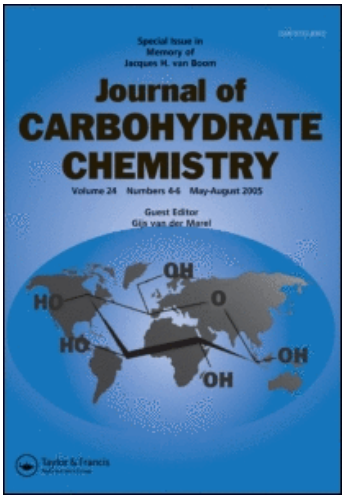

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Chemically Synthesized Oligosaccharides, 1994. A Searchable Table of Glycosidic Linkages.

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REVIEW

CHEMICALLY SYNTHESIZED OLIGOSACCHARIDES, 1994.

A SEARCHABLE TABLE OF GLYCOSIDIC LINKAGES.

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1. INTRODUCTION

This review of the literature on oligosaccharide synthesis tabulates over 700 glycosidic linkages that have been chemically synthesized in the "popular literature" in the year 1994. The "popular literature" consists of the following journals, most frequently used for reporting oligosaccharide synthesis: *Acta Chem. Scand.*, *Angew. Chem. Intl. Ed.*

Engl., Aust. J. Chem., Bioorg. Med. Chem., Bioorg. Med. Chem. Lett., Bull. Chem. Soc. Jpn., Bull. Soc. Chim. Fr., Can. J. Chem., Carbohydr. Res., Carbohydr. Lett., Chem. Ber., Chem. Lett., Chem.-Ztg., Gazz. Chim. Ital., Glycoconjugate J., Glycobiology, Helv. Chim. Acta, Heterocycles, J. Am. Chem. Soc., J. Carbohydr. Chem., J. Chem. Res., J. Chem. Soc. Chem. Commun., J. Chem. Soc. Perkin Trans. I, J. Med. Chem., J. Org. Chem., Liebigs Ann. Chem., Pol. J. Chem., Rec. Trav. Chim. Pays Bas., Synlett, Synthesis, Synth. Commun., Tetrahedron and *Tetrahedron Lett.*

The review presents the glycosidic linkages synthesized in tabular form, in an easily "searchable" format. The function of this review is to provide a convenient source where an investigator can go to ask a simple question like "has anyone made the "*αFuc(1→3)Glc linkage?*", whether as a stand-alone disaccharide or as part of a larger oligosaccharide. For each glycosidic linkage synthesized, information on the identity of the donor, the acceptor, the promoter systems used, the size of the final oligosaccharide, the neighbouring group, the anomeric configuration of the product and the yield is presented. Only glycosidic linkages formed between sugar residues are reported, i.e., the syntheses of aromatic glycosides, glycosyl-steroids or glycosyl-ceramides etc. are not reported. Only disaccharides or larger are consequently listed.

2. GUIDE TO THE TABLE

The table indicates the specific glycosidic linkages formed in alphabetical order. Each entry has an entry number followed by the literature citation. The "acceptor size" and "donor size" columns each have two numbers in their respective column. The first number refers to the size of the acceptor or donor (i.e., monosaccharide = 1, disaccharide = 2, etc.) and the size of the oligosaccharide formed is the sum of these two numbers. The second number, which is in parentheses, describes the number of equivalents of acceptor or donor used in the glycosidic synthesis. This is followed by a percentage yield column and an α/β ratio column. When only an α or β is noted, only the yield of that particular anomer was reported. The identity of the anomeric leaving group of the glycosyl donor (e.g., bromide or trichloroacetimidate) appears next. Figure 1 presents generic structures for the various donors used. The neighbouring group column describes the group next to the anomeric center, at C-2 in the glycosyl donor. The activator column describes the reagents used to activate the particular donor.

In an effort to provide as much information as possible in a minimum amount of space, we have included sugar rings modifications in square brackets preceding the sugar name. We also followed the example of the amino-acid literature and used normal fonts for

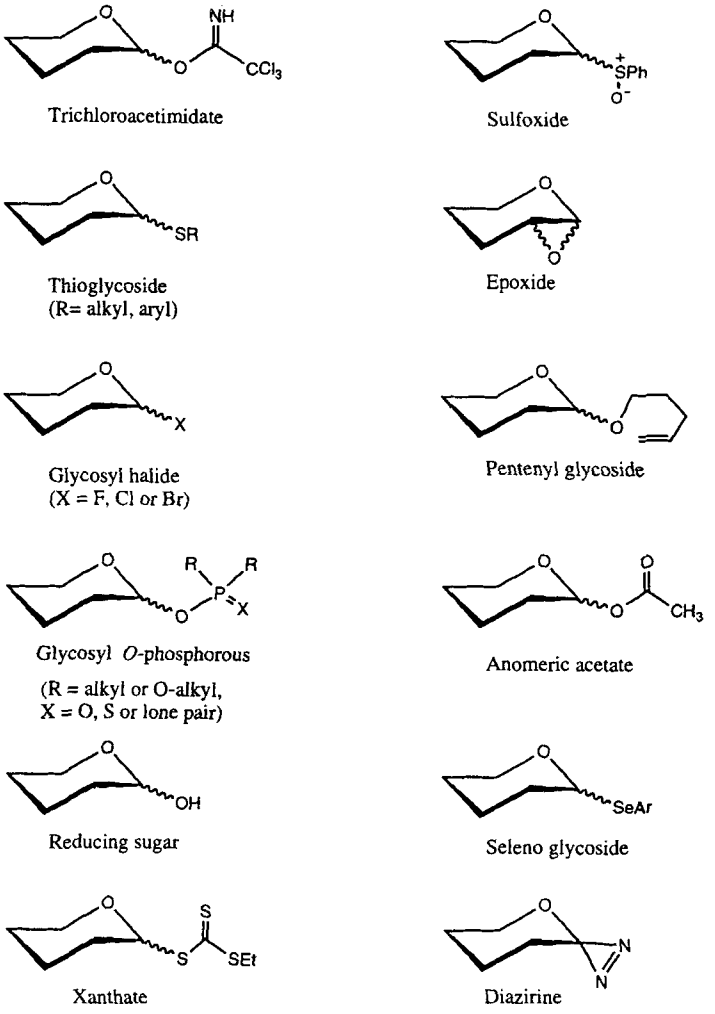

FIG. 1. GENERIC GLYCOSYL DONOR STRUCTURES

the more common D-sugars and inverted fonts for the L-sugars: e.g., "Glc" for D-glucose, and "gLC" for L-glucose. A case-insensitive search will then yield both enantiomers of the sugar. As examples, Gal[4d] means 4-deoxy-D-galactose; fUC[3F] means 3-deoxy-3-fluoro-L-fucose; xYL[3NAc] means 3-acetamido-3-deoxy-L-xylo-hexose; Ara[2d] means 2-deoxy-D-arabinose (this is a hexose, i.e., it is the systematic name for "2-deoxy-D-glucose"). Unless otherwise noted, the sugars are in the pyranose form. When the identity of one of the sugar residues is too complicated to conveniently describe in the available space, there is a footnote referring the reader to Figure 2 which contains the structures.

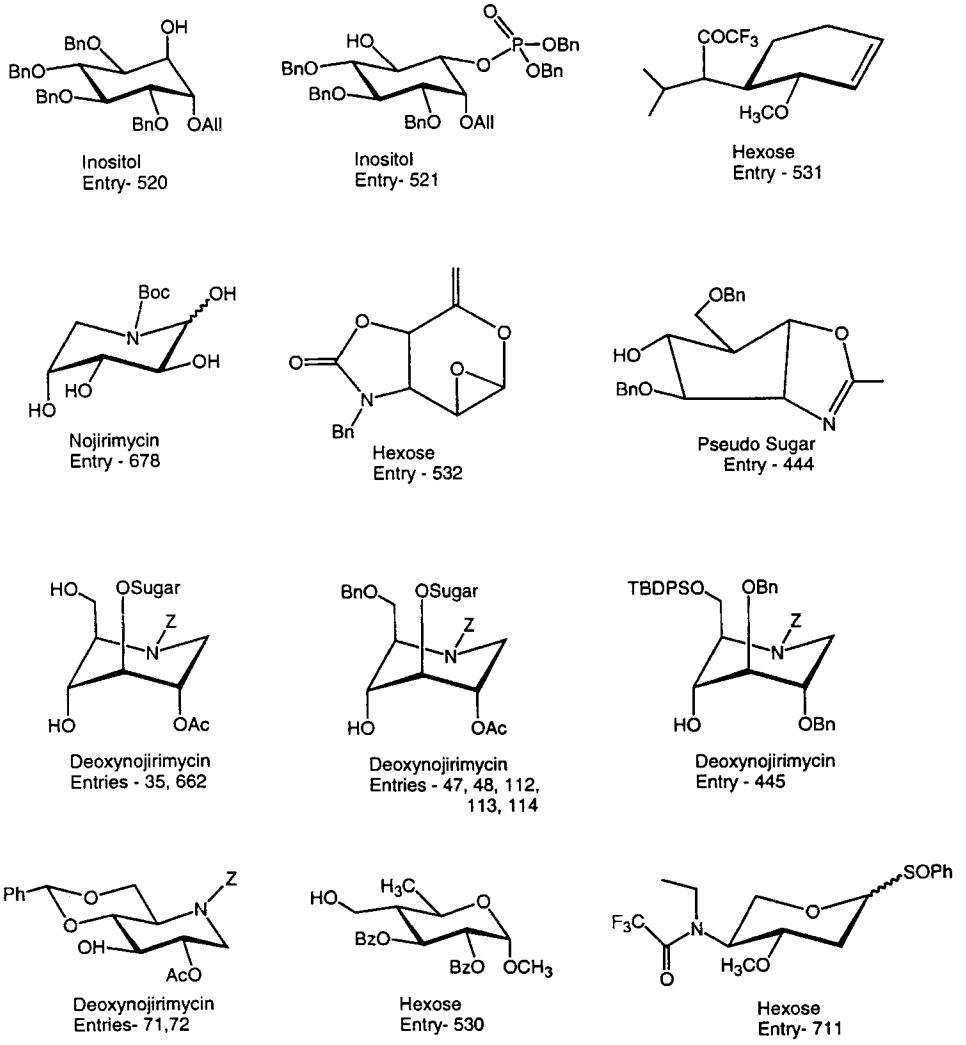

FIG. 2. CHEMICAL STRUCTURES FOR SELECTED GLYCOSYLATION ENTRIES

Example 1: In entry 10 of the table, the linkage formed was fUC(1→2)Gal. The fucose was an L-sugar as denoted by the inverse font notation whereas galactose was a D-sugar. In the acceptor size column, 1.0 equivalents of a monosaccharide acceptor was used. The donor size column indicates that 5.4 equivalents of a monosaccharide donor was used. The yield of the reaction was 77% and only the α anomer was reported. The donor was a glycosyl bromide in which the neighbouring group was *O*-benzyl. The glycosyl donor

activation conditions were tetrabutylammonium bromide (TBABr). The "Ref" column indicates that the literature reference for this particular glycosylation was 105.

Example 2: Entry 573 of the table, the linkage formed was GlcNAc(1→4)GlcNAc where both of the sugars have the D-configuration. The acceptor was a monosaccharide and 1.0 equivalent was used. Because the linkage formed column indicates a GlcNAc(1→4)GlcNAc linkage, the acceptor was most likely a GlcNAc derivative with a free 4-OH, but the table does not specify the protection scheme for the acceptor. It could have been a 2-azido or 2-phthalimido derivative and this information would have to be obtained from reference 26. The donor size column shows that 1.0 equivalents of a disaccharide donor was used as the trichloroacetimidate. No information is given on the identity of the non-reducing-end sugar of this donor. The total size of the structure synthesized was a trisaccharide. The yield of the reaction was 69% and the α / β ratio column indicates that only the β isomer yield was reported. The neighbouring group was a *N*-phthalimido and the activator was boron trifluoride etherate.

3. ABBREVIATIONS

Ac	acetyl
All	D-allose
Alt	D-altrose
Ara	D-arabinose
aRA	L-arabinose
BOC	*t*-butoxycarbonyl
Bn	benzyl
Bz -	benzoyl
CAMB	2-(chloroacetoxymethyl)benzoyl
ClBn	*p*-chlorobenzyl
Coll	collidine
DDQ	2,3-dichloro-5,6-dicyano-1,4-benzoquinone
DMTSB	dimethyl(methylthio)sulfonium tetrafluoroborate
DMTST	dimethyl(methylthio)sulfonium triflate
DTBP	di-*tert*-butylpyridine
eq.	equivalents
Et	ethyl
Fuc	D-fucose
fUC	L-fucose
fUCNAc	*N*-acetyl-L-fucosamine
Gal	D-galactose
GalNAc	*N*-acetyl-D-galactosamine
Glc	D-glucose
gLC	L-glucose
GlcANAc	2-deoxy-2-acetamidoglucuronic acid
GlcA	D-glucuronic acid

GlcNAc	*N*-acetyl-D-glucosamine
Gly	D-glycero
gLY	L-glycero
Gul	D-gulose
gUL	L-gulose
hep	heptose
IDCP	iodine dicollidine perchlorate
Ido	D-idose
iDO	L-idose
IdoA	D-idouronic acid
iDOA	L-idouronic acid
intramolec.	intramolecular
KDO	3-deoxy-D-manno-2-octulopyranosylonate
Lev	levulinoyl
Lyx	D-lyxose
lYX	L-lyxose
Man	D-mannose
ManA	D-mannuronic acid
MBz	*p*-methylbenzoyl
MDTBP	4-methyl-di-*tert*-butylpyridine
Me	methyl
$Me_2P{=}S$	dimethylphosphinothioate
MSB	methylsulfenyl bromide
Neu5Ac	sialic acid
NIS	*N*-iodosuccinimide
Nojir	nojirimycin
N.R.	not reported
Ph	phenyl
Phth	phthalimido
Piv	pivaloyl
PMB	*p*-methoxybenzyl
pyr	pyridine
ref.	reference
rHA	L-rhamnose
Rib	D-ribose
rIB	L-ribose
Tal	D-talose
tAL	L-talose
TBA	tetrabutylammonium
TBDMS	*tert*-butyldimethylsilyl
TEP	triethylphosphite
TES	triethylsilyl
Tf	trifluoromethanesulfonyl
TMS	trimethylsilyl
TMU	tetramethylurea
Tol	tolyl, *p*-methylbenzoyl
Troc	(2,2,2-trichloroethoxy)carbonyl
Trt	trityl
TSA	*p*-toluenesulfonic acid
Xyl	D-xylose
xYL	L-xylose
Z	benzyloxycarbonyl

