Glycoproteomics characterization of immunoglobulins in health and disease

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List of abbreviations

AA	2-aminobenzoic acid
AAV	ANCA-associated vasculitis
ABC	ammonium bicarbonate
ACN	acetonitrile
ACPA	anti-citrullinated protein antibodies
ADCC	antibody-dependent cellular cytotoxicity
ANCA	anti-neutrophil cytoplasmic antibodies
C1q	complement component 1 q
CDC	complement-dependent cellular cytotoxicity
CE	capillary electrophoresis
CGE-LIF	capillary gel electrophoresis with laser-induced fluorescence
CH	conserved heavy chain
CID	collision-induced dissociation
CMV	cytomegalovirus
CRP	c-reactive protein
DC-SIGN	dendritic cell-specific intercellular adhesion molecule-3 grabbing non-integrin
DHB	2,5-dihydroxybenzoic acid
DTT	dithiothreitol
EGPA	eosinophilic granulomatosis with polyangiitis
ELISA	enzyme-linked immunosorbent assay
Endo S	endoglycosidase S
ER	endoplasmic reticulum
ERLIC	electrostatic repulsion HILIC
ESI	electrospray ionization
ETD	electron-transfer dissociation
FA	formic acid
Fab	fragment antigen binding
Fc	fragment crystallizable
FcεR	Fc-epsilon receptor
FcγR	Fc-gamma receptor
FEIA	fluorescent-enzyme immune assay
FRS	Framingham risk score
GBP	glycan-binding protein
GC	glucocorticosteroid therapy
GDob1	chimeric MN12H2 antibodies with V genes from the human monoclonal IgG2 antibody DOB1
GlcNAc	*N*-acetylglucosamine
GPA	granulomatosis with polyangiitis
HDLC	high density lipoprotein cholesterol
HEK	human embryonic kidney
Hex	hexose
HexNAc	*N*-acetylhexosamine
HILIC	hydrophilic interaction liquid chromatography
HIV	human immunodeficiency virus
HPLC	high performance liquid chromatography
HR	hazard ratio

Ig	immunoglobulin
IL	interleukin
IT	ion trap
IVIg	intravenous Immunoglobulin
LC	liquid chromatography
LDLC	low density lipoprotein cholesterol
LEMS	lambert-Eaton Myasthenic Syndrome
MALDI	matrix-assisted laser desorption ionization
MBL	mannose-binding lectin
MPA	microscopic polyangiitis
MPO	myeloperoxidase
MRM	multiple reaction monitoring
MS	mass spectrometry
NCGN	necrotizing glomerulonephritis
NeuAc	*N*-acetylneuraminic acid
PBS	phosphate buffered saline
PR3	proteinase 3
PNGase F	*N*-glycosidase F
PTM	post-translational modification
qTOF	quadropole TOF
RA	rheumatoid arthritis
ROC	receiver operating characteristic
RP	reversed phase
RSD	relative standard deviation
SA	sialic acid
SD	standard deviation
SDS-PAGE	sodium dodecyl sulfate polyacrylamide gel electrophoresis
SIGN-R1	specific intercellular adhesion molecule-3 grabbing non-integrin related 1
t-ITP	transient isotachophoresis
T3	triiodothyronine
TC	total cholesterol
TFA	trifluoroacetic acid
TG	triglycerides
TNP	trinitrophenol
TOF	time-of-flight
UHPLC	ultra high performance liquid chromatography
ZIC HILIC	zwitterionic HILIC

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Curriculum Vitae

Henriëtte Rosina Plomp was born on Friday the 13th of November, 1987 in Leiderdorp, The Netherlands. After receiving the bulk of her primary education in international schools, she attended the Stedelijk Gymnasium Leiden and graduated in 2006. During the next three years, she was enrolled in the Bachelor program Life Science and Technology, a collaboration between Leiden University and the Technical University Delft. In her final year there, she followed an internship at the Department of Molecular Cell Biology at the Leiden University Medical Center, supervised by Dr. A. Zaldumbide and Prof. Dr. R. C. Hoeben, investigating the migration of human mesenchymal stem cells from different biological sources.

Following that, Rosina enrolled in the Master study Forensic Science at the University of Amsterdam, receiving a degree in 2011. In that year she also performed an internship at the Department of Forensic Molecular Biology at the Erasmus Medical Center, supervised by Dr. K. Ackermann and Prof. Dr. M. Kayser. During this time she conducted research into the expression of circadian biomarkers in human blood.

In 2012 Rosina joined the Center for Proteomics and Metabolomics at the Leiden University Medical Center as a PhD student under the supervision of Prof. Dr. M. Wuhrer, Prof. Dr. A.M. Deelder and Dr. P. Hensbergen. During her PhD, which was funded by the HighGlycan Project of the European Union's Seventh Framework Programme, Rosina investigated glycosylation of immunoglobulins using a mass spectrometry-based proteomics approach, which resulted in this thesis. Since completing her thesis, she has continued in the field of glycoproteomics as a post-doctoral researcher in the same group.

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