

A group of small GTPases consist of over twenty protein families in the super class P-loop. It has a very diverse cell functions. Small GTPases regulate the formation of vesicular follicles, cytoskeleton and nuclear transport. They participate also on cell proliferation and signaling. The aim of my work is to find important amino acids that define family and distinguish each other. I focus on families Arf, Rab, Ran, Ras and Rho. At the Rho family I am also devoted to classes Rho, Rac and Cdc42. Amino acids are identified using bioinformatic programs selected Consurf and Sca5. The objective is also to test P2RANK specialized tool developed at the Charles University in Prague that predict ligand binding sites from protein structure in different families. Founding amino acids can have a big role in the functional divergence of individual families and classes of small GTPases and can be the basis for future study example for the proliferation of cancerous cells.

1.1 Keywords