4. GLYCOSYLATION TABLE

Entry	Ref	Linkage formed	Acceptor size	Acceptor (eq.)	Donor size	Donor (eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
1	130	Ara(1→3)GlcNAc	4	(1.0)	1	(6.7)	76	α	bromide	OBn	TBABr
2	117	Ara(1→6)Gal	1	(1.7)	1	(1.0)	94	2:1	epoxide	-O-	$ZnCl_2$
3	117	Ara(1→6)Gal	1	(1.7)	1	(1.0)	60	2:1	epoxide	-O-	oxolane
4	117	Ara(1→6)Gal	1	(1.7)	1	(1.0)	90	2:1	epoxide	-O-	oxolane
5	149	Ara(1→6)Glc	2	(1.0)	1	(1.2)	85	β	bromide	OBz	$Hg(CN)_2$
6	4	aRA[5S](1→6)Gal	1	(NR)	1	(NR)	30	α	bromide	OAc	AgOTf,TMU
7	60	fUC(1→2',3)Gal-Glycal	2	(1.0)	1	(4.0)	51	α,α	fluoride	OBn	$AgClO_4$, $SnCl_2$
8	132	fUC(1→2',3)Gal-GlcNAc	2	(1.0)	1	(2.3)	93	α,α	imidate	OBn	$ZnCl_2$-OEt_2
9	61	fUC(1→2',4)Gal-Glycal	2	(1.0)	1	(5.0)	NR	α,α	fluoride	OBn	$Sn(OTf)_2$, DTBP
10	105	fUC(1→2)Gal	1	(1.0)	1	(5.4)	77	α	bromide	OBn	TBABr
11	105	fUC(1→2)Gal	1	(1.0)	1	(6.7)	30	α	bromide	OBn	TBABr
12	105	fUC(1→2)Gal	1	(1.0)	1	(4.0)	81	α	bromide	OBn	TBABr
13	133	fUC(1→2)Gal	2	(1.0)	1	(2.4)	64	α	bromide	OBn	TBABr
14	133	fUC(1→2)Gal	2	(1.0)	1	(2.4)	70	α	bromide	OBn	TBABr
15	133	fUC(1→2)Gal	2	(1.0)	1	(2.4)	78	α	bromide	OBn	TBABr
16	133	fUC(1→2)Gal	2	(1.0)	1	(2.4)	65	α	bromide	OBn	TBABr
17	133	fUC(1→2)Gal	2	(1.0)	1	(2.4)	61	α	bromide	OBn	TBABr
18	133	fUC(1→2)Gal	2	(1.0)	1	(2.4)	96	α	bromide	OBn	TBABr
19	133	fUC(1→2)Gal	2	(1.0)	1	(2.4)	94	α	bromide	OBn	TBABr
20	133	fUC(1→2)Gal	2	(1.0)	1	(2.4)	87	α	bromide	OBn	TBABr
21	133	fUC(1→2)Gal	2	(1.0)	1	(2.4)	71	α	bromide	OBn	TBABr
22	143	fUC(1→2)Gal	2	(1.0)	1	(6.0)	70	α	bromide	OBn	AgOTf; MDTBP
23	61	fUC(1→2)Gal	2	(NR)	1	(NR)	NR	α	fluoride	OBn	$Sn(OTf)_2$, DTBP

(continued)

Entry	Ref	Linkage formed	Acceptor size	Acceptor (eq.)	Donor size	Donor (eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
24	132	fUC(1→2)Gal	2	(1.0)	1	(1.1)	78	α	imidate	OBn	$ZnCl_2$-OEt_2
25	5	fUC(1→2)Gal	3	(1.0)	1	(10.0)	72	58:14	SMe	OBn	TBABr, $CuBr_2$, AgOTf
26	39	fUC(1→2)Gal	1	(1.0)	1	(1.5)	75	4:1	SEt	OClBn	DMTSB
27	51	fUC(1→2)Gal	2	(1.0)	1	(1.2)	48	α	SMe	OBn	NIS, TfOH
28	105	fUC(1→2)Gal[3NH_2]	1	(1.0)	1	(4.0)	55	α	bromide	OBn	TBABr
29	105	fUC(1→2)Gal[4NH_2]	1	(1.0)	1	(5.9)	42	α	bromide	OBn	AgOTf, MDTBP
30	105	fUC(1→2)Gal[6NH_2]	1	(1.0)	1	(4.9)	79	α	bromide	OBn	TBABr
31	105	fUC(1→2)Glc	1	(1.0)	1	(4.9)	80	α	bromide	OBn	TBABr
32	105	fUC(1→2)Gul	1	(1.0)	1	(4.0)	78	α	bromide	OBn	TBABr
33	141	fUC(1→2)rHA	1	(NR)	2	(NR)	62	α	SEt	OBn	NIS, TfOH
34	30	fUC(1→2,3)Glc	1	(1.0)	1	(1.9)	43	β,β	dibenzyl phosphite	OAc	TMSOTf
35	178	fUC(1→3)Deoxy Nojir[a]	1	(1.0)	1	(1.2)	92	α	SMe	OBn	NIS, TfOH
36	114	fUC(1→3)Glc	2	(1.0)	1	(3.3)	82	α	bromide	OBn	$HgBr_2$, MDTBP
37	116	fUC(1→3)Glc	1	(1.0)	1	(1.2)	54	α	acetate	OCH_3	BF_3-OEt_2
38	188	Fuc(1→3)GlcNAc	1	(1.0)	1	(4.0)	93	β	sulfoxide	OBn	Tf_2O, MDTBP
39	11	fUC(1→3)GlcNAc	2	(NR)	1	(NR)	90	α	bromide	OPMB	TBABr, DTBP
40	80	fUC(1→3)GlcNAc	1	(1.0)	1	(1.6)	85	α	imidate	OBn	TMSOTf
41	80	fUC(1→3)GlcNAc	2	(1.0)	1	(1.5)	78	α	imidate	OBn	TMSOTf
42	132	fUC(1→3)GlcNAc	2	(1.0)	1	(NR)	97	α	imidate	OBn	$ZnCl_2$-OEt_2
43	30	fUC(1→3)GlcNAc	1	(1.0)	1	(1.0)	53	β	dibenzyl phosphite	OAc	TMSOTf
44	79	fUC(1→3)GlcNAc	1	(1.0)	1	(2.0)	74	10:1	trichloro ethyl phosphite	OBn	TMSOTf

Entry	Ref	Linkage formed	Acceptor size	Acceptor (eq.)	Donor size	Donor (eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
45	126	fUC(1→3)GlcNAc	2	(1.0)	1	(2.0)	77	α	SMe	OBn	(NR)
46	139	fUC(1→3)GlcNAc	2	(1.0)	1	(2.0)	72	α	SMe	OBn	TBABr, $CuBr_2$, DMF
47	178	fUC(1→4)Deoxy Nojir[a]	2	(1.0)	1	(1.5)	100	α	SMe	OBn	DMTST
48	178	fUC(1→4)Deoxy Nojir[a]	3	(1.0)	1	(1.5)	89	α	SMe	OBn	DMTST
49	2	fUC(1→4)Glc	2	(NR)	1	(NR)	(NR)	6:1	fluoride	OBn	$SnCl_2$, $AgClO_4$, DTBP
50	30	fUC(1→4)Glc	1	(1.0)	1	(1.0)	45	3:1	dibenzyl phosphite	OBn	TMSOTf
51	153	fUC(1→4)GlcNAc	2	(NR)	1	(NR)	89	α	bromide	OBn	TBABr
52	171	fUC(1→4)GlcNAc	2	(1.0)	1	(3.0)	89	α	bromide	OBn	TBABr
53	79	fUC(1→4)GlcNAc	2	(1.0)	1	(1.25)	86	α	dibenzyl phosphite	OBn	TMSOTf
54	44	fUC(1→4)GlcNAc	5	(1.0)	1	(1.5)	60	α	SMe	OBn	NIS, TfOH
55	92	fUC(1→4)GlcNAc	5	(1.0)	3	(1.5)	29	α	SMe	OBn	DMTST
56	173	fUC(1→6)GlcNAc	2	(1.0)	1	(3.2)	74	α	bromide	OBn	TEABr
57	173	fUC(1→6)GlcNAc	1	(1.0)	1	(2.3)	68	α	chloride	OPMB	TEABr
58	128	fUC(1→6)GlcNAc	5	(NR)	1	(NR)	65	α	SMe	OCH_3	$CuBr_2$, TBABr
59	128	fUC(1→6)GlcNAc	4	(NR)	1	(NR)	68	α	SMe	OCH_3	$CuBr_2$, TBABr
60	184	fUC(1→6)GlcNAc	4	(1.0)	1	(1.5)	49	α	SEt	OBn	IDCP
61	42	fUCNAc-(1→3) GlcNAc	1	(1.0)	1	(1.6)	75	5:1	SEt	N_3	NIS, TfOH
62	171	Gal (1→3)GlcNAc	1	(1.0)	1	(1.3)	87	β	bromide	OAc	$Hg(CN)_2$
63	13	Gal(1-aliphatic)	1	(1.0)	1	(2.0)	100	1:3	chloride	OBn	Zn butylbenzoate
64	82	Gal(1→2)Glc	1	(1.35)	1	(1.0)	45	β	bromide	OCAMB	AgOTf, collidine
65	106	Gal(1→2)Glc	1	(1.0)	1	(1.2)	20	β	bromide	OAc	$Hg(CN)_2$

(continued)

Entry	Ref	Linkage formed	Acceptor size	Acceptor (eq.)	Donor size	Donor (eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
66	120	Gal(1→2)Glc	1	(1.0)	1	(1.1)	37	β	bromide	OAc	AgOTf
67	174	Gal(1→2)Man	2	(1.0)	1	(2.0)	86	α	bromide	OBn	AgOTf, TMU
68	174	Gal(1→2)Man	2	(1.0)	1	(1.0)	52	β	SEt	OAc	NIS, TfOH
69	143	Gal(1→2)Xyl	1	(1.0)	1	(2.0)	53	β	imidate	OBz	TMSOTf
70	106	Gal(1→2/3)Gal	1	(1.0)	1	(1.3)	28	1:6	imidate	OBn	BF_3-OEt_2
71	178	Gal(1→3)Deoxy Nojir[a]	1	(1.0)	1	(2.0)	100	β	SMe	OBz	DMTST
72	178	Gal(1→3)Deoxy Nojir[a]	1	(1.0)	2	(1.2)	90	β	SMe	OBz	NIS, TfOH
73	15	Gal(1→3)Gal	2	(1.0)	1	(2.0)	65	β	bromide	OAc	AgOTf,TMU
74	106	Gal(1→3)Gal	1	(1.0)	1	(1.2)	41	β	bromide	OAc	$Hg(CN)_2$
75	88	Gal(1→3)Gal	1	(1.5)	2	(1.0)	81	β	imidate	OBz	TMSOTf
76	39	Gal(1→3)Gal	1	(1.0)	1	(1.6)	57	α	SEt	OClBn	DMTSB
77	124	Gal(1→3)Gal	2	(1.0)	1	(1.0)	65	α	SMe	OPMB	$CuBr_2$, DMF, TBABr
78	124	Gal(1→3)Gal	2	(1.0)	1	(2.0)	56	α	SMe	OPMB	$CuBr_2$, DMF, TBABr
79	179	Gal(1→3)Gal	1	(1.0)	1	(1.1)	49	α	SEt	OTBDMS	IDCP
80	179	Gal(1→3)Gal	1	(1.0)	1	(1.1)	83	α	SEt	OPMB	IDCP
81	106	Gal(1→3)GalNAc	1	(1.0)	1	(1.5)	58	1:9	bromide	OAc	$Hg(CN)_2$
82	164	Gal(1→3)GalNAc	1	(1.0)	1	(1.2)	70	13:1	bromide	OAc	AgOTf, DTBP
83	6	Gal(1→3)GalNAc	1	(1.3)	2	(1.0)	58	β	imidate	OLev	TMSOTf
84	51	Gal(1→3)GalNAc	1	(1.0)	1	(1.04)	52	β	imidate	OAc	BF_3-OEt_2
85	46	Gal(1→3)GalNAc	3	(1.0)	1	(1.8)	91	β	SMe	OBz	NIS, TfOH
86	102	Gal(1→3)GalNAc	5	(NR)	3	(NR)	53	β	SMe	OBz	DMTST
87	162	Gal(1→3)GalNAc	5	(1.0)	1	(1.2)	78	β	SMe	OBz	DMTST
88	162	Gal(1→3)GalNAc	5	(1.0)	2	(1.5)	87	β	SMe	OBz	DMTST
89	162	Gal(1→3)GalNAc	5	(1.0)	3	(1.5)	52	β	SMe	OBz	DMTST

Entry	Ref	Linkage formed	Acceptor size	Acceptor (eq.)	Donor size	Donor (eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
90	146	Gal(1→3)Glc	1	(1.0)	1	(1.3)	68	α	chloride	OBz	AgOTf, collidine
91	146	Gal(1→3)Glc	1	(1.0)	1	(1.3)	82	α	chloride	OPiv	AgOTf, collidine
92	146	Gal(1→3)Glc	1	(1.0)	1	(1.3)	40	1:2.3	chloride	OBz	Ag Silicate
93	146	Gal(1→3)Glc	1	(1.0)	1	(1.0)	15	α	fluoride	OBz	BF_3-OEt_2
94	146	Gal(1→3)Glc	1	(1.0)	1	(1.0)	33	α	fluoride	OBz	BF_3-OEt_2
95	146	Gal(1→3)Glc	1	(1.0)	1	(1.1)	80	12:68	imidate	OBz	TMSOTf
96	146	Gal(1→3)Glc	1	(1.0)	1	(1.6)	100	20:80	imidate	OBz	TMSOTf
97	30	Gal(1→3)GlcNAc	1	(1.0)	1	(1.0)	62	β	dibenzyl phosphite	OAc	TMSOTf
98	30	Gal(1→3)GlcNAc	1	(1.0)	1	(1.0)	58	β	dibenzyl phosphite	OAc	TMSOTf
99	79	Gal(1→3)GlcNAc	1	(1.0)	1	(2.0)	64	β	dibenzyl phosphite	OAc	TMSOTf
100	188	Gal(1→3)GlcNAc	1	(1.0)	1	(4.0)	~88	β	sulfoxide	OPiv	Tf_2O, MDTBP
101	44	Gal(1→3)GlcNAc	3	(1.0)	2	(1.3)	45	β	SMe	OBz	MSB, AgOTf
102	91	Gal(1→3)GlcNAc	3	(1.0)	1	(1.9)	88	α	SMe	OBn	MeOTf
103	91	Gal(1→3)GlcNAc	3	(1.0)	1	(2.1)	86	β	SMe	OPMB	MeOTf
104	93	Gal(1→3)GlcNAc	2	(1.0)	1	(1.8)	87	α	SMe	OPMB	MeOTf
105	97	Gal(1→3)GlcNAc	3	(1.0)	2	(1.5)	90	β	SMe	OBz	DMTST
106	61	Gal(1→3)Glycal	1	(10.0)	1	(1.0)	NR	β	epoxide	-O-	$ZnCl_2$
107	106	Gal(1→3)Man	1	(1.0)	1	(1.5)	47	β	bromide	OAc	$Hg(CN)_2$
108	72	Gal(1→3)rHA	2	(1.0)	1	(1.5)	74	α	SEt	OBn	MeOTf
109	179	Gal(1→3)rHA	2	(1.0)	2	(1.3)	67	1:1	SEt	OBn	IDCP
110	80	Gal(1→3/4)GlcNAc	1	(1.0)	1	(1.0)	86	β	imidate	OAc	BF_3-OEt_2
111	80	Gal(1→3/4)GlcNAc	1	(1.3)	1	(1.0)	70	β	imidate	OAc	TMSOTf
112	178	Gal(1→4)Deoxy Nojir[a]	2	(1.0)	1	(2.0)	70	β	SMe	OBz	NIS, TfOH

