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Supplementary Information

# Chemical labeling for fine mapping of IgG N-glycosylation by ETD-MS

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## Materials and Experimental Procedures

**Materials and Chemicals.** Ttrifluoroacetic acid (TFA), sodium cyanoborohydride/ Sodium cyanoborodeuteride ($NaBH_3CN$/ $NaBD_3CN$), Formaldehyde/ Formaldehyde-$d_2$/ Formaldehyde-$^{13}C$, $d_2$ solution (HCHO/ DCDO/ $D^{13}CDO$), (7-Azabenzotriazol-1-yloxy)tripyrrolidinophosphonium hexafluorophosphate (PyAOP), Triethylammonium bicarbonate (TEAB), 4-Methylmorpholine, IgG from human serum, Dithiothreitol (DTT), Iodoacetamide (IAA), 3-(Dimethylamino)-1-propylamine (C3-methylTert) and (2-Aminoethyl)trimethylammonium chloride hydrochloride (C2-Quat) were purchased from Sigma-Aldrich (St. Louis, MO, USA). *N, N*-Dimethylethylenediamine (DMEN, C2-methylTert) was purchased from J&K Chemical (Beijing, China), Protease inhibitors (Complete tablets), Protein G-Agarose was purchased from Roche (Basel, Switzerland). RIPA Lysis Buffer (strong) was purchased from Beyotime. (Shanghai, China). ZIC-HILIC particles, HPLC-grade acetonitrile (ACN) were purchased from Merck (Darmstadt, Germany). Dimethyl sulfoxide (DMSO) was purchased from Sinopharm Chemical Reagent Co., Ltd. (Shanghai, China), Distilled water was purified by a Milli-Q system (Milford, MA, USA). Serum from all participants including healthy individuals (n=5), cirrhotic patients (n=5) and HCC patients (n=5) were obtained from Fudan University Shanghai Cancer Center. The research was handled in accordance with ethical and legal standards.

**IgG Purification.** IgG was isolated from human plasma using Protein G. First, the protein G-agarose (20 μL) were wash with 200 μL binding buffer (RIPA lysis buffer/cook tail/$H_2O$, 10/0.2/90, v/v/v), for three times. Second, 10 μL of blood serum were diluted with 90 μL binding buffer and then diluted samples were added into protein G-agarose and incubated for 3 hours with moderate agitation at 4℃. Third, the sample were centrifuged for 90 seconds at 10,000 rcf and then wiping off invalid portion. Fourth, the sample was washed by 100 μL binding buffer to thoroughly wash away all unbound non-IgG protein components for three times. Fifth, 50 μL elution buffer (0.1% TFA) were added and incubated for 5 minutes with moderate agitation at 4℃. Sixth, the sample was centrifuged and collected. This step was repeated three times. The purity of eluted IgG was further validated by SDS-PAGE and quantified by bicinchoninic acid (BCA) methods at 562 nm. At last, the IgG was stored at -20 °C until digestion.

**Protein Digestion.** First, standard proteins (IgG and fetuin) were dissolved in 100 mM TEAB buffer (pH 8.0) at 0.5 mg/ml. Second, the proteins were thermal denaturation and reduced with 10 mM DTT for 1 h at 56 °C and subsequently alkylated with 20 mM IAA for 45 min at room temperature in the dark. Third, the proteins were digested overnight at 37 °C with trypsin at a ratio of 1/20 (enzyme/protein, w/w). For serum protein digestion, 10 μL serum (containing about 900 μg proteins) were diluted with 190 μL 8 M urea solution, and then reduced with 10 mM DTT at 37 °C for 1 h and subsequently alkylated with 20 mM IAA at room temperature for 45 min in the dark. After that, the molecular compounds were removed by acetone precipitation. And then proteins were redissolved with 100 mM TEAB buffer (pH 8.0) at 0.5 mg/ml. Finally, the proteins were digested overnight at 37 °C with trypsin at a ratio of 1/50 (enzyme/protein, w/w).

