

Lectins

Description

Lectins are proteins or glycoproteins which possess the ability to bind specifically sugars. They have no enzyme activity and are not antibodies. Lectins are ubiquitous in nature, being found in all kinds of organisms (virus, microorganisms, plants, invertebrates and vertebrates). Lectins are usually oligomeric proteins and have many binding sites. The binding constant of the specific free sugar is generally many orders of magnitude lower than the binding constant of a glycoconjugate (glycolipid, glycoprotein...) containing this sugar. Lectins agglutinate cells, some lectins are even blood type specific, but they are also able to recognise cells surface glycans allowing to distinguish between different cells species and states. Furthermore some lectins stimulate lymphocyte and induce mitosis.

The lectins have been used for :

- **Studies of glycobiological interactions with glycans or glycans mimics**
- **Detection, isolation, and structural studies of glycoproteins**
- **Study the dynamics of the cell surface glycoconjugates**
- **Cell identification and to separate subpopulation of cells and subcellular organelles**
- **Study endocytosis, neoplastic transformation**
- **Mitogenic stimulation of lymphocytes**
- **Glyco-biomarkers discovery and new diagnostics assays design**

Reference	Short Name	Common name	Glycans structures specificity
L1221	AIA / Jacalin	<i>Artocarpus intergrifolia</i>	Gal α 1-6 or Gal β 1-3GalNAc (T-antigen)>> lactose, more specific for T-antigen than PNA
L1367	AML	<i>Astragalus membranaceus</i>	Gal β
L1254	CJA	<i>Crotalaria juncea</i>	Gal (Lac>GalNAc)
L1366	cMOL	<i>Moringa oleifera</i>	Complex glycans, inhibited by asialofetuin
L1201	Con A	<i>Canavalia ensiformis</i>	Man > Glc ; branched mannoses α
L1206	GNL / GNA	<i>Galanthus nivalis</i>	Terminal mannoses. Man α 1-3Man ; α 2-macroglobulin ; bind mannopentaose
L1202	LcH	<i>Lens culinaris</i>	Man α /Glc α > GlcNAc α , enhanced by Fuc α 1-6 on the core GlcNAc-Asn N-glycopeptides
L1252	NPA	<i>Narcissus pseudonarcissus Daffodil</i>	External or internal α or β mannose
L1240	PHA E	<i>Phaseolus vulgaris</i>	Gal β 1-4GlcNAc β 1-2Man, the bisecting GlcNAc β 1-4Man is essential.
L1239	PHA L	<i>Phaseolus vulgaris</i>	Gal β 1-4GlcNAc β 1-6Man of branched structures of N-glycans, Gal β 1-4GlcNAc β 1-2Man.
L1585	PHA M	<i>Phaseolus vulgaris</i>	mix of PHA-E and PHA-L specificities.
L1586	PHA P	<i>Phaseolus vulgaris</i>	mix of PHA-E and PHA-L specificities.
L1223	PNA	<i>Arachis hypogaea</i>	Lactose, T- antigen
L1203	PSA, PEA	<i>Pisum sativum</i>	Man > Glc ; enhanced by Fuc α 1-6 on the core GlcNAc-Asn N-glycopeptides, IgM1A mouse
L1216	SBA	<i>Glycine max</i>	Preference for α over β -glycodidic linkage.
L1237	SNA	<i>Sambucus nigra</i>	Neu5Ac α 2-6Gal/GalNAc
L1477	TJA-I	<i>Trichosanthes japonica Agglutinin I</i>	Sia α 2-6Gal β 4GlcNAc
L1476	TJA-II	<i>Trichosanthes japonica Agglutinin II</i>	Fuc α 1-2Gal β -, GalNAc β -, Gal β 1-3/4-GlcNAc-, Gal β 1-6Gal-
L1253	VEA	<i>Vicia ervilia</i>	Man>trehalose>Glc
L1230	WGA	<i>Triticum vulgare</i>	GlcNAc; GlcNAc β 1-4 oligomers , core of Asn linked oligasacchide; Neu5Ac