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## 2019 Center for Translational Medicine Clinical and Translational Research Scholars Program

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Sponsored in part by a Clinical and Translational Science Award (CTSA) grant from the [National Center for Advancing Translational Science](#) (KL2TR001103, UL1TR001105)

**Submit your intent to apply:** <https://www.surveymonkey.com/r/scholar2019>

**Executive Summary:** The [Center for Translational Medicine](#) (CTM) at the University of Texas Southwestern Medical Center (UTSW) invites competitive applications from junior faculty and clinical research fellows from UTSW and partner institutions to participate in the 2019, two-year CTM Clinical and Translational Research Scholars Program (Program). The Program is designed to provide intense research training and career development opportunities in a multidisciplinary setting that culminate in the submission of an extramural career development grant application (or equivalent). Candidates with research or health professional doctoral degrees and a strong commitment to clinical and/or translational research are eligible and encouraged to apply. Deliverables include a completed research project, a publishable manuscript, and an extramural grant application such as an NIH K award. Scholars will also acquire competence in critical thinking, team science, leadership, biomedical statistics and informatics.

**Goal of the Program:** The goal of the Program is to prepare junior investigators for a successful career in clinical and translational research. It is expected that Scholars will initiate a team-based clinical and translational research program leading to successful acquisition of an extramural grant as a faculty member in an academic medical center. We aim to produce successful junior investigators in clinical and translational research by providing critical resources and support to launch their research career.

### **Program Highlights:**

- **Two years long.** It is anticipated that Scholars will obtain a Graduate Certificate in Clinical Science by completing the research practica projects and courses.\*
- **Emphasizes a rigorous scientific approach.** The approach embodies our belief in hypothesis-driven, (especially but not exclusively) mechanistic-based investigation from the molecular to the population level.
- **Offers training in research skills.** The CTSA supports research training that spans the spectrum of clinical and translational science as envisioned by the National Center for Advancing Translational Science ([Figure 1](#)).
- **Develops critical thinking skills.** The Program is designed to enable trainees to lead teams that focus on significant translational problems. Critical thinking will be developed in the classroom using the Socratic Method, in small groups by giving oral presentations, and by written practica ([Figure 2](#)).
- **Fosters team science.** The Program recognizes the complexities of human research in the areas of genomic and molecular science require investigators to succeed through multidisciplinary scientific teams.
- **Offers mentorship and mentor training.** The Program aims to develop critical leadership, team building, and mentoring skills to equip our trainees and their mentors with the ability to navigate the clinical and translational research process and to communicate with groups of different scientific expertise.
- **Provides additional mentoring and leadership training for former scholar alums'** transition to independence after completion of the two-year program.

\*Scholars may choose to enroll in the [Master of Science in Clinical Science](#) program. Completion of the master's degree may require additional coursework that extends beyond two years.

### **Program Requirements:**

- Two-year commitment at 75% protected time for research.
- Three written practica ([Figure 2](#)).
- Required courses/training\*:
  - Responsible Conduct of Research
  - Clinical Research Management and Leadership
  - Grant Writing & Funding Strategies
- Attend the two scheduled scholar retreats per year for the entire time, and present research at one retreat per year, one in October and one in March.
- Additional attendance requirements include:
  - ≥ 50% of weekly Translational Science Forum Works-in-Progress presentations, and present at one per year (Wednesdays 12-1 PM);
  - At least 3 of 4 quarterly program meetings (usually a Tuesday, 12-1 PM – August, November, February, April).
- Active participation in ongoing group writing workshops, Center for Translational Medicine symposia, etc.
- Regular meetings with both the Scientific and Career/Humanistic mentors.
- Required attendance at the CTM Writing Accountability Group (CTM WAG).

### **Mentorship Requirements:**

Mentors should be actively involved in all areas of the program in order to best support the development of their mentee(s). Regular attendance at Translational Science Forum, Scholar Retreats, and other Socratic activities are expected. Mentors should have regularly scheduled meetings with their mentee(s). For more information, see the [Mentoring Guidelines](#).

