Overview Information

Funding Opportunity Title

TL1 Mentored Research Training Grant Request for Applications

Funding Opportunity Purpose

The OSU Center for Clinical and Translational Science (CCTS) is seeking applicants for the TL1 Mentored Clinical Research Training Program. The TL1 award supports trainees seeking a practical introduction to clinical and translational research. The TL1 award provides full-time research training support for:

- **Predoctoral** trainees in clinical/translational related graduate degree programs and health-professional doctorate trainees who are enrolled in a Master’s or Doctoral program (such as MPH or MD/PhD program).

- **Postdoctoral** trainees with clinical/translational related PhDs or trainees with professional doctorates plus a research related degree or trainees with professional doctorates enrolled in or planning to enroll in a research related master’s degree program (for example, MPH or MMS).

The Ohio State CCTS seeks proposals that address scientific questions consistent with the Center’s mission at any “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” as described in NIH NCATS’ Translational Science Spectrum.

Key Dates*

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<thead>
<tr>
<th>Event</th>
<th>Date</th>
<th>Link</th>
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<tr>
<td>Posted Date</td>
<td>August 25, 2021</td>
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<tr>
<td>Letter of Intent Due Date</td>
<td>September 22, 2021, midnight @ <a href="http://go.osu.edu/TL1LOI">http://go.osu.edu/TL1LOI</a></td>
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<tr>
<td>Full Application Due Date</td>
<td>December 16, 2021, midnight @ <a href="http://go.osu.edu/TL1Application">http://go.osu.edu/TL1Application</a></td>
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<td>Study Section</td>
<td>February 2022</td>
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<tr>
<td>Notice of Award Date</td>
<td>March 15, 2022, or as close as possible</td>
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<td>Earliest Start Date</td>
<td>Predoc: August 16, 2022; Postdoc: August 1, 2022</td>
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*some dates may vary because of unanticipated circumstances

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TL1 Information Session

- September 8, 2021
- 11 AM to Noon
- Registration link to attend in person or via zoom: https://go.osu.edu/TL1Info
Section I. Funding Opportunity Description

Purpose

The overall goal of the TL1 program is to increase the number of well-trained clinician-scientists who can lead the design and oversight of future clinical investigations critical to transforming the translational process so that new treatments and cures for disease can be delivered to patients faster and efficiently to all affected populations. Applicants who are underrepresented in medicine (URM) (see: https://diversity.nih.gov/about-us/population-underrepresented) are encouraged to apply in order to augment diversity in the biomedical research workforce. The OSU CCTS TL1 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 diverse 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).

For this award cycle, applications are being accepted for:

- Up to two predoctoral awardees conducting clinical and translational research
- Up to two postdoctoral awardees conducting clinical and translational research

Applicants may submit a research and career development plan that covers two years or one year. The second year renewal is contingent on the trainee making satisfactory progress during the first year.

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 TL1 Grant

- Stipend support awarded at the NIH allowed annual maximum;
- Research and travel funds: Predocs: $2,000 and $300; Postdocs: $4,000 and $1,400;
- Access to the CCTS professional services and staff including biostatistics, subject recruitment, and human subjects approval; and
- Access to a training curriculum in clinical and translational research methodology and specialized training seminars.
- Predoctoral awardees will also receive tuition support.

Expectations of TL1 Trainees

- Trainees must be able to commit full-time effort in the program at the time of appointment.
- Completion of required training elements
- Brief progress reports will be required three times per year.
- An Annual written report and an oral presentation to the Executive Committees is required.

Educational Requirements

- All trainees (pre- and post-doctoral) will take PUBHEPI 6412 - Basic Principles in Clinical and Translational Science and PUBHEPI 6413: Conducting & Communicating Research in Clinical & Translational Science.

- Pre-Doctoral Trainees
- All pre-doctoral trainees who are not enrolled in an approved Clinical and Translational academic programs (such as MPH in Clinical Translational Science, the Biomedical Sciences Graduate Program
with a clinical or translational emphasis, or the Graduate Biomedical, Clinical, and Translational Science Interdisciplinary Specialization (BIOMCLT-IS) will be required to enroll in the BIOMCLT-IS (see Appendix 3 for more information).

- All courses taken through the graduate school, with the exception of courses taken under the audit option, count toward minimum hours requirement for doctoral students. Predoctoral trainees are responsible for ensuring they are enrolled in the proper number of hours for Fall, Spring, and Summer semesters. Failure to meet any of these conditions may result in the immediate cancellation of the Graduate School Tuition and Fee Award. Students are responsible for the payment of any “special” fees such as the COTA fee, recreation fee, student activity fee, learning technology fee, etc.

- Predoctoral TL1 Trainees must remain in good academic standing, which requires a minimum quarterly cumulative grade point average of 3.00 while making reasonable progress toward the graduate degree.

**Postdoctoral Trainees**

- Trainees with clinical degrees only should be or will enroll in a clinical/translational research related master’s degree program, such as the
  - Master of Public Health <https://cph.osu.edu/prospective-students/mph>
  - Master of Medical Science <https://medicine.osu.edu/research_ed/medical_fellows/pages/index.aspx>
  - Master Clinical Research <https://nursing.osu.edu/academics/masters/master-clinical-research>
  - MS Translational Pharmacology <https://pharmacy.osu.edu/ms-translational-pharmacology>
  - Master’s Degrees in Biomedical informatics <https://medicine.osu.edu/bmi/education/Prospective_Students/MS-and-MPH-Degrees/Pages/index.aspx>

- All trainees are expected to attend the Translational Science Conference sponsored by the Association for Clinical and Translational Science, which is typically held in April Washington, D.C. They will have the opportunity to submit abstracts for poster and oral presentations.
- All trainees will complete the CITI Good Clinical Practice training and all other Medical Center and ORRP required trainings if they have not already done so.

**Section II. Eligibility Information**

**Eligible Applicants**

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

Eligibility criteria for TL1 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 and have in their possession an Alien Registration Receipt Card (I-151 or I-551) or other legal verification of admission for permanent residence. Non-citizen nationals are persons born in lands that are not States but are under U.S. sovereignty, jurisdiction, or administration (e.g., American Samoa). Individuals on temporary or student visas are not eligible for NRSA support.

2. **Predoctoral Trainees:** Pre-doctoral trainees must have received a baccalaureate degree by the beginning date of their NRSA trainee appointment and must be training at a post-baccalaureate level and enrolled in a program leading to a PhD in a clinical research-related doctoral degree program, or a combined doctoral level professional degree plus a clinical research-related advanced degree, such as a MD, DDS, DO, DNP; or PharmD +MS or MPH; or MD, DDS, DO, DNP, or PharmD + PhD.

