# Clinical Translational Research Certificate of Added Qualification Program (CTR-CAQ)
(co-directors: Igna Van den Veyver, MD and Carolyn Smith, PhD)

## Overview

<table>
<thead>
<tr>
<th>7 PRIMARY GRADUATE PROGRAMS</th>
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<tbody>
<tr>
<td>Cancer &amp; Cell Biology</td>
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<tr>
<td>Chemical, Physical &amp; Structural Biology</td>
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<tr>
<td>Development, Disease Models &amp; Therapeutics</td>
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<tr>
<td>Genetics &amp; Genomics</td>
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<tr>
<td>Immunology &amp; Microbiology</td>
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<tr>
<td>Neuroscience</td>
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<tr>
<td>Quantitative &amp; Computational Biosciences</td>
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CTR-CAQ Key Components

• Build upon experience with Translational Biology and Molecular Medicine legacy program

• Clinical Projects and dual mentorship experience
  • Accompany clinical research mentor to clinics
  • Attend diagnostic consensus conferences, grand rounds, translational research meetings
  • Observe and participate in clinical research with clinical research mentor

• Now make this available for all graduate students
  • Information during recruitment and year 1 in GSBS
  • Up to 30 students accepted per year based on review of application
    • Application due June 1 → notification July 1 → start in track August 1

• T32 training grant
CAQ requirements: 12 CREDITS

1. Spread out over 2 years (10 terms)
   - Orientation to Clinical Translational Research (OCTR) course: 2 credits
   - Practical Skills in Translational Research Workshops (PSTRW) 1 & 2 = 2 credits/year → 4 credits total
   - Attend 4 translational conferences/y + 4 B2B Seminars → together = 1 credit/year → 2 credits total
   - Year 1: Clinical Translational Research Experience and observing clinical research: 2 credits
   - Year 2: CTRE continued plus Capstone project: 2 credits

2. Completion of capstone project:
   - Written abstract and summary (by term 5 of year 2)
   - Presentation at CTR-CAQ annual retreat/symposium (~end of august)
Clinical translational research experience (CTRE) year 1:
- Accompany mentor in clinic and observe clinical translational research
- Begin to develop capstone project

Clinical translational research experience (CTRE) year 2:
- Continue to participate/observe clinical research
- Conduct capstone project

Contact hours vs credits:
Courses/conf: 8 hours = 1 CR
Experience: 24 hours = 1 CR
Possible co-credits with primary PhD program

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit hours</th>
<th>CTR-CAQ Program-specific</th>
<th>Didactic</th>
<th>Count Towards 30 hr Didactic for Candidacy</th>
<th>Possible Contribution To 30 hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orientation to Clinical Translational Research</td>
<td>2</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>2hr, Elective</td>
</tr>
<tr>
<td>Practical skills in Translational Research Workshop</td>
<td>4</td>
<td>Yes</td>
<td>Yes</td>
<td>PSTRW-1 Only</td>
<td>2 hr, Elective</td>
</tr>
<tr>
<td>Bench-to-bedside seminars, CTR-CAQ symposium and attendance of</td>
<td>2</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td></td>
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<tr>
<td>translational conferences</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Clinical Translational Research Experience</td>
<td>4</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td></td>
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<tr>
<td>TOTAL</td>
<td>12</td>
<td>OPTIONAL CO-CREDIT*</td>
<td></td>
<td></td>
<td>4</td>
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</table>

* Must be approved by PhD program – will propose up to 4 chosen from 8 co-credits available
Mentorship

1. Clinical translational research mentor
   • Student finds mentor during application process - *Program will help*
   • Must be approved by committee that reviews application (modifications may be requested)
   • Remains with student throughout time in CTR-CAQ
   • Continued interaction post CTR-CAQ is encouraged
   • Required mentor orientation will be done in T1 of year 1

