UCSF Clinical & Translational Sciences Training Program:
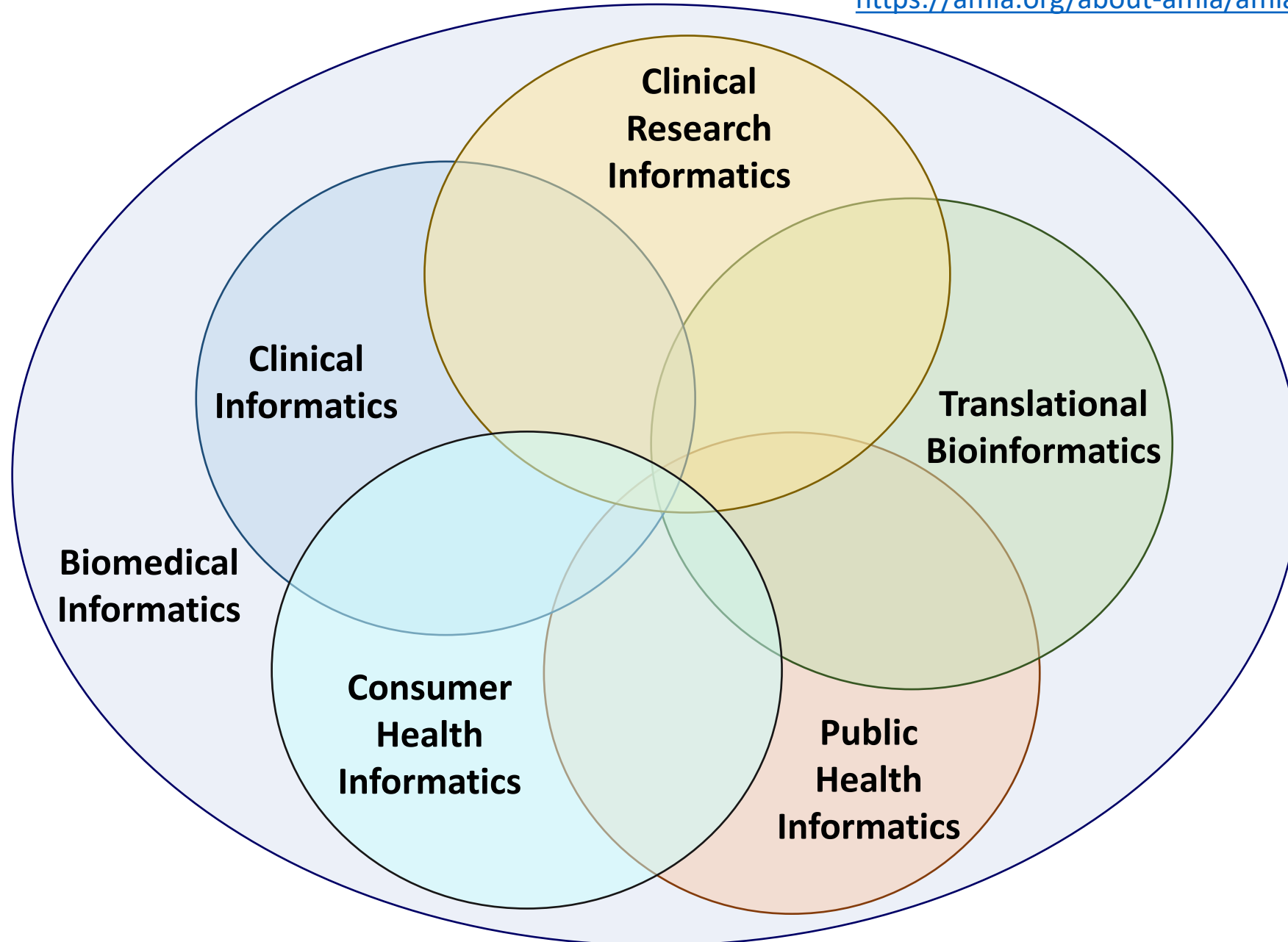
Clinical Research Informatics Postdoctoral (CRISP) Fellowship

https://crisp.ucsf.edu

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University of California, San Francisco

January 25, 2024

Five Domains of Biomedical Informatics (American Medical Informatics Association)

Clinical Research Informatics

Clinical Informatics

Translational Bioinformatics

Biomedical Informatics

Consumer Health Informatics

Public Health Informatics

Clinical Research Informatics: Challenges, Opportunities and Definition for an Emerging Domain

PETER J. EMBI, MD, MS, PHILIP R.O. PAYNE, PhD

Abstract **Objectives:** Clinical Research Infor[mation] currently not well defined. A formal description of C[RI] direct progress in the field.

