

Roadmap to Developing a Research Career in Rheumatology

Medical School/Residency: Perform research while obtaining medical training

- Devote extended periods of time to understand the workflow, methods, and research themes of lab/group
- Apply for local awards to provide research funds/stipend to protect time and demonstrate research interest
- Present at local and regional meetings, apply for ACR annual meeting travel award
- First-author original research paper is ideal but requires extensive time devotion; co-authored papers valuable
- Optimal time to write chapters, reviews, case reports
- Basic scientists/PhD may gain extensive research experience during formal training

Fellowship Year 1: Find a mentor and research project while obtaining clinical rheumatology training

- ACR fellow-in-training roadmap: <http://www.rheumatology.org/I-Am-A/Fellow-in-Training/Career-Roadmap>
- Update CV and NIH biosketch throughout; discuss local strategies with peers; attend early career meetings
- Envision your overall research career (NIH-funded/clinical trials/collaborative; clinical/translational/basic)

Mentor: schedule meetings with all local research faculty during summer/early fall to find the best fit

- Disease/phenotype interest, methods expertise, available datasets/infrastructure, aligned goals
- Get to know your division: Master's opportunities, NIH T32/funds, GCRC, prior local paths to success

Projects: choose two main projects for clinical research (one secondary data analysis and one primary data collection); choose general research topic and mentor/laboratory for basic research

- Strategize on how to establish a research niche (disease, methods, cross-collaboration)
- Consider collaborations with investigators at other institutions
- Clinical projects: write reviews, case reports/series, small projects with clinicians

Master's programs/certificates/formal didactics

- MPH:** typically due fall/early winter; may need research proposal; discuss funding and time protection
- Other Master's degrees** are institution or content specific: MMSCI, MMSc, MSc, MSCE, MSHS, etc.
- Certificate programs: training in study design, programming, statistics, etc.; varies by site/GCRC
- Basic scientists: learn specific research skills, consider taking formal courses/PhD
- Consider initiating PhD, DSc, SD, or DrPH to gain extensive methods/topic expertise

Fellowship Year 2: Perform research/publish, attend class, and write grant(s) for faculty position

- Limit adding projects that are not original research; limit involvement in projects if not first author; develop a career strategy with mentor(s); prioritize research endeavors; attend regional/national/intl. meetings

Grants for research fellows

-Rheumatology Research Foundation (RRF) Scientist Development Award (SDA)

-<https://www.rheumresearch.org/>; **summer due date**

- Aimed at those devoted to establishing a career in rheumatology research; extensive research track record is not required; clear training plan/support is essential
- \$225K for 3 years: \$50K/year for salary including fringe), \$25K/year research support
- Discuss timing early; some institutions encourage submission end of 1st year or 2nd year
- Feedback is essential; present early and often; solidify Aims page before extensive writing
- Detail plans for training, mentor support, institutional support in addition to scientific plan
- Start writing by late spring; collect/draft/edit materials in early summer; know internal deadlines; get to know your research administrators; use boilerplates; do not underestimate time!
- Award decisions in fall, funding starts July 1
- If funded, must apply for RRF Investigator Award, NIH K or equivalent during SDA

- NIH F32 (Kirschstein):** individual fellowship training grant; discuss with division to determine if needed
- Others: Lupus Foundation of America, National Psoriasis Foundation, Scleroderma Foundation,

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Myositis Foundation, Arthritis Foundation, Arthritis National Research Foundation, etc.

-Investigator-initiated pharmaceutical/industry grants if aimed at young investigators

NIH Loan Repayment Award (<https://www.lrp.nih.gov/>): pays up to \$50K/year of student loan debt for 2 years, can continue applying to renew indefinitely, due November (discuss institutional support after training)

Fellowship Year 3/Junior Faculty: Publish, graduate, find a job, and write grants to fund faculty salary

-Email cover letter/CV to chiefs to schedule meetings at ACR/meetings; start to differentiate from mentor

-Understand promotion/support/time protection at institution: Research Fellow, Instructor, Assistant Professor

Local resources (often aimed at junior faculty, but can usually apply as upper level fellow)

-Institutional K awards: 1-2 years while applying for NIH K

-Covers up to 75% of salary and fringe; limited research funds may be available

-Typically open to entire local medical school community

-K12: typically part of a larger grant with specific mission for area of research/trainees)

-KL2: through GCRC

-Local grants for investigators: hospital, medical school, university, local charities/foundations

-Local grant-writing programs, advanced research training certificates, research support, statistical consults, GCRC support for labs/study visit rooms/research coordinator, etc.

Junior Faculty: Keep publishing and writing grants to fund research/salary

-Protect time to succeed in research; transition from mentee to mentor; committees/study sections/editor

Local resources as listed above

Rheumatology Research Foundation Investigator Award (must apply before NIH K, due in summer); up to \$375K for 1-3 years (\$75K/year salary including fringe, \$50K/year for research), renewal each, NIH K or equivalent submission required

NIH K Career Development Award: <https://researchtraining.nih.gov/programs/career-development>

-Each institute has their own budget, rules, mission statement, and funding line; talk to program officer

-NIAMS funds up to 5 years of \$100K/year for salary at 75% effort, \$30K/year for research funds

-Cannot apply with K12/KL2 applications pending

-K08: basic/translational science, genetics/computational biology, secondary data analyses

-K23: patient-oriented research, prospective patient recruitment; ask program officer if appropriate aims

-K99/R00: for more advanced applicants, US citizenship/permanent residency not required

-See NIH website for other K awards for behavioral/quantitative sciences, etc.

-Three submission cycles per year (February, June, October); extensive application process

-Impact score about 5 months after submission, funding starts about 10 months after submission

VA Career Development Award: similar to NIH K, need to have VA affiliation and perform related research

Rheumatology Research Foundation: K Bridge (\$75K), **K Supplement** (\$100K for up to 2 years), **R Bridge**

NIH R03, R21, others: sign up for NIH Friday funding email (<http://grants.nih.gov/grants/guide/listserv.htm>)

Consortium/Collaborative grants for % effort (site PI/co-I): P60, P30, U01, U54, RC, R01, foundation grants

Rheumatology Research Foundation mid-career awards (multiple cycles/year): Disease Targeted Innovative Research Grant, Disease Targeted Research Pilot Grant

NIH Lasker Clinical Research Scholars Program: 5-7 years as "visiting scholar" at NIH then 3 years extramural

Federal awards: NSF, Dept. of Defense, Agency for Healthcare Res. & Quality, Centers for Medicare/Medicaid

Investigator-initiated grants from pharmaceutical companies/industry

Other foundation awards: Doris Duke, Robert Wood Johnson, Wellcome Trust, Burroughs Wellcome, etc.

Philanthropy/donors/divisional support

...NIH R01!