(continued)

Entry	Ref	Linkage formed	Acceptor size	Acceptor (eq.)	Donor size	Donor (eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
113	178	Gal(1→4)Deoxy Nojir[a]	2	(1.0)	2	(1.5)	61	β	SMe	OBz	NIS, TfOH
114	178	Gal(1→4)Deoxy Nojir[a]	2	(1.0)	2	(1.5)	59	β	SMe	OBz	DMTST
115	65	Gal(1→4)Gal	1	(1.0)	1	(1.3)	92	5:1	chloride	OBn	AgOTf, TMU
116	65	Gal(1→4)Gal	2	(1.0)	1	(1.3)	92	4:1	chloride	OBn	AgOTf, TMU
117	124	Gal(1→4)Gal	3	(1.0)	1	(2.1)	60	α	SMe	OPMB	$CuBr_2$, DMF, TBABr
118	30	Gal(1→4)Glc	1	(1.0)	1	(1.0)	66	β	dibenzyl phosphite	OAc	TMSOTf
119	11	Gal(1→4)GlcNAc	1	(1.0)	1	(1.2)	78	β	bromide	OAc	AgOTf, *DTBP*
120	133	Gal(1→4)GlcNAc	1	(1.0)	1	(2.3)	97	β	bromide	OAc	$Hg(CN)_2$
121	133	Gal(1→4)GlcNAc	1	(1.0)	1	(1.6)	67	β	bromide	OAc	$HgBr_2$
122	133	Gal(1→4)GlcNAc	1	(1.0)	1	(1.6)	81	β	bromide	OAc	AgOTf
123	133	Gal(1→4)GlcNAc	1	(1.0)	1	(1.6)	61	β	bromide	OAc	AgOTf
124	133	Gal(1→4)GlcNAc	1	(1.0)	1	(1.6)	86	β	bromide	OAc	AgOTf
125	166	Gal(1→4)GlcNAc	1	(NR)	1	(NR)	69	β	bromide	OAc	AgOTf
126	139	Gal(1→4)GlcNAc	1	(1.4)	1	(1.0)	52	β	fluoride	NPhth	AgOTf, $SnCl_2$
127	139	Gal(1→4)GlcNAc	1	(1.4)	1	(1.0)	47	β	fluoride	NPhth	AgOTf, $SnCl_2$
128	37	Gal(1→4)GlcNAc	3	(1.0)	1	(2.1)	64	β	imidate	OAc	BF_3-OEt_2
129	37	Gal(1→4)GlcNAc	3	(1.0)	1	(2.1)	66	β	imidate	OAc	TMSOTf
130	80	Gal(1→4)GlcNAc	2	(1.0)	1	(2.0)	71	β	imidate	OAc	TMSOTf
131	41	Gal(1→4)GlcNAc	4	(1.0)	2	(2.0)	74	β	SMe	OBz	DMTST
132	41	Gal(1→4)GlcNAc	6	(1.0)	2	(1.0)	28	β	SMe	OBz	DMTST
133	80	Gal(1→4)GlcNAc	3	(1.0)	1	(1.2)	42	β	SMe	OBz	DMTST
134	80	Gal(1→4)GlcNAc	3	(1.0)	2	(1.7)	44	β	SMe	OBz	DMTST
135	80	Gal(1→4)GlcNAc	3	(1.0)	2	(1.7)	38	β	SMe	OBz	DMTST

Entry	Ref	Linkage formed	Acceptor size	Acceptor (eq.)	Donor size	Donor (eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
136	97	Gal(1→4)GlcNAc	3	(1.0)	2	(1.0)	83	β	SMe	OBz	DMTST
137	97	Gal(1→4)GlcNAc	4	(1.0)	2	(2.4)	46	β	SMe	OBz	DMTST
138	126	Gal(1→4)GlcNAc	1	(1.0)	1	(1.2)	61	β	SMe	OAc	MeOTf
139	86	Gal(1→4)Glc[6d]	1	(NR)	1	(NR)	44	β	imidate	OAc	BF_3-OEt_2
140	61	Gal(1→4)Glycal	1	(NR)	1	(NR)	NR	β	epoxide	-O-	$ZnCl_2$
141	122	Gal(1→4)iDOA	2	(NR)	2	(NR)	59	1:4	imidate	OAc	TMSOTf,
142	122	Gal(1→4)iDOA	4	(NR)	1	(NR)	40	β	imidate	OAc	TMSOTf
143	176	Gal(1→4)iDOA	2	(1.0)	2	(1.15)	89	α	imidate	OBn	TMSOTf
144	84	Gal(1→4)iDOA	1	(NR)	1	(NR)	41	9:2	SEt	OBz	NIS, TfOH
145	84	Gal(1→4)iDOA	1	(NR)	1	(NR)	90	β	SEt	OBz	NIS, TfOH
146	133	Gal(1→4)Xyl	1	(1.0)	1	(2.3)	34	β	bromide	OAc	$Hg(CN)_2$
147	88	Gal(1→4)Xyl	1	(1.8)	3	(1.0)	77	β	imidate	OBz	TMSOTf
148	88	Gal(1→4)Xyl	1	(1.0)	1	(1.2)	75	β	imidate	OBz	TMSOTf
149	88	Gal(1→4)Xyl	1	(1.25)	3	(1.0)	79	β	imidate	OBz	TMSOTf
150	120	Gal(1→4,6)Glc	1	(1.0)	1	(2.4)	25	β	imidate	OAc	BF_3-OEt_2
151	35	Gal(1→6)Gal	1	(1.0)	1	(4.0)	(NR)	β	sulfoxide	OPiv	Tf_2O, MDTBP
152	188	Gal(1→6)Gal	2	(1.0)	1	(4.0)	52	β	sulfoxide	OPiv	Tf_2O, MDTBP
153	75	Gal(1→6)Glc	5	(1.0)	1	(4.4)	90	α	bromide	OBn	TBABr
154	82	Gal(1→6)Glc	1	(1.0)	1	(1.1)	63	β	bromide	OCAMB	AgOTf, collidine
155	120	Gal(1→6)Glc	1	(1.0)	2	(1.2)	76	β	imidate	OAc	BF_3-OEt_2
156	30	Gal(1→6)Glc	1	(1.0)	1	(1.0)	26	β	dibenzyl phosphite	OAc	TMSOTf
157	19	Gal(1→6)Glc	1	(1.0)	1	(2.0)	64	β	sulfoxide	OBz	TMSOTf, TEP
158	19	Gal(1→6)Glc	1	(1.0)	1	(2.0)	84	β	sulfoxide	OBz	TMSOTf, TEP
159	19	Gal(1→6)Glc	1	(1.0)	1	(2.0)	38	β	sulfoxide	OBz	TMSOTf, TEP

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Entry	Ref	Linkage formed	Acceptor size	(eq.)	Donor size	(eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
160	74	Gal[4F](1→4)Glc	1	(1.0)	1	(1.8)	44	β	bromide	OAc	$Hg(CN)_2$, $HgBr_2$
161	109	Gal[6d](1→4)Gal	2	(1.0)	1	(1.25)	56	α	SEt	OBn	$CuBr_2$, TBABr, AgOTf
162	39	GalNAc(1→3)Gal	2	(1.0)	1	(2.5)	64	4:1	bromide	N_3	AgOTf, collidine
163	65	GalNAc(1→3)Gal	1	(1.0)	1	(1.5)	83	β	chloride	NPhth	AgOTf, TMU
164	65	GalNAc(1→3)Gal	1	(1.0)	1	(1.5)	79	1:8	chloride	NPhth	AgOTf, TMU
165	65	GalNAc(1→3)Gal	2	(1.0)	1	(1.5)	78	8:92	chloride	NPhth	AgOTf, TMU
166	65	GalNAc(1→3)Gal	3	(1.0)	1	(1.5)	35	15:85	chloride	NPhth	AgOTf, TMU
167	6	GalNAc(1→3)Gal	1	(1.0)	1	(1.2)	77	α	imidate	N_3	TMSOTf
168	39	GalNAc(1→3)Gal	2	(1.0)	1	(2.5)	25	4:1	STol	N_3	DMTSB
169	66	GalNAc(1→3)GalNAc	1	(1.0)	1	(2.0)	71	9:2	bromide	N_3	AgOTf
170	66	GalNAc(1→3)GalNAc	2	(1.0)	1	(2.0)	55	2.7:1	bromide	N_3	AgOTf, TMU
171	66	GalNAc(1→3)GalNAc	3	(1.0)	1	(2.5)	84	α	bromide	N_3	AgOTf, TMU
172	6	GalNAc(1→3)GalNAc	4	(1.0)	1	(2.5)	74	α	bromide	N_3	AgOTf, TMU
173	174	GalNAc(1→3)Man	1	(1.0)	1	(2.8)	70	α	chloride	N_3	AgOTf,TMU
174	125	GalNAc(1→4)Gal	3	(1.0)	1	(2.0)	13	β	bromide	NPhth	AgOTf
175	125	GalNAc(1→4)Gal	3	(1.0)	1	(2.0)	20	β	bromide	NPhth	$HgBr_2$, $Hg(CN)_2$
176	125	GalNAc(1→4)Gal	3	(1.0)	1	(2.0)	5	β	bromide	NPhth	$Sn(OTf)_2$
177	125	GalNAc(1→4)Gal	3	(1.0)	1	(5.0)	91	1:5.5	xanthate	N_3	PhSeOTf
178	68	GalNAc(1→4)Gal	4	(1.0)	1	(1.5)	85	β	SMe	NPhth	NIS, TfOH
179	102	GalNAc(1→4)Gal	2	(NR)	1	(NR)	53	β	SMe	NPhth	NIS, TfOH
180	125	GalNAc(1→4)Gal	3	(NR)	1	(NR)	0	—	SMe	NPhth	PhSeOTf
181	125	GalNAc(1→4)Gal	3	(NR)	1	(NR)	5	—	SMe	NPhth	MeOTf
182	162	GalNAc(1→4)Gal	2	(1.0)	1	(1.2)	53	β	SMe	NPhth	NIS, TfOH

Entry	Ref	Linkage formed	Acceptor size	Acceptor (eq.)	Donor size	Donor (eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
183	168	GalNAc(1→4)Glc	1	(1.2)	1	(1.0)	80	β	β-OAc	NHTroc	$Sn(OTf)_2$, HMDS
184	168	GalNAc(1→4)Glc	1	(1.2)	1	(1.0)	80	β	β-OAc	NHTroc	$Yb(OTf)_3$, HMDS
185	168	GalNAc(1→4)Glc	1	(1.2)	1	(1.0)	80	β	β-OAc	NHTroc	$Sn(OTf)_2$
186	168	GalNAc(1→4)Glc	1	(1.2)	1	(1.0)	90	β	β-OAc	NHTroc	$SnCl_4$, AgOTf
187	168	GalNAc(1→4)Glc	1	(1.2)	1	(1.0)	81	β	β-OAc	NHTroc	$Yb(OTf)_3$
188	168	GalNAc(1→6)Gal	1	(1.2)	1	(1.0)	94	β	β-OAc	NHTroc	$Sn(OTf)_2$, HMDS
189	168	GalNAc(1→6)Gal	1	(1.2)	1	(1.0)	92	β	β-OAc	NHTroc	$Yb(OTf)_3$, HMDS
190	168	GalNAc(1→6)Gal	1	(1.2)	1	(1.0)	94	β	β-OAc	NHTroc	$Sn(OTf)_2$,
191	168	GalNAc(1→6)Gal	1	(1.2)	1	(1.0)	94	β	β-OAc	NHTroc	$Yb(OTf)_3$
192	168	GalNAc(1→6)Glc	1	(1.2)	1	(1.0)	98	β	β-OAc	NHTroc	$Sn(OTf)_2$, HMDS
193	168	GalNAc(1→6)Glc	1	(1.2)	1	(1.0)	99	β	β-OAc	NHTroc	$Yb(OTf)_3$, HMDS
194	168	GalNAc(1→6)Glc	1	(1.2)	1	(1.0)	99	β	β-OAc	NHTroc	$Sn(OTf)_2$,
195	168	GalNAc(1→6)Glc	1	(1.2)	1	(1.0)	99	β	β-OAc	NHTroc	$Yb(OTf)_3$
196	156	Glc(1→1)Gal	1	(1.0)	1	(1.1)	90	55:45	imidate	OBn	TMSOTf
197	156	Glc(1→1)Glc	1	(1.0)	1	(1.1)	91	α	imidate	OBn	TMSOTf
198	156	Glc(1→1)Glc	1	(1.0)	1	(1.3)	84	α	imidate	OBn	AgOTf
199	156	Glc(1→1)Glc	2	(1.0)	1	(1.1)	66	β	imidate	OBn	TMSOTf
200	156	Glc(1→1)gLU	1	(1.0)	1	(1.1)	49	35:14	imidate	OBn	TMSOTf
201	156	Glc(1→1)Man	1	(1.0)	1	(1.1)	87	α	imidate	OBn	TMSOTf

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Entry	Ref	Linkage formed	Acceptor size	Acceptor (eq.)	Donor size	Donor (eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
202	156	Glc(1→1)Man	1	(1.0)	1	(1.1)	93	α	imidate	OBn	TMSOTf
203	73	Glc(1→2)Glc	1	(1.0)	1	(1.0)	95	10:1	bromide	OBn	$Hg(CN)_2$
204	18	Glc(1→2)Glc	1	(NR)	1	(NR)	71	β	vinyl ether	OAc	TMSOTf
205	174	Glc(1→2)Man	2	(1.0)	1	(2.0)	69	1.9:1	bromide	OBn	AgOTf, TMU
206	95	Glc(1→2)Xyl	1	(1.0)	1	(1.9)	33	5:6	bromide	OAc	$Hg(CN)_2$, $HgBr_2$
207	143	Glc(1→2)Xyl	1	(1.0)	1	(3.0)	76	1:1	chloride	$OCOCCl_3$	AgOTf, MDTBP
208	50	Glc(1→2/3)All	1	(0.9)	1	(1.0)	90	5:1	imidate	OBn	BF_3-OEt_2
209	50	Glc(1→2/3)All	1	(0.9)	1	(1.0)	94	1:3	imidate	OBn	BF_3-OEt_2
210	50	Glc(1→2/3)All	--	--	--	--	--	both	diazirine	OBn	11 uses
211	49	Glc(1→2/3)Gal	--	--	--	--	--	both	diazirine	OBn	6 uses
212	49	Glc(1→2/3)Glc	--	--	--	--	--	both	diazirine	OBn	18 uses
213	49	Glc(1→2/3)Man	1	(1.0)	1	(1.1)	91	1:9	imidate	OBn	BF_3-OEt_2
214	49	Glc(1→2/3)Man	--	--	--	--	--	both	diazirine	OBn	7 uses
215	52	Glc(1→2/3/4)Alt	--	--	--	--	--	both	diazirine	OBn	8 uses
216	53	Glc(1→2/3/4)rIB	--	--	--	--	--	both	diazirine	OBn	8 uses
217	53	Glc(1→2/3/4)rIB	--	--	--	--	--	both	diazirine	OBn	7 uses
218	181	Glc(1→3)All	1	(1.0)	1	(1.1)	0	—	diazirine	OBn	dioxane
219	181	Glc(1→3)All	1	(1.0)	1	(1.1)	80	9:1	diazirine	OBn	dioxane
220	181	Glc(1→3)All	1	(1.0)	1	(1.1)	57	2.6:1	diazirine	OBn	dioxane
221	181	Glc(1→3)All	1	(1.0)	1	(1.9)	66	1:3.7	diazirine	OBn	dioxane
222	181	Glc(1→3)All	1	(1.0)	1	(1.3)	62	2.6:1	diazirine	OBn	dioxane
223	49	Glc(1→3)Gal	1	(1.0)	1	(1.4)	75	2:1	bromide	OBn	TBABr
224	73	Glc(1→3)Glc	1	(1.2)	2	(1.0)	0	--	bromide	OSugar	AgOTf or $Hg(CN)_2$
225	186	Glc(1→3)Glc	1	(NR)	1	(NR)	75	β	bromide	OMBz	AgOTf
226	151	Glc(1→3)Glc	1	(1.2)	1	(1.0)	19	4:1	sulfonamide	OBn	BF_3OEt_2

