

# Overview Information

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| Funding Opportunity Title | **Clinical and Translational Data Science** **Postdoctoral T32 Training Program****Request for Applications** |
| Key Dates\*

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| Posted Date | **October 9, 2025** |
| Information Session | **October 15, 2025** [https://go.osu.edu/ctds\_postdoc\_t32\_information\_sess*io*n](https://go.osu.edu/ctds_postdoc_t32_information_session) |
| Application Due Date | **October 31, 2025**, midnight [**https://go.osu.edu/ctds\_postdoc\_t32\_application**](https://go.osu.edu/ctds_postdoc_t32_application) |
| Notice of Award Date | **November 30, 2025, or as close as possible** |
| Earliest Start Date | **December 1, 2025** |

\*Some dates may vary because of unanticipated circumstances**Information Session:****Date: October 15, 2025****Time: 3-4 pm****Registration and Zoom link:** [https://go.osu.edu/ctds\_postdoc\_t32\_information\_sess*io*n](https://go.osu.edu/ctds_postdoc_t32_information_session) Those who register will be sent a link to the video |
| Funding Opportunity Purpose | Clinical and Translational Science Institute is calling for applications to the Clinical and Translational Data Science (CTDS) Postdoctoral T32 training program. The goal of this postdoctoral training program is to leverage the large, collaborative, and multidisciplinary research environment at Ohio State to increase the reach of clinical and translational data science (CTDS) education and training across the Ohio State campus and to recruit and develop a cohort of trainees to become the next generation of clinical and translational data scientist leaders.The T32 grant provides full-time research training support for postdoctoral trainees pursuing clinical and translational data science research.The overall goal of the T32 program is to prepare clinical and translational scientists and data scientists to be well equipped to serve as leaders in the burgeoning field of clinical and translational research. Postdoctoral trainees with a doctorate degree, such as but not limited to PhD, MD, or PharmD, and who are U.S. citizens, non-citizen nationals, or permanent residents are eligible to apply.The Ohio State CTDS Postdoctorate T32 training program is part of the NIH Ruth L. Kirschstein National Research Service Award (NRSA) program, the goal of which is to help ensure that a pool of highly trained scientists is available in appropriate scientific disciplines to address the nation's biomedical, behavioral, and clinical research needs. It is funded through a grant from the National Center for Clinical and Translational Science (NCATS) |

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# Section I. Funding Opportunity Description

## Purpose

For this award cycle, applications are being accepted for up to four postdoctoral awardees conducting clinical and translational data science research.

**Two Year Appointment**: Applicants are required to take a two-year T32 appointment. The research and career development plan should reflect that timeline. This Kirschstein-NRSA postdoctoral award is subject to payback mechanism (<https://grants.nih.gov/faqs#/Research-Training-and-Career-Development?anchor=56397>). For instance, a postdoctorate awardee who receives and finishes two full years of NRSA training completes the payback obligation. Up to four postdoctoral awards will be awarded.

Please read this RFA carefully for complete eligibility requirements related to the applicant and type of research proposed. Please direct all questions to the Program Manager, Stuart Hobbs at 614-685-5972 or stuart.hobbs@osumc.edu

**Benefits of the T32 Program**

* Stipend support awarded at the NIH standard.
* Research funds and travel funds.
* Access to the CTSI professional services and staff including biostatistics, research participant recruitment and retention services, and regulatory support.
* Access to a training curriculum in clinical and translational data science and research methodology and specialized training seminars.