2. Assigned faculty advisor from CTR-CAQ core faculty

3. Three individual guidance committee (IGC) meetings
Individual Guidance Committee (IGC) meeting

• Student
• Clinical translational research mentor
• CTR-CAQ faculty advisor (assigned by program)
• Thesis advisor
• Other (CTR-CAQ) faculty member

IGC will also oversee overall progress and defense/presentation of the capstone project
This committee is not another thesis advisory committee!
Requirements to apply to CTR-CAQ

1. Application package submitted by June 1 for next academic year
   • Personal statement (2 pages)
   • Student Bio (NIH format)
   • Two support letters:
     • (1) thesis advisor
     • (2) clinical translational research mentor (with biosketch)
   • Approval from primary graduate program director and thesis advisor

2. Evidence of interest in translational research
   • Describe in personal statement
   • Describe in advisor’s support letter
   • Describe in clinical mentor support letter
COURSES
Orientation to Clinical Translational Research (OCTR) course

• Course Director: Melissa Suter, PhD
• Co-director: Robin Parihar, MD, PhD
• 2 credits
• Open to all who are interested (not just CTR-CAQ students)
• Lecture-based with grading for attendance, participation and homework assignments
• Topics and lecturers will be integrated with PSTRWs
### Topics of the OCTR Course Module

<table>
<thead>
<tr>
<th>Topic</th>
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<tbody>
<tr>
<td>T1 to T4 translational research</td>
<td>Good manufacturing practice facilities</td>
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<tr>
<td>Epidemiological studies</td>
<td>Regulatory affairs</td>
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<tr>
<td>Early phase clinical trials</td>
<td>The institutional review board</td>
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<tr>
<td>Team science, mentorship, and academic-industry collaborations</td>
<td>Clinical trials reporting</td>
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<tr>
<td>Study design (RCTs)</td>
<td>Correlative science analysis</td>
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<td>Retrospective study design, working with datasets/databases</td>
<td>Informed consent</td>
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<tr>
<td>Practical Aspects of Biobanking</td>
<td>Research integrity and misconduct</td>
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<tr>
<td>Patents licensing</td>
<td>Clinical ethics overview</td>
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Practical Skills in Translational Research Workshops (PSTRW1 and 2)

• Course Director: Susan Hilsenbeck, PhD
• Co-director Farrah Kheradmand, MD
• Over two years: PSTRW1 and PSTRW2
• For CTR-CAQ students only – small group approach!
• Up to 30 students: 8-10 students per break-out group
• Two facilitators for each workshop
• Case-based or project-based skills development (standardized scenarios)
• Active learning and gradual skill building

2 Credits/y – 8 x 2 hours/y
Practical Skills in Translational Research Workshops Format (PSTRW)

- Follows OCTR course lectures
- Pre-workshop assigned reading
- Readiness assurance test (10 minutes)
- Introduction of topic and task 1 by faculty facilitator (10 minutes)
- Break-out groups work and discuss for ~15-30 minutes
- Present to entire group, receive feedback, discussion (presenters rotate)
- Repeat with task 2, etc... up to 3 tasks (depending on topic)
- Ethics, rigor and reproducibility, and responsible conduct of research aspects are integrated in each workshop.
# PSTRW1 – example topics

<table>
<thead>
<tr>
<th>YEAR 1</th>
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<tbody>
<tr>
<td>1. Clinical research proposal development – PHI and HIPAA</td>
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<tr>
<td>2. Sample size and power calculation</td>
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<tr>
<td>3. Study design – retrospective studies</td>
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<tr>
<td>4. Study design – prospective early clinical trials</td>
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<td>5. Biobanking research</td>
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<td>6. Databases and data management</td>
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<td>7. Randomized controlled trials</td>
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<td>8. ATTEND AN IRB MEETING (assigned slots throughout year)</td>
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Bench to Bedside Seminars (B2B)

