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Poster 3

## NMR studies on the Syndecan-4: Implication to High Order Multimerization

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Syndecan-4, a transmembrane heparan sulfate proteoglycan, is a coreceptor with integrins in cell adhesion. It has been suggested to form a ternary signaling complex with protein kinase C and phosphatidylinositol 4,5 bisphosphate (PIP2). Syndecans each have a unique, central and variable (V) region in their cytoplasmic domains and that of syndecan-4 is critical to its interaction with PKC $\alpha$  and PIP2. The solution conformations of free 4L and PIP2 bound form have been studied by NMR spectroscopy. Data from NMR and gel filtration chromatography indicate that cytoplasmic domain undergoes conformational transition in presence of PIP2. Solution conformations of free 4L have been determined by two-dimensional NMR spectroscopy and dynamical simulated annealing calculations. In free state, 4L forms a parallel dimer and the complex with PIP2 shows a tetrameric or high order multimeric conformation in solution. Overall three-dimensional structure of free 4L in solution exhibits symmetric dimer with two twisted strands packed parallel to each other. RMSD values between backbone atom coordinates for variable regions from Leu12 to Ala21 is 1.05Å but flanked N,C terminally constant

region (C1,C2) were unstructured. This results shows that PIP2 promotes oligomerization of syndecan-4 cytoplasmic domain for transmembrane cell adhesion signaling and variable region of 4L plays an important function in this signaling procedures.