Students who are officially enrolled in a qualifying health-professional doctoral program and wish to postpone their professional studies for one year to gain research experience may be appointed to the
TL1 research training grant for that period, provided that NRSA eligibility requirements are met. NRSA support is not provided for study leading to a MD, DO, DDS, DNP, PharmD or other similar professional clinical degrees, or a master's degree that is not pursued in a combined program with a professional level doctorate.

Individuals currently supported by other Federal funds are not eligible for trainee support from the TL1 program at the same time.

Predoctoral applicants must be either (a) post-candidacy (applicants will be asked to supply the date of the candidacy exam); or (b) have a candidacy exam scheduled before announced start date (applicants will be asked to provide the date of the scheduled exam). All others should wait for a later RFA to apply for the TL1.

No predoctoral 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 TL1.

3. **Post-doctoral Trainees.** Postdoctoral trainees must have received, as of the beginning date of the NRSA appointment, a PhD, MD, DDS, or comparable doctoral degree from an accredited domestic or foreign institution. Eligible doctoral degrees include, but are not limited to the following: DMD, DC, DO, DVM, OD, DPM, ScD, EngD, AuD, DPT, DPH, DNSc, PharmD, ND (Doctor of Naturopathy), DSW, PsyD as well as a doctoral degree in nursing research or practice.

No postdoctoral trainee may receive more than 3 years of aggregate Kirschstein-NRSA support at the postdoctoral level, including any combination of support from Kirschstein-NRSA institutional research training grants and individual fellowships. Any exception to the maximum period of support requires a waiver from the NIH awarding IC based on review of a justification from the individual and the recipient organization.

Post-doctoral applicants should also note special educational requirements outlined in Section 1, above.

4. **Effort:** Trainees must be able to commit full-time effort in the program at the time of appointment.

5. Postdocs who work at our partner institution, Nationwide Children's Hospital, are eligible to apply, as are doctoral students conducting research in NCH labs.

### Section III. Application and Submission Information

This grant program involves a two-phased application process: a Letter of Intent to Apply (LOI) and a Full Application.

This funding announcement will serve as the instructions and guidelines for both the LOI and the Full Application submissions.

#### Phase One: Letter of Intent

To be eligible, it is required that you indicate your intention to apply via the TL1 Letter of Intent form found at the web address noted at the top of this RFA.

The purpose of the Letter of Intent is:

1. To let program staff know of your intent to apply for the TL1 in order that they may organize the Study Section.
2. So applicants can fill-out the eligibility checklist to know that they are eligible.

The letter of intent takes the form of a REDCap survey. You are able to save your work and return later. REDCap will send you an email with a return link.

All Letters of Intent must be submitted through the online process by 11:59 PM EST on the date noted...
No late Letters of Intent will be accepted.

The process of completing the eligibility checklist will clearly tell you if you are eligible to go on to apply for the TL1. You should review carefully the eligibility criteria found at the top of this page before applying.

Staff will use the information you submit about your project to organize the TL1 Study section. The information about your project that you submit in the Letter of Intent will not undergo scientific review. Do not expect further contact from project staff after submitting the Letter of Intent. If project staff do have questions or concerns they will contact you.

Phase Two: Full Application

This funding announcement will serve as the instructions and guidelines for Full Application submissions.

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 given a code, so be prepared to save that information).

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. No late applications will be accepted.

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

< lastnameFirstname_TL1_Application_2021

A consultation with a biostatistician for the impending proposal is strongly recommended. You can request a virtual consultation at https://medicine.osu.edu/departments/biostatistics/service-request-form.

Investigators are strongly encouraged to visit the CCTS website to search for and make use of other CCTS resources relevant to your project.

Grant Application Checklist

The Application consists of several parts. Please use this form as a checklist when preparing your application. The application must be completed online, with additional materials uploaded in PDF format the application.

The following information will be provided in an on-line form at the web address noted above.

- Personal Information
  - Includes Employee ID Number; OSU name.; ORCID Id (see orcid.org)
  - Campus Address
  - Current University Employment Information
  - Gender, ethnicity, and additional such reporting information required by the NIH
  - Applicant Eligibility checklist (see page 2 of this packet for more information)
  - Research Eligibility checklist (see p. 6 and Appendix 1 for more information)

The following information must be provided in a single PDF document uploaded to the application form.

- Cover Page
  - Name
  - Graduate Program(s)
  - Proposed Research Project Title
☐ Research Project Abstract (250 words)
☐ Mentoring Team
☐ Mentoring and career development plan (up to 2 pages)
☐ Applicant's Background
☐ Career Development/Training Activities
☐ Mentoring (see pp. 5-6 and Appendix 2 for more information)
☐ Proposed Research Plan (up to 4 pages) (see p. 6 and Appendix 1 for more information)
☐ Title
☐ Statement of significance of the research problem
☐ Specific Aims of the Project
☐ Research Methods
☐ References (not included in the page limit)
☐ Signature page
☐ Applicant
☐ Primary Mentor
☐ Department Chair
☐ A letters of support from your Primary mentor and the other members of your mentorship team.
☐ NIH Biosketches
   ☐ Applicant
   ☐ Mentoring Team: Primary Mentor & two other mentors (and any additional optional mentors you have)
☐ Predocs: Current Advising Report (which should include GRE, MCAT or equivalent test results)
☐ Postdocs: transcript from doctoral granting institution

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

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

**Applicant's Background:** Answer such questions as: Why have you chosen a research career? What is your previous research experience? How you believe this training program will change the trajectory of your career or enhance your movement towards your goals

**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 CCTS 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 Science through the TL1 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.

**Training in Responsible Conduct of Research.** Describe in this section how you will meet the NIH requirements for instruction in the responsible conduct of research. Reflection on responsible conduct of research should recur throughout a scientist's career: at the undergraduate, post-baccalaureate, predoctoral, postdoctoral, and faculty levels. Instruction must be undertaken at least once during each career stage, and at a frequency of no less than once every four years. TL1 applicants must indicate in their training plan when in their graduate or postgraduate career they have had NIH compliant training in RCR. If it has been more than four years since they have had such training, the TL1 training plan must include a plan to obtain instruction in the responsible conduct of research. The plan must address the five instructional components, format, subject matter, faculty participation, duration of instruction, and frequency of instruction, as outlined and explained by the NIH at [https://grants.nih.gov/grants/guide/notice-files/not-od-10-019.html](https://grants.nih.gov/grants/guide/notice-files/not-od-10-019.html). See Appendix 2, below, for training options.
Mentoring: This is the section in which to describe how the mentors fit with your training goals.

Application Components: Research Plan

The Research Plan should not exceed 4 pages.

The proposed 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 refers to basic scientific discovery (Not funded by this award). T0 is characterized by the identification of opportunities and approaches to health problems.