Entry	Ref	Linkage formed	Acceptor size	Acceptor (eq.)	Donor size	Donor (eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
227	151	Glc(1→3)Glc	1	(1.2)	1	(1.0)	48	4:1	sulfonamide	OBn	TMSOTf
228	151	Glc(1→3)Glc	1	(1.2)	1	(1.0)	52	β,α	sulfonamide	OBn	BF_3-OEt_2
229	155	Glc(1→3)Glc	1	(1.0)	1	(2.0)	74	β	vinyl ether	OPiv	NIS, TfOH
230	185	Glc(1→3)Glc	1	(NR)	2	(1.0)	79	β	SPh	OAc	NIS, TfOH
231	183	Glc(1→3)Glc	1	(1.0)	1	(2.0)	84	β	SEt	OBz	NIS, AgOTf
232	87	Glc(1→3)GlcNAc	1	(1.0)	1	(1.15)	81	β	imidate	OTol	TMSOTf
233	87	Glc(1→3)GlcNAc	1	(1.0)	1	(1.3)	87	β	imidate	OTol	TMSOTf
234	87	Glc(1→3)GlcNAc	3	(1.0)	1	(5.0)	87	β	imidate	OTol	TMSOTf
235	158	Glc(1→3)GlcNAc	2	(1.0)	2	(2.5)	77	β	imidate	OTol	TMSOTf
236	75	Glc(1→3)gLY-Man	3	(1.0)	1	(1.3)	66	α	SEt	OBn	DMTST
237	75	Glc(1→3)gLY-Man	3	(NR)	2	(NR)	0	--	SMe	OBn	DMTST
238	75	Glc(1→3)gLY-Man	3	(1.0)	2	(1.8)	72	α	SMe	OBn	NIS, AgOTf
239	49	Glc(1→3)Man	1	(1.0)	1	(1.4)	80	10:1	bromide	OBn	TBABr
240	49	Glc(1→3)Man	1	(1.0)	1	(1.1)	88	82:6	imidate	OBn	BF_3-OEt_2
241	71	Glc(1→3)rHA	2	(1.06)	1	(1.0)	42	β	imidate	OAc	TMSOTf
242	71	Glc(1→3)rHA	1	(1.0)	1	(1.2)	49	β	imidate	OBz	TMSOTf
243	71	Glc(1→3)rHA	1	(1.0)	1	(1.2)	96	β	imidate	OBz	TMSOTf
244	71	Glc(1→3)rHA	1	(1.0)	1	(1.2)	80	β	imidate	OBz	TMSOTf
245	71	Glc(1→3)rHA	1	(1.0)	1	(1.0)	92	β	imidate	OBz	TMSOTf
246	116	Glc(1→3)tAL[6d]	2	(1.0)	1	(2.0)	56	β	bromide	OAc	$Hg(CN)_2$, $HgBr_2$
247	183	Glc(1→3,6)Glc	1	(1.0)	1	(2.6)	81	β,β	SEt	OBz	NIS, AgOTf
248	183	Glc(1→3,6)Glc	2	(1.0)	1	(2.6)	80	β,β	SEt	OBz	NIS, AgOTf
249	49	Glc(1→3/4)Gal	1	(1.0)	1	(1.1)	86	2:3	imidate	OBn	BF_3-OEt_2
250	49	Glc(1→3/4)Gal	--	--	--	--	--	both	diazirine	OBn	4 uses
251	49	Glc(1→3/4)Man	--	--	--	--	--	both	diazirine	OBn	3 uses

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Entry	Ref	Linkage formed	Acceptor size	(eq.)	Donor size	(eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
252	85	Glc(1→4)Glc	2	(NR)	3	(NR)	47	β	bromide	OAc	AgOTf, TMU
253	182	Glc(1→4)Glc	2	(2.1)	2	(1.0)	58	1.8:1	bromide	OSugar	AgO, I_2
254	2	Glc(1→4)Glc	1	(NR)	1	(NR)	73	8:1	fluoride	OBn	$SnCl_2$, $AgClO_4$, DTBP
255	146	Glc(1→4)Glc	1	(1.0)	2	(1.2)	73	β	imidate	OBz	TMSOTf
256	155	Glc(1→4)Glc	1	(1.0)	1	(2.0)	69	β	vinyl ether	OPiv	NIS, TfOH
257	155	Glc(1→4)Glc	1	(1.0)	1	(2.0)	70	β	vinyl ether	OPiv	NIS, TfOH
258	155	Glc(1→4)Glc	1	(1.0)	1	(2.0)	*	β	vinyl ether	OPiv	NIS, TfOH
259	54	Glc(1→4)Glc	1	(1.1)	1	(1.0)	28	3:2	Me_2P=S	OBn	NIS, TfOH
260	54	Glc(1→4)Glc	1	(0.75)	1	(1.0)	43	9:11	Me_2P=S	OBn	NIS, TfOH
261	54	Glc(1→4)Glc	1	(0.75)	1	(1.0)	81	68:32	Me_2P=S	OBn	$ZnCl_2$, $AgClO_4$
262	54	Glc(1→4)Glc	1	(0.5)	1	(1.0)	100	66:34	Me_2P=S	OBn	$ZnCl_2$, $AgClO_4$
263	54	Glc(1→4)Glc	1	(0.5)	1	(1.0)	86	66:34	Me_2P=S	OBn	$ZnCl_2$, $AgClO_4$
264	54	Glc(1→4)Glc	1	(0.75)	1	(1.0)	88	6:31	Me_2P=S	OBn	$ZnCl_2$, $AgClO_4$
265	5	Glc(1→4)Glc	2	(1.0)	1	(1.2)	93	75:18	SEt	OBn	MeOTf
266	5	Glc(1→4)Glc	3	(1.0)	2	(1.25)	61	49:12	SMe	OBn	MeOTf
267	5	Glc(1→4)Glc	5	(1.0)	--	--	37	27:10	SMe	OBn	MeOTf
268	7	Glc(1→4)Glc	1	(1.0)	1	(2.0)	93	42:58	SPyr	OBn	Pd, AgOTf
269	57	Glc(1→4)Glc	1	(1.0)	1	(1.1)	89	45:55	SMe	OBn	PhSeNPhth, TMSOTf
270	57	Glc(1→4)Glc	1	(1.0)	1	(1.4)	99	31:69	SMe	OBn	PhSeNPhth, TMSOTf

Entry	Ref	Linkage formed	Acceptor size	Acceptor (eq.)	Donor size	Donor (eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
271	57	Glc(1→4)Glc	1	(1.0)	1	(1.3)	99	54:46	SMe	OBn	PhSeNPhth, TMSOTf
272	57	Glc(1→4)Glc	1	(1.0)	1	(1.3)	94	41:59	SMe	OBn	PhSeNPhth, TMSOTf
273	57	Glc(1→4)Glc	1	(1.0)	1	(1.3)	100	β	SMe	OBz	PhSeNPhth, TMSOTf
274	185	Glc(1→4)Glc	1	(NR)	2	(1.0)	44	β	SPh	OAc	NIS, TfOH
275	146	Glc(1→4)Glc	1	(1.0)	3	(1.0)	45	β	SMe	OBz	NIS, TfOH
276	16	Glc(1→4)GlcA	1	(1.0)	1	(1.05)	53	α	imidate	OBn	TMSOTf
277	16	Glc(1→4)GlcA	1	(1.0)	1	(1.05)	52	α	imidate	OBn	TMSOTf
278	176	Glc(1→4)GlcA	4	(1.0)	1	(1.8)	74	64:10	imidate	OCH_3	TMSOTf
279	176	Glc(1→4)GlcA	4	(1.0)	1	(1.8)	62	α	imidate	OBn	TMSOTf
280	176	Glc(1→4)GlcA	4	(1.0)	1	(1.8)	60	α	imidate	OBn	TMSOTf
281	176	Glc(1→4)GlcA	4	(1.0)	1	(1.8)	60	α	imidate	OCH_3	TMSOTf
282	176	Glc(1→4)GlcA	4	(1.0)	1	(1.8)	61	α	imidate	OBn	TMSOTf
283	176	Glc(1→4)GlcA	4	(1.0)	1	(1.8)	75	α	imidate	OBn	TMSOTf
284	59	Glc(1→4)GlcNAc	1	(NR)	1	(NR)	85	β	fluoride	OAc	BF_3-OEt_2
285	86	Glc(1→4)Glc[6d]	1	(NR)	2	(NR)	14	β	imidate	OAc	TMSOTf
286	16	Glc(1→4)iDOA	1	(1.0)	1	(1.05)	46	α	imidate	OBn	TMSOTf
287	16	Glc(1→4)iDOA	1	(1.0)	1	(1.05)	41	α	imidate	OBn	TMSOTf
288	72	Glc(1→4)rHA	1	(1.0)	1	(1.1)	81	β	bromide	OAc	$Hg(CN)_2$
289	38	Glc(1→6)Gal	1	(1.0)	1	(1.1)	93	β	fluoride	OAc	BF_3-OEt_2
290	38	Glc(1→6)Gal	1	(1.0)	1	(1.1)	20	β	fluoride	OAc	BF_3-OEt_2
291	38	Glc(1→6)Gal	1	(1.0)	1	(1.1)	55	β	fluoride	OAc	BF_3-OEt_2
292	31	Glc(1→6)Gal	1	(1.5)	1	(1.0)	NR	β	epoxide	-O-	$ZnCl_2$
293	32	Glc(1→6)Gal	1	(2.0)	1	(1.0)	57	α	epoxide	-O-	$AgBF_4$

(continued)

Entry	Ref	Linkage formed	Acceptor size	(eq.)	Donor size	(eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
294	151	Glc(1→6)Gal	1	(1.2)	1	(1.0)	52	1:1	sulfonamide	OBn	BF_3-OET_2
295	151	Glc(1→6)Gal	1	(1.2)	1	(1.0)	67	1:1	sulfonamide	OBn	TMSOTf
296	155	Glc(1→6)Gal	1	(1.0)	1	(2.0)	70	β	vinyl ether	OPiv	NIS, TfOH
297	155	Glc(1→6)Gal	1	(1.0)	2	(1.0)	25*	1:7.3	*n*-pentenyl	OBn	NIS, TESOTf
298	172	Glc(1→6)Gal	1	(1.0)	1	(1.0)	75	β	tetrazol	OBn	BF_3-OEt_2
299	172	Glc(1→6)Gal	1	(1.0)	1	(1.0)	49	1:4	tetrazol	OBn	BF_3-OEt_2
300	172	Glc(1→6)Gal	1	(1.0)	1	(1.0)	69	1:3	tetrazol	OBn	BF_3-OEt_2
301	172	Glc(1→6)Gal	1	(1.0)	1	(1.0)	70	1:3	tetrazol	OBn	TMSOTf
302	172	Glc(1→6)Gal	1	(1.0)	1	(1.0)	80	β	tetrazol	OBn	TMSOTf
303	172	Glc(1→6)Gal	1	(1.0)	1	(1.0)	98	1.5:1	tetrazol	OBn	TMSOTf
304	172	Glc(1→6)Gal	1	(1.0)	1	(1.0)	82	1:1	tetrazol	OBn	TMSOTf
305	172	Glc(1→6)Gal	1	(1.0)	1	(1.0)	82	1:1	tetrazol	OBn	AgOTf
306	172	Glc(1→6)Gal	1	(1.0)	1	(1.0)	54	2:1	tetrazol	OBn	TSA
307	172	Glc(1→6)Gal	1	(1.0)	1	(1.0)	75	1.5:1	tetrazol	OBn	TSA
308	172	Glc(1→6)Gal	1	(1.0)	1	(1.0)	58	1.4:1	tetrazol	OBn	TSA
309	172	Glc(1→6)Gal	1	(1.0)	1	(1.0)	86	1:1.7	tetrazol	OBn	TMSOTf
310	172	Glc(1→6)Gal	1	(1.0)	1	(1.0)	73	2:1	tetrazol	OBn	TSA
311	172	Glc(1→6)Gal	1	(1.0)	1	(1.0)	67	7:1	tetrazol	OBn	TMSOTf
312	172	Glc(1→6)Gal	1	(1.0)	1	(1.0)	97	6:1	tetrazol	OBn	TMSOTf
313	172	Glc(1→6)Gal	1	(1.0)	1	(1.0)	83	β	tetrazol	OBn	TMSOTf
314	30	Glc(1→6)Gal	1	(1.5)	2	(1.0)	40	β	dibenzyl phosphite	OAc	TMSOTf
315	186	Glc(1→6)Glc	2	(NR)	1	(NR)	75	β	bromide	OMBz	AgOTf
316	185	Glc(1→6)Glc	1	(1.0)	1	(1.2)	84	β	bromide	OMBz	AgOTf
317	185	Glc(1→6)Glc	1	(1.0)	1	(1.2)	79	β	bromide	OMBz	AgOTf

