Team Approaches To Understanding The Role Of Innate Immunity In Pulmonary Disease

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Multi-disciplinary/multi-university collaboration is the fastest growing authorship structure in US science and engineering, a structure accelerated by the recognition that properly effected collaborations enhance creativity, increase competitiveness for funding and accelerate discovery in complex societal health problems. As a result, team-based research is increasingly being prioritized by major funding agencies, including the National Institutes of Health (NIH). A notable example is the Clinical and Translational Sciences Award (CTSA), an NIH Roadmap initiative that supports infrastructure to stimulate the speed and effectiveness of translational research (translational research refers to the development of devices, drugs, interventions or public health policies that are applied to change the effectiveness of health care delivery).

At the UTMB CTSA, we have developed an implementation model for multidisciplinary translational teams (MTTs) using the CTSA infrastructure. The MTT is a unique hybrid structure that includes components of both an academic research team (knowledge generation and training) with those of a product-driven business team (developing a translational product). In this talk, I will describe an exemplar of how the MTT structure promotes innovation in translational research. An MTT composed of pulmonologists, bioinformaticians, molecular biologists, cellular biologists and protein chemists have assembled to focus on diagnosis and management of severe (glucocorticoid-resistant) asthma. This group's interactions has revealed novel insights into molecular phenotyping of asthma, identification of its component pathophysiological processes (endotypes), and application of analytic methods for endotype prediction based on inflammatory protein patterns produced by the innate immune response. The MTT has developed new quantitative proteomics technologies that reveal the dynamic connectivity of the mucosal innate immune response and the genetic networks under their control. As a result, this MTT has pioneered methods for classifying, identifying and potentially modulating the innate pathway in human airway disease.