*\* Scholars may choose from a menu of [elective courses](#). Scholars are expected to take additional courses customized to their career development plan as needed to increase research competency; subject areas such as biostatistics, epidemiology, informatics, health services research, quantitative methods, clinical research design, clinical research protocol development, ethics, as well as some basic science courses are available.*

### **Program Deliverables:**

- **Three related practica:**
  - A Clinical/Translational **Research Project** (chosen by the scholar and mentors)
  - A Publishable **Manuscript** (e.g., a Critical Literature Review, or scientific report)
  - An Extramural Research **Grant Application** such as a K23, K08, R01, or R21; other grants may be acceptable but must be approved in advance
- **Competencies:**
  - Scientific writing skills
  - Networking with the research community
  - Clinical research questions and study design
  - Literature critique
  - Research protocol implementation
  - Statistical approaches
  - Responsible conduct of research
  - Team science
  - Biomedical informatics
  - Clinical research interactions
  - Scientific communication skills
  - Cultural diversity
  - Translational teamwork
  - Leadership skills
  - Cross disciplinary training
  - Community engagement
- **Appreciation:**
  - For new technologies and methods pertaining to the spectrum of clinical and translational research.
  - For ethical principles that influence the translation of research results into practice.
  - For methodological and analytical concepts necessary to design rigorous clinical/translational research.
  - For applying knowledge through research experiences that will contribute to future grant proposals.
- **Opportunities:** To work with a career and scientific mentoring team consisting of faculty members who are experts in career development and committed to the scholar's success.

**Eligibility:** The CTM Clinical and Translational Research Scholar Program is designed to provide additional training and focused mentorship to achieve the research career goals of individuals of exceptional scholarship, aptitude and critical thinking skills. Persons who show great scientific promise and are committed to pursuing a rigorous research training and career development plan are invited to apply. Applicants from a wide range of academic disciplines and from diverse backgrounds including underrepresented minorities, disadvantaged, and disabled individuals are encouraged to apply.

Applicants must:

- Have explicit support and commitment from their Department Chair(s) or Center Director(s), to provide:
  - At least 75% protected time for two years – this commitment must be confirmed in writing;
  - Funding for the candidate's salary and fringes during this time (to the extent not supported by the CTM (see below under [Financial Support](#));
- Be committed to participate in the Program in a focused, active manner for two years.
- Be committed to a clinical and translational science research career.
- Be appointed as a clinical research fellow or junior faculty at UT Southwestern or one of the CTSA's partner institutions;
- Have a terminal research or health-professional doctoral degree (e.g., MD, DO, PhD, PharmD, DNP, among others).
- Have a well-formulated clinical and/or translational research plan and preferably previous research experience.
- Not be, nor have been, a principal investigator on an R01, R29, or subproject of a Program Project (P01), Center (P50, P60, U54) or mentored career development (K-series) grants or other equivalent research project grant awards. R03 and R21 grants are permitted.
- Be a U.S. citizen or permanent resident. Individuals on temporary or student visas are not eligible for NIH funding.

**Financial Support:**

- The Program is supported by a NIH Clinical and Translational Science Award (CTSA) and UT Southwestern Medical Center (UTSW).
- Scholar salaries may be funded by the nominating Department/Center (including departments with other K/T training grants), by CTSA KL2 funds, or by CTM institutional funds.
- Award of KL2/institutional funds for salary support is for two years and is highly competitive.
  - Scholars selected for KL2/institutional funding will receive 75% of their UT Southwestern institutional base salary (up to the NIH cap, which is 75% of \$160,000 per year for *KL2 Scholars* for two years). Since support by KL2/institutional funds is not guaranteed at the time of application, the nominating Department or Center **must commit to provide full salary support unless officially notified otherwise by the CTM.**
- Limited research funds may be available for select Scholars, based on the annual CTM budget allocation.
- Select Scholars may have limited travel funds to attend the Translational Science Meeting in Washington, DC (annually in March/April), based on the CTM budget allocation.
- Availability of service package grants and/or vouchers to acquire statistical support services are provided for all Scholars whether or not they are receiving salary support for the duration of the program.
- Tuition provided for didactic courses, except for trainees supported by other federal funds (*e.g., institutional training grants such as K grants*).
- Scholars receiving KL2 funds should be aware that two years of salary support on the KL2 may count toward time spent on a K grant (i.e. if you receive a K23, then you will have two years less than the maximum years allowed on that funding mechanism). Please check with your specific program office and/or institute.

### **Application Instructions and Submission Process:**

The CTM office is located on South Campus in the 3<sup>rd</sup> floor of the McDermott Administration Building (B Building). Please contact Lisa Fleming, M.P.A., Manager, Center for Translational Medicine, at [Lisa.Fleming@UTSouthwestern.edu](mailto:Lisa.Fleming@UTSouthwestern.edu) with specific application or selection process questions.