**Expectations of T32 Trainees**

* Trainees must be able to commit full-time effort in the program at the time of appointment.
* Professional Development for Career Launch
	1. All trainees are required to complete the following research training courses: Grant Writing Courses (BSGP 7070/7080; PUBHEPI 8899.02; or Ohio State-CTSI semester long grant writing workshop); Responsible Conduct of Research (NURSING 7781); and Rigorous and Reproducible Design (BMI 8150)
	2. Participate in Communication Workshop to develop their 30 second elevator pitch
	3. Participate in data science workshops led by faculty mentors.
	4. Complete the CITI Good Clinical Practice training, all Ohio State Office of Responsible Research Practice (ORRP) requirements and trainings
1. Trainees are required to complete a grant writing/study development experience during their postdoctoral appointment. This includes writing specific aims of a research grant with the mentoring team, developing a research protocol, developing a budget, preparing and submitting regulatory documents (if relevant).
2. Trainees are encouraged to take CTDS themed didactic courses in areas in which they need to strengthen their background. This includes courses in Biostatistics, Bioinformatics, Clinical Informatics, Computer Science, Epidemiology, Medical Science, Population Health, Genetics/Genomics, Biology, and Pharmacology. Trainees may elect to complete the Biostatistics Graduate Certificate, Translational Bioinformatics Graduate Certificate, or AI in Digital Health Graduate Certificate.
* Presentation Requirements. Trainees are expected to:
1. Present in at least one seminar or research day annually
2. Present at one (or more) national meetings during the training period; trainees are encouraged to attend at least once the Translational Science Conference sponsored by the Association for Clinical and Translational Science, which is typically. held in April. They will have the opportunity to submit abstracts for poster and oral presentations.
3. Submit abstracts for poster or oral presentations and attend the annual OSU CTSI Annual Meeting
* Trainees are expected to produce both first-authored and co-authored publications – at least two first author manuscripts are to be submitted to a peer-reviewed journal during the training period.
* Individual Development Plan (IDP): Working with the T32 Program Directors (PDs) and the trainee mentors, the appointed T32 trainees will track their goals and progress using an online IDP. Administered as a REDCap survey, the Trainee Monitoring Assessment Tool includes the IDP and organizes training, coursework, conference and workshop plans as well as individualized training of the T32 trainee to achieve career development goals along with target completion dates. Every six months, the PDs hold an IDP meeting with the trainee and lead mentor to monitor progress and provide feedback on trainee progress.
* Progress reports will be required three times per year--twice in conjunction with the IDP meeting. An annual written report and an oral presentation to the Internal Advisory Committee are required
* NIH Regulations
1. All trainees must acknowledge the CTSI Postdoctoral T32 support in all products (publications, patents, presentations, posters) resulting from this award. See https://ctsi.osu.edu/cite-grantAll trainees must adhere to the NIH Public Access Policy.
2. Award recipients are required to comply with the NIH Public Access Policy. This includes submission to PubMed Central, upon acceptance for publication, of an electronic version of a final peer-reviewed manuscript resulting from research supported in whole or in part by the NIH. The staff of Prior Health Science Library can help investigators navigate the Public Access Policy processes
3. All trainees will follow relevant NIH Rules and Regulations as stated in the NIH Grants Policy Statement (<https://grants.nih.gov/policy/nihgps/index.htm> ) and the Ruth L. Kirschstein National Research Service Award (NRSA) Postdoctoral Research Training Grant for the Clinical and Translational Science Awards (CTSA) Program: <https://grants.nih.gov/grants/guide/pa-files/PAR-25-195.html>

Section II. Eligibility Information

Eligible Applicants

**Before you apply, please note the following information.**

Eligibility criteria for T32 applicants (established by our funding source, the National Institutes of Health) are as follows:

1. **Citizenship Status:** At the time of appointment to the training program, individuals selected to participate in the training program must be citizens or non-citizen nationals of the United States or have been lawfully admitted to the United States for permanent residence by the time of award. Noncitizen nationals are individuals, who, although not citizens of the United States, owe permanent allegiance to the United States. They generally are people born in outlying possessions of the United States (e.g., American Samoa and Swains Island). Individuals who have been lawfully admitted for permanent residence must have a currently valid Permanent Resident Card (USCIS Form I-551) or other legal verification of such status. See <https://grants.nih.gov/grants/policy/nihgps/HTML5/section_11/11.2.2_eligibility.htm#Citizens> for complete information.
2. **Degree Requirements**: Trainees must hold a doctorate degree, such as PhD, MD, PharmD, or equivalent.
3. **Effort**: Trainees must be able to commit full-time effort in the program at the time of appointment.
4. Appointees to this T32 may not have salary/stipend support from other federal funding sources.
5. No postdoctoral trainee may receive more than 5 years of aggregate Kirschstein-NRSA support, including any combination of support from Kirschstein-NRSA institutional research training grants and individual fellowships. Therefore, if you have 4 years on an F or T32 you would be eligible for only one year on the CTSI T32 – therefore you are not eligible to apply for this two-year training program.

Eligible Research

This CTDS T32 grant supports postdoctoral trainees pursuing clinical and translational data science research.

The T32 Funding Opportunity Announcement (FOA) from the NIH does not allow appointed Trainees to lead an independent clinical trial. Trainees may obtain research experience in a clinical trial led by a mentor or co-mentor. NIH strongly supports training towards a career in clinically relevant research and so gaining experience in clinical trials under the guidance of a mentor or co-mentor is encouraged.

The applicant can be part of the clinical trial team and can use the data generated during the clinical trial research experience in his/her proposed research project. NIH expects the mentor to assume overall responsibility of the trial including registering and reporting in clinicaltrials.gov and obtaining IRB approval.

Refer to “Appendix 1. Definitions: Clinical and Translational Research” of this RFA for more information on this topic, including a link to an NIH webpage with a decision tree that you can use to determine if your proposed research meets the NIH definition of a clinical trial.

Non-domestic (non-U.S.) Entities (Foreign Institutions) are not eligible to apply. Non-domestic (non-U.S.) components of U.S. Organizations are not eligible to apply. Research in foreign countries is not allowed by this award

# Section III. Application and Submission Information

Please read these instructions carefully before going online to apply. The application must be completed and submitted online at **the web address noted above.** The application process is designed so that you can save your information and return to it (You will be able to bookmark the survey page to return to the survey, or you can provide an email address to which the survey link will be emailed).

