A Privacy-Centric Contact Tracing Framework*. Ethical Tech. [online] Durham, North Carolina: Kenan Institute of Ethics. Available at: <https://kenan.ethics.duke.edu/wp-content/uploads/2020/05/Ishaan-Kumar-et-al._Undergraduate.pdf> [Accessed 10 September 2022].