T1 seeks to move basic discovery into a candidate health application. Research examples include: human physiology, first in humans (healthy volunteers), proof of concept, Phase 1 Clinical Trials.

T2 assesses the value of application for health practice leading to the development of evidence-based guidelines. Research examples include: Phase 2 and Phase 3 Clinical Trials. Clinical trials 2B and following are not funded by this award.

T3 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 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

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 inequities.
- **Specific Aims of the Project**. An outline that lists the individual experimental issues that are to be addressed. Each should be framed in terms of an hypothesis.
- A brief description of the **Methods** to be employed. A (somewhat) detailed description of the experimental system to be examined, the materials available, the procedures to be employed, expertise available in the sponsor lab, 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 feasibility of the proposal both in terms of experimental design and time frame for completion.

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• References are not included in the page limit.

Application Components: Scientific Mentorship Team

Applicants will put together a three-person mentoring team.

Primary Mentor. It is expected that the applicant will identify a mentor in their area of clinical or translational research who is likely to be a member of the faculty in the applicant’s unit. Under the guidance of the mentor, the applicant will further develop their proposal that describes the clinical research project to be undertaken. Your mentor is responsible for:

• Guiding and encouraging the design and execution of an original, high quality, clinical research project.
• Providing career development and counseling.
• Attending CCTS Mentor training.
• Meeting with you regularly (at least monthly).
• Attending occasional meetings/trainings for TL1 trainees and mentors organized by the CCTS.

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).

The Primary Mentor will need to sign the signature page.

Additional members of the mentorship team (at least 2 additional):

The mentorship team provides additional expertise in the scientific area of research chosen for the project. In order for the team to be complementary to the interests of the primary mentor, the three-person team should have the following characteristics:

1. One mentor must be from a different department than the applicant. The choice of this mentor should reflect a skill-building purpose that is discussed in the career development and mentoring plans.
2. The mentoring team must include at least one clinician and one who is either a lab-based or a population-focused researcher.

Mentoring teams that cross health science colleges are encouraged, but not required.

Your mentorship team may include a University faculty member who is not a regular member of the graduate faculty (e.g., an adjunct professor), a University staff member, or a qualified individual outside the University who can provide expertise in your discipline.

Application Components: NIH Biosketches

NIH Biosketches. The biosketches of the Applicant, the Primary Mentor and the other two (or more) members of the mentoring team 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 TL1 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. Please use the new biosketch form. The NIH does not require use of this form until January 24, 2022, but you might as well get used to it now.

Application Components: Letters of Support

Letters of support are required from: your Lead Mentor and each member of your mentorship team.
Include these letters in your application PDF.
The Letters should acknowledge awareness and support of the project and address the role and qualifications of the mentor for the project.

Address the letters to:

Ginny L. Bumgardner, MD, PhD
Center for Clinical & Translational Science
376 W. 10th Ave., Suite 260
Ohio State University
Columbus, OH 43210

Other Application Components

Current Advising Report. The predoctoral application should include a current Advising Report. To access your advising report, log on to BuckeyeLink. Go to the “Student Center” section. Under “Academics” you will see the link “Generate Advising Report.” Click on this link and a current Advising Report will be generated that you can save as a PDF.

Typically, the advising report includes your professional entrance examination scores (GRE or MCAT, or equivalent as relevant to your situation) in the left column. If it does not for some reason, please include documentation of your relevant score(s).

Transcript from Doctoral Granting Institution. Postdoctoral applicants should provide a transcript to document their doctoral degree. It can be a photocopy incorporated into your application. You do not have to request a new transcript.

Section IV. Application Review Information

A Study Section will make recommendations to the CCTS Executive Committee for funding. 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.

The overall impact will reflect an evaluation of the trainee, the mentoring team, the training plan, and the proposed research. All are equally weighted and the study section will assess the overall fit of the components together.

All applicants will receive reviewer comments on their applications.

Section V. Integrating Special Populations

Applicants are encouraged to integrate special populations into their projects. The term “Special Populations” encompasses a multitude of groups and communities that are commonly underrepresented in clinical and translational research, and the CCTS is actively working to correct this problem. These groups include, but are not limited to, the following:

- Fetuses, neonates, and children
- Pregnant or nursing women
- Older adults
- Individuals with physical disabilities
- Individuals with communication or sensory impairments (hearing, vision)
- Racial, ethnic, or cultural minorities
- Non-English speaking individuals
- Underinsured or socioeconomically disadvantaged patients
- Gender or sexual minorities (LGBTQ+)
- Individuals with intellectual disabilities
- Isolated urban or rural communities
Socioeconomic or demographic factors may contribute to the systematic underrepresentation of special populations, regardless of whether these groups are explicitly targeted for research participation. Historical cases of research misconduct have also ingrained a deep-rooted mistrust of the medical establishment in certain communities. Investigators often encounter additional challenges when recruiting or retaining special populations for research, such as how to effectively obtain informed consent for individuals with intellectual disabilities or how to ensure success for a study requiring multiple clinic visits for individuals with limited physical mobility. All of these factors contribute to the underrepresentation in research of specific populations.

Therefore, though this is not a scored category, applicants are encouraged to design research projects that address the needs of special populations; devise recruitment and retention plans that will optimize the participation of one or more special population; or pursue other strategies that integrate underrepresented groups into clinical and translational research.

Section VI. Other Information

- The NIH requires individuals supported by the TL1 to have ORCID IDs (Open Researcher and Contributor Identifiers). You may acquire your free ORCID here: https://orcid.org/
- Appointed TL1 Trainees are not allowed to simultaneously hold another appointment or position. Trainees must be appointed as a full-time fellow and must maintain that appointment during the entire award period. The student may not be required to perform any service for the fellowship stipend beyond that normally required for coursework and/or research activities, and may not hold any other type of employment or appointment.
- Graduate Fellows receive stipends related to their academic programs. They do not render services for pay, and therefore are not considered employees. According to the Federal Tax Reform Act of 1986, fellowship stipends are considered taxable income. However, because fellowships are considered awards, the university may not withhold income tax from the monthly stipend. Students will not receive a W-2 Form. Students may be required to file federal and state estimated quarterly income tax forms. Information and forms on quarterly filing can be obtained from a tax advisor or at Internal Revenue Service (IRS). Information about fellowships and taxes can be found at the IRS website. Students may also be required to pay the Columbus city tax (City of Columbus tax website). Questions regarding taxes on fellowships should be directed to the Office of the Controller, Payroll Services Tax Information, 614-292-2311, or <controller.osu.edu/pay/pay-home.shtm>
- Postdoctoral trainees funded by the TL1 are governed by NIH –NRSA guidelines and have different salary and tax situations than some other postdocs. Information on postdoc benefits and other compensation issues can be found at the Office of Postdoctoral Affairs website here: https://u.osu.edu/osupac/postdocs-2/current-postdocs/benefits-2/ and for Nationwide Children’s Hospital Here: https://www.nationwidechildrens.org/research/office-of-trainee-affairs
- Postdoctoral Appointees and NIH Payback Agreement. For individuals receiving postdoctoral support under individual fellowships or institutional research training grants, a payback obligation is incurred for the first 12 months of Kirschstein-NRSA support. However, the 13th and subsequent months of postdoctoral NRSA supported research training serves to pay back this obligation month by month. A Payback Agreement (PHS 6031) is required but only for the initial 12-month postdoctoral support period. Awarded postdoctoral trainees will be asked to fill out and submit an NIH Payback Agreement. For more information see: 11.4.1 General (nih.gov)
  The payback form can be found here: https://grants.nih.gov/grants/funding/416/phs6031.pdf
- Research in foreign countries is not allowed by this award.