***The application consists of the following:***

***Kindly submit your intent to apply: <https://www.surveymonkey.com/r/scholar2019>***

1. A curriculum vitae in the standard UT Southwestern promotion & tenure format; **please add grants and teaching information at the bottom of the CV**; (can be found at W:\PUB\SMSDEAN\Promotion and Tenure)
2. Specific Aims Page (description of research project);
  - a. *1-page Specific Aims Page, should be single-spaced, .5 inch margins, 11 point Arial font. Citations do not count toward the page limit.*
3. A career development and training plan;
  - a. *1000 words or less; should be single-spaced, .5 inch margins, 11 point Arial font: Include current area(s) of research interest, current areas of clinical/translational investigation, a proposed training plan including information about additional training, what you hope to gain from the mentor experience, what courses you think will be the most beneficial to your success, and career goals.*
4. A personal statement;
  - a. *500 words or less; should be single-spaced, .5 inch margins, 11 point Arial font: How did you arrive at this place in your career? A career in clinical/translational research is challenging, with many opportunities and frustrations. Why are you attracted to this career?*
5. A minimum of 3 letters of recommendation:
  - a. 1 letter of recommendation with a statement of commitment (75% protected time) from the Department Chair(s) or Center/Institute Director(s); this letter should specifically state financial support in the event the salary funding is not available to the applicant;
  - b. 1 letter of recommendation from a professional reference;
  - c. 1 letter of recommendation from the scientific mentor who will oversee the scholar's research project;
6. An [online](#) application to the [Graduate Certificate Program](#) in Clinical Science at UT Southwestern Graduate School of Biomedical Sciences (*must submit online by 2/1/2019 for summer admission*). Applicants will likely need to clear the cache on their browsers to make the application link work.

The applicant should submit Items 1-4 to Lisa Fleming [via email](#). The authors of letters of recommendation (items 5a, 5b, 5c) should address their letters to [Keith Argenbright, MD, MMM, Madhukar Trivedi, MD, and Helen Yin, PhD](#), and submit their letters [via email](#) to Lisa Fleming. Item 6 should be submitted by the applicant [online](#) (link to online application to the Graduate School; you may need to clear the cache on your browser to make the login screen work; alternatively, you may visit [this page](#) and click "apply now" on the right hand column).

Competitive applicants will be invited for interviews and will be asked to give short oral presentations (10 minutes, video recorded).

***Note: The Program Selection Committee will not consider incomplete or late applications. Applications will undergo administrative review and the committee will invite selected candidates for interviews.***

### **Schedule for Application and Selection Process:**

Call for applications issued: November 2018

**Candidate presentations (10 minutes, filmed @ CTM Office): Between January 1 and February 1, 2019 – email [Daniel.Baxter@UTSouthwestern.edu](mailto:Daniel.Baxter@UTSouthwestern.edu) to schedule.**

**Application due: February 1, 2019**

**Interviews: Friday, March 1, 2019**

**Mandatory orientation: TBD**

Appointment start date: July 1, 2019

**Appendices:**

[Figure 1](#): Spectrum of Clinical/Translational Research Supported by the Program

[Figure 2](#): Typical Timeline for KL2/Clinical & Translational Scholars

[Mentor-Mentee Guidelines/Agreement](#)

[Course Requirements and Electives for Scholar Graduate Certificate](#)

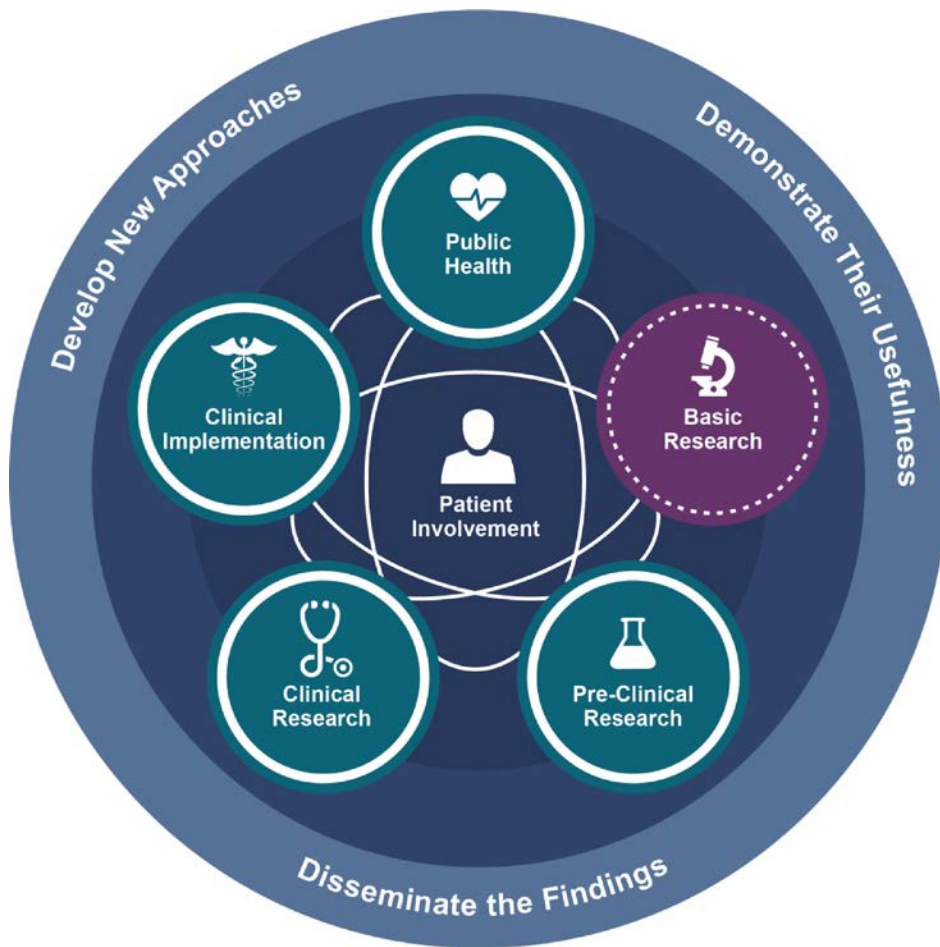
[Course Descriptions](#)

