

A Periodic Table of Monosaccharides

The table is organized into groups based on carbon number (rows) and functional group (columns). The groups are: Aldehydes, Ketoses, Aminosugars, Uronic Acids, and Deoxy sugars. The rows are labeled with carbon numbers: 3, 4, 5, 6, 7, 8, 9, and 10. Each cell contains the name, symbol, formula, and mass of the monosaccharide. A legend indicates the format: Name (blue), Glyc (yellow), Symbol (green), Formula (red), and Mass (orange).

Carbon Number	Aldehydes	Ketoses	Aminosugars	Uronic Acids	Deoxy sugars
3	Triose				
4	Tetraose				
5	Pentose				
6	Hexose				
7	Heptose				
8	Octose				
9	Nonose				
10	Decose				

A Periodic Table of Monosaccharides

Description

It is important to recognize the great diversity of monosaccharides commonly encountered in animals, plants, and microbes, as well as to organize them in a visually interesting style that also emphasizes their similarities and relatedness. This article discusses the nature of building blocks, monosaccharides, and monosaccharide derivatives – terms commonly used in discussing ‘glycomolecules’ found in nature. To aid in awareness of monosaccharide diversity here is presented a Periodic Table of Monosaccharides. The rationale is given for the construction of the Table and the selection of 104 monosaccharides, which is largely based on those presented in the KEGG and SNFG websites of monosaccharides and includes room to enlarge as new discoveries are made. The Table should have educational value and is intended to capture the attention and foster the imagination of those unfamiliar with glycosciences and encourage researchers to delve deeper into this fascinating area.

