OligoTech®

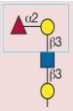
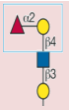
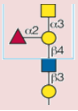
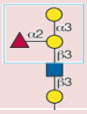
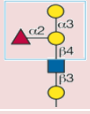
ABO, Lewis & P Histo-Blood Group Antigens

Elicityl is developing a unique offer of several systems of blood group antigens available at quantities and cost not seen before.

Blood group antigens are present on cell surface molecule of wide structural diversity including carbohydrate epitope on glycoprotein/lipid and peptide antigens. Although all blood group antigens are serologically detectable on red blood cells, most of them are also expressed in non-erythroid tissues. In addition to their structural diversity, they also possess wide functional diversity (i.e transporters, receptors for ligands, viruses, bacteria, adhesion molecules…).

We present a selection of 26 ABO, 16 Lewis and 3 P Blood group antigens which are available in prepacks of 5 mg, 25 mg, 100 mg, 1 g and 5 g. Bulk quantities also available upon request such as 100's g scale.

- Each oligosaccharide results from a specific biological process of production developed by Elicityl
- Compounds available either in Reagent Grade (purity >95%) or Technical Grade

ABO Blood group antigens				**Product code**	
h antigen	**Precursor**	Triaose	Galβ-3GlcNAcβ-4Gal	**GLY005**	Bombay phenotype
H antigen	**Precursor**	Disaccharide	Galβ1-3GlcNAc	**GLY009**	
	Type 1	Triaose	Fucα-2Galβ-3GlcNAc	**GLY031-1**	
		Tetraose	Fucα1-2Galβ1-3GlcNAcβ1-3Gal	**GLY032-1**	
		Pentaose	Fucα1-2Galβ1-3GlcNAcβ1-3Galβ1-4Glc	**GLY033-1**	
	Type 2	Triaose	Fucα-2Galβ1-4GlcNAc	**GLY031-2**	
		Tetraose	Fucα1-2Galβ1-4GlcNAcβ1-3Gal	**GLY032-2**	
		Pentaose	Fucα1-2Galβ1-4GlcNAcβ1-3Galβ1-4Glc	**GLY033-2**	
	Type 4	Tetraose	Fucα1-2Galβ1-3GalNAcβ1-3Gal	**GLY127**	
	Type 5	Triaose	Fucα1-2Galβ1-4Glc	**GLY031-3**	2'fucosyllactose
A antigen	**Precursor**	Triaose	GalNAcα1-3(Fucα1-2)Gal	**GLY034**	
	Type1	Tetraose	GalNAcα-3(Fucα-2)Galβ-3GlcNAc	**GLY035-1**	
		Pentaose	GalNAcα1-3(Fucα1-2)Galβ1-3GlcNAcβ1-3Gal	**GLY036-1**	
		Hexaose	GalNAcα1-3(Fucα1-2)Galβ1-3GlcNAcβ1-3-Lac	**GLY037-1**	
	Type 2	Tetraose	GalNAcα1-3(Fucα1-2)Galβ1-4GlcNAc	**GLY035-2**	
		Pentaose	GalNAcα1-3(Fucα1-2)Galβ1-4GlcNAcβ1-3Gal	**GLY036-2**	
		Hexaose	GalNAcα1-3(Fucα1-2)Galβ1-4GlcNAcβ1-3-Lac	**GLY037-2**	
	Type 4	Pentaose	GalNAcα1-3(Fucα1-2)Galβ1-3GalNAcβ1-3Gal	**GLY128**	
	Type 5	Tetraose	GalNAcα1-3(Fucα1-2)Galβ1-4Glc	**GLY035-3**	
B antigen	**Type 1**	Tetraose	Galα1-3(Fucα1-2)Galβ1-3GlcNAc	**GLY038-1**	
		Pentaose	Galα1-3(Fucα1-2)Galβ1-3GlcNAcβ1-3Gal	**GLY039-1**	
		Hexaose	Galα1-3(Fucα1-2)Galβ1-3GlcNAcβ1-3-Lac*	**GLY040-1**	
	Type 2	Tetraose	Galα1-3(Fucα1-2)Galβ1-4GlcNAc	**GLY038-2**	
		Pentaose	Galα1-3(Fucα1-2)Galβ1-4GlcNAcβ1-3Gal	**GLY039-2**	
		Hexaose	Galα1-3(Fucα1-2)Galβ1-4GlcNAcβ1-3-Lac*	**GLY040-2**	
	Type 4	Pentaose	Galα1-3(Fucα1-2)Galβ1-3GalNAcβ1-3Gal	**GLY129**	
	Type 5	Tetraose	Galα1-3(Fucα1-2)Galβ1-4Glc	**GLY038-3**	

