

## Clinical Laboratory Science Graduate Student Research without Funding



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## Objectives

1. Discuss common issues related to CLS masters student research.
2. Identify strategies utilized by the CLS masters program for student research
3. Summarize research outcomes of UTMB CLS masters program.

## Introduction

- ▶ CLS Master Program started with 6 students in 2011 in three tracks.
  - CLSN-MS
    - Masters of Science in Clinical Laboratory Science for Science Graduates
  - CLSC-MS
    - Masters of Science in Clinical Laboratory Science for certified CLS Graduates
  - TRM-MS
    - Masters of Science in Transfusion Medicine for certified Specialist in Blood Banking (SBB)

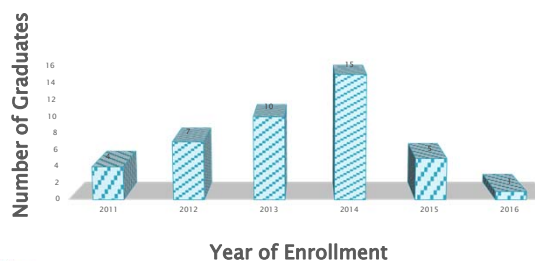
## Program goal and tracks

- ▶ The goal of Clinical Laboratory Science Master's program is to provide quality laboratory practitioners with Evidence based Laboratory Science practice and leadership skills to benefit the patients and profession that they serve and to contribute to the scientific knowledge in CLS.
- ▶ The culminating experience of the master program in clinical laboratory science is the completion of a thesis.

## Outcomes

- ▶ A total of 42 students have graduated from the CLS Masters Program, by the end of 2017 summer.
  - 42 graduates defended a thesis.
- ▶ Currently, 51 students are enrolled in the CLS Masters Program.

## GRADUATES OF CLS MASTERS PROGRAM



## The Research Process

1. The students are provided a list of mentors and are encouraged to speak to them regarding ongoing or new projects.
2. Students identify a research topic and submit a brief description to the masters committee (consisting of 4 faculty + Program Director) for approval. A thesis chair is assigned.
3. Students enroll into the CLS Research course in Fall semester and complete a research proposal with the help of their thesis chair.
4. Students defend proposal and obtain committee feedback/approval followed by IRB approval.

## The Research Process (cont'd)

5. Students enroll into the second research course which is focused on data collection and analysis and present their work in progress to the masters committee.
6. Students enroll into the Thesis course and write the thesis under the supervision of thesis chair. Thesis defense occurs at the final stage of this process.
7. Masters committee feedback and revisions are provided and final revised thesis is submitted.



## Common Issues

- ▶ Availability of interesting projects
- ▶ Faculty availability to mentor students
- ▶ Delays in obtaining data from Electronic Medical Record (EMR)
- ▶ Funding

## Solutions

- ▶ Projects/Mentors
  - Utilize outside mentors with ongoing projects
  - Encourage students to find projects where they work
    - Requires permission from employer institution



## Solutions

- ▶ Funding
  - Encourage students to conduct bench research with mentors that have funding
  - Utilize affiliated hospital information systems to design projects using existing data
  - Utilize publicly available data such as CDC and AHRQ
    - [https://www.cdc.gov/nchs/nhanes/nhanes\\_questionnaires.htm](https://www.cdc.gov/nchs/nhanes/nhanes_questionnaires.htm)
    - <https://www.hcup-us.ahrq.gov/databases.jsp>
    - <https://www.cdc.gov/nchs/nhis/data-questionnaires-documentation.htm>

## Strategies

- ▶ Encourage students to solicit existing funded research projects with mentors outside the CLS department first.
- ▶ Distance students generally find projects at their place of employment and are supervised by pathologist/lab director.
- ▶ Remaining students work with CLS program faculty and utilize EMR or publicly available data.