[Typical Course Schedule](#)

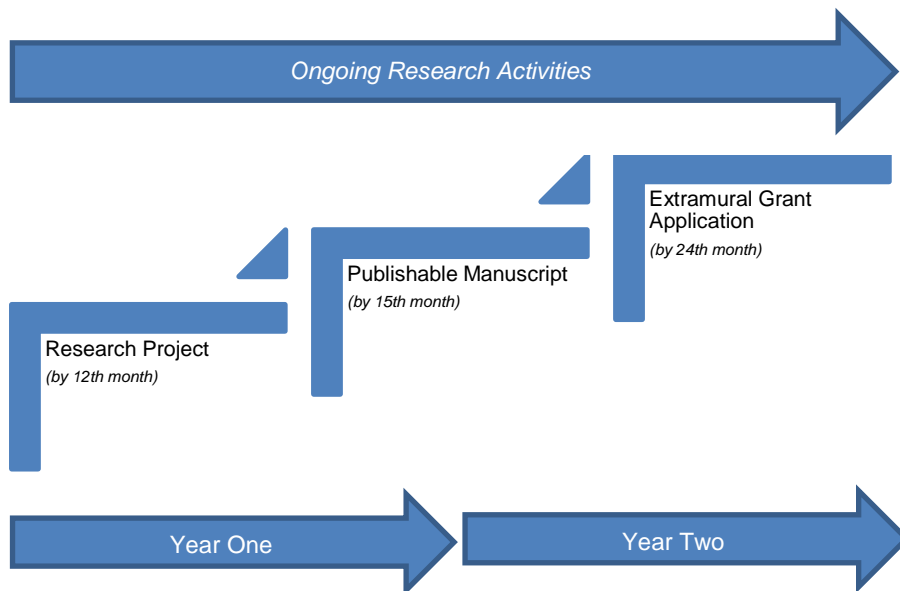
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**Fig. 1:**  
**Spectrum of clinical/translational research supported by the Program**  
*(T= translational. T0 Basic science discovery; T1 translation to humans; T2 translation to patients; T3 translation into practice; T4 translation to population health.)*



**Fig. 2:**  
**Typical timeline for KL2/Clinical & Translational Scholars**  
*The research project, manuscript, and grant application should focus on the same research question/project.*



## Mentor-Mentee Guidelines/Agreement

### Background

Effective mentorship is a critical element in the process by which mentees achieve excellence in the design and management of clinical research, facilitating their growth as leaders in clinical and translational science. By the end of the first semester, the mentee must identify both a scientific and career/humanistic mentors. Being a mentor is a responsibility and a privilege, as it enables one to work with the best and brightest of the next generation. Together, the mentee and mentors will form a relationship focused on mentee career development as a clinical/translational researcher.

### Expectations of Scientific Mentors

- Primary responsibility for guiding mentees toward research independence. Together with the mentee, the scientific mentor will help identify investigators to serve on the mentoring team. The scientific mentor will provide the mentee with the scientific and methodological expertise for their research projects.
- Clearly delineate specific expectations of the substantive learning/research skills to be achieved.
- Primary responsibility for helping the mentee develop both hypotheses and research protocols; providing the initial "peer review" that helps validate the scientific merit of all proposals; helping the mentee to obtain appropriate interdisciplinary consultations; assisting with all phases of grant preparation; and the development of effective presentations and publications.
- Overseeing and approving all required practica – mentor must submit a “mentor approval form” for each practica submission.
  - a. Research project
  - b. Publishable manuscript with critical component
  - c. Research grant application (extramural; K23 or equivalent)

### Expectations of Career/Humanistic Mentors

- Develop with the mentee specific milestones and timelines for achieving career development goals; help mentee to develop his/her career identity.
- Assist mentee in navigating the culture of academic medicine.
- Encourage mentee to expand his/her professional network.
- Mentee/mentor can set expectations that meet their specific needs associated with “life” issues, concerns, and celebrations; provide guidance with particular issues specific to gender, race, etc.

