

Developing an Advanced Sciences Immunology and Immunotherapy Course for the University of Colorado School of Medicine Trek Curriculum

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BACKGROUND

The ability to critically evaluate data related to the function of the immune system and further develop hypotheses and predictions of immune relevance is essential to the practice of medicine. Providers who have an understanding of both the basic medical and clinical science that underlies the immune system as it relates to disease and therapy are best positioned to provide optimal care as it evolves throughout their careers.

Evidence suggests that learning basic medical science concepts alongside clinical experiences strengthens understanding, retention, and utilization of these concepts in the future. In their current curriculum, students at the University of Colorado gain an understanding of the foundational concepts underpinning the immune system separated from the clinical experience.

For the new Trek curriculum, we intend to teach the concepts of immunology alongside integrated clinical experiences in order to promote retention and strengthen connections between basic medical and clinical science.

INTRODUCTION

- Immunology is a multi-faceted scientific field that addresses a wide range of clinically relevant topics. Coverage of these foundational topics inherently intertwines basic science with complex immunopathology, clinical laboratory testing and scientific innovation relevant to the continually evolving practice of medicine.
- This advanced sciences course was designed to offer an integrated presentation of basic science in the context of clinical examples that explicitly makes connections among concepts to lead to deeper understanding and enhanced long-term retention.
- The aim of the immunology and immunotherapy Year 3 advanced sciences course is to prepare the medical students of the University of Colorado School of Medicine to be life-long learners capable of evaluating and integrating new knowledge into their clinical practice.

OBJECTIVES

- To design an innovative advanced sciences curriculum that fosters learning the knowledge and skills required to translate immunology and immunotherapy to the current practice of medicine.
- To intertwine basic medical science concepts with clinical applications to promote a 'growth mindset' for a medical specialty founded in critical thinking.
- To foster the ability to make informed, evidence-based decisions in the context of uncertainty.

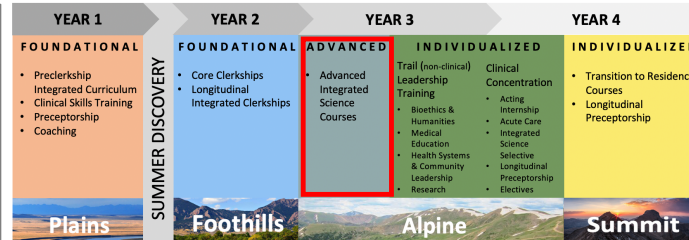


FIGURE 1. CUSOM TREK CURRICULUM

A high-level visual overview of the Trek curriculum beginning in the Plains of Year 1 through the Summit of Year 4. Advanced integrated science courses will be offered during the fall of Year 3.

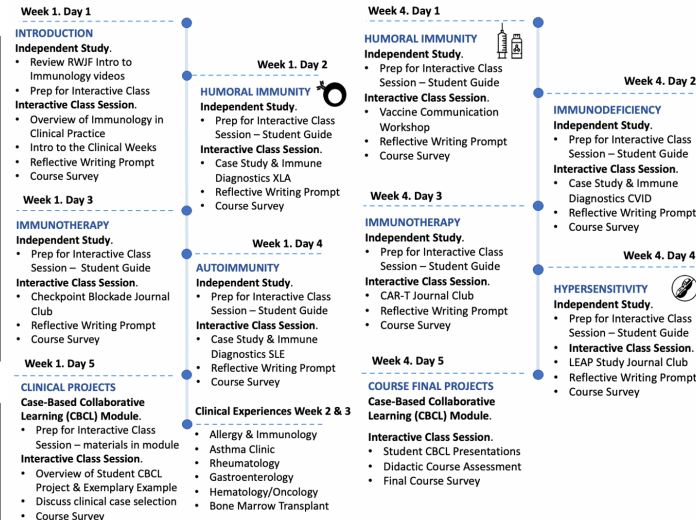


FIGURE 2. IDPT8055 PILOT COURSE OVERVIEW

A high-level visual overview of IDPT8055 Immunology & Immunotherapy. Weeks 1 and 4 are didactic. Weeks 2 and 3 are clinical experiences.

METHODS

- A curriculum consisting of ten didactic modules was developed and piloted with third year medicine students in February 2021 (F.2). Didactic classroom sessions occurred weeks 1 and 4. Authentic, clinical experiences took place weeks 2 and 3.
- A post-pre survey was used to assess improvements in knowledge and attitudes towards advanced immunology topics, as well as impressions of the modules and overall learning experience.

RESULTS

- The didactic modules created as a result of this CUSOM Teaching Scholars Program project are a combination of asynchronous, independent, self-guided preparation and synchronous, student-centered, interactive class sessions.
- The didactic modules include clinical pathological conferences, patient panels, focused journal article discussions, vaccine communication strategies, immunologically-relevant case studies and immune diagnostics.
- The individual clinical experiences include assignments to one of a variety of immunologically-relevant medical practices, such as allergy and immunology, gastroenterology, rheumatology, and hematology and oncology.
- The final course project was designed to integrate basic medical science and clinical science through the creation of a case-based collaborative learning module focused on an immunologically-relevant case selected by each medical student from their individual clinical experiences.
- Post-pre survey results were not yet collected at the time of this submission due to the timing of the pilot course, February 2021.

DISCUSSION

- IDPT8055 Immunology and Immunotherapy was designed to facilitate medical students' connection of the didactic concepts and knowledge of immunology with the clinical practice of immunology-based specialties.
- Future directions are to offer the pilot course one to two times before the official rollout of the course (Fall 2023) to gather feedback from medical students for modifications for improvement of the course.

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