Applications and supporting materials are to be submitted **by 11:59 p.m. EST on the date noted at the top of this RFA. No late applications will be accepted.**

Materials must be submitted online in **PDF format**.

Use Arial with font no smaller than size 11. Use single-space text. Margins should be at least ½ inch on all sides.

Please make sure you have completed all sections of the entire application. Incomplete applications will not be accepted.

Materials must be submitted online in **PDF format** with the file named using the following guideline:

 < lastname\_firstname\_T32\_Application\_2025 >

**Application Components: Cover Page**

1. Name
2. Advanced Degree
3. Institution where currently employed (for academic institutions, include name, college, department).
4. Primary Mentor:

Name

Institution

Email

### Application Components: Personal Statement, Career Development and Mentoring Plans

This section cannot exceed two type-written, single-spaced pages.

**Applicant's Background:** The CTDS T32 application requires trainees to describe their educational and research background, motivation for a research career, clinical and translational data science research focus and how the CTDS T32 training experience would benefit their research and their career development.

**Career Development/Training Activities during the Award Period:** Describe here the new, enhanced research skills and knowledge you will acquire as a result of the proposed award. The governing body of the CTDS has defined Core Competencies in clinical and translational science, and they are listed in Appendix 2, below. Draw from the list those areas in which you need development and describe how you will gain skills, knowledge, and experience in Clinical and Translational Data Science through the T32 program. Here you may include lists of courses, workshops, meetings, etc. You may also describe how you will use the award to gain specific technical skills, again through courses, workshops, mentoring, etc., as appropriate.

**Mentoring:** As part of your application for the [Program Name] T32 Postdoctoral Fellowship, please include a brief statement (1–2 pages) describing your training and mentoring goals. Specifically:

1. **Mentoring Needs and Expectations:** Please describe what you hope to gain from this mentored postdoctoral experience. Consider addressing:
	* Your scientific and professional development goals for the next 2 years.
	* Specific skills, methods, or domain areas in **clinical, biomedical, or computational data science** you wish to strengthen (e.g., causal inference, machine learning for EHRs, multi-omics integration, implementation science, etc.).
	* The types of mentoring approaches that you find most effective — for example, structured feedback, collaborative team science environments, independent exploration, or interdisciplinary guidance.
	* The kinds of support you hope to receive from mentors and the program (e.g., grant writing, manuscript preparation, networking, leadership, or clinical translation).
2. **Research and Mentorship Alignment:** Please discuss how your interests and goals align with the T32 program’s research themes and training environment.
	* Summarize your primary research focus and how it connects to **clinical or translational data science**.
	* Identify **one or more potential primary mentors** among the program’s faculty whose expertise, research portfolio, and mentoring style you believe would support your development.
	* For each suggested mentor, provide a brief rationale (2–4 sentences) describing how their research aligns with your interests or how their mentoring approach could enhance your training.
	* If applicable, mention any prior contact you have had with these faculty members (this is optional). You are welcome to suggest **secondary mentors** or collaborators if you envision a multidisciplinary mentoring team.

**Application Components: Research Plan**

**The Research Plan** should not exceed 4 pages.

Clinical and translational data science research includes novel data science methodologies that significantly improve the process or efficiency of clinical and translation research, or new data science applications to significant clinical and translational research questions.

The proposed clinical and translational data science research shall be classified into one or multiple among four data science fields: Biostatistics and Population Health, Translational Genomics, Translational Pharmacology, or AI in Health.

The proposed clinical and translational science research must fit the following definition of clinical research and be situated somewhere on the translational research spectrum from T1 to T4. See **Appendix 1** for more information.

**Clinical Research**: Research with human subjects that is:

1) Patient-oriented research. Research conducted with human subjects (or on material of human origin such as tissues, specimens, and cognitive phenomena) for which an investigator (or colleague) directly interacts with human subjects. Excluded from this definition are in vitro studies that utilize human tissues that cannot be linked to a living individual. Clinical research includes: (a) mechanisms of human disease, (b), therapeutic interventions, (c) clinical trials, or (d) development of new technologies. Or:

2) Epidemiological and behavioral studies. Or:

3) Outcomes research and health services research.

**Translational Research.** The translational science spectrum represents each stage of research along the path from the biological basis of health and disease to interventions that improve the health of individuals and the public. For more detailed information, see Appendix 1.

**T0** Basic Science. Refers to basic scientific discovery (Not funded by this award).

**T1** Discovery or Foundational Research seeks to move basic discovery into a candidate health application.

**T2** Health Application to Assess Efficacy: assesses the value of application for health practice leading to the development of evidence-based guidelines.

**T3** Health Practice (Science of Dissemination and Implementation): attempts to move evidence-based guidelines into health practice, through delivery, dissemination, and diffusion research. Research examples include health services research related to dissemination, communication, and implementation; and clinical outcomes research. Phase 4 Clinical Trials are also part of T3, but are not funded by this award.

