
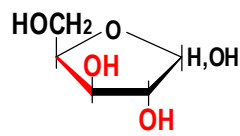

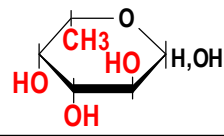
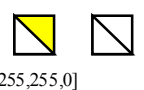
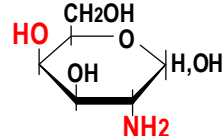
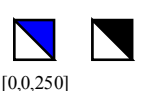
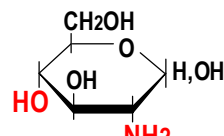
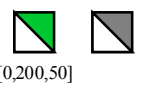
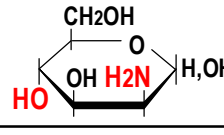
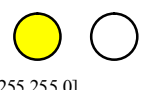
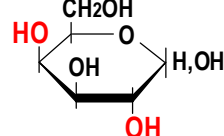
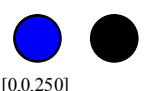
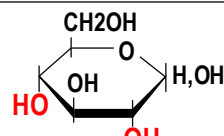
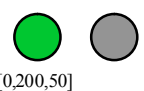
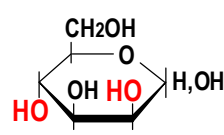
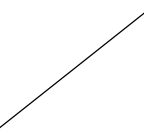
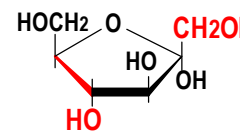
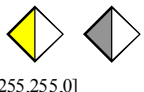
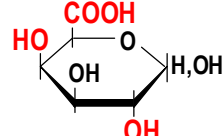
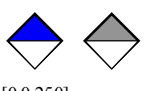
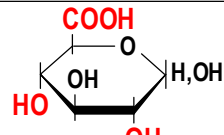

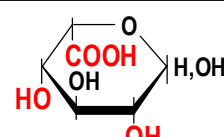
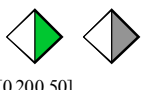
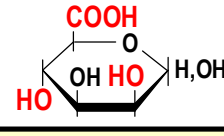




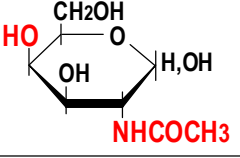


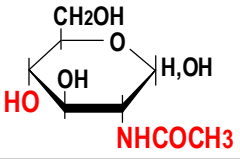


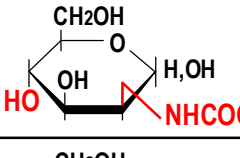
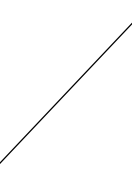
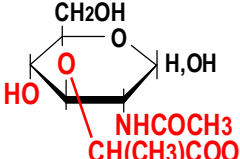


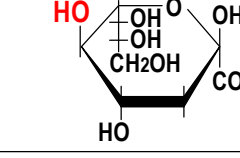


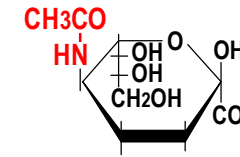


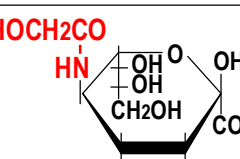
# Monosaccharide List for Mass Spectrometer [MS, MS/MS and MS<sup>n</sup>] (1/2)

