

Heterologous expression of newly identified galectin-8 from sea urchin embryos produces recombinant protein with lactose binding specificity and anti-adhesive activity

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Equally contributed to this study

TABLE I - Members of the galectin family in invertebrates

Name	Species	type	MW (kDa)	Cell types & tissues	Function
GALEC2a_SUBDO ¹	<i>Suberites domuncula</i> Porifera	tandem-repeat	33,091	extracted from axial filaments of the spicules	spicule growth, biosilica deposition; self-associate in the Ca ²⁺ presence; co-precipitates with Silicatein.
CaL ²	<i>Cinachyrella apion</i> Porifera	eight subunits of 15.5 kDa	124	extracted and purified from total animals	induces cell death; haemagglutinating activity towards human erythrocytes of all ABO groups.
GCG ³⁻⁵	<i>Geodia cydonium</i> Porifera	prototype and chimera oligomers	13,15,16 30,46, 62	extracellular fluid of the sponge	binding to terminal blood group A-related saccharides on polylactosamine-type glycans.
HOL-30 ⁶	<i>Halichondria okadai</i> Porifera	forming dimers of 60KDa	30	extract from homogenised organisms	agglutinate rabbit and human erythrocytes.
Nematogalectin A e Nematogalectin B ⁷	<i>Hydra and Clytia</i> Cnidaria	prototype forming trimer	28 120	proximal tubule (B) and distal tubule (A) (Desmonemes, stenoteles and isorhizas)	nematocyst tubules differentiation.
OvGalBP ⁸	<i>Onchocerca volvulus</i> Nematode (<i>filaria</i>)	tandem repeat	32.5	adult female	specifically bind IgE with a role in the pathophysiology of human filarial infection.
Hco-gal-1, Tco-gal-2 ⁹ Hco-GAL-3a Hco-gal-4 ¹⁰	<i>Hemonchus contortus</i> Nematode	tandem repeat	31-35	third stage larvae all life cycle stages, adult parasites	antigen of the sheep gastrointestinal nematode parasite.
Tci-gal-1 and -2 ¹¹	<i>Teladorsagia circumcincta</i> Nematode	tandem repeat	31 – 33	third stage larvae	antigen of the sheep gastrointestinal nematode parasite .

N32, LEC-1 N16, LEC-6 ¹²⁻¹⁴ <i>lec-2-5</i> <i>lec-8-11</i> DC2.3a/LEC-12a LEC-8 ¹⁵⁻¹⁷	<i>Caenorhabditis</i> <i>elegans</i> Nematode	Tandem repeat tandem repeat chimera prototype prototype	32 16 31-35 16-27 19,9 -	adult cuticle ----- ----- ----- pharyngeal-intestinal valve and intestinal-rectal valve, weakly in intestine.	hypothesised role in the formation of tight and insoluble epidermal layers. recombinant for LEC-2-4 and LEC-8-11. hemagglutinating activity against rabbit erythrocytes. host defense against bacterial infection by competition.
Pl-Gal-8	<i>Paracentrotus lividus</i> Echinoidea	tandem-repeat	35	Embryonic endodermal cells and secondary mesenchyme cells. Larvae sphincters and gut.	hemoagglutination and cell adhesion.
CvGal ¹⁸ CgGal ¹⁹	<i>Crassostrea virginica</i> Bivalvia	four CRD 130kDa prototype	70,9 16,5	hemocytes, palps, gills, mantle, midgut, and rectal tissues. hemocytes, , mantle, gills, digestive gland, gonad, adductor muscle, heart, labial palp.	cell-cell interactions; host-pathogen interactions; Immune system; cell adhesion
AiGal ²⁰	<i>Argopectens</i> <i>irradians</i> Bivalvia	four CRDs	61.5	haemocytes	immune responses against bacterial infection
SgGal-1 ²¹	<i>Solen</i> <i>grandis</i> Bivalvia	tandem repeat	47.1	hemocytes, gonad, mantle, muscle, gill and hepatopancreas	pattern recognition receptors (PRRs) in pathogen recognition
PoGal1 ²² PoGal2 PfGal	<i>Pinctada</i> <i>fucata</i> Bivalvia	four CRDs tandem-repeat tandem-repeat	63.4 38.1 38,09	up-regulated in digestive gland, mantle, haemocyte, gonad and intestine after <i>Vibrio alginolyticus</i> infection.	innate immune response. constitutive and inducible acute-phase protein involved in the innate immune response . immune response against bacterial infection and clearance of bacterial pathogens.
McGal ²³	<i>Ruditapes</i> <i>philippinarum</i> Bivalvia	tandem repeat	33.9	heart, mantle, foot, adductor, palp, siphon tissues and hemocytes	up-regulated after challenge with <i>Perkinsus</i> <i>olseni</i> or <i>Vibrio tapetis</i> binding to their surface .

BgGal ²⁴	<i>Biomphalaria glabrata</i> Gastropoda	tandem-repeat	32,0	embryonic cell line (Bge), circulating haemocytes	pattern recognition receptor for pathogens(<i>Schistosoma mansoni</i>).
CiLgals-a CiLgals-b ^{25,26}	<i>Ciona intestinalis</i> Ascidiacea	Tandem repeat	32.9 37.1	pharynx extracts and hemocytes	Inflammatory responses more probable for CiLgals-a
Dmgal ²⁷	<i>Drosophila melanogaster</i> Diptera	tandem repeat	57,6	Embryonic, larval, and adult somatic and visceral musculature, central nervous system.	Innate immune system.
PpGalec ²⁸	<i>Phlebotomus papatasi</i> Diptera	tandem repeat		larval and pupal stages of development - midgut	interaction with Leishmania protozoan parasites and parasites adherence facilitation to the midgut epithelial cells
OmGalec ²⁹	<i>Ornithodoros moubata</i> , Arachnida	tandem repeat	37,4	all stages of the life cycle adult hemocytes, midguts, and reproductive organs	immunity, interaction with pathogens, and development

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