

Neutrophils, one of the most abundant immune cells in systemic circulation, constitute the first line of defense against pathogenic bacteria or fungi. However, neutrophils can also contribute to variety of pathologies associated with chronic inflammation. These include still uncured, chronic inflammatory skin disease-psoriasis. One of the critical features of psoriasis is unwanted, hard-to-control itch. Itch which evokes desire to scratch can worsen skin conditions and lead to development of new pathologic changes in the skin. Therefore, itch is a potential therapeutic target for treatment of chronic inflammatory skin diseases, including psoriasis. However, there is still little knowledge about mechanisms underlying chronic, unwanted itch in psoriasis and related skin disorders, which limits treatment options for progressing pathologic, itchy skin changes. In this project we will determine the role of neutrophils, and one of the main proinflammatory neutrophil components, so called serine proteases, in itch-mediated skin changes in psoriasis and other neutrophil-dependent chronic inflammatory skin diseases. There is a great interest in unraveling interactions between immune cells and nervous system that transmits pain or itch sensation in so called barrier organs, such as skin. Skin is one of the largest and the most exposed organ in human body, and the studies proposed can contribute to better understanding the dialog between neutrophils and nervous system in the skin.