Koichi Tanaka Laboratory of Advanced Science and Technology

	Name	CAS No. <sup>1)</sup>	Symbol <sup>2)</sup> [R,G,B] Grey	Empir. Formula	Residual <sup>3)</sup> (Full <sup>3)</sup> )	Monoiso. Mass <sup>4)</sup>	Average Mass <sup>4)</sup>	Nom. Mass	Structure
	D-Xylose	Xyl 58-86-6	 [250,100,0]	C <sub>5</sub> H <sub>8</sub> O <sub>4</sub> (C <sub>5</sub> H <sub>10</sub> O <sub>5</sub> )	132.0423 150.0528	132.114 150.129	132 150		
	L-Fucose	Fuc 2438-80-4	 [250,0,0] Dark Gray	C <sub>6</sub> H <sub>10</sub> O <sub>4</sub> (C <sub>6</sub> H <sub>12</sub> O <sub>5</sub> )	146.0579 164.0685	146.141 164.156	146 164		
Hexosamines	D-Galactosamine	GalNH <sub>2</sub> (7535-00-4)	 [255,255,0]	C <sub>6</sub> H <sub>11</sub> NO <sub>4</sub> (C <sub>6</sub> H <sub>13</sub> NO <sub>5</sub> )	161.0688 179.0794	161.156 179.171	161 179		
	D-Glucosamine	GlcNH <sub>2</sub> 3416-24-8	 [0,0,250]	C <sub>6</sub> H <sub>11</sub> NO <sub>4</sub> (C <sub>6</sub> H <sub>13</sub> NO <sub>5</sub> )	161.0688 179.0794	161.156 179.171	161 179		
	D-Mannosamine	ManNH <sub>2</sub> (2636-92-2)	 [0,200,50]	C <sub>6</sub> H <sub>11</sub> NO <sub>4</sub> (C <sub>6</sub> H <sub>13</sub> NO <sub>5</sub> )	161.0688 179.0794	161.156 179.171	161 179		
Hexoses	D-Galactose	Gal 59-23-4	 [255,255,0]	C <sub>6</sub> H <sub>10</sub> O <sub>5</sub> (C <sub>6</sub> H <sub>12</sub> O <sub>6</sub> )	162.0528 180.0634	162.140 180.155	162 180		
	D-Glucose	Glc 50-99-7	 [0,0,250]	C <sub>6</sub> H <sub>10</sub> O <sub>5</sub> (C <sub>6</sub> H <sub>12</sub> O <sub>6</sub> )	162.0528 180.0634	162.140 180.155	162 180		
	D-Mannose	Man 3458-28-4	 [0,200,50]	C <sub>6</sub> H <sub>10</sub> O <sub>5</sub> (C <sub>6</sub> H <sub>12</sub> O <sub>6</sub> )	162.0528 180.0634	162.140 180.155	162 180		
	D-Fructose	Fru 57-48-7		C <sub>6</sub> H <sub>10</sub> O <sub>5</sub> (C <sub>6</sub> H <sub>12</sub> O <sub>6</sub> )	162.0528 180.0634	162.140 180.155	162 180		
Uronic acids (Acidic Sugars)	D-Galacturonic acid	GalA 685-73-4	 [255,255,0]	C <sub>6</sub> H <sub>8</sub> O <sub>6</sub> (C <sub>6</sub> H <sub>10</sub> O <sub>7</sub> )	176.0321 194.0427	176.123 194.138	176 194		
	D-Glucuronic Acid	GlcA 6556-12-3	 [0,0,250]	C <sub>6</sub> H <sub>8</sub> O <sub>6</sub> (C <sub>6</sub> H <sub>10</sub> O <sub>7</sub> )	176.0321 194.0427	176.123 364.207	176 194		
	L-Iduronic Acid	IdoA (3402-98-0)	 [150,100,50]	C <sub>6</sub> H <sub>8</sub> O <sub>6</sub> (C <sub>6</sub> H <sub>10</sub> O <sub>7</sub> )	176.0321 194.0427	176.123 194.138	176 194		
	D-Mannuronic acid	ManA (1986-14-7)	 [0,200,50]	C <sub>6</sub> H <sub>8</sub> O <sub>6</sub> (C <sub>6</sub> H <sub>10</sub> O <sub>7</sub> )	176.0321 194.0427	176.123 194.138	176 194		