• Course Director: Sundararajah Thevananther, PhD
• Co-director William Craigen, MD, PhD
• 4 one-hour translational research seminars of choice
• 4 times per year School-wide CTR-CAQ seminar
  • Open to all and required for CTR-CAQ students
  • Translational researcher guest faculty invited by CTR-CAQ students and faculty
  • CTR-CAQ students host and participate in guest speaker selection and invitation
  • CTR-CAQ students meet with guest speaker
  • One of the seminars coincides with annual CTR-CAQ retreat (annual retreat can count for experience credit hours)

1 Credit/year
Clinical Translational Research Experience (CTRE) course

- Course Director: Igna Van den Veyver, MD
- Co-director: Fred Pereira, PhD
- 12 half days “experience” per year – starts term 2 of year 1
- Guided by CTR-CAQ mentor
- Exposure to clinical medicine and clinical research in field of research interest
  - Mostly year 1
- Capstone project
  - Mostly year 2
- BCM affiliate locations

2 Credits/y – 12 half days/y
Total 4 credits
Preparations before going to clinics

• Starts once student is admitted to CTR-CAQ
• Insurance
  • same type of malpractice insurance as medical students
  • even though you do NOT participate in care you are covered
• Background checks
• HIPAA and CITI training
• IRB experience (as part of PSTRW course)
CTR-CAQ mini white coat ceremony

• After term 1 (~end of OCTR course)
• Has been done in TBMM for the last several years before the start of clinical projects.
  • Celebrates your entry into clinical research environment
  • Privilege to train in clinical learning environment
  • Representing the program and knowing your role and responsibilities
  • Professionalism in clinical learning environment
  • The do’s and don’t’s in clinics as a CTR-CAQ student
  • Dress code
CTRE course Year 1: clinical research experience

• Directed by CTR-CAQ mentor (others can help)
• Term 2 – Term 5 year 1 (can overflow to year 2)
• Exposure to clinical medicine in area of interest
• Exposure to clinical research
  • Observe clinical research activity and begin to develop ”capstone project”
• Guided flexibility – role of IGC and CTR-CAQ mentor
• Varies depending on mentor and student experience
• Experiences can transition in focus as student progresses
CTRE course Year 2: capstone project

- Directed by clinical translational research mentor (others can help)
- Capstone project proposal (short -- not a thesis proposal or QE proposal!)
- Conduct capstone project
- Varies depending on mentor, research field and setting, and prior student experience
- Options:
  - Can vary from case series to participation in trials
  - Must be feasible in allotted time
  - Oversight by IGC
CTRE Oversight

• Graded as: pass – incomplete – fail

• Brief proposal of activities is required for Term 1 year 1
• Clinical activity reports - other terms
  • Reviewed by CTR-CAQ mentor and course directors
• Evaluation forms for student and mentor (twice per year)
• Present summary to IGC at scheduled meetings (~ every 6 months)
Clinical Translational Research Certificate of Added Qualification

Prepare to Lead Translational Research Teams

Baylor graduate students in their first or second year who are interested in a career focused on translating biomedical discoveries into molecular medicine advances to benefit human health are invited to apply for the Clinical Translational Research Certificate of Added Qualification (CTR-CAQ) program. Participants will acquire the foundational knowledge and professional skills required of effective leaders of translational research teams.

The CTR-CAQ is a two-year program run in coordination with our seven interdisciplinary Ph.D. programs so that it will not slow down your progress with your thesis research. You and your mentors will design your clinical translational research work so that it integrates with or complements your thesis research. Each year, 30 students will be selected to participate.

The CTR-CAQ program will be supported by an NRSA Institutional Predoctoral Training Grant (T32) from the National Institute of General Medical Sciences. We anticipate funding for eight students beginning in the summer of 2020. See the application for information on eligibility and to apply for support by the T32.

CTR-CAQ Courses

- Orientation to Clinical Translational Research (OCTR): Topics covered include T1-T4 translational research, study design for randomized clinical trials and retrospective studies, Good Manufacturing Practice facilities, informed consent, regulatory affairs, Institutional Review Board.
- Practical Skills in Translational Research Workshops (PSTRWS): Case-based or project-based skills development pertaining to clinical research proposal development, sample size and power calculations, retrospective studies, prospective early clinical trials, biobanking research, databases and data management.
- Clinical Translational Research Seminars (CTRS): translational research seminars given by guest faculty invited by CTR-CAQ faculty and students. Students have opportunity to interact with guest faculty in small, informal group setting.