Entry	Ref	Linkage formed	Acceptor size	Acceptor (eq.)	Donor size	Donor (eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
318	185	Glc(1→6)Glc	1	(1.0)	1	(1.2)	44	β	bromide	OMBz	AgOTf
319	147	Glc(1→6)Glc	1	(1.3)	1	(1.0)	38	β	bromide	OAc	DMF, LiBr, electrolysis
320	149	Glc(1→6)Glc	2	(1.0)	1	(1.2)	79	1:7	bromide	OAc	$Hg(CN)_2$
321	38	Glc(1→6)Glc	1	(1.3)	1	(1.0)	66	β	chloride	OBz	AgOTf
322	10	Glc(1→6)Glc	1	(1.0)	1	(1.5)	65	9:1	fluoride	OBn	$SnCl_2$, $AgClO_4$
323	10	Glc(1→6)Glc	2	(1.0)	1	(2.3)	54	α	fluoride	OBn	$SnCl_2$, $AgClO_4$
324	38	Glc(1→6)Glc	1	(1.0)	1	(1.0)	84	β	fluoride	OBz	BF_3-OEt_2,
325	38	Glc(1→6)Glc	1	(1.0)	1	(1.0)	71	β	fluoride	OAc	BF_3-OEt_2,
326	38	Glc(1→6)Glc	1	(1.0)	1	(1.1)	45	β	fluoride	OAc	TiF_4
327	38	Glc(1→6)Glc	1	(1.0)	1	(1.1)	67	66:34	fluoride	OBn	BF_3-OEt_2
328	38	Glc(1→6)Glc	1	(1.0)	1	(1.1)	20	70:30	fluoride	OBn	BF_3-OEt_2
329	38	Glc(1→6)Glc	1	(1.0)	1	(1.1)	62	71:29	fluoride	OBn	TMSOTf
330	38	Glc(1→6)Glc	1	(1.0)	1	(1.1)	54	90:10	fluoride	OBn	TMSOTf
331	38	Glc(1→6)Glc	1	(1.0)	1	(1.1)	0	—	fluoride	OBn	Tf_2O
332	38	Glc(1→6)Glc	1	(1.0)	1	(1.1)	63	β	fluoride	OAc	BF_3-OEt_2
333	38	Glc(1→6)Glc	1	(1.0)	1	(1.1)	70	β	fluoride	OAc	BF_3-OEt_2
334	38	Glc(1→6)Glc	1	(1.0)	1	(1.1)	68	β	fluoride	OAc	BF_3-OEt_2
335	38	Glc(1→6)Glc	1	(1.0)	1	(1.1)	66	β	fluoride	OAc	BF_3-OEt_2
336	38	Glc(1→6)Glc	1	(1.0)	1	(1.1)	59	β	fluoride	OAc	BF_3-OEt_2
337	38	Glc(1→6)Glc	1	(1.0)	2	(1.1)	61	β	fluoride	OAc	BF_3-OEt_2
338	38	Glc(1→6)Glc	1	(1.0)	2	(1.1)	74	β	fluoride	OAc	BF_3-OEt_2
339	64	Glc(1→6)Glc	2	(1.0)	2	(1.0)	65	55:10	fluoride	OBn	$SnCl_2$, $AgClO_4$
340	185	Glc(1→6)Glc	1	(1.0)	1	(1.0)	76	α	fluoride	OAc	BF_3-OEt_2
341	64	Glc(1→6)Glc	2	(1.2)	2	(1.0)	88	67:21	imidate	OBn	TMSOTf

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Entry	Ref	Linkage formed	Acceptor size	Acceptor (eq.)	Donor size	Donor (eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
342	185	Glc(1→6)Glc	1	(1.0)	1	(1.0)	62	β	imidate	OAc	BF_3-OEt_2
343	10	Glc(1→6)Glc	3	(1.0)	3	(1.0)	12	α	*n*-pentenyl	OBn	IDCP
344	14	Glc(1→6)Glc	1	(1.0)	1	(1.0)	34	β	reducing sugar	OBz	$Fe(ClO_4)_3$
345	18	Glc(1→6)Glc	1	(NR)	1	(NR)	76	1:20	vinyl ether	OBn	TMSOTf
346	18	Glc(1→6)Glc	1	(NR)	1	(NR)	82	β	vinyl ether	OAc	TMSOTf
347	115	Glc(1→6)Glc	1	(1.3)	2	(1.0)	29	β	*n*-pentenyl	OAc	NIS, TESOTf
348	172	Glc(1→6)Glc	1	(1.0)	1	(1.0)	79	1:13	tetrazol	OBn	TMSOTf
349	172	Glc(1→6)Glc	1	(1.0)	1	(1.0)	66	7:1	tetrazol	OBn	TMSOTf
350	172	Glc(1→6)Glc	1	(1.0)	1	(1.0)	61	4.2:1	tetrazol	OBn	TMSOTf
351	172	Glc(1→6)Glc	1	(2.0)	1	(1.0)	73	6:1	tetrazol	OBn	TMSOTf
352	172	Glc(1→6)Glc	1	(1.0)	1	(1.0)	70	β	tetrazol	OBn	TMSOTf
353	30	Glc(1→6)Glc	1	(1.0)	1	(1.0)	25	β	dibenzyl phosphite	OAc	TMSOTf
354	30	Glc(1→6)Glc	1	(1.0)	1	(1.0)	62	β	dibenzyl phosphite	OBn	TMSOTf
355	30	Glc(1→6)Glc	1	(1.0)	1	(1.0)	66	β	dibenzyl phosphite	OBn	TMSOTf
356	30	Glc(1→6)Glc	1	(1.0)	1	(1.0)	72	β	dibenzyl phosphite	OBn	TfOH
357	30	Glc(1→6)Glc	1	(1.0)	1	(1.0)	66	β	dibenzyl phosphite	OBn	Tf_2O
358	19	Glc(1→6)Glc	1	(1.0)	1	(2.0)	43	β	sulfoxide	OBz	TMSOTf
359	19	Glc(1→6)Glc	1	(1.0)	1	(2.0)	51	β	sulfoxide	OBz	TMSOTf
360	19	Glc(1→6)Glc	1	(1.0)	1	(2.0)	46	β	sulfoxide	OBz	TMSOTf
361	19	Glc(1→6)Glc	1	(1.0)	1	(2.0)	39	β	sulfoxide	OBz	TMSOTf, TEP

Entry	Ref	Linkage formed	Acceptor size	Acceptor (eq.)	Donor size	Donor (eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
362	19	Glc(1→6)Glc	1	(1.0)	1	(2.0)	70	β	sulfoxide	OBz	TMSOTf
363	7	Glc(1→6)Glc	1	(1.0)	1	(2.0)	80	3:2	SPyr	OBn	Pd, AgOTf
364	7	Glc(1→6)Glc	1	(1.0)	1	(2.0)	93	65:35	SPyr	OBn	Pd, AgOTf
365	7	Glc(1→6)Glc	1	(1.0)	1	(2.0)	88	13:87	SPyr	OBn	Pd, AgOTf
366	38	Glc(1→6)Glc	1	(1.05)	1	(1.0)	77	β	SEt	OBz	MeOTf
367	57	Glc(1→6)Glc	1	(1.0)	1	(1.3)	100	10:90	SMe	OBn	MeOTf
368	57	Glc(1→6)Glc	1	(1.0)	1	(1.3)	91	21:79	SMe	OBn	MeOTf
369	110	Glc(1→6)Glc	5	(1.0)	1	(2.0)	86	β	SMe	OBz	NIS, TfOH
370	115	Glc(1→6)Glc	1	(2.0)	2	(1.0)	46	β	SPh	OAc	NIS, TESOTf
371	185	Glc(1→6)Glc	1	(NR)	2	(1.0)	84	β	SPh	OAc	NIS, TfOH
372	185	Glc(1→6)Glc	1	(1.0)	2	(1.2)	62	β	SPh	OAc	NIS, TfOH
373	185	Glc(1→6)Glc	1	(1.0)	2	(1.0)	76	β	SPh	OAc	NIS, TfOH
374	38	Glc(1→6)GlcNAc	1	(1.0)	1	(1.1)	60	β	fluoride	OAc	BF_3-OEt_2
375	37	Glc(1→6)GlcNAc	1	(1.0)	2	(1.0)	66	β	imidate	OAc	BF_3-OEt_2
376	37	Glc(1→6)GlcNAc	1	(1.0)	2	(1.0)	61	β	imidate	OAc	TMSOTf
377	42	Glc(1→6)GlcNAc	3	(1.0)	1	(1.5)	90	β	SePh	OBz	NIS, TfOH
378	31	Glc(1→6)Glycal	1	(1.5)	1	(1.0)	NR	β	epoxide	-O-	$ZnCl_2$
379	31	Glc(1→6)Glycal	1	(1.5)	2	(1.0)	NR	β	epoxide	-O-	$ZnCl_2$
380	31	Glc(1→6)Glycal	1	(1.5)	2	(1.0)	40	β	epoxide	-O-	$ZnCl_2$
381	32	Glc(1→6)Glycal	1	(2.0)	1	(1.0)	52	α	epoxide	-O-	$AgBF_4$
382	32	Glc(1→6)Glycal	1	(2.0)	2	(1.0)	51	α	epoxide	-O-	$AgBF_4$
383	32	Glc(1→6)Glycal	1	(2.0)	2	(1.0)	43	α	epoxide	-O-	$AgBF_4$
384	89	Glc(1→6)Man	1	(1.0)	1	(3.2)	70	β	bromide	OAc	$Hg(CN)_2$, $HgBr_2$
385	38	Glc(1→6)Man	1	(1.0)	1	(1.1)	93	β	fluoride	OAc	BF_3-OEt_2
386	38	Glc(1→6)Man	1	(1.0)	1	(1.1)	85	β	fluoride	OAc	BF_3-OEt_2

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Entry	Ref	Linkage formed	Acceptor size	(eq.)	Donor size	(eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
387	37	Glc(1→6)Man	1	(1.25)	1	(1.0)	78	α	imidate	OAc	TMSOTf
388	160	Glc[5S](1→2)Glc	1	(1.3)	1	(1.0)	90	3.5:1	imidate	OAc	TESOTf
389	160	Glc[5S](1→2)Glc	1	(1.0)	1	(1.2)	40	10:1	imidate	OAc	TESOTf
390	160	Glc[5S](1→2)Glc	1	(2.0)	1	(1.0)	80	9:1	imidate	OAc	TESOTf
391	160	Glc[5S](1→2)Glc	1	(2.0)	1	(1.0)	16	α	imidate	OAc	TESOTf
392	160	Glc[5S](1→2)Glc	1	(2.0)	1	(1.0)	19	α	imidate	OAc	TESOTf
393	22	Glc[5S](1→4)Glc	1	(2.0)	1	(1.0)	87	α	imidate	OAc	TESOTf
394	22	Glc[5S](1→4)Glc	1	(2.0)	1	(1.0)	90	1:1	imidate	OAc	TESOTf
395	2	Glc[5S](1→4)Glc[4Se]	1	(2.0)	1	(1.0)	57	46:11	imidate	OAc	TESOTf
396	22	Glc[5S](1→4)Glc[4S]	1	(2.0)	1	(1.0)	55	53:2	imidate	OAc	TESOTf
397	160	Glc[5S](1→6)Glc	1	(1.0)	1	(1.3)	80	1.5:1	imidate	OAc	TESOTf
398	72	GlcA(1→3)Gal	3	(1.0)	1	(2.4)	40	9:1	chloride	OBn	$HgBr_2$
399	30	GlcA(1→3)GlcNAc	1	(1.0)	1	(1.0)	18	β,β	dibenzyl phosphite	OAc	TMSOTf
400	62	GlcANAc(1→6)Glc	1	(1.0)	1	(1.5)	88	β	bromide	C=NR	AgAluminosilicate
401	27	GlcNAc(1→1)Gal	1	(1.0)	1	(2.0)	88	--	imidate	N_3	TfOH
402	42	GlcNAc(1→2)fUCNAc	1	(1.0)	1	(1.4)	21	4:1	SePh	N_3	NIS, TfOH
403	80	GlcNAc(1→2)Gal	6	(1.25)	6	(1.0)	77	β	imidate	N_3	TMSOTf
404	131	GlcNAc(1→2)Gal	1	(1.0)	1	(1.3)	100	β	imidate	NHTroc	TMSOTf
405	67	GlcNAc(1→2)Man	1	(1.0)	1	(5.6)	54	β	bromide	NPhth	AgOTf, collidine
406	92	GlcNAc(1→2)Man	3	(1.0)	1	(3.5)	71	β	bromide	NPhth	AgOTf, lutidine
407	92	GlcNAc(1→2)Man	4	(1.0)	1	(3.0)	42	β	bromide	NPhth	AgOTf, lutidine
408	161	GlcNAc(1→2)Man	1	(1.0)	1	(1.5)	80	β	bromide	NPhth	AgOTf, collidine
409	175	GlcNAc(1→2)Man	2	(2.0)	1	(1.0)	91	β	bromide	NPhth	AgOTf, collidine
410	175	GlcNAc(1→2)Man	2	(2.0)	1	(1.0)	83	β	bromide	NPhth	AgOTf, collidine

Entry	Ref	Linkage formed	Acceptor size	Acceptor (eq.)	Donor size	Donor (eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
411	161	GlcNAc(1→2)Man[6F]	1	(1.0)	1	(1.5)	98	β	bromide	NPhth	AgOTf,collidine
412	111	GlcNAc(1→3)fUC	1	(1.0)	1	(1.1)	71	β	β-OAc	NHTroc	$FeCl_3$
413	42	GlcNAc(1→3)fUCNAc	1	(1.0)	1	(1.0)	40	4:1	imidate	N_3	TMSOTf
414	42	GlcNAc(1→3)fUCNAc	2	(1.0)	1	(1.6)	26	4:1	SEt	N_3	NIS, TfOH
415	15	GlcNAc(1→3)Gal	2	(1.0)	2	(2.2)	38	β	bromide	NPhth	AgOTf,TMU
416	126	GlcNAc(1→3)Gal	2	(1.3)	3	(1.0)	42	β	fluoride	NPhth	$CpHfCl_2$, AgOTf
417	166	GlcNAc(1→3)Gal	2	(NR)	2	(NR)	87	β	fluoride	NPhth	$CpHfCl_2$, AgOTf
418	37	GlcNAc(1→3)Gal	2	(1.4)	4	(1.0)	53	β	imidate	NPhth	TMSOTf
419	37	GlcNAc(1→3)Gal	2	(2.0)	4	(1.0)	61	β	imidate	NPhth	TMSOTf
420	80	GlcNAc(1→3)Gal	3	(1.0)	3	(1.06)	80	β	imidate	N_3	TMSOTf
421	80	GlcNAc(1→3)Gal	2	(2.0)	6	(1.0)	80	β	imidate	N_3	TMSOTf
422	80	GlcNAc(1→3)Gal	2	(2.0)	6	(1.0)	74	β	imidate	N_3	TMSOTf
423	80	GlcNAc(1→3)Gal	3	(1.3)	6	(1.0)	71	β	imidate	N_3	TMSOTf
424	100	GlcNAc(1→3)Gal	1	(1.0)	1	(1.1)	84	β	imidate	$NHCOCCl_3$	TMSOTf
425	126	GlcNAc(1→3)Gal	2	(2.0)	3	(1.0)	42	β	imidate	NPhth	TMSOTf
426	132	GlcNAc(1→3)Gal	2	(NR)	3	(1.0)	70	β	imidate	N3	BF_3-OEt_2
427	132	GlcNAc(1→3)Gal	2	(NR)	3	(1.0)	71	β	imidate	N_3	BF_3-OEt_2
428	132	GlcNAc(1→3)Gal	2	(NR)	4	(NR)	69	β	imidate	N_3	BF_3-OEt_2
429	132	GlcNAc(1→3)Gal	5	(NR)	3	(NR)	64	β	imidate	N_3	BF_3-OEt_2
430	132	GlcNAc(1→3)Gal	5	(NR)	3	(NR)	63	β	imidate	N_3	BF_3-OEt_2
431	138	GlcNAc(1→3)Gal	1	(1.2)	1	(1.0)	59	β	imidate	NPhth	BF_3-OEt_2
432	138	GlcNAc(1→3)Gal	1	(1.2)	1	(1.0)	55	β	imidate	NPhth	BF_3-OEt_2
433	171	GlcNAc(1→3)Gal	2	(4.0)	3	(1.0)	25	β	imidate	NHAc	BF_3-OEt_2
434	79	GlcNAc(1→3)Gal	2	(1.0)	3	(2.0)	32	β	dibenzyl phosphite	N_3	BF_3-OEt_2

