

Postdoctoral Fellow in HIV, hepatitis C virus (HCV) and overdose epidemic and economic modeling
Division of Infectious Diseases and Global Public Health
University of California San Diego (UCSD)

The position is for a postdoctoral fellowship to join an innovative, multi-disciplinary research team funded by a prestigious **NIH Director's Avant-Garde Award** (<https://today.ucsd.edu/story/uc-san-diego-researcher-wins-5.6m-nih-avant-garde-award-to-prevent-hiv-hepatitis-c-and-overdose>). Dr. Natasha Martin (<https://profiles.ucsd.edu/natasha.martin>) leads the project, with additional mentorship from faculty specializing in biostatistics, infectious diseases, and epidemiology. The project aims to revolutionize HIV and hepatitis C virus (HCV) prevention and resource allocation for people who use drugs (PWUD) across the United States. The project will pioneer the integration of large language models (LLMs) to create behavioral "digital twins," embedded within dynamic epidemic and economic simulation models to guide real-world public health policy.

The Division of Infectious Diseases and Global Public Health (IDGPH) at UCSD is in the Department of Medicine in the School of Medicine of the University of California San Diego (<https://idgph.ucsd.edu/>). IDGPH is a multidisciplinary center that includes faculty, postdocs, and graduate students from Epidemiology, Social Sciences, Biostatistics, Medicine, and other disciplines. IDGPH aims to eliminate the burdens of infectious diseases and health disparities by delivering outstanding patient care, conducting world-class multidisciplinary health research, directing the institutional response to antimicrobial resistance, preventable healthcare associated infections, and emerging pathogens, and offering leadership, consultation and training on global public health, equity, microbiology, and infectious diseases topics.

Position Title: Postdoctoral Fellow

Duties and Responsibilities: The postdoctoral fellow will develop, calibrate, validate, and apply dynamic mathematical models of HIV, hepatitis C virus (HCV), and overdose among people who inject drugs. We welcome applicants with expertise in either deterministic epidemic modeling, including compartmental or differential-equation-based models, or agent-based and individual-based simulation modeling. The models will be used to evaluate the population-level impact, costs, and cost-effectiveness of alternative combinations and allocations of HIV, HCV, overdose prevention, and substance use treatment services. The fellow will conduct parameter estimation, model calibration and validation, uncertainty and sensitivity analyses, and scenario and policy analyses; develop transparent and reproducible computational workflows; and contribute to manuscripts, conference presentations, and dissemination to public health partners. The fellow will work closely with an interdisciplinary team spanning infectious disease epidemiology, mathematical modeling, health economics, biostatistics, artificial intelligence, and substance use research.

Position Qualifications: Candidates should have a doctoral degree in mathematical modeling, computer science, biostatistics, epidemiology, or a related field. Strong computational skills and expertise in mathematical modeling of infectious diseases are required. Start date and term are negotiable.

Position Instructions: Applicants should submit a cover letter, CV, and contact information for three references to Matthew Rivera (mnr001@health.ucsd.edu).