1. 세미나 제목: Regulation of actin polymerization by calcium through the formin INF2

초록: INF2 (inverted formin 2) is a member of the formin family that accelerates actin polymerization. In cells, INF2 is involved in actin polymerization-mediated mitochondrial fission and maintenance of Golgi architecture. A common mechanism for formin regulation is auto inhibition, through the interaction between the N-terminal diaphanous inhibitory domain (DID) and C-terminal diaphanous autoregulatory domain (DAD). However, INF2 regulation is not directly related to this mechanism. Purified INF2 is always active and DID and DAD show low binding activity, which implies the involvement of unknown regulators. Mutations in DID region of INF2 link to two diseases, Charcot-Marie-Tooth disease and focal segmental glomerulosclerosis, and constitutively activate INF2. To find novel regulator protein and understand the relationship between INF2 mutation and pathogenesis, we performed bioID and found actin binding protein transgelin 2. Knockdown of transgelin 2 in U-2 OS cells showed enhanced INF2 function. Cell-free *in vitro* actin polymerization mediated by INF2 requires calcium and calmodulin, and the effect of purified transgelin 2 in this assay has not yet been tested. This work is will provide insight into a fundamentally new regulatory mechanism of INF2 and finally it will provide insights into the pathogenic mechanisms of INF2-linked diseases.

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