(continued)

Entry	Ref	Linkage formed	Acceptor size	Acceptor (eq.)	Donor size	Donor (eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
435	41	GlcNAc(1→3)Gal	2	(1.0)	1	(1.7)	94	α	SMe	NPhth	NIS, TfOH
436	57	GlcNAc(1→3)Gal	1	(1.0)	1	(1.5)	77	β	SMe	NPhth	NIS, TfOH
437	145	GlcNAc(1→3)GalNAc	1	(1.0)	2	(1.25)	84	β	imidate	NPhth	BF_3-OEt_2
438	94	GlcNAc(1→3)Glc	1	(1.0)	1	(3.6)	58	β	bromide	NPhth	AgOTf, collidine
439	100	GlcNAc(1→3)GlcNAc	1	(1.0)	1	(1.15)	87	β	imidate	$NHCOCCl_3$	TMSOTf
440	91	GlcNAc(1→3)rHA	2	(1.2)	1	(1.0)	53	α	chloride	N_3	AgOTf, MDTBP
441	111	GlcNAc(1→3)rHA	1	(1.0)	1	(1.1)	66	β	imidate	NHTroc	TMSOTf
442	111	GlcNAc(1→3)rHA	1	(1.0)	2	(1.2)	40	β	imidate	NHTroc	TMSOTf
443	111	GlcNAc(1→3)rHA	1	(1.0)	2	(1.6)	49	β	imidate	NHTroc	TMSOTf
444	21	GlcNAc(1→4) pseudo sugar[a]	1	(1.0)	2	(1.5)	60	β	SPh	NAcR	NIS, TfOH
445	169	GlcNAc(1→4)deoxy Nojir[a]	1	(NR)	1	(NR)	92	77:15	SPh	N_3	NIS, TfOH
446	144	GlcNAc(1→4)Gal	2	(NR)	1	(NR)	55	β	β-OAc	NHAc	TMSOTf
447	46	GlcNAc(1→4)Gal	2	(1.0)	1	(1.7)	65	β	SMe	NPhth	NIS, TfOH
448	87	GlcNAc(1→4)Glc	2	(1.0)	1	(2.0)	81	β	imidate	NPhth	BF_3-OEt_2
449	87	GlcNAc(1→4)Glc	2	(1.0)	1	(2.5)	88	β	imidate	NPhth	BF_3-OEt_2
450	100	GlcNAc(1→4)Glc	1	(1.0)	1	(1.1)	82	β	imidate	$NHCOCCl_3$	TMSOTf
451	100	GlcNAc(1→4)Glc	1	(1.0)	1	(1.1)	72	β	imidate	$NHCOCCl_3$	TMSOTf
452	158	GlcNAc(1→4)Glc	1	(1.0)	1	(1.5)	81	β	imidate	NPhth	BF_3-OEt_2
453	158	GlcNAc(1→4)Glc	1	(1.0)	1	(1.5)	90	β	imidate	NPhth	BF_3-OEt_2
454	168	GlcNAc(1→4)Glc	1	(1.2)	1	(1.0)	82	β	β-OAc	NHTroc	$Sn(OTf)_2$, HMDS
455	168	GlcNAc(1→4)Glc	1	(1.2)	1	(1.0)	81	β	β-OAc	NHTroc	$Yb(OTf)_3$, HMDS

Entry	Ref	Linkage formed	Acceptor		Donor		Yield	α:β	Glycosyl	Neighbouring	Activator
			size	(eq.)	size	(eq.)	(%)		Donor	group	
456	168	GlcNAc(1→4)Glc	1	(1.2)	1	(1.0)	82	β	β-OAc	NHTroc	$Sn(OTf)_2$
457	168	GlcNAc(1→4)Glc	1	(1.2)	1	(1.0)	90	β	β-OAc	NHTroc	$SnCl_4$, AgOTf
458	168	GlcNAc(1→4)Glc	1	(1.2)	1	(1.0)	82	β	β-OAc	NHTroc	$Yb(OTf)_3$
459	94	GlcNAc(1→4)GlcA	1	(NR)	1	(NR)	94	β	bromide	NPhth	AgOTf, collidine
460	100	GlcNAc(1→4)GlcA	1	(1.0)	1	(1.15)	89	β	imidate	$NHCOCCl_3$	TMSOTf
461	108	GlcNAc(1→4)GlcNAc	1	(1.0)	1	(2.0)	93	β	bromide	NPhth	AgOTf
462	17	GlcNAc(1→4)GlcNAc	1	(1.0)	1	(1.1)	58	β	chloride	NPhth	AgOTf
463	17	GlcNAc(1→4)GlcNAc	2	(1.0)	2	(1.1)	50	β	chloride	NPhth	AgOTf
464	36	GlcNAc(1→4)GlcNAc	1	(1.0)	1	(2.0)	67	β	chloride	NPhth	AgOTf, collidine
465	1	GlcNAc(1→4)GlcNAc	3	(1.0)	1	(3.0)	79	β	fluoride	NPhth	Cp_2HfCl_2, AgOTf
466	59	GlcNAc(1→4)GlcNAc	1	(NR)	1	(NR)	83	β	fluoride	NPhth	BF_3-OEt_2
467	128	GlcNAc(1→4)GlcNAc	1	(1.0)	1	(1.5)	86	β	fluoride	NPhth	$CpHf(OTf)_2$
468	128	GlcNAc(1→4)GlcNAc	2	(1.0)	2	(1.5)	99	β	fluoride	NPhth	$CpHf(OTf)_2$
469	128	GlcNAc(1→4)GlcNAc	4	(NR)	1	(NR)	80	β	fluoride	NPhth	$CpHf(OTf)_2$
470	140	GlcNAc(1→4)GlcNAc	1	(1.0)	1	(1.0)	78	β	fluoride	NPhth	$CpHfCl_2$, $AgClO_4$
471	140	GlcNAc(1→4)GlcNAc	1	(1.0)	1	(1.0)	81	β	fluoride	NPhth	$CpHfCl_2$, $AgClO_4$
472	140	GlcNAc(1→4)GlcNAc	1	(2.0)	2	(1.0)	72	β	fluoride	NPhth	$CpHfCl_2$, $AgClO_4$
473	1	GlcNAc(1→4)GlcNAc	1	(1.0)	2	(1.0)	69	β	imidate	NPhth	BF_3-OEt_2
474	17	GlcNAc(1→4)GlcNAc	1	(1.0)	1	(1.3)	61	β	imidate	N_3	BF_3-OEt_2
475	17	GlcNAc(1→4)GlcNAc	1	(1.0)	1	(1.2)	76	β	imidate	NPhth	BF_3-OEt_2
476	17	GlcNAc(1→4)GlcNAc	2	(1.0)	2	(1.1)	72	β	imidate	NPhth	BF_3-OEt_2
477	48	GlcNAc(1→4)GlcNAc	1	(NR)	1	(NR)	44	β	imidate	NPhth	BF_3-OEt_2
478	48	GlcNAc(1→4)GlcNAc	2	(NR)	1	(NR)	61	β	imidate	NPhth	BF_3-OEt_2
479	55	GlcNAc(1→4)GlcNAc	1	(2.0)	2	(1.0)	85	β	imidate	N_3	BF_3-OEt_2
480	55	GlcNAc(1→4)GlcNAc	1	(2.0)	3	(1.0)	91	β	imidate	N_3	BF_3-OEt_2

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Entry	Ref	Linkage formed	Acceptor size	Acceptor (eq.)	Donor size	Donor (eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
481	100	GlcNAc(1→4)GlcNAc	1	(1.0)	1	(1.1)	81	β	imidate	$NHCOCCl_3$	TMSOTf
482	100	GlcNAc(1→4)GlcNAc	1	(1.0)	1	(1.15)	84	β	imidate	$NHCOCCl_3$	TMSOTf
483	100	GlcNAc(1→4)GlcNAc	1	(1.0)	1	(1.15)	80	β	imidate	$NHCOCCl_3$	TMSOTf
484	100	GlcNAc(1→4)GlcNAc	1	(1.0)	1	(1.10)	42	β	imidate	$NHCOCCl_3$	TMSOTf
485	100	GlcNAc(1→4)GlcNAc	1	(1.0)	1	(1.1)	71	β	imidate	$NHCOCCl_3$	TMSOTf
486	100	GlcNAc(1→4)GlcNAc	1	(1.0)	1	(1.15)	75	β	imidate	$NHCOCCl_3$	TMSOTf
487	100	GlcNAc(1→4)GlcNAc	1	(1.0)	1	(1.5)	81	β	imidate	$NHCOCCl_3$	TMSOTf
488	48	GlcNAc(1→4)GlcNAc	1	(NR)	1	(NR)	65	β	β-OAc	NPhth	TMSOTf
489	140	GlcNAc(1→4)GlcNAc	1	(1.0)	1	(1.0)	90	β	SPh	NPhth	NIS, AgOTf
490	140	GlcNAc(1→4)GlcNAc	1	(1.5)	1	(1.0)	85	β	SPh	NPhth	NIS, AgOTf
491	140	GlcNAc(1→4)GlcNAc	1	(3.0)	3	(1.0)	65	β	SPh	NPhth	NIS, AgOTf
492	140	GlcNAc(1→4)GlcNAc	4	(1.0)	3	(1.0)	67	β	SPh	NPhth	NIS, AgOTf
493	184	GlcNAc(1→4)GlcNAc	1	(2.4)	3	(1.0)	52	β	SEt	NPhth	NIS, TfOH
494	184	GlcNAc(1→4)GlcNAc	1	(1.5)	3	(1.0)	61	β	SEt	NPhth	NIS, TfOH
495	81	GlcNAc(1→6)Gal	1	(NR)	1	(NR)	60	β	SePh	N_3	PhSeOTf
496	168	GlcNAc(1→6)Gal	1	(1.2)	1	(1.0)	95	β	β-OAc	NHTroc	$Sn(OTf)_2$, HMDS
497	168	GlcNAc(1→6)Gal	1	(1.2)	1	(1.0)	96	β	β-OAc	NHTroc	$Yb(OTf)_3$, HMDS
498	168	GlcNAc(1→6)Gal	1	(1.2)	1	(1.0)	93	β	β-OAc	NHTroc	$Sn(OTf)_2$
499	168	GlcNAc(1→6)Gal	1	(1.2)	1	(1.0)	94	β	β-OAc	NHTroc	$Yb(OTf)_3$
500	41	GlcNAc(1→6)Gal	3	(1.0)	1	(1.7)	61	β	SMe	NPhth	NIS, TfOH
501	166	GlcNAc(1→6)GalNAc	1	(NR)	4	(NR)	79	β	fluoride	NPhth	$CpHfCl_2$, AgOTf
502	166	GlcNAc(1→6)GalNAc	1	(NR)	4	(NR)	50	β	fluoride	NPhth	AgOTf, $SnCl_2$
503	145	GlcNAc(1→6)GalNAc	1	(1.0)	2	(1.3)	29	β	imidate	NPhth	BF_3-OEt_2

Entry	Ref	Linkage formed	Acceptor size	Acceptor (eq.)	Donor size	Donor (eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
504	145	GlcNAc(1→6)GalNAc	3	(1.0)	2	(1.1)	~50	β	imidate	NPhth	BF_3-OEt_2
505	124	GlcNAc(1→6)GalNAc	1	(1.0)	2	(1.0)	70	β	SPh	NPhth	NIS, TfOH
506	168	GlcNAc(1→6)Glc	1	(1.2)	1	(1.0)	95	β	β-OAc	NHTroc	$Sn(OTf)_2$, HMDS
507	168	GlcNAc(1→6)Glc	1	(1.2)	1	(1.0)	96	β	β-OAc	NHTroc	$Yb(OTf)_3$, HMDS
508	168	GlcNAc(1→6)Glc	1	(1.2)	1	(1.0)	95	β	β-OAc	NHTroc	$Sn(OTf)_2$
509	168	GlcNAc(1→6)Glc	1	(1.2)	1	(1.0)	96	β	β-OAc	NHTroc	$Yb(OTf)_3$
510	173	GlcNAc(1→6)GlcNAc	1	(NR)	1	(NR)	83	β	bromide	NPhth	AgOTf, collidine
511	19	GlcNAc(1→6)GlcNAc	1	(NR)	1	(NR)	NR	1:2	imidate	N_3	AgOTf
512	76	GlcNAc(1→6)GlcNAc	1	(1.0)	1	(1.0)	50	β	β-OAc	NHAc	$FeCl_3$
513	76	GlcNAc(1→6)GlcNAc	1	(1.0)	1	(2.0)	43	β	β-OAc	NHAc	$FeCl_3$
514	30	GlcNAc(1→6)GlcNAc	1	(1.05)	1	(1.0)	49	β	dibenzyl phosphite	NPhth	TMSOTf
515	30	GlcNAc(1→6)GlcNAc	1	(1.05)	1	(1.0)	45	β	dibenzyl phosphite	NPhth	TMSOTf
516	30	GlcNAc(1→6)GlcNAc	1	(1.0)	1	(1.0)	63	β	dibenzyl phosphite	NHTroc	TMSOTf
517	30	GlcNAc(1→6)GlcNAc	1	(1.0)	1	(1.0)	32	β	dibenzyl phosphite	NHTroc	TMSOTf
518	98	GlcNAc(1→6)Man	2	(1.0)	1	(2.6)	61	β	bromide	NPhth	AgOTf, collidine
519	78	GlcNAc(1→Gly)-Man	1	(1.2)	1	(1.0)	73	β	bromide	NPhth	AgOTf, collidine
520	33	GlcNAc(1→x)inositol[a]	1	(1.0)	1	(1.6)	55	α	imidate	N_3	TMSOTf
521	33	GlcNAc(1→x)inositol[a]	1	(1.0)	1	(2.6)	65	α	imidate	N_3	TMSOTf
522	160	Glc[5S](1→2)Glc	1	(1.0)	1	(1.0)	22	α	SePh	OAc	$NOBF_4$
523	160	Glc[5S](1→6)Glc	1	(1.0)	1	(1.0)	35	α	SePh	OAc	$NOBF_4$

