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Cross-modulation of protein-protein and protein-glycan interactions is required for galectin functions

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Galectins are small soluble lectins involved in many biological processes such as proliferation, migration or apoptosis. Fourteen members of the galectin family have been identified in mammals and designated as galectin-1 to galectin-14. The common property of galectins is the presence of a carbohydrate-recognition domain (CRD) of about 130 amino acids with a highly conserved folding that confers affinity for galactoside containing glycans by which galectins acts through carbohydrate-dependent extracellular activities. In this regard, galectin inhibitors that block the carbohydrate recognition domain have been developed for cancer treatment. During the last years, we have demonstrated that galectin-1/oligosaccharide specificity is driven by galectin-1/membrane receptor interactions modifying cell/cell adhesion. In another hand we have also established that galectin-3 aggregation is induced by specific protein/glycan interactions resulting in lattice formation which strengthen cell-cell interactions under dragging forces imposed by the fluid flow acting on cell surface. Due to the many biological processes in which galectins are involved protein-sugar interactions are not specific; however protein-protein interactions are more specific to biological functions and thus a better pharmaceutic target for drug design.

Biography

Francoise Guerlesquin has completed her PhD at Aix-Marseilles University and her postdoc in ETH in Zurich. She is now permanent researcher at CNRS in Marseilles and she is team leader of an NMR group. She has published more than 110 papers in structural biology, and she is currently working on molecular assemblies.

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