### Expectations of ALL Mentors & Mentees

- The mentee is ultimately responsible for initiating and maintaining the relationship with the mentor(s). The mentee has the right to change mentors if his/her research question changes and/or the mentoring relationships are not meeting expectations.
- Although the idea of team mentoring is good, the mentoring relationship should be ultimately handled solely by the immediate mentor and mentee (not delegated).
- A standard expectation is that mentors will develop a relationship with their mentee, be available/accessible, be an advocate, and be resourceful.
- Regular and frequent meetings are essential for success. Thus, the mentee should have regular meetings with at least one member of the mentoring team, in addition to meeting with the entire mentoring group at least once per quarter. The mentee should prepare a brief formal summary of meetings with the entire mentoring team.
- The mentee will request that his/her mentors attend seminars at which the mentee is presenting. Attendance is highly encouraged as well as an important aspect of the development and growth of all mentees seeking a career in clinical research.
- Mentors and the mentee should participate in (a) the Scholars retreats; (b) evaluations and assessments of the individual mentee and team mentoring relationships; and (c) intimate involvement in the execution of the mentee’s practica for the program.
- The mentee is required to meet every six months with the Center for Translational Medicine, Education & Career Development team members to assess the overall mentoring experience; mentors & mentees will have an open line of communication with Keith Argenbright, M.D., M.M.M. (Multi-PI, KL2 Program).

<b>Graduate School of Biomedical Sciences – Graduate Certificate for Clinical Scholars</b>				SCHOLAR CERTIFICATE
				18 hours total
				Scholars: 75% protected time / 2 years
Course #	UTSW Courses/Practicum (CTR = Clinical & Translational Research)	Credit Hours	Semester	Required for Scholar Graduate Certificate - 4 hours required coursework; remaining hours met with practica and electives, minimum 9 credits for practica
	Practica: Research Project, Publishable Manuscript, Extramural Grant Application	9-15	Ongoing	all three required
	Responsible Conduct of Research	0	Summer	required
CTM 5208	Clinical Research Management & Leadership	2	Spring	required
CTM 5106	Grant Writing & Funding Strategies (online)	1	Winter	required
CTM 5301	Intro to Principles & Methods of CTR	3	Fall	electives
CTM 5309	Biostatistics I	3	Fall	
CTM 5209	Practical CTR Protocol Development	2	Spring	
CTM 5302 OR CTM 5307	Biostatistics II OR Epidemiology for the Clinical Investigator	3	Spring	
CTM 5105	Ethics in CTR	1	Fall (Odd)	
CTM 5115	CTR from Proposal to Implementation	1	Fall	
CTM 5203	Clinical Pharmacology & Drug Development	2	Fall	
CTM 5207	Intro to Patient Centered Outcomes Research & Comparative Effectiveness Research	2	Spring (Even)	
CTM 5114	Preparing a Journal Report (Scientific Writing)	1	TBD - New	
CTM 5XXX	Team Science	1	TBD - New	
CTM 5118	Successfully Obtaining an R (SOAR) Grant Writing Seminar	0.5	Fall	
CTM 5119	K Grant Writing Seminar	1	Varies	
CTM 5117	Mentoring Excellence for Developing Leaders (open to alumni)	1	Varies	
CTM 5211	CTM Socratic Seminar	2	Varies	
CTM 5210	Developing & Commercializing Biomedical Research	2	Fall	
CTM 5XXX	Foundations of Clinical Trials	2	Fall - New	
CTM 5096	Independent Study	1-3	All	
	<i>UT Health Science Center at Houston Courses in Public Health and Bioinformatics</i>	Varies	Varies	