**T4** Evaluation of Health Impact on Real World Populations: seeks to evaluate the “real world” health outcomes of population health practice. Research examples include: population level outcome studies; studies of the social determinants of health. **[[1]](#footnote-1)**

The research plan should be organized as follows:

* Title of the proposed project.
* Significance of the problem. State how the proposed project will improve scientific knowledge and/or change the field of study; what will be the (short- or long- term) impact of the research on human health; what will be the long-term impact of the proposed research on health. In particularly, please state whether this research proposes a novel data science methodology that significantly improves the process or efficiency of clinical and translation research, or a new data science application to significant clinical and translational research questions.
* Specific Aims of the Project. An outlinethat lists the individual experimental issues that are to be addressed. Each should be framed in terms of a hypothesis.
* A brief description of the Methods to be employed. A (somewhat) detailed description of the study design, data generation/collection/integration, data science methodologies and analysis plan, and the rationale for the design of the project. From this section, the reader should be able to determine how the data to be gathered will help solve the problem identified. The reviewers should also be able to assess the feasibility of the proposal both in terms of study design, data science methodology and analysis plan, and time frame for completion.
* Please describe the candidate’s expertise for this research project.
* References are **not** included in the page limit.

### Application Components: Scientific Mentorship Team

**Applicants will identify the primary mentor, and secondary mentor/s can be appointed later.**

Primary Mentor. It is expected that the applicant will identify a mentor in their area of clinical or translational data science research.

The primary mentor is expected at a minimum to:

* Provide guidance for design and execution of an original, high-quality research project.
* Meet with the trainee regularly.
* Provide career development and counseling.
* Participate in formal CTSI Mentor training (and complete mentor competency assessment surveys).
* Practice inclusive and culturally responsive mentorship.
* Have active external research funding.
* Attend Orientation, IDP meetings (twice a year), and at least two trainings/events per year organized for T32 trainees and mentor.

The Primary Mentor’s Letter of Support should acknowledge their understanding of these requirements; describe their mentoring plan for your development, including reference to the mentoring and training plan in your application; and describe their training experience (including number of mentees).

### Application Components: NIH Biosketches

NIH Biosketches. The biosketch of the Applicant should be uploaded to the application. Use the “Personal Statement” section to describe why your experience and qualifications make you particularly well-suited for your role (either as T32 trainee or mentor) in the program. Within this section you may, if it is relevant to your situation, briefly describe factors such as family care responsibilities, illness, disability, and active-duty military service that may have affected your scientific advancement or productivity.

You can find a “Biographical Sketch Sample,” with instructions, and a blank formatted “Biographical Sketch” form here: <https://grants.nih.gov/grants/forms/biosketch.htm>

### Application Components: Letters of Support

1. A letter of support is required from your primary mentor. The letter should acknowledge awareness and support of the project and address the role and qualifications of the mentor for the project. Include this letter in your application PDF.
2. A letter of support from your current postdoctoral supervisor or PhD advisor, or other research supervisor.

Address the letters to:

Lang Li, PhD

Clinical and Translational Science Institute

376 W. 10th Ave., Suite 260

The Ohio State University

Columbus, OH 43210

Email: Lang.Li@osumc.edu

# Section IV. Application Review Information

A Study Section will make recommendations to the T32 Internal Advisory Committee. Each application will be read by three reviewers. Applications will receive an Impact Score (NIH 1-9 scale). Individual components will also be scored 1-9.

Trainee selection criteria are based on a holistic review process in which the candidate’s attributes, experiences and educational metrics and accomplishments to date are assessed. The candidate’s academic and scholarly accomplishments and research career aspirations are assessed. The quality of the mentorship team and the training plan are important evaluation criteria. The potential clinical and translational data science research project impact on innovation and advances in health and the rigor of the research approach contribute to the evaluation. Finally, the potential of the T32 training program to significantly impact the candidate’s career trajectory is assessed.

All applicants will receive reviewer comments on their applications.

# Section V. Award Administration Information

## Award Notices

Meritorious applications will receive formal notice in the form of a Letter of Offer provided to the applicant. A completed and signed CTSI Award Acceptance Letter is required before the start date.

## Award Requirements

Applicants and mentors must become CTSI members by completing a CTSI membership form. https://ctsi.osu.edu/about/membership

# Section VII. Program Contacts

## Grant Management Contact

## If you have any questions regarding this RFA, please contact:

**Stuart D. Hobbs, PhD, MBA**

Program Director

Research Education, Training and Career Development

Clinical and Translational Science Institute

Ste. 260 Prior Hall, 376 W. 10th Avenue, Columbus, OH 43210

614-685-5972 Office

stuart.hobbs@osumc.edu [ccts.osu.edu](http://ccts.osu.edu/)

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| **Signature: Applicant** |

I certify that the statements herein are true and complete to the best of my knowledge and that I will comply with all applicable CTSI terms and conditions governing my potential appointment. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties.