Section VI. 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 CCTS Award Acceptance Letter is required before the start date.
Award Requirements
Applicants and mentors must become CCTS members by completing a CCTS membership form.  
https://ccts.osu.edu/form/become-a-member

Reporting
You will provide brief interim progress reports three times per year and an annual progress report at the end of the year in which you will report on the progress of meeting the project milestones you listed in your application. The annual report will also include a brief presentation about your experience as a KL2 scholar to the CCTS Executive Committee.

Trainees, Mentors, and TL1 Program Directors will meet every six months to review progress on the scholars Training Plan.

Citation Requirements: Awardees are required, by National Institutes of Health (NIH) grants policy to include a specific acknowledgment of grant support on all products (publications, patents, presentations, posters) resulting from this award. The specifics for this grant are: CTSA KL2 Award number TL1TR002735. See https://ccts.osu.edu/content/acknowledging-ccts for sample text.

Compliance with the NIH Public Access Policy: 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.

Section VII. Agency Contacts

Grant Management Contact
If you have any questions regarding this RFA, please contact:

Stuart D. Hobbs, PhD, MBA
Program Director
Research Education, Training, & Career Development
Center for Clinical & Translational Science
Ste. 260 Prior Hall, 376 W. 10th Avenue, Columbus, OH 43210
614-685-5972 Office
stuart.hobbs@osumc.edu  ccts.osu.edu

Program Co-Directors

Ginny L. Bumgardner, MD, PhD
Associate Dean for Research Education & Professor, College of Medicine
Director, TL1 Program, OSU Center for Clinical and Translational Science
Ginny.Bumgardner@osumc.edu

Lawrence Kirschner, MD, PhD
Associate Dean and Professor, College of Medicine
Co-Director, TL1 Program, OSU Center for Clinical and Translational Science
Lawrence.Kirschner@osumc.edu
These signatures must be acquired in the order presented below

**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 CCTS 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.

________________________________________  ____________________________
Applicant’s signature       Date

**Signature: Primary Mentor**

As Primary Mentor, I take responsibility in:

- Guiding and encouraging the design and execution of an original, high quality, clinical or translational research project.
- Providing career development and counseling.
- Attending CCTS Mentor training.
- Meeting with trainee regularly (at least monthly).
- Attending occasional meetings/trainings for TL1 trainees and mentors organized by the CCTS.

___________________________________  ________________________________
Signature of Primary Mentor     Date

**Signature: Department or Program Chair**

This individual is qualified for this program. The Program or Department/Division Chair has read and agrees to the guidelines of the TL1 Program.

___________________________________  ________________________________
Signature of Department/Division Chair   Date
Appendix 1. Definitions: Clinical & Translational Research

Before you apply, please note the following information.

CLINICAL RESEARCH AND CLINICAL TRIALS

Per regulations, Ruth L. Kirschstein TL1 awards fund clinical research, per the following definitions.

Clinical Research\(^2\): 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\(^3\): 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.

Types of Clinical Trials:

- **Diagnostic trials** determine better tests or procedures for diagnosing a particular disease or condition.
- **Natural history studies** provide valuable information about how disease and health progress.
- **Prevention trials** look for better ways to prevent a disease in people who have never had the disease or to prevent the disease from returning.
- **Quality of life trials** (or supportive care trials) explore and measure ways to improve the comfort and quality of life of people with a chronic illness.
- **Screening trials** test the best way to detect certain diseases or health conditions.
- **Treatment trials** test new treatments, new combinations of drugs, or new approaches to surgery or radiation therapy.

Phases of Clinical Trials: Clinical trials are conducted in “phases.” The trials at each phase have a different purpose and help researchers answer different questions. The OSU TL1 program is funded by the NIH’s National Center for Advancing Translational Science (NCATS). The authorization for NCATS limits specific support for clinical trials only through the end of Phase IIA\(^4\). Therefore, if your research project is a clinical trial, it should fit one of the following descriptions:

- **Phase I trials**—Tests a new biomedical intervention in a small group of people (e.g. 20-80) for the first time to determine efficacy and evaluate safety (e.g., determine a safe dosage range and identify side effects).
- **Phase II trials**—Study the biomedical or behavioral intervention in a larger, but still limited, group of people (up to several hundred) to determine efficacy and further evaluate safety.

Phase II trials are further divided:\(^5\)

- **Phase Ila**: Pilot clinical trials to evaluate efficacy (and safety) in selected populations of patients with the disease or condition to be treated, diagnosed, or prevented. Objectives may focus on dose-response, type of patient, frequency of dosing, or numerous other characteristics of safety and efficacy.
- **Phase I Ib (Not funded by this award)**: Well controlled trials to evaluate efficacy (and safety) in patients with the disease or condition to be treated, diagnosed, or prevented. These clinical trials usually represent the most rigorous demonstration of a medicine’s efficacy. Sometimes referred to as pivotal trials.


NCATS provides the additional following distinction: “Phase IIA trials provide data for exposure-response in patients, while Phase IIB trials [not funded by this award] provide data for dose-ranging in patients.”

Phase III trials—Not funded by this award. Study to determine efficacy of the biomedical or behavioral intervention in large groups of people (from several hundred to several thousand) by comparing the intervention to other standard or experimental interventions as well as to monitor adverse effects, and to collect information that will allow the interventions to be used safely. Phase IV trials—Not funded by this award. Studies conducted after the intervention has been marketed. These studies are designed to monitor the effectiveness of the approved intervention in the general population and to collect information about any adverse effects associated with widespread use.

THE SPECTRUM OF TRANSLATIONAL HEALTH RESEARCH

Per regulations, Ruth L. Kirschstein TL1 awards fund translational research that occupies a particular space on the Clinical & Translational research spectrum: T1 to T4 (excluding clinical trials from Phase IIB to Phase IV).

