Overview and Objectives:
The Independent Study within the T1 Translational track must incorporate human or the translational aspect of studies relevant to the candidate’s thesis or methodology/technique to be learned outside the scope of the research mentor’s laboratory. For the latter, the candidate must identify a specific laboratory to acquire the skills and written agreement of the research expertise mentor/supervisor. Prior to the commencement of MS directed research/independent study, a brief proposal outlining the goal(s), rationale, objectives or specific methodologies to be learned, and relevance to the overall thesis is submitted for review and approval by the research mentor and course director.

Course Design:
- 1-3 credits, spanning up to 2 consecutive semesters.
- Must be taken for a grade.

Grading criteria: Each item below comprises 25% of the letter grade.
1. Submission of initial translational practicum proposal outlining Rationale, Goals and Learning Objectives, Relevance to their thesis and/or research field that is approved by course director (3-5 pages with unlimited citations).

2. Completion of self-reflection essay submitted within 2 weeks of practicum completion addressing the following (5 page limit, will be attached to initial proposal for final grade at the conclusion of the practicum):
   - Define and refine a testable hypothesis within the scope of the thesis work
   - Identify and learn assay(s) or methodology that specifically address elements of the testable hypothesis that is within expertise of their laboratory mentor
   - Interpret the findings of assays/methodology performed: was the testable hypothesis proven or disproven? If not, why?
   - Identify pitfalls/ alternative strategies if the conclusions are not anticipated
   - Identify the next step in logical progression of the work being done
   - Create a deliverable product: Plans to submit as abstract, obtain data for part of manuscript, grant proposal, or other deliverables.
   - Describe core competencies [http://www.icre.pitt.edu/cbe/competencies.html](http://www.icre.pitt.edu/cbe/competencies.html) that were addressed and provide key evidence.

3. Submission of completed laboratory notebook for review by course director
4. Mentor’s written assessment that addresses the following:
   a. quality of work performed
   b. scientific proficiency gained
   c. time management
   d. team work
   e. presentation skills during lab meeting.
Competencies:

**Problem Formulation:** Propose significant and novel empirical, testable, hypothesis-driven research questions using, where appropriate, different disciplines and community engagement. Critically review published studies that use various research methodologies and identify possible sources of bias and potential health disparities therein.

**Methodology:** Design basic features of research protocols based on specific research questions, appropriately addressing bias. Compare strengths and weaknesses (feasibility, efficiency, generalizability, validity, and ability to derive unbiased inferences) of different research paradigms and methodologies.

**Applied Analytical Techniques:** Describe appropriate data analysis plans for addressing specific research questions.

**Oral Communication:** Prepare and deliver oral presentations of research at a variety of stages to a range of audiences and respond to constructive criticism and questions.

**Written Communication:** Prepare written presentations of research at a variety of stages to a range of audiences, technical and non-technical, and respond to constructive criticism and questions.

**Multidisciplinary Teamwork:** Demonstrate behaviors that allow them to be an effective member of a multidisciplinary team including generating multiple points of view, contributing to the development of new ideas, and demonstrating conflict management skills. Demonstrate behaviors of a responsible mentee. Engage in self-assessment, recognizing and addressing strengths and weaknesses in their research skills.
CLRES 2085 Translational Independent Study

Proposal Submission Cover Sheet

Candidate’s Name:
Mentor’s Name:
Mentor’s Email:

Proposed # of credits:
Date:
Term and Year:

Focus:
The Independent Study within the T1 track must incorporate human or the translational aspect of studies relevant to the candidate’s thesis or methodology/technique to be learned outside the scope of the research mentor’s laboratory. For the latter, the candidate must identify a specific laboratory to acquire the skills and written agreement of the research expertise mentor/supervisor.

Grading criteria:

1. Submission of initial T1 independent study proposal outlining Rationale, Goals and Learning Objectives, Relevance to their thesis and/or research field that is approved by course director. Candidates must attach proposal to this cover sheet (3-5 pages with unlimited citations) and submit to course director for review and pre-approval.

2. Completion of self-reflection essay submitted within 2 weeks of independent study completion that addresses the following (3 page limit, will be attached to initial proposal for final grade):

   Scientific Methodology learned
   a. Learn to define/refine a testable hypothesis within the scope of the thesis work
   b. Identify and learn assay(s) or methodology that specifically address elements of the testable hypothesis
   c. Be able to interpret the findings of assays/methodology performed: was the testable hypothesis proven or disproven? If not, why?
   d. Be able to identify pitfalls/alternative strategies if the conclusions are not anticipated
   e. Be able to create a deliverable product: Plans to submit as abstract, part of manuscript, grant proposal, or other deliverable?

3. Submission of completed lab notebook and Mentor’s written assessment that addresses the following:

   Research Integrity and Core Competencies
   f. Be able to write a daily scientific notebook and submit for review at the end of practicum (it will be returned to you after review). Must contain a daily entry of work done, begin with a question/or goal, Methods used, Data/Findings, Interpretation of findings, Conclusion/Next step. This must be written in pen, legible.
g. Assessment by mentor on quality of work performed, scientific proficiency gained, time management, team work, and presentation skills during lab meeting.

________________________________________
Candidate’s signature and date

________________________________________
Mentor’s signature and date

________________________________________
Course Director’s signature