**Dimethylation.** After digestion, the solution containing peptides were labeled with $CH_3$ (light), $CD_2H$ (medium) and $^{13}CD_3$ (heavy), respectively. First, 100 μg peptides was dissolved in 200 μL 100 mM TEAB buffer (pH 8.0). Second, 17 μL 4% formaldehyde solution (HCHO, DCDO or $D^{13}CDO$) and 17 μL 0.6 M sodium cyanoborohydride solution ($NaBH_3CN$ or $NaBD_3CN$) were added. Third, the reaction mixture was rincubated at 37 °C for 2 h. Fourth, the dimethyl labeled peptides were desalted using a C18 SPE cartridge and subsequently lyophilized in vacuum. For IgG, fetuin and serum glycopeptides identification, the demethylation was label with $CH_3$ (light). For IgG quantification experiment, the glycopeptides were labeled with $CH_3$ (light), $CD_2H$ (medium) and $^{13}CD_3$ (heavy), respectively, and then mixed for C18 desalting.

**DMEN-amidation.** The reaction condition was described previously with minor modification.[1] First, 100 μg dimethyl peptides were dissolved in 29 μL DMSO, and then 1 μL TEAB (1 M), 5 μL N, N-Dimethylethylenediamine (5 M), 2.5 μL N-methylmorpholine were added and vortexed. Second, 12.5 μL PyAOP (400 mM in DMSO) solution were added. Third, the reaction mixture was vortexed and stood at room temperature for 2 h. Fourth, the reaction solution was diluted with 1 mL loading buffer (80% ACN containing 1% TFA), and then the N-glycopeptides were enriched using in-house ZIC-HILIC micro-column. Briefly, after the ZIC-HILIC column was equilibrated by the loading buffer for three times, the peptides were loaded into ZIC-HILIC micro-column, and then the column was washed with 200 μL loading buffer for three times. Then, enriched N-glycopeptides were eluted with 100 μL 0.1% TFA for three times. And subsequently dried by vacuum centrifugation for MALDI-MS and LC-MS/MS analysis.

**MALDI-MS Analysis.** The MALDI-TOF MS experiments were performed on a 5800 Proteomics Analyzer (Applied Biosystems, Framingham, MA, USA) equipped with a Nd:YAG laser (355 nm), an acceleration voltage of 20 kV, and a repetition rate of 400 Hz. One microliter of sample was loaded onto a MALDI target and mixed with 1 μL of CHCA solution and dried in the air before MS analysis. External mass calibration was performed using peptides from myoglobin peptides.

**LC-ESI-MS/MS Analysis.** The N-glycopeptides were analyzed by nanospray LC-ESI-MS/MS on an Orbitrap Fusion Tribrid (Thermo Scientific) coupled to an EASY-nano-LC system (Thermo Scientific) without the trap column. For one LC-ESI-MS/MS run, about 10 μg glycoprotein (IgG and fetuin) or 1 μL serum protein enzymatic hydrolysates were loaded for N-glycopeptides and 1 μg protein for peptides analysis, and separated at a C18 column (50 cm × 75 μm i.d.) with a flow rate of 200 nL/min. Solvent A was water containing 0.1% formic acid. Solvent B was acetonitrile containing 0.1% formic acid. For IgG peptides (dimethylation), the gradient was 60 min in total: 0-45 min, 5%-30% B; 45-50 min, 30%-45% B; 50-53 min, 45%-90% B; 53-54:50 min, 90% B; 54:50-55 min, 5% B; 55-60 min, 5% B. For standard IgG N-glycopeptides (native, dimethylation and amidation), the gradient was 60 min in total: 0-3 min, 5%-10% B; 3-45 min, 10%-40% B; 45-50 min, 40%-55%B; 50-53 min, 55%-90% B; 53-54 min, 90% B; 54-55 min, 90%-5% B; 55-60 min, 5%-0% B. For amidated fetuin N-glycopeptides, the gradient was 90 min in total, 0-50 min, 1%-10% B; 50-80 min, 10%-40% B; 80-82 min, 40%-85% B; 82-90 min, 85% B. For serum IgG N-glycopeptides (amidation), the gradient was 120 min in total: 0-80 min, 0% B；80-81 min, 0-1% B; 81-100 min, 1% B; 100-101 min, 1%-80% B; 101-106 min, 80%-0% B; 106-120 min, 0% B. For serum N-glycopeptides (native and amidation), the gradient was 90 min in total: 0-90 min, 2%-30% B; 90-114 min, 30-45% B; 114-117 min, 45%-90% B; 117-118:50 min, 90% B; 118:50-119 min, 90%-2% B; 119-120 min, 2% B. For serum N-glycopeptides (amidation) the gradient was 90 min in total: 0-25 min, 0%-2% B; 25-30 min, 2-9% B; 30-100 min, 9%-25% B; 100-105 min, 25%-80% B; 105-110 min, 80% B; 110-110:10 min, 80%-0% B; 110:10-120, 0% B. The MS parameters for N-glycopeptide analysis were set as follow. MS1: scan range (m/z) = 500-2000; resolution = 120k; AGC target = 200,000; maximum injection time = 50 ms; dynamic exclusion after n times, n = 1; dynamic exclusion duration = 15 s; each selected precursor was subject to one HCD-MS/MS and one ETD-MS/MS. MS/MS: isolation window = 2; detector type = Orbitrap; resolution = 15k; AGC target =200,000; maximum injection time = 150 ms; HCD collision energy = 30% (NCE), ETD and EThcD was default settings. Besides, HCD collision energy was 25% (NCE) for EThcD. For native and dimethylated IgG sample, only charge state was among 2-5, the precursor could be sented to do the next MS/MS experiments. For amidated IgG sample, the precursor could be sented to do the next MS/MS experiments included charge state =3-6. Native serum sample included charge state = 2-8, and amidated fetuin and serum sample were charge state = 3-15 could be sented to do the next MS/MS experiments. The MS parameters for IgG peptides analysis were set as: MS1: scan range (m/z) = 350-1600 (m/z), resolution = 120k; MS/MS: precursor with charges included 2-4 could be sented to do the HCD (NCE, 35%) fragmentation.