A Periodic Table of Monosaccharides

	Aldoses			Ketoses		Aminosugars						Uronic Acids					
iose	Glycosiddehyde Gly C ₃ H ₆ O ₃ 90.08			Dihydroxyacetone DHA C ₃ H ₆ O ₃ 90.08													
rose	Threose Thr C ₄ H ₈ O ₄ 126.09	Erythrose Ery C ₄ H ₈ O ₄ 126.09		Erythrulose Eru C ₄ H ₈ O ₄ 126.09													
tose	Ribose Rib C ₅ H ₁₀ O ₅ 150.13	Xylose Xyl C ₅ H ₁₀ O ₅ 150.13	Ebiose Eib C ₅ H ₁₀ O ₅ 150.13	Ribulose Ribu C ₅ H ₁₀ O ₅ 150.13	Xylulose Xylu C ₅ H ₁₀ O ₅ 150.13												
	Anabinose Ara C ₅ H ₁₀ O ₅ 150.13	Lyxose Lyx C ₅ H ₁₀ O ₅ 150.13	Apiose Api C ₅ H ₁₀ O ₅ 150.13														
xose	Glucose Glc C ₆ H ₁₂ O ₆ 180.16	Galactose Gal C ₆ H ₁₂ O ₆ 180.16	Mannose Man C ₆ H ₁₂ O ₆ 180.16	Fructose Fru C ₆ H ₁₂ O ₆ 180.16	Psicose Psi C ₆ H ₁₂ O ₆ 180.16	Glucosamine GlcN C ₆ H ₁₁ NO ₅ 179.17	Galactosamine GalN C ₆ H ₁₁ NO ₅ 179.17	Mannosamine ManN C ₆ H ₁₁ NO ₅ 179.17	Bacillosamine Bac C ₆ H ₁₁ NO ₅ 162.19	Desosamine Des C ₆ H ₁₁ NO ₅ 175.23	Ailosamine AiIN C ₆ H ₁₁ NO ₅ 179.17	Glucuronic acid GlcA C ₆ H ₁₀ O ₇ 194.14	Iduronic acid IdoA C ₆ H ₁₀ O ₇ 194.14	Mannuronic acid ManA C ₆ H ₁₀ O ₇ 194.14	N-Acetyl-D-glucosamine L6dAltNAc C ₆ H ₁₁ NO ₆ 205.21		
	Altrose Alt C ₆ H ₁₂ O ₆ 180.16	Alose All C ₆ H ₁₂ O ₆ 180.16	Idose Ido C ₆ H ₁₂ O ₆ 180.16	Tagatose Tag C ₆ H ₁₂ O ₆ 180.16	Sorbose Sor C ₆ H ₁₂ O ₆ 180.16	Idosamine IdoN C ₆ H ₁₁ NO ₅ 179.17	Altrosamine AltN C ₆ H ₁₁ NO ₅ 179.17	Talosamine TalN C ₆ H ₁₁ NO ₅ 179.17	Gulosamine GulN C ₆ H ₁₁ NO ₅ 179.17	Muramic acid Mur C ₆ H ₁₁ NO ₆ 205.23	N-Acetyl-fucosamine FucNAc C ₆ H ₁₁ NO ₆ 205.21	L-Asuronic acid LAltA C ₆ H ₁₀ O ₇ 194.14	Guluronic acid GulA C ₆ H ₁₀ O ₇ 194.14	Fructuronic acid FruA C ₆ H ₁₀ O ₇ 194.14	N-Acetyl-D-glucosamine 6dTalNAc C ₆ H ₁₁ NO ₆ 205.21		
	Glucose Gul C ₆ H ₁₂ O ₆ 180.16	Talose Tal C ₆ H ₁₂ O ₆ 180.16				N-Acetyl-glucosamine GlcNAc C ₆ H ₁₁ NO ₆ 221.21	N-Acetyl-galactosamine GalNAc C ₆ H ₁₁ NO ₆ 221.21	N-Acetyl-mannosamine ManNAc C ₆ H ₁₁ NO ₆ 221.21	N-Acetyl-quinovosamine QuiNAc C ₆ H ₁₁ NO ₆ 221.21	N-Acetyl-rhamnosamine RhaNAc C ₆ H ₁₁ NO ₆ 221.21	N-Acetyl-allosamine AllNAc C ₆ H ₁₁ NO ₆ 221.21	Takuronic acid TalA C ₆ H ₁₀ O ₇ 194.14	Galacturonic acid GalA C ₆ H ₁₀ O ₇ 194.14	Auronic acid AllA C ₆ H ₁₀ O ₇ 194.14			
						N-Acetyl-altrosamine LaltNAc C ₆ H ₁₁ NO ₆ 221.21	N-Acetyl-gulosamine GulNAc C ₆ H ₁₁ NO ₆ 221.21	N-Acetyl-idosamine LidoNAc C ₆ H ₁₁ NO ₆ 221.21	N-Acetyl-talosamine TalNAc C ₆ H ₁₁ NO ₆ 221.21	N-Acetyl-muramic acid MurNAc C ₆ H ₁₁ NO ₇ 265.27	N-Glycolyl-muramic acid MurNGc C ₆ H ₁₁ NO ₇ 309.27	4-O-Methyl-D-glucuronic acid meGlcA C ₆ H ₁₀ O ₇ 208.17					
tose	D or L-Glycero-D-manno-Heptose ManHep C ₇ H ₁₄ O ₇ 210.18			Sedoheptulose Sed C ₇ H ₁₄ O ₇ 210.18	Mannoheptulose ManH C ₇ H ₁₄ O ₇ 210.18												
				Octose													
				D-erythro-L-galacto- Oct C ₈ H ₁₆ O ₈ 240.21	3-Deoxy-D-manno-2-octulonic acid Kdo C ₈ H ₁₆ O ₈ 238.19	Eminose Erw C ₈ H ₁₆ O ₈ 236.26	Methylthioinosamide Mtl C ₈ H ₁₅ NO ₇ 255.32										
						Nonose											
						Pseudesaminic acid Pse C ₉ H ₁₈ O ₉ 258.25	Acetaminic acid Aci C ₉ H ₁₈ O ₉ 250.25	Legonaminic acid Leg C ₉ H ₁₈ O ₉ 250.25	4-Ep-legonaminic acid 4eLeg C ₉ H ₁₈ O ₉ 250.25	8-Ep-legonaminic acid 8eLeg C ₉ H ₁₈ O ₉ 250.25	8-Ep-metaminic acid 8eAci C ₉ H ₁₈ O ₉ 250.25						
						7-Deoxy-D-glycero-D-galacto-nonulosonic acid Kdn C ₉ H ₁₈ O ₉ 268.27	Neuraminic acid Neu C ₉ H ₁₈ NO ₉ 267.23	N-Acetyl-neuraminic acid Neu5Ac C ₉ H ₁₇ NO ₁₀ 309.27	N-Glycolyl-neuraminic acid Neu5Gc C ₉ H ₁₇ NO ₁₀ 353.27	Fucaminic acid Fus C ₉ H ₁₈ NO ₉ 305.27							

Name: Glucose
Symbol: Glc
Formula: C₆H₁₂O₆
Mass: 180.16

Category

- 1. News