Researchers at the University of South Florida have developed protein acyl transferase (PAT) inhibitors for the treatment of autopalmitoylation activity, as well as for the treatment of various conditions and diseases including cancer.

Protein palmitoylation is the attachment of fatty acids to various amino acids including cysteine, serine and threonine. The purpose of palmitoylation depends on the particular protein in question; however, it is known to play an important role in protein-protein interactions, subcellular trafficking, and protein membrane association. Researchers have now discovered that the dysregulation of protein palmitoylation, sometimes known as autopalmitoylation, may be a main factor in a number of human diseases including cancer, cardiovascular diseases, neurological diseases, and infectious diseases. This highlights the need to develop a way to inhibit this dysregulated activity.

USF researchers have developed a PAT inhibitor compound to treat dysregulated autopalmitoylation activity and multiple cancer types including colorectal cancer, leukemia, and cervical cancer. The compound identified will be able to inhibit the PATs that modify the Ras oncogene protein, which is a protein closely linked to many types of cancer. Mutations involving the Ras proteins have been estimated to contribute to the pathology of over 30% of all human cancers. Palmitoylation is required for the function of three of the four forms of Ras. Therefore, this method will inhibit or hinder cancerous Ras protein production by inhibiting dysregulated palmitoylation or autopalmitoylation activity. This method provides a promising new tool for cancer cell inhibition.

**ADVANTAGES:**

- Inhibits PATs that modify the Ras oncogene protein
- Inhibits dysregulated protein autopalmitoylation
- Inhibits cancer cell function
- May treat many other diseases

**A PAT Inhibitor for the Treatment of Cancer and Other Disorders**

![Relative BODIPY Fluorescence](image)

Inhibition of Autopalmitoylation Activity Measured by a Gel-Based Assay with Ten Individual Compounds (43-28)