**Data analysis.** XCalibur 4.0 was used for data processing. Raw data was used directly without any further processing for automated N-glycopeptide identification using Byonic. The following parameters were used for IgG search: mass tolerance for precursors and fragment ions were set as ± 10 ppm. and ± 20 ppm., respectively. The enzyme was full-trypsin and maximal missed cleavage was 0. Cysteine carbamidomethylation (+57.021 Da), N-Terminal and lysine dimethylation (+28.031 Da, 32.056 Da or 36.076 Da against actual condition.), Aspartic acid, Glutamic acid and C-Terminal DMEN-amidation (+70.0891 Da) were set as fixed modification. Variable modifications contained oxidation on Met (M +15.995 Da, rare2) and N-glycosylation (common 1), FDR (False discovery rate) < 1%. The IgG glycan database was shown as Table S6 (Summarized from previous reports).[2] The protein databases contain all four IgG subclasses: IgG1 (UniProt ID, P01857), IgG2 (P01859), IgG3 (P01860) and IgG4 (P01861). For serum N-glycopeptides search, the parameters were same except missed cleavage was 2, the N-glycan database was built-in (N-glycan 182 human no multiple fucose） and the protein database was SwissProt-human. In addition, for amidated sample, the sialylated glycan were rewritten with corresponding additional mass (+70.09 Da, per reactive site). The N-glycopeptides identified were filtered to 1% FDR and Byonic score ≥150. Moreover, the IgG N-glycopeptides that automated identified were further examined manually to make sure the accuracy identification. The mass spectrometry proteomics data have been deposited to the ProteomeXchange Consortium via the PRIDE[3] partner repository with the dataset identifier PXD014713.

## Results and Discussion

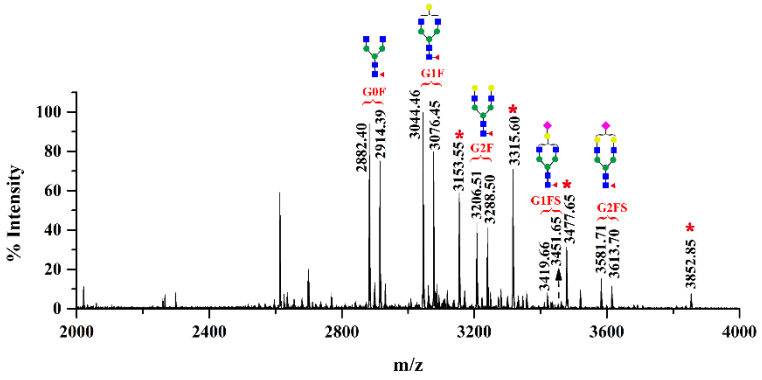



**Fig. S1** MALDI-TOF mass spectrum of C3-methylTert-amidated N-glycopeptides from standard IgG. "*" denotes the byproducts of IgG1 glycopeptides. For C3-methylTert compound, byproducts with additional 239.15 Da were obviously shown in the spectrum, and this side reaction was obviously with IgG1 glycopeptides. DMEN derivatization also had this side reaction, but it was much lower than C3-methylTert derivatization. After adding 1 μL 1 M TEAB buffer to control the pH during DMEN derivatization, the side reaction was control and the byproducts were almost invisible. As for C2-Quat derivatization, since C2-Quat reagent carries a permanent positive charge, the derivatives couldn't be observed in the MALDI-MS (multi-charged) and the Byonic software need to be modified to recognize its fragments ion.

