

## **ABSTRACT**

The protein p130Cas (human ortholog BCAR1) is a major substrate for phosphorylation by the Src family kinase and plays a central role in oncogenic transformation. Increased level of BCAR1 correlates with primary tumour growth and cancer progression. Localized to focal adhesion, p130Cas serves as a mechanosensor and mediates key interactions with the extracellular environment. The structure of p130Cas is crucial for its function, mainly the anchoring domains SH3 and CCH, together with the substrate domain which is extended when under tension. This Master's thesis presents a newly developed FRET mechanosensor based on the structure of p130Cas. The sensor utilizes the anchoring domains of p130Cas for proper localization to focal adhesions, where it can detect tension in living cells.

### **Key words:**

p130CAS, FRET, focal adhesions, mechanosensing