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Applicant’s signature Date

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| **Appendix 1. Definitions: Clinical and Translational Research** |

**Before you apply, please note the following information.**

**CLINICAL RESEARCH AND CLINICAL TRIALS**

Per regulations, Ruth L. Kirschstein T32 awards fund clinical research, per the following definitions.

**Clinical Research[[2]](#footnote-2)**: Research with human subjects that is:

1) Patient-oriented research. Research conducted with human subjects (or on material of human origin such as tissues, specimens, and cognitive phenomena) for which an investigator (or colleague) directly interacts with human subjects. Excluded from this definition are in vitro studies that utilize human tissues that cannot be linked to a living individual. It includes: (a) mechanisms of human disease, (b), therapeutic interventions, (c) clinical trials, or (d) development of new technologies.

2) Epidemiological and behavioral studies.

3) Outcomes research and health services research.

**Clinical Trial[[3]](#footnote-3):** A research study in which one or more human subjects are prospectively assigned to one or more interventions (which may include placebo or other control) to evaluate the effects of those interventions on health-related biomedical or behavioral outcomes.



Use the following four questions to determine the difference between a clinical study and a clinical trial:

1. Does the study involve human participants?
2. Are the participants prospectively assigned to an intervention?
3. Is the study designed to evaluate the effect of the intervention on the participants?
4. Is the effect being evaluated a health-related biomedical or behavioral outcome?

Note that if the answers to the 4 questions are yes, your study meets the NIH definition of a clinical trial, even if…

* You are studying healthy participants
* Your study does not have a comparison group (e.g., placebo or control)
* Your study is only designed to assess the pharmacokinetics, safety, and/or maximum tolerated dose of an investigational drug
* Your study is utilizing a behavioral intervention
* Only one aim or sub-aim of your study meets the clinical trial definition

Studies intended solely to refine measures are not considered clinical trials. Studies that involve secondary research with biological specimens or health information are not clinical trials.

Use the NIH decision tree at this webpage <https://grants.nih.gov/ct-decision/index.htm> to determine if your proposed research meets the NIH definition of a clinical trial. This webpage also contains case studies and FAQs to help you and your mentoring team understand the NIH definition of a clinical trial.

**THE SPECTRUM OF TRANSLATIONAL HEALTH RESEARCH**

Per regulations, Ruth L. Kirschstein T32 awards fund translational research that occupies a particular space on the Clinical and Translational research spectrum: T1 to T4

The application has a section where you will place your research on the spectrum and provide a two to 4 sentence justification for that placement.

Below are definitions and more information.

Translation: the process of turning observations in the laboratory, clinic, and community into interventions that improve the health of individuals and the public—ranging from therapeutics and diagnostics to medical procedures and behavioral medicine.[[4]](#footnote-4)

For didactic purposes, translational research has often been described in phases of translation, or “T-phases.”[[5]](#footnote-5)

**T0 Basic Research**

Basic research involves scientific exploration that can reveal fundamental mechanisms of biology, disease or behavior. Every stage of the translational research spectrum builds upon and informs basic research.

**T1 Preclinical Research**

Preclinical research connects the basic science of disease with human medicine. During this stage, scientists develop model interventions to further understand the basis of a disease or disorder and find ways to treat it. Testing is carried out using cell or animal models of disease; samples of human or animal tissues; or computer-assisted simulations of drug, device or diagnostic interactions within living systems.

**T2 Clinical Research**

Clinical research includes studies to better understand a disease in humans and relate this knowledge to findings in cell or animal models; testing and refinement of new technologies in people; testing of interventions for safety and effectiveness in those with or without disease; behavioral and observational studies; and outcomes and health services research. The goal of many clinical trials is to obtain data to support regulatory approval for an intervention.

**T3 Clinical Implementation**

The clinical implementation stage of translation involves the adoption of interventions that have been demonstrated to be useful in a research environment into routine clinical care for the general population. This stage also includes implementation research to evaluate the results of clinical trials and to identify new clinical questions and gaps in care.

**T4 Public Health**

In this stage of translation, researchers study health outcomes at the population level to determine the effects of diseases and efforts to prevent, diagnose and treat them. Findings help guide scientists working to assess the effects of current interventions and to develop new ones.

**THE SPECTRUM OF TRANSLATIONAL HEALTH RESEARCH (**



Translational Science is the field of investigation focused on understanding the scientific and operational principles underlying each step of the translational process.[[6]](#footnote-6)

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| **Appendix 2: Clinical and Translational Data Science Training Program Description**  |

Broadly, CTDS training program is comprised of four major components: 1) **Didactic** **Courses**; 2) **Seminars, Workshops and Discussion Sessions,** 3) **Mentored Research**; and 4) **Professional Development,** each described in further detail below. The specific mosaic of training experiences across these four components will be tailored according to the educational needs and research interests of the trainee.