### Center for Translational Medicine Course Offerings

Course #	Course Name	Credit Hours	Course Description
<b>Summer Courses</b>			
	Responsible Conduct of Research <b>CORE</b> (Holbein)	0	<b>Short course (7 weeks).</b> Regulatory requirements of clinical research (IRB, GCP, HIPAA, and investigational filings), ensuring patient safety, interactions with government and industry, contract negotiations, successful strategies and tactics.
TBD	Biostatistical Software Boot Camp	N/A	Nano Course/Boot Camp
<b>Fall Courses</b>			
CTM 5301	Introduction to Principles & Methods of Clinical & Translational Research <b>CORE</b> (Jacobe)	3	Basic and intermediate level principles in research design; formulation of the research question; identifying primary and secondary structures; use of control groups and pre-specified hypotheses; surrogate measurements; analysis of incomplete data; meaning of P values and confidence intervals; identification of bias and flaws in study design.
CTM 5391	Mathematical Biostatistics for the Clinical Investigator <b>CORE</b> (Reisch)	3	Traditional, mathematical approach to statistical analysis of biomedical data. Topics include data description, summary statistics, elements of probability, distributions of random variables including applications of the binomial and normal distributions, estimation and confidence intervals, hypothesis testing, analysis of variance, correlation and regression and contingency tables. Additional topics include statistical power, sample size, and study design.
CTM 5309	Conceptual Biostatistics for the Clinical Investigator <b>CORE</b> (Hynan)	3	Conceptual approach to statistical analysis of biomedical data. Review of fundamental statistical principles focusing on explanation of the appropriate scientific interpretation of statistical tests rather than the mathematical calculation of the tests themselves. The course covers All topics typically used in biomedical publications, including data description, summary statistics, p values, and non-parametric tests, analysis of variance, correlation, regression, and statistical power & sample size estimation.
CTM 5XXX	Foundations of Clinical Trials	2	This course is intended for the clinical researcher who is interested in designing a clinical trial and developing a protocol. It is also of value to researchers and practitioners who must critically evaluate the literature of published clinical trials and assess the merits of each trial and the implications for the care and treatment of patients.
CTM 5105	Ethics in Clinical Science (Heitman)  <i>Offered in odd numbered years only.</i>	1	<b>Short course (8 weeks).</b> This course is a systematic examination of the ethical concepts and standards of responsible conduct of research in biomedical science and clinical investigation. Its aim is to provide postdoctoral trainees and junior faculty in biomedical clinical research a framework in which to recognize, examine, resolve, and prevent ethical questions and conflicts in their professional work and prepare them for independent research and mentoring of others.
CTM 5210	Developing & Commercializing Biomedical Research (Grassler & Taussig)	2	This course reviews basic concepts in developing and commercializing research in biomedical sciences. Students will learn principles of designing experiments for clinical and regulatory relevance, discerning inventions from research data, obtaining intellectual property legal protection, structuring licenses of inventions to existing companies, forming new start-up companies, attracting investment capital, and regulatory approval of products for human therapy.
CTM 5115	Clinical & Translational Research from Proposal to Implementation (Toto)	1	This course reviews basic elements for a research proposal and implementation. Topics include regulatory approvals; continuing regulatory oversight; monitoring patient safety; recruitment; clinical assessments, data treatment, data collection, entry and auditing; provision of experimental tests/tasks; data analyses; publication planning.
CTM 5118	Successfully Obtaining an R (SOAR) Grant Writing Seminar (Yin)	0.5	SOAR is designed to increase NIH R-type grant acquisition success rates in basic, translational, and clinical research. SOAR includes topics such as demystifying the grant writing process, grantsmanship, surviving the NIH study section review, writing tips and tricks, navigating NIH requirements, peer-review, etc.