Clinical Translational Research Experience (CTRE): Students learn about clinical aspects of their area of research interest through exposure to clinical medicine and clinical research, and develop a short capstone project in consultation with their CTR mentor.

You will:

- Gain knowledge of the ethical, regulatory aspects and practical conduct of clinical research
- Conduct hands-on work with peers in small groups to use this knowledge in simulated scenarios
- Master the skills necessary to work in and lead teams of researchers
- Participate in clinical/translational conferences and meetings where you will learn from and interact with experts in translational research
- Complete a capstone project with mentorship from your chosen clinical translational research mentor who will introduce you to clinical research

Clinical Translational Research Mentors

Baylor College of Medicine Graduate School of Biomedical Sciences is embedded within a leading health sciences university with a top-ranked medical school and located in the heart of the world’s largest medical complex. This provides access to many exceptional clinical translational research mentors for our students. You will have the opportunity to select mentors from:

- Asthma Clinical Research Center
- Center for Cell and Gene Therapy
- Dan L. Duncan Institute for Clinical and Translational Research
- Laster and Sue Smith Breast Center
- Pediatric Clinic at Texas Children’s Hospital
- Tropical Medicine Clinic
- Children’s Nutrition Research Center
- Juvenile Research Center
- And many more clinical research centers and clinics
CLINICAL TRANSLATIONAL RESEARCH CERTIFICATE OF ADDED QUALIFICATION

The vision of Baylor College of Medicine is to improve health through science, scholarship and innovation.

Realizing this vision requires providing the next generation of translational research leaders with the knowledge, skills and experience necessary to apply the knowledge gained from the basic sciences to address clinical and community healthcare needs.

Baylor graduate students in their first or second year who are interested in a career focused on translating biomedical discoveries into molecular medicine advance to benefit human health are invited to apply for the Clinical Translational Research Certificate of Added Qualification (CTR-CAG) program. Participants will acquire the foundational knowledge and professional skills required of effective leaders of translational research teams.

YOU WILL:

- Gain knowledge of the ethics, regulatory aspects and practical conduct of clinical research
- Conduct hands-on work with peers in small groups to use this knowledge in simulated scenarios
- Master the skills necessary to work in and lead teams of researchers
- Participate in clinical/translational conferences and meetings where you will learn from and interact with experts in translational research

For a full listing of BCM research centers, visit www.bcm.edu/researchcenters.

YOUR MENTORS

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- BCM adult outpatient clinics
- Center for Cell and Gene Therapy
- Dan L. Duncan Institute for Clinical and Translational Research
- Lester and Sue Smith Breast Center
- Texas Children’s Hospital Fetal Center
- Texas Children’s Hospital pediatric clinics
- Tropical Medicine Clinic
- USDA Children’s Nutrition Research Center
- Vaccine Research Institute

And many more clinical research centers and clinics.
Small-group in person info sessions

April 14
• 11:30 – Cancer & Cell Biology (CCB)
• 12:15 – Development, Disease Models & Therapeutics (DDMT)

April 21
• 11:30 – Genetics & Genomics (GG) and Chemical, Physical & Structural Biology (CPSB)
• 12:15 – Immunology & Microbiology (IY)

April 28
• 12:00 – Neuroscience (NE) and Quantitative & Computational Biosciences (QCB)
Annual program retreat

• End of August
• One day
• Students who finished the two years must present
• Other CTR students can present
  • Student submits abstract (end of term 5; with project summary)
  • All will have posters; some selected for talks
• Leadership opportunity: retreat committee
• Students recommend and invite speaker
• Planned in person
Questions?

We look forward to receiving your application!

Contact:

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