**Figure 5: Didactic Courses**

| AI in Digital Health Graduate Certificate (12 credits)Core course:BMI 5780 – Programming for Biomedical Informatics (Python)Elective courses (pick 3):BMI 5551 – Survey of AI/ML in Digital HealthBMI 5552 – AI/ML Applications in Medical ImagingBMI 5553 – Predictive Analytics in Electronic Health RecordsBMI 5754 – Natural Language Processing in Biomedical InformaticsBMI 5750 – Methods in Biomedical Informatics and Data Science | **Biostatistics Graduate Certificate (14 credits)****Core courses:**PUBHEPI 6410 - Principles of EpidemiologyPUBHBIO 6210 - Applied Biostatistics IPUBHBIO 6211 - Applied Biostatistics IIPUBHBIO 6250 - Regression Methods for the Health SciencesSelective courses (pick 1):PUBHBIO 6270 - Introduction to SAS for Public Health StudentsSTAT 5730 - Introduction to R for Data Science |
| --- | --- |
| Translational Bioinformatics Graduate Certificate (15 credits)BMI 5710 – Introduction to Biomedical InformaticsBMI 5730 – Introduction to BioinformaticsBMI 5750 – Methods in Translational Bioinformatics (R programming)BMI 7030 – Analysis of Transcriptome DataPUBHBIO 5280 – Introduction to Genomic Data Analysis | **Clinical Informatics Graduate Certificate (15 credits)**BMI 5710 - Introduction to Biomedical InformaticsBMI 5750 - Methods in Biomedical Informatics (R Programming)BMI 5760 - Public Health InformaticsBMI 7040 - Introduction to Clinical InformaticsBMI 5770 - Health Analytics |
| **Basic, Clinical and** Quantitative **Pharmacology**PHARMCL 5600 - Introduction to General PharmacologyPHR 7550 - Research Applications of Clinical PharmacologyPHR 7582/7583 - Organ System Toxicology and Risk AssessmentPHR 8025 - Pharmaco metricsPHR 8320 - Biomedicinal ChemistryPHR 8380 - Structure-based Computer-aided Molecular DesignPHR 8750 - Molecular and Cellular Pharmacology | **Biology and Genetics/Genomics**MOLGEN 5300 - Cancer GeneticsMOLGEN 5645 - Quantitative, Population and Evolutionary GeneticsPHR 5700 - Introduction to Personalized Therapeutics and PharmacogenomicsINTMED 7020/7030 - Foundations in Genetics I/IIBSGP 7000 - Biomedical Sciences ConceptsCBG 8270 - Biomedical Mechanisms of Carcinogens |
| **Population Health**PUBHEPI 7412 - Principles and Procedures for Human Clinical TrialsPUBHHBP 7534 - Research Methods in Health Behavior and PromotionPUBHHMP 8671 - Health Care Outcomes MeasurementPUBHHMP 7678 - Approaches to Health Services ResearchPUBHHBP 7544 - Fundamentals of Population Health and Public HealthPUBHEPI 6413 - Conducting and Communicating Research in Clinical and Translational Science | **Research Methods**NURSING 7781 - Responsible Conduct of ResearchHTHRHSC 7300 - Management and Leadership in Health SciencesBSGP 7070/7080 - Fundamentals of Grant Writing I or IIPHR 7560 - Clinical Trials I: Design and RegulationPHR 7561 - Clinical Trials II: Site Management and Study LeadershipPHR 7782 - Clinical Research Design and MethodsPHR 7784 - Data Analysis in Clinical/Preclinical Research |

**Didactic Courses** will primarily accomplish the domain expert objectives of the program. Specifically, we seek to ensure all trainees possess in-depth, multi-disciplinary content knowledge in clinical and translational data science and are equipped with the knowledge and skills needed for a successful career in clinical and translational research. We will ensure that all trainees have excellent knowledge and skills in general research areas, including grant writing, research ethics and responsible conduct of reproducible research, research design, and data analysis.

**Didactic courses in Figure 5** are strongly encouraged, though not required. Because of the variety of needed training in both clinical science and data science for the four themes, there are eight components to this program’s didactic curriculum. Four data science education programs have corresponding graduate certificate programs: AI in Digital Health, Clinical Informatics, Translational Bioinformatics, and Biostatistics. These educational programs are purposely designed for trainees who do not have adequate training in data science. Three other training programs: Genetics and Genomics, Biology and Pharmacology, and Population Health, are designed for trainees who do not have adequate training in clinical or translation science. Trainees from four themes of CTDS, Biostatistics and Population Health, Translational Genomics, Translational Genomics, and AI in Digital Health, can selectively pick courses from these education programs, or complete requirements to earn a certificate. All trainees are required to complete the following research training courses: Grant Writing Courses (BSGP 7070/7080; PUBHEPI 8899.02; or semester long grant writing training in Ohio State-CTSI); Responsible Conduct of Research (NURSING 7781); and Rigorous and Reproducible Design (BMI 8150).