## Example 1

- ▶ **Title of Thesis**
  - Determination of the Number and Severity of Diagnostic Errors in Patients Evaluated with Laboratory Tests for Bleeding and Thrombotic Disorders
- ▶ **Funding**
  - None, utilized UTMB EMR under the supervision of a mentor in Department of Pathology
- ▶ **Dissemination among the scientific community**
  - Publication: Sarkar MK, Botz CM, Laposata M. (2017) An assessment of Overutilization and Underutilization of laboratory tests by Expert Physicians in the Evaluation of Patients for Bleeding and Thrombotic Disorders in Clinical Context and in Real-Time. *Diagnosis*: Vol.4(1):21-26

## Example 1

- ▶ **Awards/Accolades**
  - Nominated as 2017 Choosing Wisely Champion by American Society for Clinical Pathology (ASCP)
  - Travel award from Department of Pathology
  - Travel award from Johns Hopkins School of Medicine
  - Recently been chosen to be a member of the High Value Pillar: Lab Stewardship program
- ▶ **Impact**
  - Graduate is a member of the Coagulation Diagnostic Management Team at his place of employment

## Example 2

- ▶ **Title of Thesis**
  - Correlation of Viral Load and CD4+ T-cell count to symptomatic HIV-associated pain
- ▶ **Funding**
  - None, utilized UTMB EMR data under the supervision of a mentor in Department of Neuroscience & Cell Biology
- ▶ **Dissemination among the scientific community**
  - Poster presentation at Texas Society of Allied Health Professions 40<sup>th</sup> Annual Conference
  - Publication in progress

## Example 3

- ▶ **Title of Thesis**
  - Evaluation of the inflammasome in HIV patients at UTMB
- ▶ **Funding**
  - None, utilized UTMB EMR data under the supervision of a mentor in Department of Neuroscience & Cell Biology
- ▶ **Dissemination among the scientific community**
  - Publication in progress

## Example 4

- ▶ **Title of Thesis**
  - Evaluation of laboratory turnaround time for stroke patients
- ▶ **Funding**
  - None, utilized hospital EMR data under the supervision of a faculty in the CLS Department
- ▶ **Dissemination among the scientific community**
  - Presentation at place of employment
- ▶ **Impact**
  - Graduate was promoted to Lab Director position

## Example 5

- ▶ **Title of Thesis**
  - Role of C- Reactive Protein in Cardiovascular Risk for Obese Patients
- ▶ **Funding**
  - None, utilized publicly available National Health and Nutritional Examination Survey (NHANES) data under the supervision of faculty from CLS Department
- ▶ **Dissemination among the scientific community**
  - Manuscript and publication in progress

## Example 6

- ▶ **Title of Thesis**
  - Use of the Learning Objectives by Healthcare Students at a Phlebotomy Workshop
- ▶ **Funding**
  - None, utilized St. Vincent's Student run free clinic Phlebotomy workshop as data source under the supervision of faculty in CLS Department
- ▶ **Dissemination among the scientific community**
  - Poster presentation at Texas Society of Allied Health Professions 39th Annual Conference

## Example 7

- ▶ **Title of Thesis**
  - Evaluation of KRAS mutations in colorectal cancer patients tested at the Molecular Diagnostics laboratory at the University of Texas Medical Branch
- ▶ **Funding**
  - None, utilized UTMB EMR data under the supervision of faculty in Clinical Molecular Diagnostics Lab, Department of Pathology
- ▶ **Dissemination among the scientific community**
  - Poster presentation at 2016 Texas Association For Clinical Laboratory Science Conference.

## Example 8

- ▶ **Title of Thesis**
  - Analysis of chromosomal microarray results at the University of Texas Medical Branch
- ▶ **Funding**
  - None, utilized UTMB EMR data under the supervision of faculty in Clinical molecular Diagnostics lab, Department of Pathology
- ▶ **Dissemination among the scientific community**
  - Presentation at lab
  - Manuscript in progress

## Example 9

- ▶ **Title of Thesis**
  - Detection of Telomerase Activity in Fetal Membranes from Normal and Premature Deliveries
- ▶ **Funding**
  - None, utilized data from an existing study under supervision of Department of Obstetrics and Gynecology
- ▶ **Dissemination among the scientific community**
  - Presentation at lab
  - Manuscript in progress

## Discussion/Questions?

