

Chronic itch (greater than 6 weeks duration) is a highly prevalent and debilitating symptom, underlying different disorders with largely unmet clinical needs. These include; eczema, dry skin syndrome or a disease of unknown cause, chronic idiopathic pruritus, which often affects elderly individuals. In this project we propose to investigate how chronic itch develops, by focusing on three likely critical and interdependent players in this pathology: 1, the outermost skin layer-epidermis that has a direct contact with an outside world; 2, cutaneous immune system and 3, nervous system. Both, the immune and nervous systems play a key role in sensing potential threats, and orchestrate the response of the organism that manifests in a desire to scratch. We will test whether communication between these three skin compartments, that leads to the chronic itch, is dependent on a protein Regnase 1. Regnase 1 has never been implicated in the pathology of chronic itch. Therefore, these studies may bring new insights into the mechanisms underlying chronic itch-associated disorders.