

Adhesion Molecules in the Nervous System: Focus on F-Spondin

Molecules that regulate cell adhesion play many important roles in the nervous system, including the regulation of tissue morphogenesis, neurite outgrowth, cell proliferation, and synapse formation. R&D Systems offers a range of research reagents for the study of adhesion molecules such as extracellular matrix (ECM) proteins, integrins, cadherins, cell adhesion molecules of the Ig superfamily, proteoglycans, and more.

F-Spondin is a secreted ECM glycoprotein that was originally recognized for its high expression in embryonic floor plate. Its name derives from this localization (the floor plate), and its structural relationship to thrombospondin (TSP). F-Spondin contains an N-terminus with reelin-like and spondin-type domains, and a C-terminus with multiple type 1 TSP repeats. It was initially recognized for its neurite-outgrowth modulating activity. F-Spondin also appears to be a ligand for amyloid precursor protein (APP), the precursor for amyloid β , an aggregating peptide linked to Alzheimer's disease plaque formation.

Adhesion Molecule Products				Adhesion Molecule Products			
MOLECULE	PROTEINS	ANTIBODIES	ELISAs/ASSAYS	MOLECULE	PROTEINS	ANTIBODIES	ELISAs/ASSAYS
Agrin	R	R	R	Integrin $\alpha_5\beta_1$	H		
Cadherin-4/R-Cadherin	H	H		Integrin β_5		H	
Cadherin-6	H	H		Laminin $\gamma 1$		H R	
Cadherin-8	H	H		Laminin I	M		
Cadherin-11	H	H		Laminin S		H R Ch	
Cadherin-12	H	H		Laminin-1		M	
Cadherin-13		H		Laminin-5		H	
Cadherin-17		H		Mindin		H	
E-Cadherin	H M	H M	H M	NCAM-1/CD56	H	H	
N-Cadherin	H	H		NCAM-L1	H	H	H
P-Cadherin	H M	H M	H	Nidogen-1/Entactin	H	H	
VE-Cadherin	H	H M		R-Spondin 1		M	
Contactin-1, -2, -4, -5	H	H		F-Spondin	H	H	
DANCE		H		Tenascin C		H M	
Endocan	H M	H M		Tenascin R		H M R	
Fibronectin	H B	H		Thrombospondin-1	H	H	
ICAM-1/CD54	H M R	H M R	H M R	Thrombospondin-2	H	H	H
ICAM-2/CD102	H M	H M		Thrombospondin-4		H	
ICAM-3/CD50	H	H	H	Thrombospondin-5/COMP	H	H	
Integrin α_2 /CD49b		H M		Vitronectin	H B		
Integrin α_3 /CD49c		H M					

Key: H Human M Mouse R Rat B Bovine Ch Chicken

F-Spondin-induced Neurite Outgrowth

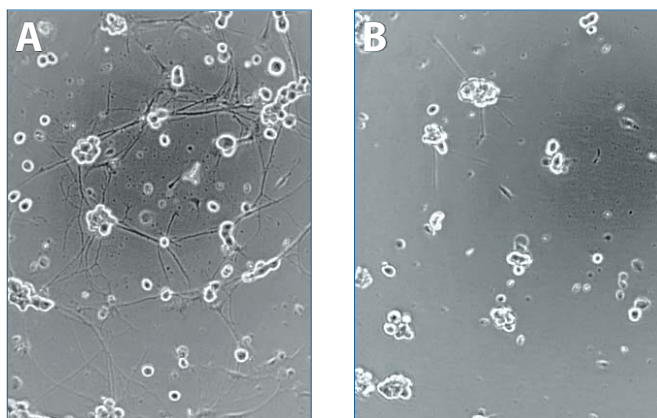


Figure 1. A: R&D Systems recombinant human F-Spondin (Catalog # 3135-SP), immobilized on a nitrocellulose-coated microplate, promotes neurite outgrowth in E13 chick DRG neurons when cultured in the presence of R&D Systems recombinant human β -NGF (Catalog # 256-GF). **B:** A control plate using the same conditions except without F-Spondin exhibits little neurite outgrowth.

Anti-MuSK Neutralizes Agrin-induced AChR Clustering

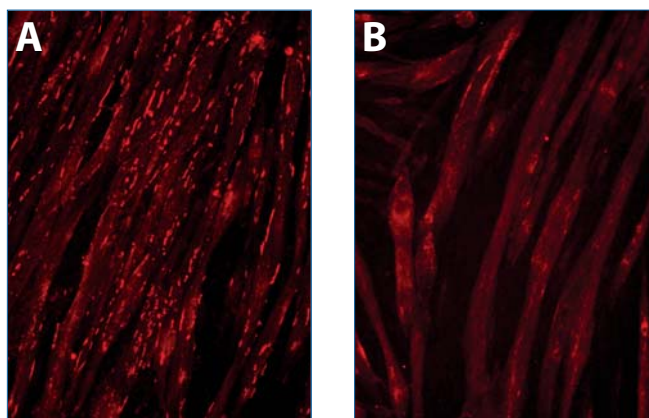


Figure 2. A: Myotubes differentiated from the C2C12 murine myoblast cell line were treated with R&D Systems recombinant rat agrin (Catalog # 550-AG) to cluster acetylcholine receptors (AChRs). **B:** Pre-treatment with R&D Systems goat anti-rat MuSK polyclonal antibody (Catalog # AF562) inhibits agrin-induced clustering. Cells were stained using a rhodamine α -bungarotoxin conjugate.