Design: Given the early stage of CRI knowledge and key stakeholders and opinion leaders to determine th[e] phases employed complimentary methods to triangu[late]

Measurements: Study phases included: 1) a group in[terview] with a larger group of self-identified CRI professiona[ls] debriefing and member-checking with a group of CR[I] and organized for formal, independent content analy[sis] iterative process to identify emergent categorizations

Results: We identified a range of challenges and opp[ortunities] themes spanning academic, practical, and organizatio[nal] development of a formal definition of CRI and supported further representations that illustrate areas of emphasis critical to advancing the domain.

Conclusions: CRI has emerged as a distinct discipline that faces multiple challenges and opportunities. The findings presented summarize those challenges and opportunities and provide a framework that should help inform next steps to advance this important new discipline.

Editorial

The maturation of clinical research informatics as a subdomain of biomedical informatics

Suzanne Bakken [1,2,3]

Health Informatics

Rachel L. Richesson · James E. Andrews
Editors

Clinical
Research
Informatics

Second Edition

Springer

Clinical Research Informatics involves **the use of informatics in the discovery and management of new knowledge relating to health and disease**. It includes management of information related to clinical trials and secondary research use of clinical data.

Overlap between clinical informatics, clinical research informatics and clinical research

Clinical Informatics

- Enterprise Information Systems
- Clinical decision support
- Human-centered design
- Workflow engineering
- Change management
- Computer programming
- Data privacy and security
- EHR governance
- Quality improvement principles
- Mobile technology (wearables)
- Health economics & financing

Clinical Research Informatics

- Leveraging EHR data to improve population health
- Computable phenotypes
- Data standards & nomenclatures
- Health information exchange
- Data visualization
- Natural language processing
- Machine learning algorithms
- Artificial Intelligence
- Implementation science
- Workflow Optimization

Clinical Research

- Study design
- Subject recruitment
- Data management
- Data quality assurance
- Clinical epidemiology
- Ethical conduct of research
- Publishing & presenting research
- Biostatistics
- Systematic reviews
- Clinical trials
- Program evaluation
- Grant writing

Clinical Research Informatics: Combining research and operations in a learning healthcare system

CRISP Components

|	
	1) Mentored research project
	2) Training in Clinical Research (TICR) courses: • Advanced Training in Clinical Research Certificate, • Master of Science Degree in Health Data Science (MiHDAS), • Master in Advanced Studies (MAS) Degree in Clinical Research, or • Tailored course selections from Training in Clinical Research program
	3) Weekly didactic sessions with UCSF Clinical Informatics Fellows
	4) Fellows Advancement Skills Training in Clinical Research (FAST-CaR) Career Development Seminars
	5) Regular works in progress seminars
	6) Clinical experience (20% effort)

CRISP Program Recommended Courses   https://crisp.ucsf.edu

Quarter	Course
Summer	Responsible Conduct of Research (EPI 201)
	Designing Clinical Research (EPI 202)
	Introduction to Programming in R (BIOSTAT 213)
	Introduction to the Science of Big Data (BIOSTAT 202)
Fall	Clinical Epidemiology (EPI 204)
	Biostatistics for Clinical Research I (BIOSTAT 200)
	Advanced Programming in R (BIOSTAT 214)
	Data Science Program Seminar (DATASCI 221)
Winter	Machine Learning in R (BIOSTAT 216)
	Biostatistics for Clinical Research II (BIOSTAT 208)
	Data Science Program Seminar (DATASCI 221)
Spring	Use of EHR Data for Research (EPI 231)
	Publishing and Presenting Clinical Research (EPI 212)
	Biostatistics for Clinical Research III (BIOSTAT 209)
	Data Science Program Seminar (DATASCI 221)
	15 courses, 31 credits

