

Postdoctoral Rheumatology Physician Training Pathway.

Training schedule: In both the basic or clinical research tracks in this pathway, T32 training for Rheumatology MDs typically starts after completing a minimum of 1 year of clinically focused intensive inpatient and outpatient Fellowship training (ie, $\geq 80\%$ clinical time commitment). In Year 1, the Fellows do 3 half-day adult Rheumatology clinics/week, and an aggregate of 1 other subspecialized clinic experiences (including Metabolic Bone Disease clinic with Dr. Kado, Pediatric Rheumatology Clinic at Rady Children's Hospital, and Ultrasound Clinic with Drs. Lee and Ceponis). In the first quarter of Year 1, potential T32 trainees receive T32 orientation, and prepare a formal application to the T32, due October 1. They start to work with the PD/PI, Dr. Corr and EC members, and the Rheumatology Fellowship Director, to select potential mentoring teams and projects, thereafter vetted by the entire EC and IAB. In Fellowship Year 1, potential MD T32 trainees also attend the internal T32 research meetings that are discussed below, and they have the option to do a 4 week research rotation (at $\sim 50\%$ effort/week) with a potential T32 mentor. Selected T32 MD applicants are formally approved by PD/PI and EC by May 1, must submit an IDP with the mentoring team, for PD/PI and EC vetting, suggestions, and approval, by June 1. On July 1, in Year 2 of their Rheumatology Fellowship, trainees start 24-36 months (typical duration) of concentrated bench- **OR** clinical-translational research supported by Year 1 of T32 support. Training home base is in 1 lab or research unit, but with the ability of trainees to work collaboratively with other units during their T32 training period. During the T32 support period, there is protected research time (ie, $\leq 20\%$ of time spent on clinical duties, as 2 half day clinics/week). Research training in Year 1 of the T32 builds momentum for UCSD KL2, and extramural NIH and Foundation Career Development grant applications in Year 2 and later in these MD training tracks.

Didactic Coursework and Curricula (Other than those cited earlier) for Research Path MDs:

1. MDs in the Basic-Translational Research Pathway, with and without PhD degrees, are obligated to take specific courses offered in the BMS Immunology predoctoral training program, judged by their mentoring team and the PD/PI, as highly relevant to their T32 lab research training program, and starting in the first year of T32 training. For clinical research trainees, interaction with basic scientists is furthered by their attendance at the **Mechanisms of Disease, and Translational Biology Journal Club**.
2. As detailed in the **RCR Section** of the application, all postdoctoral trainees are required to complete 2 UCSD Ethics Program courses: **Scientific Ethics**, and either **Ethics and Survival Skills in Academia**, or a review course. The predoctoral students take the BIOM 219 Ethics course in the BMS Immunology curriculum.
3. Other UCSD Immunology and Biology Courses available, offer distinct or more concise material than BMS Immunology (described below for Predoctoral Pathway), and can be more useful for trainees studying specific disease research problems. Options include the **Advanced Immunology Course (233-B, one semester)**, **Advanced Molecular Biology (221-B)** or **Advanced Cell Biology (223-A)**. Also, each year a course on modern techniques of biomedical research (Medicine 260) is offered at UCSD for all postdocs, but targeted to MD research trainees. The course is a series of 15 one-hour lectures in which various techniques in molecular biology, biochemistry, cell biology, immunology, and statistics are covered.
4. **CTSA U54 Scientific Communication/Grant Writing Course**. A compulsory grant writing course is completed before the end of Year 2 of T32 support.
5. CTSA U54 elective courses in biostatistics, and informatics are offered. Moreover, the program requires that MDs in the Clinical-Translational Research Pathway, and without MPH degrees, take at least 3 didactic courses/year, over their 24-36 months of training in the T32. These requirements are designed to help select the most committed MD candidates for moving forward into T32 training, and to promote long-term competitive success and retention of MD

trainees in academic Rheumatology. We emphasize coursework leading to either a **UCSD Master's of Advanced Studies (MAS) in Clinical Research**, or an **MPH from the UCSD Epidemiology Department** (a new offering in final development). Both are described below. In mid-2019, UCSD is slated to have a new **MS program in Drug Discovery and Development**, as another option, pending UC system-wide approval. Since the dual degree programs are not ideal for everyone, on a case by case basis, some MD trainees are permitted to opt for a CREST certificate instead of MAS, with the same core curriculum, though shorter and without the practicum, which is not needed for all actively doing research.

-UCSD CTSA U54 MAS Program: This CTSA U54 program, which leads to a Master's Degree (ctri.ucsd.edu), comprises 40 quarter units of study, with 12 Core Courses (26 units) in Epidemiology, Patient-Oriented Research, Biostatistics, Scientific Communication Skills, Health Services Research, Data Management/ Informatics, Professional Development (detailed in **Table D**). These are supplemented by additional advanced statistics, experiential courses, and other elective courses selected by trainees, with mentoring team input (14 units). The course culminates with an Independent Study Research Project. Coursework can be completed in 12, 18 or 30 months of study. Most required courses are conducted year-round over four consecutive 12-week periods. To allow flexibility, classes are mostly held in the late afternoons and evenings.

-UCSD MPH Degree Program in Epidemiology: The **UCSD MPH Program**, to commence in mid-2018, is based in the Department of Family Medicine and Public Health. Course work, in this 2-year thesis-requiring degree program, covers the basic public health disciplines--biostatistics, environmental health, epidemiology, health behavior, health policy, and health services. At the start of the program, there will be defined tracks in Epidemiology and Health Behavior. Tracks in the other 4 disciplines will be developed during the subsequent 3-4 years. Enrollment goal is 50 students/year, with a steady state MPH class of 100 students.

Table D. UCSD CTSA U54 MAS Course Curriculum:

<u>Required Core Courses</u>	<u>Advanced Statistics Elective Courses (minimum of 4 units required)</u>	<u>Elective Courses (minimum of 6 units required)</u>
Mentorship/Career Planning	Analyzing Medical Data Using R	Translational Research
Epidemiology I	Longitudinal Data Analysis	Stem Cell Translation
Epidemiology II	Clinical Decision Analysis	Current Trends in Biomedical Informatics
Patient-Oriented Research I	Bioinformatics Applications to Human Disease	Modeling Clinical Data/Knowledge for Computation
Patient-Oriented Research II	Principles of Biomedical Informatics	Clinical Decision Support Systems at Point of Care; CER/Comparative Effectiveness Research
Scientific Communication Skills	Advanced Regression Methods	Bioethics & Medical Practice
Biostatistics I		Molecular and Cellular Basis for Disease
Biostatistics II		Qualitative Research; Behavi Science Research
Health Services Research		Occupational and Environmental Health
Data Management/Informatics		Global Health Policy A, B, and C
Professional Development Seminar Series		Emerging and Re-emerging Infectious Diseases
Independent Study Project		Cultural Perceptions about Health/Disease
		Independent Study in Public Health
		Drug Discovery, Development, & Commercialization