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Chemical synthesis of fragments of galactosaminogalactan and pel polysaccharides

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Chemical Synthesis of Fragments of Galactosaminogalactan and Pel Polysaccharides

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To my family and my friends.

路漫漫其修远兮，

吾将上下而求索。

Long, long had been my road and far, far was the journey;

I would go up and down to seek my heart's desire.

Table of contents

List of abbreviations	i
Chapter 1	1
General Introduction	
Chapter 2	29
Synthesis of α -galactose, α -galactosamine and α - <i>N</i> -acetyl galactosamine galactosaminogalactan homo-oligomers from <i>Aspergillus fumigatus</i>	
Chapter 3	87
Synthesis of GAG hetero-oligomers featuring α -galactose, α -galactosamine and α - <i>N</i> -acetyl galactosamines linkages	
Chapter 4	137
Synthesis of an azido-GAG heptasaccharide featuring α -GalN ₃ and α -GalNAc linkages	
Chapter 5	163
Assembly of a library of Pel oligosaccharides featuring α -glucosamine and α -galactosamine linkages	
Chapter 6	214
Summary and Future Prospects	
Chinese Summary	222
Curriculum Vitae	225
List of Publications	226
Acknowledgements	227

List of abbreviations

Ac	acetyl	Glc	glucose
ACN	acetonitrile	GlcN	glucosamine
aq.	aqueous	GlcN ₃	2-azido-2-deoxy glucose
atm	1 atmosphere = 10 ⁵ Pa	GlcNAc	<i>N</i> -acetyl glucosamine
Bn	benzyl	h	hour
Boc	<i>t</i> -butyloxy carbonyl	HB	hydrogen bond
bs	broad singlet	HFIP	1,1,1,3,3,3-hexafluoro-2-propanol
BSP	1-benzenesulfinyl piperidine	HMBC	heteronuclear multiple-bond correlation
Bt	benzotriazole	HPLC	high performance liquid chromatography
Bu	butyl	HRMS	high-resolution mass spectroscopy
<i>t</i> -Bu	<i>tert</i> -butyl	HSQC	heteronuclear single quantum coherence
Bz	benzoyl	Hz	Hertz
COSY	correlation spectroscopy	IR	infrared
δ	chemical shift	J	coupling constant
d	doublet	LC-MS	liquid chromatography-mass spectrometry
DCM	dichloromethane	Lev	levulinoyl
dd	doublet of doublets	m	multiplet
DMAP	<i>N,N</i> -4-dimethylaminopyridine	M	molar
DMF	dimethylformamide	MALDI	matrix-associated laser desorption ionization
DMSO	dimethyl sulfoxide	Man	mannose
DTBMP	2,6- <i>di-tert</i> -butyl-4-methylpyridine	Me	methyl
DTBS	di- <i>tert</i> -butylsilylidene	min	minute
EA/ EtOAc	ethyl acetate	MPF	methyl(phenyl)formamide
eq	equivalents	MS	mass spectrometry
ESI	electrospray ionization	MS	molecular sieves
Et	ethyl	Nap	2-methylnaphthyl
GAG	galactosaminogalactan	NBS	<i>N</i> -bromosuccinimide
Gal	galactose		
GalN	galactosamine		
GalN ₃	2-azido-2-deoxy galactose		
GalNAc	<i>N</i> -acetyl galactosamine		

NIS	<i>N</i> -iodosuccinimide	TBAI	tetra- <i>n</i> -butylammonium iodide
NMR	nuclear magnetic resonance		
NOESY	nuclear Overhauser effect spectroscopy	TBDPS	<i>tert</i> -butyldiphenylsilyl
		TBS	<i>tert</i> -butyldimethylsilyl
Nu	nucleophile	TCA	trichloroacetyl
NR	no reaction	TEA	triethylamine
PE	petroleum ether	TEMPO	2,2,6,6-tetramethyl-1-piperidinyloxy
Pel	pellicle polysaccharide		
Ph	phenyl	Tf	trifluoromethanesulfonyl
Ph ₂ SO	diphenyl sulfoxide	TfOH	triflic acid
Phth	phthaloyl	Tf ₂ O	trifluoromethanesulfonic anhydride
PMB	<i>para</i> -methoxybenzyl		
ppm	parts per million	TFA	trifluoroacetic acid
Py	pyridine	THF	tetrahydrofuran
q	quartet	TIPS	triisopropylsilyl
RT	room temperature	TMS	trimethylsilyl
R _f	retention factor	TLC	thin layer chromatography
s	singlet	Tol	<i>p</i> -tolyl
sat.	saturated	Troc	2,2,2-trichloroethoxycarbonyl
SDS-PAGE	sodium dodecyl sulfate polyacrylamide gel electrophoresis	Ts	<i>p</i> -toluenesulfonyl
t	triplet	TTBP	2,4,6-tri- <i>tert</i> -butylpyrimidine
TBAB	tetra- <i>n</i> -butylammonium bromide	<i>p</i> -TsOH	<i>p</i> -toluenesulfonic acid
		UDP	uridine 5'-diphosphate
TBAF	tetra- <i>n</i> -butylammonium fluoride	UV	ultraviolet