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.

Translational research involves moving knowledge gained from the basic sciences to its application in clinical and community settings. This concept is often summarized by the phrases “bench-to-bedside” and “bedside-to-community” research. As the concept of translational health research has evolved with practice and time, it is clear that translational research encompasses a bidirectional continuum. For didactic purposes, translational research has often been described in phases of translation, or “T-phases.”

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. (Not funded by the TL1 grant)

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.

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THE SPECTRUM OF TRANSLATIONAL HEALTH RESEARCH (T0 TO T4)

Source: http://catalyst.harvard.edu/pathfinder/ accessed July 2021
Appendix 2: Core Competencies for Clinical and Translational Investigator Training

The task of CTSA education programs is to prepare the next generation of investigators to conduct clinical and translational research that will address the health care challenges faced in the United States. Creating a recognizable discipline centered on clinical and translational science will help build this workforce. To help establish the discipline, the CTSA Education and Career Development Key Function Committee has drafted national standards for core competencies in clinical and translational science.

The thematic competencies identify common, basic elements that should shape the training experiences of junior investigators by defining skills, attitudes and behaviors that can be shared across multidisciplinary teams of clinician-scientists. The overall goal is to create a competency-based education for training clinician-scientists that will define the discipline of clinical and translational science.

Research Methods

- Identify major clinical/public health problems and relevant translational research questions
- Identify, interpret, and critique literature and assess the state of knowledge regarding a problem
- Know how to design a study protocol for clinical and translational research
- Understand study methods, design and implementation
- Use appropriate laboratory, clinical, and population research methods
- Understand the principles of the conduct of responsible research

Analysis, Statistics, and Informatics

- Be able to use appropriate statistical methods and conduct relevant analysis
- Be competent in appropriate bioinformatics

Community & Communications

- Understand the principles of community engagement in clinical and translational research
- Navigate competently among diverse populations and cultures
- Be able to communicate scientific findings to your peers and to disseminate scientific knowledge to those outside your field, including other scientists, university administrators, policy makers, and the public

Leadership & Training

- Participate in cross-disciplinary training and mentoring
- Demonstrate leadership and professionalism
- Engage in translational teamwork

Appendix 3: Biomedical, Clinical, and Translational Science Interdisciplinary Specialization

The goal of the Graduate Interdisciplinary Specialization in Biomedical Clinical and Translational Science (GISBCTS) is to prepare graduate and professional students to be actively engaged in the field of clinical and translational science through academic training and research.

As defined by the Ohio State University Graduate School, a graduate interdisciplinary specialization (GIS) involves two or more graduate programs outside the student's home program. Completion of a GIS is noted on the student's transcript.

The core course in this program focuses on the basic components of clinical and translational science, while the electives allow students to pursue topics across the other health sciences colleges for an interdisciplinary experience.

Curriculum Requirements

- All students enrolled in the GISBCTS must take PUBHEPI 6412 Conducting and Communicating Research in Clinical and Translational Science. This is a 2 credit hour course offered each Autumn semester by the College of Public Health. It is recommended, but not required, that this course be taken first.
- Most of the participating colleges have internal procedures that are required to enroll in their courses, such as contacting the instructor. For most of these courses you will need to talk to the instructor before enrolling.
- Students must take at least one course from each of the Core Competency Clusters. The Competency Clusters are based on the National Center for Research Resources (NCRR) Core Competencies for Clinical and Translational Research. There are a total of 14 competencies that have been grouped together to form four clusters.

Specialization Guidelines

- The GISBCTS require a minimum of 10 and no more than 20 semester credit hours of graduate level coursework taken from at least 5 different courses.
- A graduate interdisciplinary specialization involves two or more graduate programs outside the student's home program.
- Nine credit hours must be taken outside of the student's home program in at least three courses. Thus, if you are a BSGP student, you must select at least three courses from the GISBCTS course menu that come from outside that curriculum. These courses can come from other programs in the College of Medicine or from other colleges.
- Credit hours can include work already required as part of the student's degree program.
- If there is a course that fits the competencies but is not listed here, it is possible to substitute it for a listed course. Contact the GISBCTS program administrator for more information.
- Apply for the Specialization through OSU Graduate School at this address: https://gradsch.osu.edu/pursuing-your-degree/career-development/degree-options/applying-graduate-minors-and

Questions? Contact the GISBCTS program administrator at Stuart.Hobbs@osumc.edu or 614-685-5972
All students take the core course:

**PUBHEPI 6412: Basic Principles in Clinical and Translational Science (2 credits)**

Then students take at least one course from each of the four Core Competencies:

<table>
<thead>
<tr>
<th>Research Methods</th>
<th>Analysis, Statistics, and Informatics</th>
<th>Community &amp; Communication</th>
<th>Leadership &amp; Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSGP 8050: Research Techniques &amp; Resources (4 credits)</td>
<td>PUBHBIO 6280: Practical Biostatistics for Biomedical Laboratory Researchers (3 credits)</td>
<td>HTHRHSC 7888: Health and Rehabilitation Science Grand Rounds Intro (1 credit)</td>
<td>NURSING 7404: Project Management for Healthcare and Clinical Research ONLINE (3 credits)</td>
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<tr>
<td>NURSING 8780: Research Methods I (3 credits)</td>
<td>PUBHBIO 6210: Design &amp; Analysis of Studies in the Health Sciences I (ONLINE available) (3 credits)</td>
<td>BSGP 7070: Fundamentals of Grant Writing I (4 credits)</td>
<td>NRSRCT 8400: Leadership Throughout Organizations &amp; Systems (3 credits)</td>
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<tr>
<td>NURSING 7781: Responsible Conduct of Research, ONLINE (3 credits)</td>
<td>PUBHBIO 6211: Design &amp; Analysis of Studies in the Health Sciences II (3 credits)</td>
<td>BSGP 7080: Fundamentals of Grant Writing II (2 credits)</td>
<td>NRSRCT 8401: Strategic Macrosystem Management for the Doctor of Nursing Practice (3 credits)</td>
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<tr>
<td>NURSING PHARMACY 7782 Clinical Research Design and Methods, ONLINE (3 credits)</td>
<td>PUBHBIO 7245: Biostatistical Collaboration (2 credits)</td>
<td>Nursing 6110: Health Literacy (2 credits)</td>
<td>HTHRHSC 7300: Management &amp; Leadership in Health Sciences (3 credits)</td>
</tr>
<tr>
<td>NRSRCT 8780: Clinical Effectiveness &amp; Translation in Clinical Science (3 credits)</td>
<td>PSYCH 6810: Statistical Methods in Psychology I (4 credits)</td>
<td>PUBHHBP 7520: Community Health Assessment (2 credits)</td>
<td>HTHRHSC 7350: Issues &amp; Policy in Health Sciences (3 credits)</td>
</tr>
<tr>
<td>PUBHEPI 7412: Principles &amp; Procedures for Human Clinical Trials (3 credits)</td>
<td>PSYCH 6811: Statistical Methods in Psychology II (4 credits)</td>
<td>PUBHHBP 7544: Fundamental Determinants of Population Health &amp; Implications for Public Health (3 credits)</td>
<td>PHR 5560: Success &amp; Leadership in Pharmacy (1.5 credits)</td>
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<tr>
<td>PUBHHBP 7532: Program Evaluation in Public Health (3 credits)</td>
<td>STAT 5301: Intermediate Data Analysis I (4 credits)</td>
<td>PUBHHBP 7558: Social Ecological Strategies in Prevention (2 credits)</td>
<td>PUBHHMP 7617: Health Services Leadership &amp; Organizational Change (3 credits)</td>
</tr>
<tr>
<td>PUBHHBP 7534: Research Methods in Health Behavior &amp; Health Promotion (3 credits)</td>
<td>STAT 5302: Intermediate Data Analysis II (3 credits)</td>
<td>PUBHEPI 6413: Conducting &amp; Communicating Research in Clinical &amp; Translational Science (2 credits)</td>
<td>PUBAFRS 6000: Public Policy Formulation &amp; Implementation (4 credits)</td>
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<tr>
<td>PUBHHBP 7522: Program Planning &amp; Implementation (3 credits)</td>
<td>VETCLIN 8783: Experimental Design &amp; Data Analysis in Veterinary &amp; Comparative Medicine I (1 credit)</td>
<td>VISSCI 7940: Oral Presentation of Scientific Research (1-3 credits)</td>
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<td>PUBHHMP 8671: Health Care Outcomes Measurement (2 credits)</td>
<td>VETCLIN 8784: Experimental Design &amp; Data Analysis in Veterinary &amp; Comparative Medicine II (1 credit)</td>
<td>VISSCI 7970: Grantsmanship (2 credits)</td>
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<tr>
<td>PUBHHMP 7678: Approaches to Health Services Research (3 credits)</td>
<td>BMI 5710: Introduction to Biomedical Informatics (3 credits)</td>
<td>VETCLIN 8781 Research Methods and Grantsmanship (1 credit)</td>
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<tr>
<td>VISSCI 7960: Ethics in Biomedical Research (2 credits)</td>
<td>BMI 5750: Methods in Biomedical Informatics (3 credits)</td>
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<tr>
<td>PHR 8520: Research Ethics (1 credit)</td>
<td>BMI 8150: Rigorous and Reproducible Design and Data Analysis (3 credits) Can be used either for Methods or Analysis</td>
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</tbody>
</table>
Course Descriptions

Core Course:

College of Public Health – Epidemiology

PUBHEPI 6412: Basic Principles in Clinical and Translational Science
Identification of clinical and translational research issues, assessment of the literature, ethically responsible research, cross-disciplinary training and mentoring. 2 units.

Other Courses to Select From:

College of Medicine

School of Health and Rehabilitation Sciences

HTHRHSC 7300: Management & Leadership in Health Sciences
Application of management and leadership principles for the development of administration of allied health departments in the health care system. 3 units

HTHRHSC 7350: Issues and Policy in Health Sciences
Allied health professionals must increasingly face many complex issues that affect healthcare. It is crucial that graduate students be able to critically examine a broad range of issues and understand various positions and their implications. 3 units

HTHRHSC 7888: Health and Rehabilitation Science Grand Rounds Intro
Students develop skills in analyzing, discussing and synthesizing health and rehabilitation research. Students present their own research and critically appraise faculty research. Discussion and demonstration of leadership will occur. 1 unit.

Biomedical Informatics

BMI 5710: Introduction to Biomedical Informatics
A survey of biomedical informatics theories and methods employed in the design, implementation and management of information systems supporting basic science, clinical and translational research, clinical care, and public health. Recommended course work in computer science, statistics, anatomy, physiology, and medical terminology. (3 credits)

BMI 5750: Methods in Biomedical Informatics
An intensive, application-oriented survey of methods used during the course of the design, implementation and evaluation of BMI platforms, including clinical info systems, decision support systems, databases, electronic data capture instruments, data visualization tools and other analytical "pipelines". These methods span a broad spectrum from information needs assessments to systems evaluation. Prereq: Basic knowledge of the following areas - basic computer science principles (logic, procedural and/or object oriented programming, data structures and algorithms), statistical methods, and medical terminology. (3 credits)

BMI 8150: Rigorous and Reproducible Design and Data Analysis
Students will learn to: computationally analyze datasets using best practices in experimental design and analysis; use the R language to analyze datasets from transcriptome, genome, and clinical studies; use examples from experimental design literature that are rigorous and with built-in flaws; identify sources of bias and the impact these have on results/conclusions. This course is graded S/U. (3 credits) Can be used for credit in Research Methods track or Analysis, Statistics, and Informatics track, but not both.

Biomedical Science Graduate Program

BSGP 7070: Fundamentals of Grant Writing I
Introduce students to the basic principles of grant writing. 4 units.

BSGP 7080: Fundamentals of Grant Writing II
Introduce students to principles of grant writing. Students will also write their own grants in the style of NIH submissions. Students will also learn about the grant review process. 2 units

BSGP 8050: Research Techniques and Resources
Survey of research techniques used to solve problems in modern cell and molecular biology, immunology, biochemistry, microbiology, microscopy, laboratory safety, and related available resources. 4 units.

College of Nursing: Nursing Practice

NRSPRCT 8400: Leadership Throughout Organizations & Systems
Socialization to leadership and excellence in multiple dimensions of the Doctor of Nursing Practice role. 3 units
NRSPRCT 8401: Strategic Macrosystem Management for the Doctor of Nursing Practice
Integration of theoretical, leadership and communication principles into strategic management strategies for evidence based, innovative macro system health care optimization for selected populations. 3 units

NRSPRCT 8780: Clinical Effectiveness and Translation in Clinical Science
Theoretical underpinnings of nursing knowledge and critical appraisal of clinical relevant research related to clinical effectiveness and translational science concepts. 3 units.

College of Nursing

NURSING 6110: Health Literacy
Examination and analysis of issues of low health literacy, including populations at risk, research, measurement tools, writing in plain language; health communication techniques; and organizational approaches. 2 units.