Lac stands for Lactose

Lewis blood group antigens

Type 1	**Lewis^a (Le^a)**	Triaose	Galβ1-3(Fucα1-4)GlcNAc	**GLY046**	Main receptor for *Candida* sp, *S. aureus*, *B. pertussis* LNDFH II
		Tetraose	Galβ1-3(Fucα1-4)GlcNAcβ1-3Gal	**GLY054**	
		Hexaose	Galβ1-3(Fucα1-4)GlcNAcβ1-3Galβ1-4(Fucα1-3)Glc	**GLY055**	
	Lewis^b (Le^b)	Tetraose	Fucα1-2Galβ1-3(Fucα1-4)GlcNAc	**GLY045**	Main receptor for *H. pylori*
		Pentaose	Fucα1-2Galβ1-3(Fucα1-4)GlcNAcβ1-3Gal	**GLY056**	
	A Lewis^b	Pentaose	GalNAcα1-3(Fucα1-2)Galβ1-3(Fucα1-4)GlcNAc	**GLY035-4**	ALe^b
	B Lewis^b	Pentaose	Galα1-3(Fucα1-2)Galβ1-3(Fucα1-4)GlcNAc	**GLY038-4**	BLe^b
Type 2	**Lewis^x**	Triaose	Galβ1-4(Fucα1-3)GlcNAc	**GLY049**	Carcinoma overexpression CD15/SSEA-1
		Tetraose	Galβ1-4(Fucα1-3)GlcNAcβ1-3Gal	**GLY050**	
		Hexaose	Galβ1-4(Fucα1-3)GlcNAcβ1-3Galβ1-4(Fucα1-3)Glc	**GLY051**	
	Lewis^y	Tetraose	Fucα1-2Galβ1-4(Fucα1-3)GlcNAc	**GLY048**	Secondary ligands for bacterial toxins from *E. coli* & *V. cholerae*
		Pentaose	Fucα1-2Galβ1-4(Fucα1-3)GlcNAcβ1-3Gal	**GLY052**	
	A Lewis^y	Pentaose	GalNAcα1-3(Fucα1-2)Galβ1-4(Fucα1-3)GlcNAc	**GLY035-5**	ALe^y
	B Lewis^y	Pentaose	Galα1-3(Fucα1-2)Galβ1-4(Fucα1-3)GlcNAc	**GLY038-5**	BLe^y
	Sialyl Lewis^x	Tetraose	Neu5Acα1-3Galβ1-4(Fucα1-3)GlcNAc	**GLY047**	Tumor associated antigen (see our TACA Bulletin)
		Pentaose	Neu5Acα2-3Galβ1-4(Fucα1-3)GlcNAcβ1-3Gal	**GLY053**	

These **antigens are not only erythroid-specific** and play key role in organ transplantation and development in addition to their well-known role in transfusion medicine. Thru the 26 blood group systems to date, mostly ABO and Lewis derivatives may **play a role in adhesive interaction linked to embryogenesis, inflammation and malignancy**. They are also **useful biomarkers** tools providing diagnostic and prognostic for various diseases.

P blood group antigens

Galα-4Gal	**P^k**	Triaose*	CD77/ Gb_3	**GLY120**	*main receptor for Uropathogenic *E.coli*
	P	Tetraose*	Globoside Gb_4	**GLY121**	Parvovirus B19, *S. dysenteriae, S. suis*
	P1	Triaose*	Galα1-4Galβ1-4GlcNAc	**GLY136**	

Physiological functions for the P blood group are not known. Nevertheless several roles have been highlighted such as:

- Pathogenesis of urinary tract infections (uropathogenic strains of *E.coli*)
- Receptors for the human parvovirus B19 (infection *in utero*, congenital anemia)

Quality control

All of the Blood group antigens are analyzed by Nuclear Mass Spectrometry (NMR) and High Performance Anion Exchange Chromatography (HPAEC) for structure validation and determination of their level of purity.

References

- P Stanley and R Cummings. 2009. Structures Common to Different Glycans. Essentials of Glycobiology. 2nd ed. A Varki *et al*., editors. Cold Spring Harbor Laboratory Press.
- JP Cartron and Y Colin. Structural and functional diversity of blood group antigens. Transfus. Clin. Biol. 2001; 8 : 163-99.
- Marionneau *et al.* 2001. ABH and Histo-blood Group antigens. Biochimie, 83; 565−573.

This selection of blood group antigens is extracted from the OligoTech® catalogue, our offer of oligosaccharides and polysaccharides. Full catalogue can be downloaded from www.elicityl-oligotech.com.