

NG2 is a transmembrane glycoprotein mainly expressed in developing tissue, and often re-expressed in tumor cells. NG2 glycoprotein is an important regulator of cell migration and adhesion. Increased expression of NG2 enhances the metastatic potential of cancer cells. However, the molecular mechanisms of these processes are still not fully understood. An increasing number of evidences, in recent years, have shown that NG2 can be responsible for Rho/ROCK activation, which is essential for effective amoeboid invasiveness.

In this thesis, we analysed the role of NG2 glycoprotein, especially the role of its PDZ-binding motif on amoeboid phenotype induction, and activation of Rho/ROCK signaling.

Our results demonstrate the importance of the NG2 PDZ-binding motif on mesenchymal-amoeboid transition of cells in a 3D environment. Surprisingly, they show that the expression of both the NG2 cytoplasmatic domain and the truncated version, lacking the PDZ-binding motif, do not change the amount of Rho-GTP or the activation of the Rho/ROCK signaling pathway in 2D.