Nursing 7404: Leadership in Healthcare and Clinical Research Project Management
Principles of project management, strategic planning, and leadership in healthcare, clinical research and regulatory settings. 3 credits. Summer. ONLINE

Nursing 7781: Responsible Conduct of Research Concepts and policies for the responsible conduct of research (RCOR), Institutional Review Boards, and dissemination of findings. 3 credits Autumn/Spring. ONLINE, face-to-face as needed

Nursing/Pharmacy 7782 Research Design and Methods for Clinical and Preclinical Research Study of research design and methods used in clinical and preclinical research. Measurement issues, bias and confounding, statistical considerations, evaluation of published clinical and preclinical research designs, and protocol and proposal development. 3 credits. Autumn/Spring. ONLINE

NRSPRCT 8780: Research Methods I
Survey of quantitative design and measurement approaches relevant to nursing and health. Emphasis is placed on experimental designs and measurement in nursing and health research. 3 units.

College of Pharmacy

PHR 5560: Success & Leadership in Pharmacy
Explore the meaning of success and leadership, attributes of successful leaders and what can be done to be a successful leader. 1.5 units

PHR 8520 – Research Ethics
Basic concepts of integrity in the process of research. The course fulfills NIH requirement for research ethics. 1 unit.

Pharmacy/Nursing 7782 Research Design and Methods for Clinical and Preclinical Research
Study of research design and methods used in clinical and preclinical research. Measurement issues, bias and confounding, statistical considerations, evaluation of published clinical and preclinical research designs, and protocol and proposal development. 3 credits. Autumn/Spring. ONLINE

College of Public Health – Biostatistics

PUBHBIO 6210: Design and Analysis of Studies in the Health Sciences I
Theory and application of basic statistical concepts for design of studies in health sciences, integrated with statistical software applications. In class & online sections available. 3 units.

PUBHBIO 6211: Design and Analysis of Studies in the Health Sciences II
A second course in applied biostatistical methods with an emphasis on regression methods commonly used in the health sciences. The focus is on linear regression and ANOVA. Integrated with the use of computer statistical packages. 3 units.

PUBHBIO 6280: Practical Biostatistics for Biomedical Laboratory Researchers
Introduction to statistical principles and methods appropriate for experimental laboratory data with applications in biomedical sciences. 3 units

PUBHBIO 7245: Biostatistical Collaboration
Basic biomedical research methodologies; collaborate with biomedical researchers to design experiments and plan analyses; protocol preparation; professional skills development; statistical report preparation. 2 units.

College of Public Health – Epidemiology

PUBHEPI 6412: Basic Principles in Clinical and Translational Science
Identification of clinical and translational research issues, assessment of the literature, ethically responsible research, cross-disciplinary training and mentoring. 2 units.

PUBHEPI 6413: Conducting and Communicating Research in Clinical and Translational Science
Design and writing of protocol, study methods and implementation, community engagement, informatics, translational teamwork. Scientific communication
skills and dissemination of clinical and translational science. 2 units.

PUBHEPI 7412: Principles and Procedures for Human Clinical Trials
Principles and procedures for clinical professionals in the design, conduct and analysis of human clinical trials. 3 units.

College of Public Health – Health Behavior and Health Promotion

PUBHHBP 7520: Community Health Assessment
Models of community health assessment; skills in identifying, analyzing and integrating information concerning community resources and needs. 2 units.

PUBHHBP 7522: Program Planning and Implementation
Planning and implementation of programs to address public health issues in defined populations; development of a health promotion program for a specific community partner. 3 units.

PUBHHBP 7532: Program Evaluation in Public Health
Examination of evaluation models for public health programs; exploration of philosophical and scientific issues in evaluation; and skill building in both qualitative and quantitative evaluation methods. 3 units.

PUBHHBP 7534: Research Methods in Health Behavior and Health Promotion
Social science research methods emphasizing methods used to assess the dimensions of health-relevant behaviors and community-based prevention research. 3 units.

PUBHHBP 7544: Fundamental Determinants of Population Health and Implications for Public Health
Presents the ideas that population health is determined by factors outside of health care and individual behavior occurs within a social context. 3 units.

PUBHHBP 7558: Social-Ecological Strategies in Prevention
Community health promotion strategies using policy, systems, and environmental change perspectives. 2 units.

College of Public Health – Health Services Management and Policy

PUBHMP 7617: Health Services Leadership and Organizational Change
Overview of leadership and organizational change theories, as well as the application of those theories to case studies in health sector organizations. 3 units

PUBHMP 7678: Approaches to Health Services Research
Overview of the field of health services research and the role of health services research in improving health care delivery. 3 units.

PUBHMP 8671: Health Care Outcomes Measurement
Evaluation of specific techniques for measuring outcomes in clinical and health services research studies. 2 units.

John Glenn School of Public Affairs

PUBAFRS 6000: Public Policy Formulation and Implementation
Overview of the public policy process and the historical and contemporary context in which policy making and implementation are carried out in the United States at the federal, state and local levels. 4 units.

Psychology

PSYCH 6810: Statistical Methods in Psychology I
Basic concepts of descriptive and inferential statistics; includes estimation, hypothesis testing, non-parametric techniques, and analysis of variance. 4 units.

PSYCH 6811: Statistical Methods in Psychology II
Simple linear regression and correlation, multiple linear regression, interactions; introduction to other related methods such as nonlinear regression and random effects models. 4 units.

Statistics

STAT 5301: Intermediate Data Analysis I
The first course in a two-semester non-calculus sequence in data analysis covering descriptive statistics, design of experiments, probability, statistical inference, one-sample t, goodness of fit, two sample problem, and one-way ANOVA. 4 units.

STAT 5302: Intermediate Data Analysis II
The second course in a two-semester sequence in data analysis covering simple linear regression (inference, model diagnostics), multiple regression models, variable selection, model selection, two-way ANOVA, mixed effects model. 3 units.

College of Veterinary Medicine

VETCLIN 8781: Research Methods and Grantsmanship
Introduction to grantsmanship, including the development of a research question, use of appropriate statistical methods, and the preparation
of a research proposal that will be reviewed by the class. 1 unit.

**VETCLIN 8783: Experimental Design & Data Analysis in Veterinary & Comparative Medicine I**
Principles and practice of study designs and data analyses commonly used in veterinary and comparative medical research. 1 unit.

**VETCLIN 8784: Experimental Design & Data Analysis in Veterinary & Comparative Medicine II**
Introduction to the principles and practice of study designs and data analyses commonly used in veterinary and comparative medical research. 1 unit.

**Vision Science**

**VISSCI 7960: Ethics in Biomedical Research**
Provides a general understanding of the issues surrounding the ethical conduct of science including issues related to research involving human subjects, scientific misconduct, and authorship of scientific papers. Real-life case studies will be used. 2 units.

**VISSCI 7970: Grantsmanship**
The structure of the National Institutes of Health, the principles of good grantsmanship, and description of the grant review process. Emphasis focused on Mentored Clinical Scientist Development Award (K23) and Research Project Grant (R01). 2 units.