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Entry	Ref	Linkage formed	Acceptor size	Acceptor (eq.)	Donor size	Donor (eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
524	81	Glc[6d](1→2)Glc[6d]	1	(1.0)	1	(1.06)	90	β	imidate	OAc	TMSOTf
525	81	Glc[6d](1→3)Glc[6d]	3	(1.0)	1	(1.25)	85	β	imidate	OAc	TMSOTf
526	73	gLY-Man(1→6)Glc	1	(1.0)	1	(1.0)	61	α	imidate	OAc	TMSOTf
527	73	gLY-Man(1→6)Glc	1	(1.0)	1	(1.0)	53	α	imidate	OAc	TMSOTf
528	73	gLY-Man(1→6)Glc	3	(1.0)	1	(1.1)	52	α	imidate	OAc	TMSOTf
529	177	Glycal(1→3)rHA	1	(1.0)	2	(2.0)	40	α	glycal	H	NIS
530	24	hexose(1→2)Gal[6d][a]	1	(1.7)	1	(1.0)	74	12:1	sulfoxide	H	Tf_2O
531	127	hexose(1→3)Glc [$4NH_2$,6d][a]	2	(1.0)	1	(1.0)	90	1.5	imidate	H	AgOTf
532	154	hexose(1→6)Gal[a]	1	(NR)	1	(NR)	65	α	epoxide	-O-	$ZnCl_2$
533	83	iDO(1→3)GalNAc	1	(NR)	2	(1.0)	86	β	imidate	OPiv	TMSOTf
534	83	iDO(1→3)GalNAc	3	(1.0)	2	(1.5)	87	β	imidate	OPiv	TBDMSOTf
535	83	iDO(1→3)GalNAc	5	(1.0)	1	(2.5)	99	β	imidate	OPiv	TBDMSOTf
536	176	iDO(1→4)Glc	1	(1.07)	1	(1.0)	60	β	fluoride	OAc	BF_3OEt_2
537	122	iDO-(1→3)Gal	1	(NR)	1	(NR)	60	β	SEt	OAc	NIS, TfOH
538	84	iDOA(1→3)Gal	2	(NR)	2	(NR)	90	β	SEt	OBz	NIS, TfOH
539	84	iDOA(1→3)Gal	4	(NR)	2	(NR)	89	β	SMe	OBz	NIS, TfOH
540	112	KDO(2 →4)KDO	1	(1.0)	2	(2.0)	23	4:1	bromide	H	$Hg(CN)_2$, $HgBr_2$
541	76	KDO(2→4)KDO	3	(1.0)	1	(1.8)	60	α	bromide	H	$Hg(CN)_2$, $HgBr_2$
542	76	KDO(2→4)KDO	3	(1.0)	1	(1.6)	50	α	bromide	H	$Hg(CN)_2$, $HgBr_2$
543	76	KDO(2→4)KDO	3	(1.0)	2	(3.0)	20	α	bromide	H	$Hg(CN)_2$, $HgBr_2$
544	76	KDO(2→4)KDO	3	(1.0)	2	(3.0)	19	α	bromide	H	$Hg(CN)_2$, $HgBr_2$
545	112	KDO(2→4)KDO	1	(1.0)	1	(5.0)	61	4:1	bromide	H	$Hg(CN)_2$, $HgBr_2$
546	112	KDO(2→4)KDO	1	(4.9)	2	(1.0)	17	α	bromide	H	$Hg(CN)_2$, $HgBr_2$
547	76	KDO(2→6)GlcNAc	2	(1.0)	1	(5.7)	86	1.2:1	bromide	H	$Hg(CN)_2$, $HgBr_2$

Entry	Ref	Linkage formed	Acceptor size	Acceptor (eq.)	Donor size	Donor (eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
548	76	KDO(2→6)GlcNAc	2	(1.0)	1	(5.7)	52	α	bromide	H	$Hg(CN)_2$, $HgBr_2$
549	112	KDO(2→8)KDO	1	(1.0)	2	(1.2)	23	α	bromide	H	$Hg(CN)_2$, $HgBr_2$
550	112	KDO(2→8)KDO	1	(1.3)	1	(1.0)	64	α	fluoride	H	BF_3-OEt_2
551	112	KDO(2→8)KDO	1	(1.0)	1	(1.1)	59	α	fluoride	H	BF_3-OEt_2
552	165	IYX(1→6)Gal	1	(1.6)	1	(1.0)	87	α	epoxide	-O-	none
553	130	IYX[2,6d](1→3)GlcNAc	4	(1.0)	1	(8.0)	85	α	fluoride	H	$AgClO_4$, $SnCl_2$, TMU
554	90	IYX[2,6d](1→3)GlcNAc	2	(1.0)	1	(1.2)	86	α	SMe	H	DMTST
555	109	Lyx[2d](1→4)Gal	2	(1.05)	1	(1.0)	65	α	SPyr	H	AgOTf
556	28	Man(1→2)gUL	1	(1.0)	1	(1.2)	93	α	dibenzyl phosphite	OAc	TMSOTf
557	77	Man(1→2)Man	1	(1.0)	1	(1.1)	73	α	bromide	OAc	AgOTf
558	77	Man(1→2)Man	1	(1.0)	1	(1.1)	75	α	bromide	OAc	AgOTf
559	142	Man(1→2)Man	2	(NR)	1	(NR)	92	α	imidate	OAc	TMSOTf
560	142	Man(1→2)Man	3	(NR)	1	(NR)	91	α	imidate	OAc	TMSOTf
561	103	Man(1→2)Man	1	(1.0)	1	(1.3)	73	α	*n*-pentenyl	OAc	NIS, TESOTf
562	103	Man(1→2)Man	2	(1.0)	1	(2.5)	70	α	*n*-pentenyl	OAc	NIS, TESOTf
563	163	Man(1→2)Man	1	(NR)	1	(NR)	78	α	*n*-pentenyl	OBz	NIS, TESOTf
564	163	Man(1→2)Man	2	(NR)	1	(NR)	78	75	*n*-pentenyl	OBn	NIS, TESOTf
565	99	Man(1→2)Man	1	(1.0)	1	(1.25)	65	α	SEt	OBn	DMTST
566	103	Man(1→2,2')Man	3	(1.0)	1	(2.5)	68	α,α	*n*-pentenyl	OAc	NIS, TESOTf
567	112	Man(1→3)Man	1	(1.0)	2	(3.0)	55	α	chloride	OSugar	$Hg(CN)_2$, $HgBr_2$
568	59	Man(1→3)Man	3	(NR)	2	(NR)	62	β	imidate	OSugar	BF_3-OEt_2
569	70	Man(1→3)Man	3	(1.0)	1	(2.3)	61	α	imidate	OAc	TMSOTf
570	184	Man(1→3)Man	5	(1.0)	1	(10.0)	59	α	imidate	OAc	TMSOTf

(continued)

Entry	Ref	Linkage formed	Acceptor size	Acceptor (eq.)	Donor size	Donor (eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
571	184	Man(1→3)Man	6	(1.0)	1	(3.1)	88	α	imidate	OAc	TMSOTf
572	103	Man(1→3)Man	1	(1.0)	1	(1.3)	96	α	*n*-pentenyl	OAc	NIS, TESOTf
573	103	Man(1→3)Man	1	(1.0)	3	(1.3)	72	α	*n*-pentenyl	OAc	NIS, TESOTf
574	70	Man(1→3,6)Man	2	(1.0)	1	(3.7)	71	α	imidate	OAc	TMSOTf
575	63	Man(1→3,6)Man	1	(1.0)	1	(2.2)	78	α,α	$Me_2P{=}S$	OBn	$AgClO_4$
576	36	Man(1→4)Glc	1	(1.0)	1	(1.5)	41	α	bromide	OAc	$Hg(CN)_2$, $HgBr_2$
577	137	Man(1→4)Glc	1	(1.3)	1	(1.0)	87	β	bromide	2-Oxo	Ag Alumino silicate
578	187	Man(1→4)Glc	1	(1.0)	1	(1.5)	52	β	fluoride	intramolec.	AgOTf, $SnCl_2$, MDTBP
579	54	Man(1→4)Glc	1	(0.75)	1	(1.0)	76	α	$Me_2P{=}S$	OBn	$AgClO_4$
580	36	Man(1→4)Glc	1	(1.0)	1	(1.0)	77	β	SEt	intramolec.	NIS
581	57	Man(1→4)Glc	1	(1.0)	1	(1.2)	80	81:19	SMe	OBn	NIS
582	36	Man(1→4)GlcNAc	1	(1.0)	1	(1.5)	40	α	bromide	OAc	$Hg(CN)_2$, $HgBr_2$
583	187	Man(1→4)GlcNAc	1	(1.0)	1	(1.5)	40	β	fluoride	intramolec.	AgOTf, $SnCl_2$, MDTBP
584	142	Man(1→4)GlcNAc	2	(NR)	4	(NR)	91	α	imidate	OAc	TMSOTf
585	63	Man(1→4)GlcNAc	1	(1.0)	1	(1.0)	45	22:78	$Me_2P{=}S$	OBn	$TrtClO_4$, I_2
586	36	Man(1→4)GlcNAc	1	(1.0)	1	(1.0)	51	β	SEt	intramolec.	NIS
587	36	Man(1→4)GlcNAc	1	(1.0)	2	(1.0)	28	β	SEt	intramolec.	NIS
588	36	Man(1→4)GlcNAc	2	(1.0)	1	(1.0)	27	β	SEt	intramolec.	NIS
589	36	Man(1→4)GlcNAc	1	(1.5)	2	(1.0)	69	α	SEt	OAc	NIS, AgOTf
590	36	Man(1→4)GlcNAc	2	(1.0)	1	(2.0)	49	α	SEt	OAc	NIS, AgOTf
591	118	Man(1→4)Man	1	(1.0)	1	(2.0)	73	α	bromide	OAc	AgOTf, collidine
592	123	Man(1→4)Man	1	(1.0)	1	(1.4)	81	α	acetate	-S-	TMSOTf
593	136	Man(1→4)rHA	1	(1.2)	1	(1.0)	84	β	bromide	2-Oxo	Ag_2CO_3

Entry	Ref	Linkage formed	Acceptor size	(eq.)	Donor size	(eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
594	172	Man(1→5)GlcNAc	polymer		1	(1.0)	--	α	orthoester	OAc	TMSOTf
595	136	Man(1→6)Gal	1	(1.2)	1	(1.0)	85	β	bromide	2-Oxo	Ag_2CO_3
596	172	Man(1→6)Gal	1	(1.0)	1	(1.0)	88	3:1	tetrazol	OBn	TMSOTf
597	172	Man(1→6)Gal	1	(1.0)	1	(1.0)	92	1.2:1	tetrazol	OBn	TMSOTf
598	172	Man(1→6)Gal	1	(1.0)	1	(1.0)	92	2.9:1	tetrazol	OBn	TMSOTf
599	172	Man(1→6)Gal	1	(1.0)	1	(1.0)	97	2.4:1	tetrazol	OBn	AgOTf
600	172	Man(1→6)Gal	1	(1.0)	1	(1.0)	63	1:1	tetrazol	OBn	$PdCl_2$
601	63	Man(1→6)Gal	1	(1.0)	1	(1.0)	80	α	$Me_2P{=}S$	OBn	$AgClO_4$
602	63	Man(1→6)Gal	1	(1.0)	1	(1.0)	39	24:76	$Me_2P{=}S$	OBn	$TrtClO_4$, I_2
603	36	Man(1→6)Glc	1	(1.0)	1	(1.5)	78	α	bromide	OAc	$Hg(CN)_2$, $HgBr_2$
604	98	Man(1→6)Glc	1	(1.0)	2	(1.5)	56	α	bromide	OAc	AgOTf, collidine
605	161	Man(1→6)Glc	1	(1.0)	2	(1.9)	43	1.4:1	chloride	OSugar	$HgBr_2$, $Hg(CN)_2$
606	161	Man(1→6)Glc	1	(1.0)	2	(1.5)	64	α	chloride	OSugar	$HgBr_2$, $Hg(CN)_2$
607	161	Man(1→6)Glc	1	(1.0)	2	(1.0)	61	α	chloride	OSugar	$HgBr_2$, $Hg(CN)_2$
608	187	Man(1→6)Glc	1	(1.0)	1	(1.5)	74	β	fluoride	intramolec.	AgOTf, $SnCl_2$, MDTBP
609	38	Man(1→6)Glc	1	(1.25)	1	(1.0)	83	α	imidate	OBz	TMSOTf
610	63	Man(1→6)Glc	1	(1.0)	1	(1.0)	44	43:57	$Me_2P{=}S$	OBn	$TrtClO_4$, I_2
611	36	Man(1→6)Glc	1	(1.0)	1	(1.0)	61	β	SEt	intramolec.	NIS
612	118	Man(1→6)Man	1	(1.0)	1	(2.0)	53	α	bromide	OAc	AgOTf, collidine
613	118	Man(1→6)Man	1	(1.2)	2	(1.0)	39	α	bromide	OSugar	$Hg(CN)_2$
614	118	Man(1→6)Man	1	(1.0)	2	(1.8)	38	α	bromide	OSugar	AgOTf, TMU
615	118	Man(1→6)Man	1	(1.0)	1	(1.3)	68	α	bromide	OAc	$Hg(CN)_2$
616	113	Man(1→6)Man	3	(1.0)	2	(4.0)	80	α	chloride	OSugar	$Hg(CN)_2$, $HgBr_2$

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Entry	Ref	Linkage formed	Acceptor size	Acceptor (eq.)	Donor size	Donor (eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
617	59	Man(1→6)Man	5	(1.0)	2	(1.2)	52	β	imidate	OSugar	BF_3-OEt_2
618	70	Man(1→6)Man	2	(1.0)	1	(1.3)	77	α	imidate	OAc	TMSOTf
619	89	Man(1→6)Man	1	(1.0)	2	(1.5)	57	α	imidate	OAc	AgOTf
620	89	Man(1→6)Man	1	(1.0)	1	(1.3)	48	α	imidate	OAc	AgOTf
621	142	Man(1→6)Man	1	(NR)	1	(NR)	84	α	imidate	OAc	TMSOTf
622	184	Man(1→6)Man	4	(1.0)	1	(3.4)	71	α	imidate	OAc	TMSOTf
623	184	Man(1→6)Man	5	(1.0)	1	(2.4)	45	α	imidate	OAc	TMSOTf
624	103	Man(1→6)Man	2	(1.0)	1	(1.3)	77	α	*n*-pentenyl	OAc	NIS, TESOTf
625	103	Man(1→6)Man	4	(1.0)	5	(1.3)	57	α	*n*-pentenyl	OAc	NIS, TESOTf
626	123	Man-(1→4)Man	1	(1.4)	1	(1.0)	89	α	SPh	2,6-S anhydro	NIS, TMSOTf
627	29	ManA(1→5)tAL	1	(1.0)	1	(8.0)	85	α	imidate	OAc	TMSOTf
628	29	ManA(1→5)tAL	1	(NR)	1	(NR)	0	--	imidate	OAc	TMSOTf
629	180	Man[4NH_2](1→2)Man-[4NH_2]	1	(1.0)	1	(1.3)	93	α	chloride	OAc	AgOTf,collidine
630	180	Man[4NH_2](1→2)Man-[4NH_2]	1	(1.0)	1	(1.5)	81	α	chloride	OBz	AgOTf,collidine
631	129	Man[6d](1→3,6)Man	1	(1.0)	1	(2.05)	53	α,α	chloride	OAc	AgOTf, TMU
632	152	Neu5Ac(1→6)Gal	1	(NR)	1	(NR)	49	2.2:1	xanthate	H	CH_3SBr, AgOTf
633	152	Neu5Ac(1→6)Gal	1	(1.0)	1	(2.0)	71	4:1	xanthate	H	CH_3SBr, AgOTf
634	12	Neu5Ac(2→3)Gal	1	(NR)	1	(NR)	69	α	bromide	SPh	Hg^{++}
635	164	Neu5Ac(2→3)Gal	2	(1.0)	1	(4.0)	7	α	bromide	SPh	$Hg(CN)_2$, $HgBr_2$
636	164	Neu5Ac(2→3)Gal	2	(1.0)	1	(4.0)	75	α	bromide	SPh	$Hg(CN)_2$, $HgBr_2$

