

# **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 break down the barriers between basic medical and clinical science.

## **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 and to foster the ability to make informed, evidence-based decisions in the context of uncertainty.

## **METHODS**

This course aims to facilitate medical students' connection of the didactic concepts and knowledge of immunology with the clinical practice of immunology-based specialties. This will be accomplished through the creation of a variety of didactic modules in the classroom offered alongside authentic experience in the clinic.

## **RESULTS**

The didactic modules created are a combination of asynchronous, independent, self-guided preparation and synchronous, student-centered, interactive class sessions. Example didactic modules include clinical pathological conferences, patient panels, focused journal article discussions, vaccine communication strategies, case studies and immune diagnostics. The individual clinical experiences will include assignments to one of a variety of immunologically-relevant practices, such as allergy and immunology, gastroenterology, rheumatology and hematology and oncology. The final course project will integrate basic medical science and clinical science through the creation of a case-based collaborative learning module centered on a case selected by each medical student from their individual clinical experiences.

## **DISCUSSION**

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 science 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 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.