Winter Courses			
CTM 5106	Grant Writing & Funding Strategies <b>CORE</b> (Toto)	1	<b>100% Online Course.</b> This course will review the different types of federal grant mechanisms as well as grants or contracts from research foundations, advocacy organizations and industry. How to write a persuasive, well-reasoned application will be the focus of the course including the budget, resources and environment, preliminary data, and the research plan.
Spring Courses			
CTM 5207	Introduction to Patient Centered Outcomes Research & Comparative Effectiveness Research (Halm)	2	This course covers the methods used in outcomes and health services research, which includes research design, theory, measurement, methods of analysis, and evaluation of published research. Course objectives are: 1) describe basic concepts, definitions, and types of outcomes and health services research; 2) understand structure, process, outcomes and underuse, misuse, overuse conceptual models; 3) identify common approaches and challenges to measuring cost, quality, access, and equity in health and health care; 4) describe experimental and observational research designs used to assess the impact of health services (drugs, devices, procedures, strategies, delivery and financing systems) on patient-oriented, clinical, and resource use outcomes.
CTM 5302	Biostatistics for Clinical Sciences II <b>CORE (or Epi)</b> (Reisch)	3	Linear and logistic regression models (control of confounding and predictive models); categorical data analysis (binomial and Poisson distributions, analysis of paired categorical data, nonparametric methods for ordinal data); survival analysis (Kaplan-Meier curves. Hazard functions, types of censoring, log-rank tests and generalized Wilcoxon tests, Cox regression model). <b>Prerequisite: CTM 5309 or CTM 5391 or instructor consent.</b>
CTM 5209	Practical Clinical & Translational Research Protocol Development <b>CORE</b> (Jacobe)	2	This course is the practical application of the concepts taught in Introduction to Principles & Methods of Clinical & Translational Research. We will apply our understanding of team science, foundations of clinical and translational research, and clinical research design and analysis to the creation of a written research proposal, an oral research presentation, and elevator talk. At the end of the semester, students will have a workable draft of all three of these key elements that they may develop further into proposals for funding or an IRB protocol. This course incorporates a blended classroom which entails online video lectures, assigned reading, and in class discussion sections in which students will evaluate each other's written proposals. At the end of the semester, students will present their research proposal for oral feedback from peers as well as faculty. <b>Prerequisite: CTM 5301 and CTM 5106 or instructor consent.</b>
CTM 5307	Epidemiology for the Clinical Investigator <b>CORE (or Biostats 2)</b> (Haley)	3	Concepts of multivariate causality; criteria for establishing causality; risk; rates; incidence, prevalence and attack rates; incidence density; crude, specific and adjusted rates; relative risk, odds ratio, case-fatality rate and attributable risk; sampling error, selection bias, information bias, definition bias, and confounding; statistical techniques to control for bias; variables; overview of statistical analysis; multiple comparisons correction; study designs to avoid bias: survey and sample selection, cross-sectional, cohort, case-control; prospective vs. retrospective; attributes of cohort studies; design principles of case-control studies; types of control groups; strategies of matching in case-control studies; experiential introduction to statistical computing for different types of clinical epidemiology studies.
CTM 5208	Essentials of Management & Leadership for Researchers <b>CORE</b> (Argenbright)	2	This course is a structured review and discussion of the basics of management and leadership theory and practice. Topics include project management and budgeting, information systems, leadership style, effective interviewing and hiring techniques, conflict resolution, and the basics of organizational culture. Predominant theories and research, as well as shared experiences of the instructor and the group will be discussed in order to enhance each participant's effectiveness as a manager and leader. It will be a combination of assigned readings, didactic lectures, active group discussion, a mid-term project and final examination.

Semester Varies			
CTM 5119	K Grant Writing Seminar	1	This seminar is intended for trainees who are writing and submitting K grants. Participants attend each session, engaging in a peer review of each other's specific grant section. Faculty experts are brought in to enhance the learning experience.
CTM 5114	Scientific Communication (TBD)	1	<i>Under development.</i> General writing skills and strategies; how to prepare an empirical article including tips on writing the abstract, introduction, aims, methods, results, and discussion/conclusion sections of a peer reviewed journal article. Students will be required to submit a journal article and review others' articles.
CTM 5113	Advanced Clinical and Translational Research Design & Analysis (TBD)	1	Critical review and methods critique of scientific journal articles pertinent to academic medicine.
CTM 5203	Clinical Pharmacology & Drug Development (Holbein)	2	Pharmacokinetics; pharmacodynamics; drug absorption, distribution, metabolism/elimination; drug-drug and drug-disease interactions; preclinical drug development (Phase I, II, III and IV); proof-of-concept and dose-finding studies; post-marketing surveillance.
CTM 5117	Mentoring Excellence for Developing Leaders (Argenbright)	1	This is an interactive, participant-based course on mentoring excellence. Its objective is to engage mentors at all points in their career and give them the tools and skills necessary in order to improve their mentoring. This course is based on a combination of mentoring curricula and techniques that were observed at high performing translational medical centers (UCSF, Harvard, Wisconsin) as well as the National Research Mentoring Network (NRMN) mentor training. The NRMN curriculum facilitates career-stage appropriate training for mentors and mentees, tailored to foster the success of a diverse group of biomedical researchers, with a specific focus on deepening the alignment and impact of mentoring relationships. <b>Prerequisite: CTM 5208 or instructor consent.</b>
CTM 5096	Team Science Fundamentals	1	<i>Under development</i>
CTM 5211	CTM Socratic Curriculum (Varies)	2	Students will participate in seminars dedicated to their comprehensive understanding of clinical and translational research, careers in academic medicine, and other relevant professional development topics.
CTM 5096	Independent Study/Special Topics (Assigned mentor)	1-3	
Other			
	Online courses offered through the University of Texas Health Science Center at Houston. (Only available to matriculated CTM students.)		<a href="#">Courses offered through the School of Public Health in the division of Health Promotion &amp; Behavioral Sciences</a>  <a href="#">Courses offered through the School of Biomedical Informatics</a>
Academic Credit for Research			
CTM 5097	Directed Research	0-15	Directed Research offers academic credit for research and writing efforts guided by the trainee's scientific mentor(s) and program leadership. <ul style="list-style-type: none"> <li>• Deliverables typically include a research project, publishable manuscript, and extramural grant application (see program requirements at the time of matriculation/orientation).</li> <li>• Deliverables are reviewed by the CTM Education &amp; Mentoring Oversight Committee (EMOC).</li> <li>• Matriculated students are enrolled in these credits throughout the program, with a minimum of 9 credits/maximum of 15 credits awarded for the required deliverables.</li> </ul>