Entry	Ref	Linkage formed	Acceptor size	Acceptor (eq.)	Donor size	Donor (eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
637	164	Neu5Ac(2→3)Gal	2	(1.0)	1	(4.0)	82	α	bromide	SPh	$Hg(CN)_2$, $HgBr_2$
638	47	Neu5Ac(2→3)Gal	2	(1.2)	2	(1.0)	6	α	chloride	H	AgOTf, DTBP
639	47	Neu5Ac(2→3)Gal	2	(1.0)	2	(1.0)	12	α	chloride	H	AgOTf, DTBP
640	35	Neu5Ac(2→3)Gal	2	(1.5)	1	(1.0)	40	9:1	xanthate	H	MSB, AgOTf
641	30	Neu5Ac(2→3)Gal	2	(NR)	1	(NR)	27	5:1	dibenzyl phosphite	H	TMSOTf
642	30	Neu5Ac(2→3)Gal	2	(3.0)	1	(1.0)	48	β	dibenzyl phosphite	H	TMSOTf
643	114	Neu5Ac(2→3)Gal	3	(1.5)	1	(1.0)	36	α	diethyl phosphite	H	TMSOTf
644	114	Neu5Ac(2→3)Gal	3	(1.5)	1	(1.0)	20	α	dibenzyl phosphite	H	TMSOTf
645	35	Neu5Ac(2→3)Gal	2	(1.0)	1	(1.0)	54	α	SMe	SPh	MSB, AgOTf
646	35	Neu5Ac(2→3)Gal	2	(1.5)	1	(1.0)	67	α	SEt	SPh	MSB, AgOTf
647	35	Neu5Ac(2→3)Gal	2	(1.5)	1	(1.0)	57	α	SEt	SPh	NIS, TfOH
648	35	Neu5Ac(2→3)Gal	2	(1.5)	1	(1.0)	33	88:12	SMe	SPh	NIS, TfOH
649	40	Neu5Ac(2→3)Gal	2	(1.0)	1	(2.0)	48	α	SMe	H	DMTST
650	45	Neu5Ac(2→3)Gal	1	(2.0)	3	(1.0)	30	α	SPh	H	NIS, TfOH
651	45	Neu5Ac(2→3)Gal	2	(2.0)	3	(1.0)	49	α	SPh	H	NIS, TfOH
652	122	Neu5Ac(2→3)Gal	3	(NR)	2	(NR)	50	α	SPh	H	NIS, TfOH
653	125	Neu5Ac(2→3)Gal	2	(2.0)	1	(1.0)	49	6:1	SMe	H	PhSeOTf
654	139	Neu5Ac(2→3)Gal	3	(1.0)	1	(3.0)	64	α	SPh	H	NIS, TfOH
655	139	Neu5Ac(2→3)Gal	2	(1.0)	1	(2.0)	43	α	SPh	H	NIS, TfOH
656	162	Neu5Ac(2→3)Gal	3	(1.0)	2	(2.0)	50	α	SPh	H	NIS, TfOH
657	152	Neu5Ac(2→3)GalNAc	1	(NR)	1	(NR)	49	2.2:1	SMe	H	DMTST

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Entry	Ref	Linkage formed	Acceptor size	Acceptor (eq.)	Donor size	Donor (eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
658	152	Neu5Ac(2→3)GalNAc	1	(NR)	1	(NR)	61	6.7:1	SMe	H	CH_3SBr, AgOTf
659	30	Neu5Ac(2→3)GlcNAc	2	(1.0)	1	(1.2)	44	6:1	dibenzyl phosphite	H	TMSOTf
660	23	Neu5Ac(2→6)-Gal-hep[6S]	1	(1.1)	1	(1.0)	~60	α	chloride	H	DMF
661	23	Neu5Ac(2→6)-Gal-hep[6S]	1	(1.1)	1	(1.0)	~60	α	chloride	H	DMF
662	178	Neu5Ac(2→6)Deoxy Nojir[a]	2	(1.0)	1	(1.7)	56	α	SMe	H	NIS, TfOH
663	40	Neu5Ac(2→6)Gal	2	(1.0)	1	(1.7)	90	2:1	SMe	H	NIS, TfOH
664	159	Neu5Ac(2→6)Gal	1	(1.0)	1	(1.2)	52	α	SPh-OCH_3	H	NIS, TfOH
665	23	Neu5Ac(2→6)Gal-hep	1	(1.0)	1	(1.25)	46	3:1	xanthate	H	MSB, AgOTf
666	23	Neu5Ac(2→6)Gal-hep	1	(1.0)	1	(1.9)	~60	3:1	SMe	H	MSB, AgOTf
667	23	Neu5Ac(2→6)Gal-hep	1	(1.0)	1	(1.9)	~60	7:2	SMe	H	MSB, AgOTf
668	23	Neu5Ac(2→6)Gal-hep	1	(1.0)	1	(1.0)	<5%	—	SMe	H	DMTST
669	164	Neu5Ac(2→6)GalNAc	3	(1.0)	1	(2.5)	69	α	bromide	SPh	$Hg(CN)_2$, $HgBr_2$
670	164	Neu5Ac(2→6)GalNAc	3	(1.0)	1	(2.5)	69	α	bromide	SPh	$Hg(CN)_2$, $HgBr_2$
671	46	Neu5Ac(2→6)GalNAc	4	(1.0)	1	(3.0)	36	α	SPh	H	NIS, TfOH
672	30	Neu5Ac(2→6)Glc	1	(NR)	1	(NR)	80	6:1	dibenzyl phosphite	H	TMSOTf
673	30	Neu5Ac(2→6)Glc	1	(3.0)	1	(1.0)	45	β	dibenzyl phosphite	Br	TMSOTf
674	3	Neu5Ac(2→6)Glc	1	(NR)	1	(NR)	61	3:1	SMe	H	DMTST
675	150	Neu5Ac(2→8)Neu5Ac	1	(NR)	1	(NR)	68	β	$OP(OEt)_2$	H	TMSOTf
676	150	Neu5Ac(2→8)Neu5Ac	1	(NR)	1	(NR)	51	β	$OP(OEt)_2$	H	TMSOTf

Entry	Ref	Linkage formed	Acceptor size	Acceptor (eq.)	Donor size	Donor (eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
677	150	Neu5Ac(2→8)Neu5Ac	1	(NR)	1	(NR)	54	β	$OP(OEt)_2$	H	TMSOTf
678	20	Nojir(1→6S)GlcNAc[a]	1	(NR)	1	(NR)	80	α	reducing sugar	OH	TSA
679	157	rHA(1→2)aLT	1	(1.0)	1	(1.05)	60	α	imidate	OAc	TMSOTf
680	91	rHA(1→2)Gal	4	(1.0)	2	(2.7)	38	α	bromide	OBz	AgOTf, MDTBP
681	93	rHA(1→2)Gal	3	(1.0)	1	(3.4)	94	α	chloride	OBz	AgOTf, MDTBP
682	96	rHA(1→2)Gal[3F]	1	(1.0)	1	(1.8)	90	α	bromide	OBz	AgOTf, collidine
683	96	rHA(1→2)Gal[4F]	1	(1.0)	1	(1.8)	92	α	bromide	OBz	AgOTf, collidine
684	107	rHA(1→2)Gal[6-d]	1	(1.0)	1	(1.4)	97	α	bromide	OBz	AgOTf, collidine
685	96	rHA(1→2)Gal[6F]	1	(1.0)	1	(1.9)	85	α	bromide	OBz	AgOTf, collidine
686	93	rHA(1→2)Glc	3	(1.0)	1	(1.6)	94	α	bromide	OBz	AgOTf, MDTBP
687	81	rHA(1→2)Glc[6-d]	2	(1.0)	1	(2.0)	76	α	imidate	OBn	TMSOTf
688	157	rHA(1→2)aLT	1	(1.0)	2	(1.08)	61	α	imidate	OSugar	TMSOTf
689	91	rHA(1→2)rHA	1	(1.0)	1	(3.0)	73	α	acetate	NHAc	TMSOTf
690	116	rHA(1→2)rHA	1	(1.0)	1	(1.1)	60	α	acetate	OCH_3	BF_3-OEt_2
691	141	rHA(1→2)rHA	1	(NR)	1	(NR)	59	α	SEt	OBn	IDCP
692	141	rHA(1→2)rHA	1	(NR)	2	(NR)	72	α	SEt	OSugar	NIS, TfOH
693	141	rHA(1→2)rHA	1	(NR)	2	(NR)	62	α	SEt	OSugar	NIS, TfOH
694	69	rHA(1→2)tAL-(6-deoxy)	1	(1.2)	1	(1.0)	72	α	SEt	OBn	MeOTf
695	71	rHA(1→2)tAL-(6-deoxy)	1	(1.0)	2	(1.2)	72	α	SEt	OBz	NIS, TfOH
696	107	rHA(1→2)Xyl[3d]	1	(1.0)	1	(1.4)	92	α	bromide	OBz	AgOTf, collidine
697	107	rHA(1→2)Xyl[4d]	1	(1.0)	1	(1.4)	93	α	bromide	OBz	AgOTf, collidine
698	167	rHA(1→3)Gal	1	(1.0)	1	(2.0)	37	α	bromide	OBz	AgOTf
699	149	rHA(1→3)Glc	1	(1.0)	1	(1.2)	76	α	bromide	OBz	$Hg(CN)_2$

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Entry	Ref	Linkage formed	Acceptor size	Acceptor (eq.)	Donor size	Donor (eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
700	149	rHA(1→3)Glc	1	(1.2)	1	(1.0)	88	α	$OCOCl_3$	OBz	TMSOTf, MDTBP
701	91	rHA(1→3)rHA	1	(1.2)	1	(1.0)	53	α	bromide	OBz	AgOTf
702	93	rHA(1→3)rHA	4	(1.5)	4	(1.0)	69	α	imidate	OBz	BF_3-OEt_2
703	63	rHA(1→4)rHA	1	(1.0)	1	(1.0)	46	69:31	Me_2P=S	OBn	TrtClO_4, I_2
704	63	rHA(1→6)Gal	1	(1.0)	1	(1.0)	81	53:47	Me_2P=S	OBn	TrtClO_4, I_2
705	63	rHA(1→6)Gal	1	(NR)	1	(NR)	61	35:65	Me_2P=S	OBn	TrtClO_4, I_2
706	149	rHA(1→6)Glc	2	(1.0)	1	(1.2)	88	α	bromide	OBz	$Hg(CN)_2$
707	149	rHA(1→6)Glc	2	(1.0)	1	(1.1)	96	α	$OCOCl_3$	OBz	TMSOTf, MDTBP
708	63	rHA(1→6)Glc	1	(1.0)	1	(1.0)	50	45:55	Me_2P=S	OBn	TrtClO_4, I_2
709	63	rHA(1→6)Glc	1	(NR)	1	(NR)	52	23:77	Me_2P=S	OBn	TrtClO_4, I_2
710	157	rHA(1→6)GlcNAc	1	(1.0)	1	(1.0)	76	α	imidate	OAc	BF_3-OEt_2
711	25	Rib[2,6d](1→x)hexose[a]	1	(1.1)	1	(1.0)	38	β	sulfoxide	H	Tf_2O
712	43	Rib[2d](1→4)Glc	1	(NR)	1	(NR)	97	3:1	trichloro ethyl phosphite	H	$Sn(OTf)_2$
713	43	Rib[2d](1→4)Rib[2d]	1	(NR)	1	(NR)	38	3:2	trichloro ethyl phosphite	H	BF_3-OEt_2
714	165	Rib(1→6)Gal	1	(1.6)	1	(1.0)	90	α	epoxide	-O-	none
715	34	Rib[2d](1→6)Glc	1	(1.0)	1	(1.0)	82	α	OTBDMS	H	TMSOTf
716	34	Rib[2d](1→6)Glc	2	(1.0)	1	(1.2)	75	α	OTBDMS	H	TMSOTf
717	130	xYL[3,6d](1→3)GlcNAc	4	(1.0)	1	(8.0)	84	α	fluoride	OBn	$AgClO_4$, $SnCl_2$, TMU
718	90	xYL[3,6d](1→3)GlcNAc	2	(1.0)	1	(1.2)	82	α	SMe	OBn	DMTST

Entry	Ref	Linkage formed	Acceptor size	Acceptor (eq.)	Donor size	Donor (eq.)	Yield (%)	α:β	Glycosyl Donor	Neighbouring group	Activator
719	130	xYL[4,6d](1→3)GlcNAc	4	(1.0)	1	(8.0)	90	β	fluoride	OBn	$AgClO_4$, $SnCl_2$, TMU
720	90	xYL[4,6d](1→3)GlcNAc	2	(1.0)	1	(1.2)	57	α	SMe	OBz	DMTST
721	137	Xyl(1→2)Man	2	(1.0)	1	(1.5)	71	β	bromide	OBz	AgOTf
722	70	Xyl(1→2)Man	1	(1.0)	1	(1.5)	75	β	imidate	OAc	TMSOTf
723	70	Xyl(1→2)Man	1	(1.0)	1	(1.3)	89	β	imidate	OAc	TMSOTf
724	148	Xyl(1→4)Xyl	1	(1.0)	1	(1.5)	76	β	imidate	OAc	BF_3-OEt_2
725	148	Xyl(1→4)Xyl	1	(1.0)	1	(1.9)	70	β	imidate	OAc	BF_3-OEt_2
726	148	Xyl(1→4)Xyl	1	(1.0)	1	(1.9)	76	β	imidate	OAc	BF_3-OEt_2
727	148	Xyl(1→4)Xyl	1	(1.0)	1	(1.7)	76	β	imidate	OAc	BF_3-OEt_2
728	149	Xyl(1→6)Glc	2	(1.0)	1	(1.2)	94	β	bromide	OBz	$Hg(CN)_2$
729	15	XylNAc[4d](1→3)Gal	2	(1.0)	1	(1.0)	39	β	SMe	NPhth	MSB, AgOTf
730	174	Xyl[3,6](1→3)Man	1	(1.0)	1	(1.4)	58	α	chloride	OBn	AgOTf,TMU
731	108	Xyl[3d](1→4)Gal	2	(1.05)	1	(1.0)	22	α	fluoride	OBn	$SnCl_2$, $AgClO_4$
732	109	Xyl[3d](1→4)Gal	2	(1.05)	1	(1.0)	84	α	SPyr	OBn	AgOTf
733	104	Xyl[$3NH_2$,4d](1→4)gUL ($3NH_2$)	1	(1.0)	1	(1.2)	90	β	SPh	OPiv	NIS, TfOH
734	108	Xyl[4d](1→4)Gal	2	(1.0)	1	(1.2)	64	57:7	fluoride	OBn	$SnCl_2$, $AgClO_4$

[a] See figure 2

* 2 steps, one pot reactions

5. RETRIEVAL OF TABLE DATA ON THE INTERNET

The table and future versions, including any revisions, corrections or updates will be posted on the Internet under the following World Wide Web (WWW) address: http://glyco2.chem.ualberta.ca/MISC/glycosylation.html. Please note that this address is case sensitive.

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