Eligibility

- U.S. citizen or permanent resident

- Doctoral degree

- Clinical license in a healthcare profession (medicine, nursing, pharmacy, dentistry, psychology, physical therapy, acupuncture, podiatry)

- Fewer than three years of prior funding through institutional or individual NRSA postdoctoral grants

- Applicant department must commit to covering approximately 30% ($40,000/year) of the costs

Estimated Annual Cost of Fellowship

Applicant's department covers ~$70K

Training grant covers ~$90K
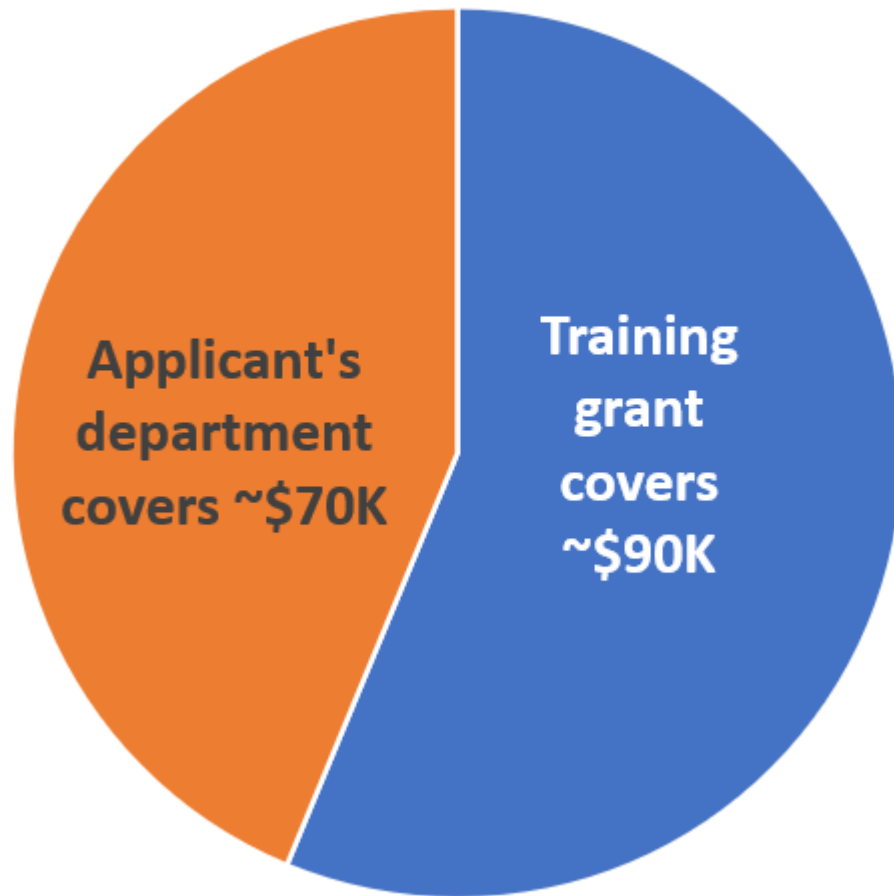
Department/division must cover:

- UCSF housing supplement (about $15,000/year)

- Difference between UCSF and NIH pay scales

- Uncovered tuition ($0 - $10,000/year)

- Miscellaneous expenses (e.g., travel, conference registration)

- Revenue from 20% fellow's clinical activities may be applied to these costs

Application Review Criteria

Selection criteria will focus on the candidate's potential to become a productive clinical investigator and successful K awardee as evaluated across five domains:

Mentor	Experience of mentor(s) and success of their prior trainees. Commitment of the proposed mentor(s) and plan for training.
Candidate	Creativity of the candidate and potential to conduct innovative research based on background, areas of interest/expertise, prior publications, and grants.
Research plan	Scientific strength, clinical importance, and feasibility of the proposed research plan.
Resources	Tangible resources provided by the mentor (e.g., workstation, computer, data analytic support, administrative support, travel to scientific conferences).
Academic potential	Likelihood that the candidate will pursue an academic career as a clinical investigator whose work will have an important impact on health care.