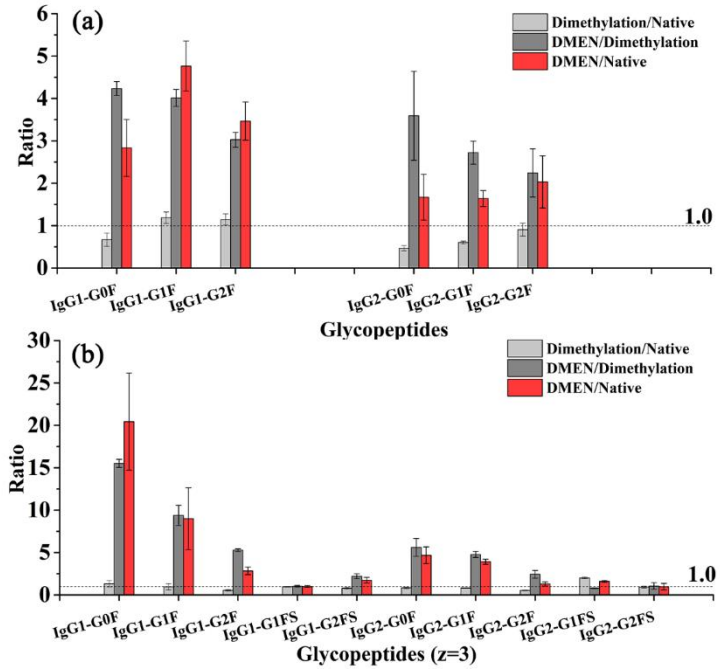



**Fig. S2** Relative intensity ratio of an equimolar of IgG N-glycopeptides among different states. Relative intensity ratio of an equimolar mixture of IgG N-glycopeptides between dimethylated N-glycopeptides and native N-glycopeptides, DMEN-admidated N-glycopeptides and dimethylated N-glycopeptides in (a) MALDI-MS and (b) LC-ESI-MS analysis. In detail, equal amounts of native N-glycopeptides and dimethylated N-glycopeptides were combined together to HILIC enrichment and then MS analysis. The intensity (MALDI-MS) or XIC area (ESI-MS, +3 charge state) of the native N-glycopeptide and dimethylated N-glycopeptide were compared. Also equal amounts of dimethylated and DMEN-amidated N-glycopeptides were mixed together to HILIC enrichment, MS analysis and then compared. The ratio between DMEN-admidated N-glycopeptides and native N-glycopeptides were obtain from DMEN/dimethylation multiply by demethylation/native.