**Typical Course Schedules**

*(subject to change)*



**Summer 2018 Course Schedule**

*June 26 - August 10, 20178(draft, subject to change)*

	Monday	Tuesday	Wednesday	Thursday	Friday
7:00					
8:00					
9:00					
10:00					
11:00					
12:00					
1:00		<b>CTM 5107 - Responsible Conduct of Research 12:30-2:00pm</b>		<b>CTM 5107 - Responsible Conduct of Research 12:30-2:00pm</b>	
2:00					
3:00					
4:00					
5:00					
6:00					
7:00					

CTM 5107 - Responsible Conduct of Research, Blair Holbein, PhD  
 Tuesday/Thursday from 12:30 - 2:00 in room TBA

# Fall 2018 Course Schedule

August 27 - December 7, 2018 (draft, subject to change)

	Monday	Tuesday	Wednesday	Thursday	Friday
8:00					
9:00					
10:00					
11:00					
12:00			<i>TSF Nccn-1:00pm</i>		
1:00				<b>CTM 5115 - CTR Proposal to Implementation 1:00-2:00pm</b>	<b>CTM 5096 - Foundations of Clinical Trials 1:30-3:30pm</b>
2:00					
3:00					
4:00	<b>CTM 5309 - Conceptual Biostatistics 4:00-5:30pm</b>	<b>CTM 5301 - Intro to Principles &amp; Methods of CTR 3:30-5:00pm</b>	<b>CTM 5309 - Conceptual Biostatistics 4:00-5:30pm</b>	<b>CTM 5301 - Intro to Principles &amp; Methods of CTR 3:30-5:00pm</b>	
5:00					
6:00			<b>CTM 5210 - Developing &amp; Commercializing Biomedical Research 5:30-7:30pm</b>		
7:00					

CTM 5115 - Clinical & Translational Research from Proposal to Implementation, Robert Toto, MD  
Thursday from 1:00 - 2:00 in room B5.206

CTM 5301 - Intro to Principles & Methods of Clinical & Translational Research, Heidi Jacobs, MD, MSCS  
Tuesday/Thursday from 3:30 - 5:00 in room NL3.120

CTM 5096 - Foundations of Clinical Trials, Robert Toto, MD  
Fridays from 1:30 - 3:30 in room D1.100

CTM 5309 - Conceptual Biostatistics - Linda Hynan, PhD  
Monday/Wednesday from 4:00 - 5:30 in room D1.200

CTM 5210 - Developing & Commercializing Biomedical Research - Frank Grassler, JD/Ron Taussig, PhD  
Wednesday from 5:30 - 7:30 in room NL3.120

# Spring 2019 Course Schedule

January 14 - May 3, 2019 (draft, subject to change)

	Monday	Tuesday	Wednesday	Thursday	Friday
7:00					
8:00	CTM 5307 - Epidemiology for the Clinical Investigator 8:00-9:30am		CTM 5307 - Epidemiology for the Clinical Investigator 8:00-9:30am		
9:00					
10:00		CTM 5391 - Biostatistics I 10:00-11:30am		CTM 5391 - Biostatistics I 10:00-11:30am	
11:00					
12:00			TSF Noon-1:00pm	CTM 5208 - Essentials of Leadership & Management for Researchers 12:00-2:00pm	
1:00					
2:00					
3:00			CTM 5209 - Practical Clinical & Translational Research Proposal Development 3:00-5:00pm		
4:00		CTM 5302 - Biostatistics II 4:00-5:30pm			CTM 5302 - Biostatistics II 4:00-5:30pm
5:00					

CTM 5307 - Epidemiology for the Clinical Investigator, Robert Haley, MD  
Monday/Wednesday from 8:00 - 9:30 in room F2.300

CTM 5208 - Essentials of Leadership & Management for Researchers, Keith Argenbright, MD, MMM  
Thursday from 12:00 - 2:00 in room B5.206

CTM 5391 - Biostats I, Joan Reisch, PhD  
Tuesday/Thursday from 10:00 - 11:30 in room D1.102

CTM 5302 - Biostatistics II, Joan Reisch, PhD  
Tuesday/Thursday from 4:00 - 5:30 in room D1.102

CTM 5209 - Practical Clinical & Translational Research Proposal Development, Heidi Jacobe, MD, MSCS  
Wednesdays from 3:00 - 5:00 in room D1.102

CTM 5106 - Grant Writing & Funding Strategies, Robert Toto, MD  
ONLINE ONLY - "Winter-mester" Course 12/10/18 thru 1/11/19; Must be completed by Friday, January 11, 2019