**Seminars and Workshops**

Practical data science training Didactic courses cannot cover all the knowledge and skills in data science training. One big gap is training in using real data. In Ohio State-CTSI, there are a number of on-going workshops and training sessions for clinical and translational researchers (**Table 1**). These training programs are designed to provide hands on training, including data access application, data manipulation, and data analysis programming. In particular, we provide training using large language model for analyzing clinical data. Generally, these training programs cover both clinical data and multi-omics data.

**Table 1: Data Science Workshops in The Ohio State University Clinical and Translational Science Institute**

|  |  |  |  |
| --- | --- | --- | --- |
| **Workshops and training sessions** | **Data sources** | **Data science skills** | **Frequency** |
| Secondary data analysis workshop | Electronic medical records, MarketScan and Medicaid/Medicare | Biostatistics, informatics. | Once/year |
| Bioinformatics data analysis workshop | TCGA and GEO | Bioinformatics | Once/year |
| AI/ML workshop | Electronic medical records | Large language model | Once/year |
| LifeScale data access training session | De-identified medical records in Ohio State medical center and NCH | Cloud computing, informatics data integration, | Weekly |
| Clinical pharmacology workshop | De-identified clinical trial, real-world datasets | Population modeling, exposure-response analyses | Once/year |

Journal Club and Research Seminar participation: All trainees are required to participate on a monthly a journal club and research seminars organized by this T32 training program. This journal club and research seminar will also serve as the research update from individual mentees, and communication platform among all the mentors and mentees.

Other coursework will be completed as recommended by the trainee’s mentoring committee, based on their educational needs, interests, and long-term goals. It should be noted that because this is not a degree granting program, coursework requirements will be selective, so as not to adversely impact trainee productivity, while also meeting their long-term goals and mentored research experience.

**Mentored Research**

Mentoring Committee and individual development plan (IDP). The mentoring committee will be comprised of a primary mentor from one of the CTDS clusters. If the primary mentor’s research expertise is clinical and translational science, at least one of co-mentors should be a data scientist; and vice versa. When appropriate, trainees will be encouraged to identify a junior faculty member/mentor in training to also serve on their committee. There will be a minimum of two mentors on each mentoring team. This mentoring team will serve several broad functions, including training in research skills, monitoring progress, professional socialization and development, assistance with professional networking, and career planning and placement. Once a trainee has identified all members of the mentoring committee, the committee and the trainee work together to identify the trainee’s short and long-term goals and to develop an individual development plan (IDP) designed to facilitate attainment of those goals. We will use an IDP form recommended in Ohio State Office of Postdoctoral Office. This form includes postdoc self-assessment of skills, mentor input on postdoc skill assessment, annual plan in training, and long-term goal setting. The development, implementation, and revision of the IDP require a series of steps to be conducted by the postdoctoral fellow and the research mentor. These steps are an interactive effort, beginning with the postdoctoral fellow, and both the postdoc and the research advisor must participate fully in the process.

Research project development. The trainee, along with the primary mentors will work to establish the primary research project that will serve as the core of the research training experience. Trainees are expected to meet with their primary mentor on a weekly basis, and with other members of the mentoring committee bimonthly, and minimally one time per year where all the mentoring team will meet together to assess the progress of mentee, and provide a report to the T32 program. This mentoring team meeting will focus on development of the trainee’s research aims, progress on research aims since the last meeting, challenges/barriers faced and methods to overcome them, manuscripts planned/submitted/published, national/international meeting abstract planned submissions and presentations.

**Professional Development**

It is recognized that postdoctoral training is often the final opportunity for individuals to have substantial dedicated time to gain experience in a wide variety of areas and approaches important to their career goals. In addition to didactic and research training, CTDS will provide substantive training to enhance trainees’ professional development, including training in ethics and research integrity, administrative, fiscal and regulatory training, grant-writing skill development, training in how to run a multidisciplinary research program, preparing and executing their own research project (with all attendant responsibilities), and observation of and discussion with program mentors. Trainees will also be encouraged to seek exposure to the extensive mosaic of information and experiences available to them at Ohio State to develop a broad foundation for an independent research program in their area of specialty. Moreover, experiential training through mentoring of other students will be an important component of professional development.

Trainee professional development and career advancement are promoted through: 1) an experienced leadership team with a proven track record, 2) outstanding funded research mentors committed to high quality research, trainee success, and career progression, 3) serial IDP and progress updates, 4) leadership training and opportunities, 5) serial self-assessment of clinical translational research and clinical translation science competencies using a new performance assessment tool (PAT), and 6) participation in informal Career Dinner Series with invited guests, including CTSI T and K alumni, highlighting various research career paths. CTSI T32 trainees will be invited to seminars and workshops organized by other Ohio StateT32 programs including a robust annual workshop focusing on Leadership Skills. A Resiliency Training Program piloted in 2021 was facilitated by the NIH Office of Intramural Training and Education (OITE) and will be offered annually to all Ohio State T32 trainees. The purpose of the program is to promote resilience, career satisfaction, and retention in research careers. T32 programming exposes trainees to a multitude of faculty, administrators, staff, and peers who engage in clinical translation research and clinical translational science that facilitates broad networking. The following are specific activities for professional development for trainees.