CRISP Fellows 2021-2023: what are they doing now?

Mohamed Seedahmed MD MPH
Assistant Professor, U. Pittsburgh
Pulmonary & Critical Care Medicine

Rachael Stovall MD
Assistant Professor, U. Washington
Rheumatology

Jonathan Witonsky MD MAS
Assistant Professor, UCSF
Pediatric Allergy & Immunology

Arthritis Care & Research

AMERICAN COLLEGE of RHEUMATOLOGY
Empowering Rheumatology Professionals

Incidence Rate and Factors Associated With Fractures Among Medicare Beneficiaries With Ankylosing Spondylitis in the United States

Rachael Stovall ✉, Emma Kersey, Jing Li, Rahaf Baker, Christine Anastasiou, Andriko Palmowski, Gabriela Schmajuk, Lianne Gensler, Jinoos Yazdany

Performance of a Computational Phenotyping Algorithm for Sarcoidosis Using Diagnostic Codes in Electronic Medical Records: Case Validation Study From 2 Veterans Affairs Medical Centers

https://formative.jmir.org/2022/3/e31615

CHEST

Volume 162, Issue 1, July 2022, Pages 184-195

Education and Clinical Practice: Original Research

Race- and Ethnicity-Based Spirometry Reference Equations: Are They Accurate for Genetically Admixed Children?

Jonathan Witonsky MD [a], Jennifer R. Elhawary MS [b], Celeste Eng BS [b],

José R. Rodríguez-Santana MD [d], Luisa N. Borrell DDS, PhD [e], Esteban G. Burchard MD, MPH [c]

CRISP Fellows 2023-24

Cecilia Dalle Ore, MD
Neurosurgery

Lauren Harasymiw, MPH, PhD, MD
Neonatology

Vadim Shteyler, MD
Pediatric Allergy & Immunology

CRISP
(CLINICAL RESEARCH INFORMATICS POSTDOCTORAL)
FELLOWSHIP

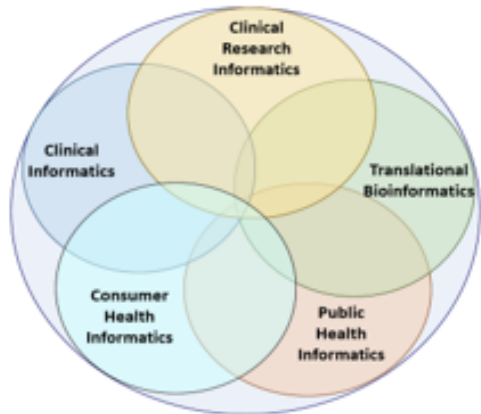**APPLICATION DEADLINE:**
APRIL 1, 2024
OFFERS EXTENDED:
MAY 1, 2024
FELLOWSHIP BEGINS:
JULY 1, 2024

FIVE SPECIALTIES WITHIN INFORMATICS

What is Clinical Research Informatics?

Clinical Research Informatics is one of five informatics subspecialties defined by the American Medical Informatics Society. It encompasses the technology, processes, principles, and practices required for clinical research involving human subjects and their data.

What is CRISP?

The Clinical Research Informatics Postdoctoral (CRISP) Fellowship provides tailored training for clinician investigators who seek to improve healthcare through the science of clinical research informatics. The fellowship is funded by a training (TL1) grant from the National Center for Advancing Translational Science (NCATS), the UCSF Clinical and Translational Science Institute, and the Department of Epidemiology and Biostatistics. CRISP Fellows receive a stipend commensurate with their PGY/postdoctoral fellow status plus tuition assistance for didactic training in data science and clinical research.

Fellows may choose between a 1- or 2-year fellowship starting July 1, 2024. Applications received by April 1, 2024 will receive preferential consideration.

Program Contacts:

Program Director:
Mary Whooley, MD
Mary.Whooley@va.gov

Program Coordinator:
Christian Leiva
Christian.Leiva@ucsf.edu

Learn more at:
https://crisp.ucsf.edu

Discussion