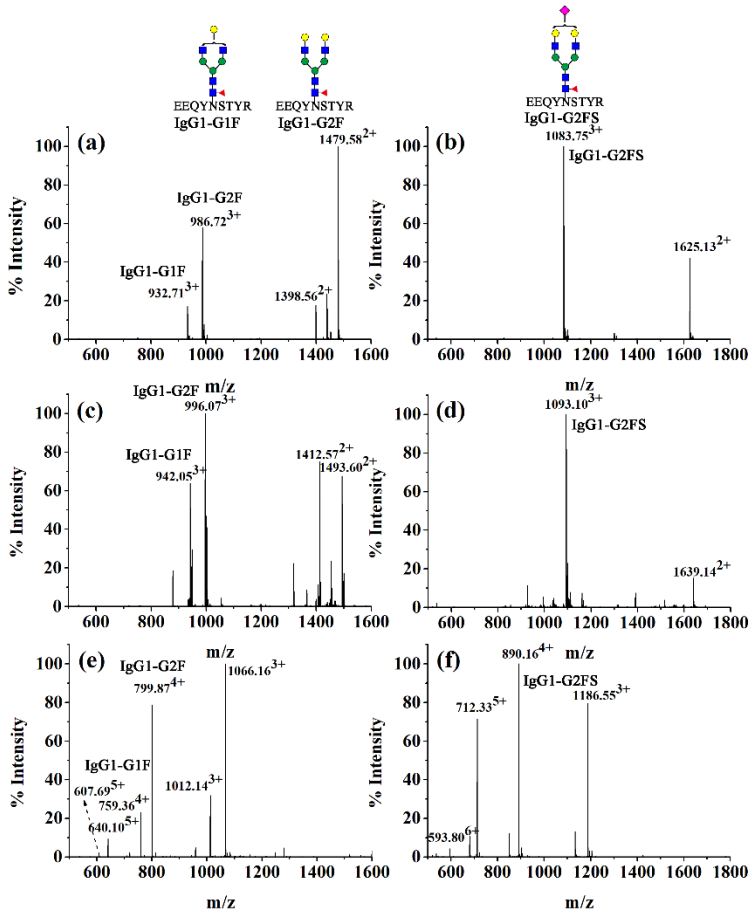



**Fig. S3** LC-ESI mass spectra of IgG N-glycopeptides. (a) native N-glycopeptides, IgG1-G1F and IgG1-G2F, (b) native N-glycopeptides, IgG1-G2FS, (c) dimethylated N-glycopeptides, IgG1-G1F and IgG1-G2F, (d) dimethylated N-glycopeptides, IgG1-G2FS, (e) DMEN-amidated N-glycopeptides, IgG1-G1F and IgG1-G2F and (f) DMEN-amidated N-glycopeptides, IgG1-G2FS.