# Monosaccharide List for Mass Spectrometer [MS, MS/MS and MS<sup>n</sup>] (2/2)

Koichi Tanaka Laboratory of Advanced Science and Technology

	Name	CAS No. <sup>1)</sup>	Symbol <sup>2)</sup>	Empir. Formula	Residual <sup>3)</sup>	Monoiso. Mass <sup>4)</sup>	Average Mass <sup>4)</sup>	Nom. Mass	Structure
			[R,G,B] Grey		(Full <sup>3)</sup> )				
N-Acetyl hexosamines	N-Acetyl galactosamine	GalNAc 1811-31-0	  [255,255,0]	C <sub>8</sub> H <sub>13</sub> NO <sub>5</sub>	(C <sub>8</sub> H <sub>15</sub> NO <sub>6</sub> )	203.0794	203.193	203	
	N-Acetyl glucosamine	GlcNAc 7512-17-6	  [0,0,250]	C <sub>8</sub> H <sub>13</sub> NO <sub>5</sub>	(C <sub>8</sub> H <sub>15</sub> NO <sub>6</sub> )	203.0794	203.193	203	
	N-Acetyl mannosamine	ManNAc (7772-94-3)	  [0,200,50]	C <sub>8</sub> H <sub>13</sub> NO <sub>5</sub>	(C <sub>8</sub> H <sub>15</sub> NO <sub>6</sub> )	203.0794	203.193	203	
	N-Acetyl muramic acid	MurNAc (10597-89-4)		C <sub>11</sub> H <sub>17</sub> NO <sub>7</sub>	(C <sub>11</sub> H <sub>19</sub> NO <sub>8</sub> )	275.1005	275.255	275	
Sialic Acids (Acidic Sugars)	2-keto-3-deoxy-D-glycero-D-galactononic acid	KDN (22594-61-2)	  [0,200,50] w/ pattern Right gray w/ pattern	C <sub>9</sub> H <sub>14</sub> O <sub>8</sub>	(C <sub>9</sub> H <sub>16</sub> O <sub>9</sub> )	250.0689	250.202	250	
	N-Acetyl neuraminic acid	Neu5Ac (NANA) 131-48-6	  [125,0,125] Dark Gray	C <sub>11</sub> H <sub>17</sub> NO <sub>8</sub>	(C <sub>11</sub> H <sub>19</sub> NO <sub>9</sub> )	291.0954	291.254	291	
	N-Glycolyl neuraminic acid	Neu5Gc (1113-83-3)	  [200,250,250]	C <sub>11</sub> H <sub>17</sub> NO <sub>9</sub>	(C <sub>11</sub> H <sub>19</sub> NO <sub>10</sub> )	307.0903	307.253	307	

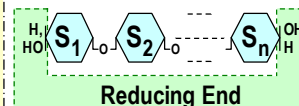
1) <http://www.commonchemistry.org/index.aspx>

Modification		Monoisotopic	Average	Nom.
Methylate	-H+CH <sub>3</sub>	14.0157	14.027	14
Acetate	-H+CH <sub>2</sub> CHO	42.0106	42.037	42
Phosphate	-H+PO <sub>3</sub> H <sub>2</sub>	79.9663	79.979	80
Sulphate	-H+SO <sub>3</sub> H	79.9568	80.063	80
Free Reducing End <sup>3)</sup>	+H+OH	18.0106	18.015	18
Reduced Reducing End <sup>3)</sup>	+H+OH+2H	20.0262	20.031	20

2) Proteomics, Vol.9, pp5398-5399 (2009)

Element	Monoisotopic Mass	Average Mass
H	1.00782504	1.0079
C	12.00000000	12.011
N	14.0030740	14.007
O	15.9949146	15.999
P	30.9737615	30.974
S	31.9720710	32.066

3) Practical Mass Calculation for Mass Spectrometer



[Oligosaccharide Mass of S<sub>1</sub>S<sub>2</sub>...S<sub>n</sub>] =  
 [Residual Mass of S<sub>1</sub>] +  
 [Residual Mass of S<sub>2</sub>] +  
 ... +  
 [Residual Mass of S<sub>n</sub>] +  
 [Mass of Reducing End]

or  
 [Full Mass of S<sub>1</sub>] +  
 [Full Mass of S<sub>2</sub>] +  
 ... +  
 [Full Mass of S<sub>n</sub>] -  
 (n-1) x H<sub>2</sub>O

