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Harvard Catalyst TL1 Program Summary

Insights to Inspire: Team Science

• Strengthened interactions between PhD graduate students in the TL1 Program with MD/PhD students in the Harvard Medical School T32 Medical Scientist Training Program.
• Held bimonthly joint grand rounds followed by a thesis research presentation by an upper-level TL1 or MD-PhD student in an area that directly relates to the clinical case.
• Students met over dinner (virtually this year) to discuss their scientific interests and the clinical implications of their work with one another and with key faculty members.
• These enhanced interactions between basic/translational science graduate students in TL1 and physician-scientist trainees and faculty involved in clinical/translational research provided a basis for future collaborative efforts involving team science between clinicians and translational/basic scientists.
• Implemented a required course which uses case studies of actual drugs and trials to provide examples of how team science can lead to changes in practice.

Issue Being Addressed: Translational medicine increasingly involves teams of scientists, clinicians, and research staff in an effort to move discoveries from the "bench to the bedside". Traditionally, training programs have provided a "siloded" approach to research, in which individual efforts in discovery are pursued within each program, and there's little opportunity for interaction between trainees in different programs. This approach undermines the potential for synergy between research groups and could delay the translation of basic research discoveries into improvements in human health.

Approaches Implemented:

1. We have developed a program that enhances interactions between the Ph.D. students in this TL1 program and the Leder Human Biology (LHB) Program with the MD-PhD students in the Harvard Medical School (HMS) T32 Medical Scientist Training Program. This bimonthly joint Grand Rounds involves a clinical presentation of an actual patient case by a physician-scientist trainee- typically a medical resident at Brigham and Women's Hospital (BWH), which is then followed by a research presentation in which an upper-level TL1 or MD-PhD graduate student presents their thesis research in an area that directly relates to the clinical case. The clinical aspects of the case are reviewed and discussed by one of the leading clinical educators at BWH (Professor Emeritus Marshall Wolf, MD) along with the TL1
Principal Investigator (Professor Thomas Michel, MD, Ph.D.). The students meet together over dinner (virtually this year) to discuss their scientific interests and the clinical implications of their work with one another and with key faculty members. This Grand Rounds program directly enhances interactions between basic/translational science graduate students in the TL1 and physician-scientist trainees and faculty involved in clinical/translational research- providing a basis for future collaborative efforts involving team science between clinicians and translational/basic scientists.

2. We have implemented a required course entitled "Case Studies in Human Biology and Translational Medicine" in which the first-year TL1 graduate students read clinical papers and participate in discussions led by clinical investigators to review how basic discoveries led to the development of new drugs and affected medical care through team science. The focus is on studies in diabetes (SGLT2I therapies) and hypercholesterolemia (statin therapies). This course uses case studies of actual drugs and trials to provide examples of how team science can lead to changes in practice.

Outcomes/Measures Used to Determine Success: We are conducting a poll to assess the impact of these two programs on the students' understanding of how team science can lead to the identification and validation of new drugs and approaches to diagnosis and therapy.

Description of Results: A survey is being conducted, and results are not yet available.

Lessons Learned: We are aware from informal discussions that these programs are deeply valued by the students. Yet it has been a challenge to fully develop the concepts of team science during a time in which we have been forced to do only "remote learning". We feel that the resumption of in-person conferences and classes in the upcoming academic year should serve to enhance the impact of these programs.