Monthly Lunch and Learn Series (required) is targeted to postdocs for junior faculty in Ohio State-CTSI. It has practical topics (e.g., data sharing requirements by NIH, Introduction to CTSI, work life balance). It includes a range of things that are applicable to any discipline.

Bimonthly Brown Bag Meeting with the Program Directors (required): The goal of these meetings is to promote the professional development of the trainees, increase the interaction and collaboration of trainees funded under the program, and to provide an open forum in which they can provide feedback to the Program Directors regarding is discussed: ethics and responsible conduct of research, research reproducibility, personnel/lab management, and career planning. Specifically, at each meeting, the trainees will select a case study from our Rigorous Reproducible Responsible Research Integrity “Case of the Month” to discuss as a group. We also will ask trainees to share challenges they have faced in managing their projects and discuss potential solutions. Finally, we will discuss future directions for our trainees and identified means to support their future goals (e.g., linking them with members of our EAB, guiding them in grant planning, etc.). Trainees will also be provided with time to give feedback to the Program Directors.

Biannual One-on-One Meetings with Program Directors (required): Once per semester, each trainee will meet with one of the Program Directors to discuss their research and training progress and to ensure that they are receiving full mentorship support. Program Directors will also be available in between these meetings to meet with trainees as needed.

National and International Meetings (required): Trainees will be required to attend one national or international scientific meeting annually, along with attendance at the NCATS Training Grant meeting. These meetings provide networking opportunities and vital interactions with leading researchers in the field and exposure to the latest research innovations. It is expected that trainees will present their research during at least one of these meetings, and preferably one each year of training.

Team Science Training (required): Team science training will be provided by Dr. Jeni Cross and her team from Colorado State University. Dr. Cross’s effort is supported by the UM1. The team science training is a combination of individual training and team interventions. It includes a set of competencies to improve team performance: 1) building genuine relationships and trust, 2) communication, 3) management, 4) collaborative ideation and problem-solving, and 5) leadership[42, 43], The specific competencies within each of these areas (e.g., cognitive openness, and self-awareness) are learned through a combination of experiential learning or training, team experience, and team feedback and evaluation. The evidence shows that training alone is not enough to create high performing teams, rather a variety of activities combined improve team performance, well-designed and -delivered team trainings, team debriefs, team coaching, feedback and evaluation, and robust team coordination activities [43, 44]. Team science training will be a semester long program.

Science Communication (optional but strongly recommended). Effective and meaningful verbal communication is essential to professional development and leadership. Effective research communication with other scientists in different fields is critical for collaboration and team science, and meaningful communication with the public is essential to optimize community partnerships and adoption of healthcare innovations. As revealed during the pandemic, many scientists lack the skills to effectively communicate the value, rigor, and relevance of research to the lay public. The T32 program will focus on teaching trainees the communication skills necessary to effectively write about and speak about research and its value through T32 specific programming. This will include a workshop tailored to our trainees that will be developed by a local communications company “Articulation, Inc.” where trainees will learn how to develop a 30 second “elevator pitch,” prepare a TEDx style research presentation, and enhance their skills through constructive critiques on their presentations. With the evolution of virtual and hybrid means of disseminating information, this topic will be expanded to include approaches using a spectrum of communication formats and be inclusive of a range of audiences. Leading experts at Ohio State will be invited as speakers for the Lunch and Learn seminars to further enhance training in science communication. Trainees are encouraged to travel to scientific conferences to present their research. They also have many opportunities to present their research in classes, at research-in-progress seminars, at departmental conferences, and at the annual COM Trainee Research Day. The latter is an opportunity for all COM trainees to present their research and interact in a single day-long event regardless of research discipline. Top poster presenters also have the opportunity to win travel awards to support travel to national scientific meetings.

1. Adapted from “T-Phases of Translational Health Research” at <https://www.iths.org/investigators/definitions/translational-research/> and Harvard Catalyst at <http://catalyst.harvard.edu/pathfinder/> accessed July 2021. [↑](#footnote-ref-1)
2. <http://grants.nih.gov/grants/policy/nihgps/HTML5/section_1/1.2_definition_of_terms.htm> accessed March 2023. [↑](#footnote-ref-2)
3. <https://grants.nih.gov/ct-decision/index.htm> accessed March 2023. [↑](#footnote-ref-3)
4. Gilliland, C.T., et al., 2019. <https://doi.org/10.1021/acsptsci.9b00022> accessed March 2029. [↑](#footnote-ref-4)
5. <https://ncats.nih.gov/translation/spectrum> accessed October 2025. [↑](#footnote-ref-5)
6. Gilliland, C.T., et al., 2019. <https://doi.org/10.1021/acsptsci.9b00022> accessed March 2029. [↑](#footnote-ref-6)