**VISSCI 7940: Oral Presentation of Scientific Research**
Student gives a talk based on his/her research or scholarship and improves his/her speaking skills. 1-3 units.
Appendix 4: Fulfilling Requirements in Responsible Conduct of Research

Courses:

**Pharmacy 8520 - Research Ethics**
Basic concepts of integrity in the process of research. The course covers all areas of responsible conduct of research including mentor/trainee roles, data management, animal use, human subjects. Often offered May term. The course fulfills NIH requirement for research ethics. Dr. Cynthia Carnes, instructor. 1 credit

**Vision Science 7960 - Ethics in Biomedical Research**
Provides a general understanding of the issues surrounding the ethical conduct of science including issues related to research involving human subjects, scientific misconduct, and authorship of scientific papers. Real-life case studies will be used. Often offered Fall Term. Dr. Karla Zadnik, instructor. 2 credits.

**Nursing 7781 - Responsible Conduct of Research**
Concepts and policies for the responsible conduct of research (RCOR), Institutional Review Boards, and dissemination of findings. Offered Online, Spring. Dr. Amy Mackos and Dr. Karen Williams, instructors. 3 credits.

**HTHRHSC 7883 - Responsible Conduct of Research**
Seminar encompassing a variety of professional skills in Health and Rehabilitation Sciences Research including the process of writing, publishing, and reviewing journal manuscripts; human & animal subjects in research & responsible conduct. 1 credit.

**BioPhrm 7510 – Professional & Ethical Issues in Biomedical Sciences**
A discussion course based on case scenarios dealing with ethical issues facing biomedical researchers, such as publishing practices, confidentiality, mentoring. Typically offered in Spring Semester. Dr. Frederick Villamena, instructor. 2 credits.

**Biomedical Engineering 6983 - Research Ethics**
Introduction to professional and ethical issues confronting biomedical research and researchers and approaches to dealing with such issues. Prereq: Grad standing, or permission of instructor. Offered Autumn term. Dr. Alan Litsky, instructor. 2 credits.

**Surgery 8814 - Responsible Conduct of Research: Human Participants and the Use of Animals in Biomedical Research**
Responsible conduct of research with human participants and the use of animals in biomedical research is crucial to maintaining the public trust in both the results and the methods of biomedical research. Offered Spring semester. Dr. Tatiana Oberyszyn, instructor. 2 credits.

Other Training Programs

**Webcast from the NIH: Ethical and Regulatory Aspects of Clinical Research:**
This is a live webcast that the CCTS hosts most autumns. The sessions are typically Wednesday mornings from mid-September to November. Participants watch the webcasts and take part in discussions. By attending 6 of 7 sessions and completing evaluations and pre and post tests, participants receive certification. More information: https://www.bioethics.nih.gov/courses/ethical-regulatory-aspects.shtml Contact Karen Carter of the CCTS at KarenK.Carter@osumc.edu for local hosting information.

**Conversations about Research Ethics (CARE) Training Program**
The Center for Ethics and Human Values (CEHV) offers a semester-long, multidisciplinary, and discussion-based RCR program called the CARE Training Program. It involves 8 hour-long sessions led by CEHV ethicists. Each session uses a “flipped classroom” model, providing participants with resources prior to each discussion. Details here: https://cehv.osu.edu/care-training-program

**Responsible Conduct of Research Training at Nationwide Children’s Hospital**
Nationwide Children’s Hospital offers a Responsible Conduct of Research Training Series during the summer. The course fulfills NIH requirements. For details, contact Katie.Campbell@nationwidechildrens.org.
Appendix 5: Individual Development Plan

Working with the TL1 Program Directors and your mentor, the TL1 trainee will convert their training plan into an Individual Development Plan. Administered as a REDCap survey, the IDP plan will organize training, coursework, conference and workshop plans as well as individualized training of the TL1 trainee along with target completion dates. Every six months, the lead mentor and TL1 co-Directors will monitor progress and provide feedback on progress to each TL1 trainee.

This plan is outlined below so that it might inform the development of the career development plan included in the application.

### Sample IDP for predoctoral Trainee

<table>
<thead>
<tr>
<th>Training</th>
<th>Target Completion Date</th>
<th>Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Training Elements: Classes</td>
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<tr>
<td>PUBHEPI 6412: Basic Principles in Clinical and Translational Science</td>
<td>Offered Fall Semester</td>
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<tr>
<td>PUBHEPI 6413: Conducting &amp; Communicating Research in Clinical &amp; Translational Science</td>
<td>Offered Spring Semester</td>
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<tr>
<td>Graduate Interdisciplinary Specialization Courses</td>
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<tr>
<td>Course: Research Methods Track</td>
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<td>Course: Analysis, Statistics, and Informatics Track</td>
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<td>Course: Community &amp; Communication Track</td>
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<td>Course: Leadership &amp; Training Track</td>
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<td>Research Ethics Training</td>
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<tr>
<td>Meeting Attendance</td>
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<tr>
<td>Attendance and poster at CCTS Annual meeting</td>
<td>Held in Winter</td>
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<tr>
<td>Attendance and poster at ACTS meeting</td>
<td>Washington, DC, in Spring</td>
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<tr>
<td>Workshops</td>
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<tr>
<td>Tools of the Trade—attend 3 per year</td>
<td></td>
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</tr>
<tr>
<td>Lunch &amp; Learn Programs—attend 8 per year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Career Dinner Series</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individualized Training Options</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training 2, etc.</td>
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### Sample IDP for postdoctoral Trainee

<table>
<thead>
<tr>
<th>Training</th>
<th>Target Completion Date</th>
<th>Completion Date</th>
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<tbody>
<tr>
<td>Required Training Elements: Classes</td>
<td></td>
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</tr>
<tr>
<td>PUBHEPI 6412: Basic Principles in Clinical and Translational Science</td>
<td>Offered Fall Semester</td>
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<tr>
<td>PUBHEPI 6413: Conducting &amp; Communicating Research in Clinical &amp; Translational Science</td>
<td>Offered Spring Semester</td>
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<tr>
<td>If in Degree Program</td>
<td></td>
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<tr>
<td>What degree</td>
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<tr>
<td>List of planned courses</td>
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<tr>
<td>Course 1</td>
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<tr>
<td>Course 2, etc.</td>
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<tr>
<td>Meeting Attendance</td>
<td></td>
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</tr>
<tr>
<td>Event</td>
<td>Location</td>
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</tr>
<tr>
<td>----------------------------------------</td>
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<tr>
<td>Attendance and poster at CCTS Annual meeting</td>
<td>Winter</td>
<td></td>
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<tr>
<td>Attendance and poster at ACTS meeting</td>
<td>Washington, DC, in Spring</td>
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<tr>
<td>Workshops</td>
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