Devin Schoen

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Education

University of California - Berkeley 2022-Present
University of California - San Francisco San Francisco, CA
Joint Ph.D. in Bioengineering
Specialization in Medical Imaging

Oregon Health & Science University 2020-2022
M.S. in Medical Physics Portland, OR
Specialization in Diagnostic Imaging

University of Hawai'i at Manoa 2017-2020
B.S. in Physics Honolulu, HI
Minor in Astrophysics

Certifications

American Board of Radiology August 2021
Focus: Nuclear Medical Physics

Research Experience

SARS-CoV-2 Antibody Response Serology Study 08/2021-08/2022
Oregon Health & Science University Portland, OR
Supervisor: Marcel Curlin, M.D.

Project: Detailing and characterizing the immune response following SARSCOV-2 vaccination through serology analysis in a 2000 person cohort.
⇒ Acquiring blood samples for serology analysis and covid virus PCR tests for genomic sequencing.
⇒Analyzing phylogenies and building data visualizations

PET Imaging of Neuroinflammation 12/2020-07/2022
Oregon Health & Science University / Portland VA Portland, OR
Supervisor: Milky Kohno, Ph.D. & Jeanne Link, Ph.D.

Project: A clinical trial of an anti-inflammatory to reduce neuroinflammation and improve brain function in methamphetamine-use disorder
⇒Acquiring dynamic C-11 PET scans
⇒Processing and analyzing venous and arterial samples to measure blood activity and tracer metabolites

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⇒Creating a model to establish the validity of using population derived input functions in place of arterial sampling for patient populations
⇒Pharmacokinetic modeling of PBR28 using PMOD software
⇒Building and programming an analysis pipeline for processing neuroimaging data

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ISODAR 60MeV Cyclotron 05/2020-10/2020
Massachusetts Institute of Technology Cambridge, MA
Supervisor: Janet Conrad, Ph.D.

Project: Develop a high current (10 mA of 60 MeV of protons) cyclotron for neutrino research. Potential applications of such a high current and highpower accelerator are far-reaching, extending to high-activity medical isotope production.
⇒Using OPAL and COMSOL softwares, I modeled the electric and magnetic fields in the main section of the cyclotron
⇒Using the developed model, I introduced collimators to take advantage of vortex motion and optimize beam parameters for extraction

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Dual Energy X-Ray Absorptiometry Software 03/2020-09/2020
University of Hawai'i Cancer Center Honolulu, HI
Supervisor: John Shepherd, Ph.D.

Project: Extraction of biomarkers from medical imaging through the use of deep learning and machine learning techniques ⇒Developed and packaged software for processing dual-energy x-ray absorptiometry breast images
⇒Designed and built electronics circuit to model bio-impedance spectroscopy behavior

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Single Volume Neutron Scatter Camera 08/2018-09/2020
University of Hawai'i - High Energy Physics Group Honolulu, HI
Supervisor: John Learned, Ph.D.

Project: Development of a compact neutron detector capable of spatial localization and energy discrimination
⇒Using Geant4 and ROOT, I built, ran, and analyzed particle simulations to optimize our detector geometry
⇒In the lab, I set up and executed testing of various detector prototype iterations
⇒Oversaw scheduling and training of new undergraduate and graduate lab workers

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CosmicFlows4 - Local Galaxy Cluster Mapping 10/2017-08/2018
Institute for Astronomy - Hawai'i Honoulu, HI
Supervisor: Brent Tully, Ph.D.

Project: Mapped the distances of 9792 spiral galaxies in the local cluster
⇒Performed photometry on galaxies from database to determine

apparent luminescence
⇒Utilized luminescence and disk planar tilt data to determine galaxy distances based on the Tully-Fisher Principle

Other Work Experience

Medical Physics Assistant 06/2021-06/2022
OHSU - Radiation Medicine Dept. Portland, OR
⇒Performed daily patient radiation therapy plan checks

Biostatistician (promotion) 11/2021–07/2022
Research Assistant (position transfer) 08/2021–11/2021
Hospital Aide 02/2021–08/2021
OHSU – Occupational Health Portland, OR
⇒Data management and analysis
⇒Phlebotomy for sample acquisition
⇒Assisted with clinical, regulatory, and compliance tasks: Respirator fit testing Medical record charting
⇒COVID-19 nasopharyngeal swab testing

Overnight IT Consultant 07/2018-05/2019
University of Hawai'i Honoulu, HI
⇒Monitored server banks overnight and ran regular system checks
⇒Responded to questions through IT Help Desk phone line and email

Museum Guide 03/2015-12/2019
Griffith Observatory Los Angeles, CA
⇒Gave science presentations and talks to the public visitors of the space museum
⇒Assisted visitors in looking through the observatory's telescopes at celestial objects

Miscellaneous Opportunities

Magnetic Resonance Imaging Techniques Summer School 06/2021
American Association of Physicists in Medicine Virtual
⇒Attended lectures, workshops and networking events focused on improvement ofintegrating MRI use into radiotherapy treatments

Nuclear Analytical Techniques Summer School 07/2019-08/2019
UC Davis Davis, CA
⇒Participated in lectures and hands-on activities addressing nuclear physicstechnology
⇒Shadowed research at the McClellan Nuclear Reactor and the Crocker CyclotronFacility

Publications

- Bates, T. et al. (January 2023). The time between vaccination and infection impacts immunity against SARS-CoV-2 variants. Cold Spring Harbor Laboratory Press. https://doi.org/10.1101/2023.01.02.23284120

- Bates, T. et al. (October 2022). BNT162b2-induced neutralizing and non-neutralizing antibody functions against SARS-CoV-2 diminish with age. Cell Reports. https://doi.org/10.1016/j.celrep.2022.111544

- Bates, T. et al. (April 2022). Omicron neutralizing antibody response following booster vaccination compared with breakthrough infection. Cold Spring Laboratory Preprints. https://doi.org/10.1101/2022.04.11.22273694

- Kourkchi, E. et al. (April 2022). VizieR Online Data Catalog: Cosmicflows-4: Tully-Fisher distances (Kourkchi+, 2020). https://ui.adsabs.harvard.edu/abs/2022yCat..19020145K/abstract

- Winklehner, D. et al. (February 2022).Order-of-magnitude beam current improvement in compact cyclotrons. IOP Publishing. https://doi.org/10.1088/1367-2630/ac5001

- Bates, T. et al. (February 2022). Vaccination before or after SARS-CoV-2 infection leads to robust humoral response and antibodies that effectively neutralize variants. Science Immunology. https://doi.org/10.1126/sciimmunol.abn8014

- Bates, T. et al. (January 2022). Antibody response and variant cross-neutralization after SARS-CoV-2 breakthrough infection. JAMA. https://doi.org/10.1001/jama.2021.22898

- Kourkchi, E. et al. (April 2022). Cosmicflows-4: The Catalog of~ 10,000 Tully–Fisher Distances. The Astrophysical Journal. https://doi.org/10.3847/1538-4357/abb66b