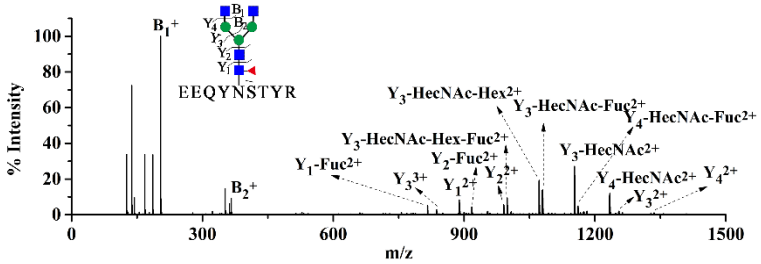



**Fig. S4** The HCD MS/MS spectrum of the N-glycopeptide IgG1-G0F with the precursor $[M+4H]^{4+}$ at m/z 718.84 .

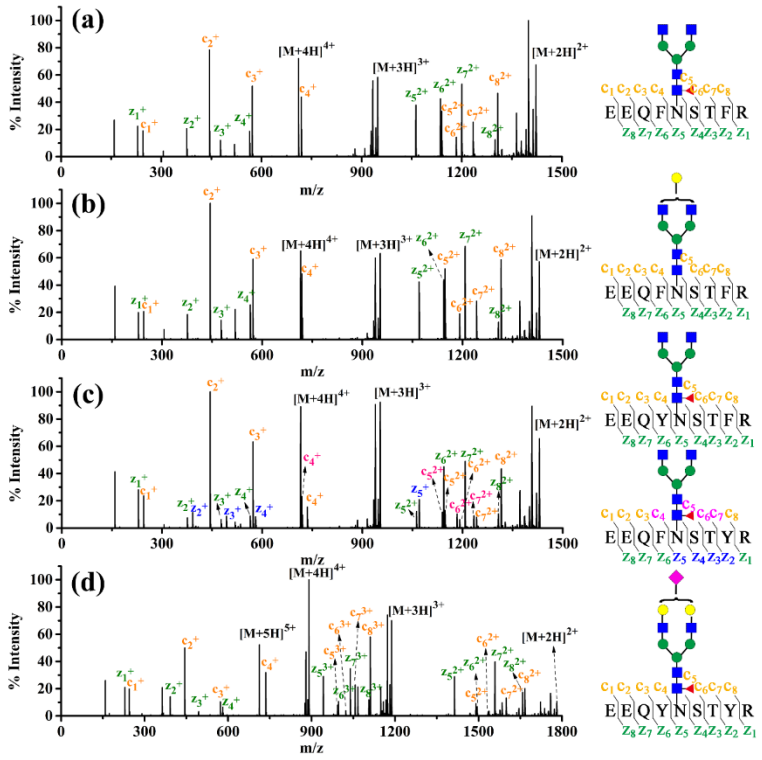



**Fig. S5** The ETD MS/MS spectra of the DMEN-amidated N-glycopeptides from IgG. (a) IgG2-G0F, with the precursor $[M+4H]^{4+}$ at m/z 710.85, (b) IgG2-G1, with the precursor $[M+4H]^{4+}$ at m/z 714.84 and (c) IgG3 and IgG4-G0F with the precursor $[M+4H]^{4+}$ at m/z 714.84 and (d) IgG1-G2FS with the precursor $[M+5H]^{5+}$ at m/z 712.33. IgG2-G1, IgG3-G0F and IgG4-G0F are isomers, as [tyrosine + fucose] and [phenylalanine + Hexose] have the same mass. Thanks to the high ETD efficiency of this strategy, these N-glycopeptides can be well distinguished and identified. For example, $c_4$ and $z_5$ ions can be used to distinguish IgG2-G1 from IgG3-G0F, and $z_2$, $z_3$, $z_4$ and $c_5$, $c_6$, $c_7$ ions can be used to distinguish IgG2-G1 from IgG4-G0F.

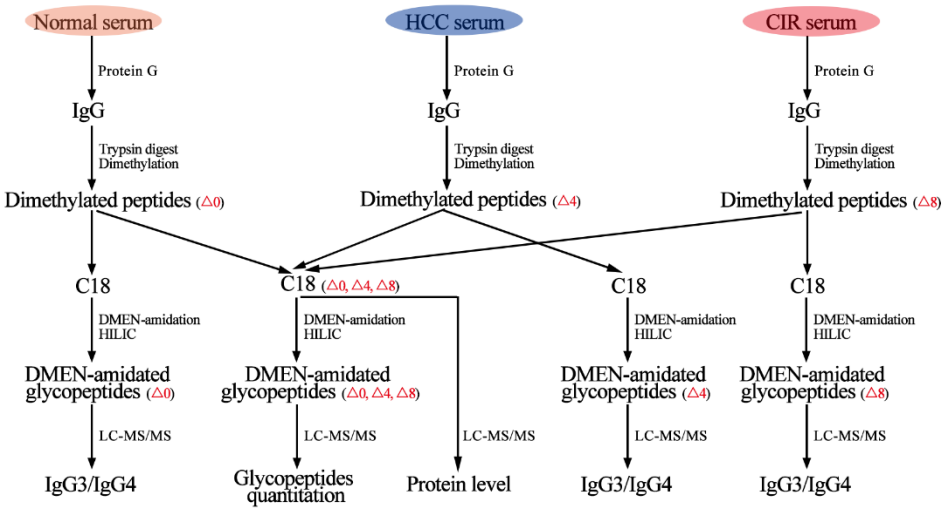



**Fig. S6** Workflow of isotopic dimethylation combined with DMEN-amidation for serum IgG N-glycopeptides quantitation. The normal serum from five healthy people were pooled before analysis for uniform standards and the serum from cirrhosis (CIR) and hepatocellular carcinoma (HCC) patients were analysis by individual, five cases respectively. For IgG1, IgG2 and IgG3/4 (grouped) N-glycopeptides, the relative abundance were calculated using the equation based on previous reports.[4] For IgG3/4 N-glycopeptides, the area of extracted ion chromatograms (XICs) of $z_5$ were extracted manually for relatively quantifying IgG3 and IgG4 glycopeptodes (IgG3/IgG4 ratio), and then the XICs (after deconvolution) of precursor were divided into two part according IgG3/IgG4 ratio to quantify IgG3 or IgG4 glycopeptodes among different disease states. At last, the ratio of each IgG subclass N-glycopeptides to normal group were normalized to that the expression of their protein level based on their corresponding unique peptides (GPSVFPLAPSSK for IgG1, GLPAPIEK for IgG2, WYVDGVEVHNAK for IgG3 and GLPSSIEK for IgG4).

The affect of overlapping-peak was eliminated (deconvolution) based on previous reports and the calculated equation is as follows:

$$\mathrm{Ratio}\left(\frac{S_M}{S_L}\right) = \frac{S_M - S_L*\left(\frac{S_{l+4}}{S_l}\right) - S_H*\left(\frac{S_{h-4}}{S_h}\right)}{S_L - S_M*\left(\frac{S_{m-4}}{S_m}\right) - S_H*\left(\frac{S_{h-8}}{S_h}\right)} \qquad \text{Equation (S1)}$$

$$\mathrm{Ratio}\left(\frac{S_H}{S_L}\right) = \frac{S_H - S_L*\left(\frac{S_{l+8}}{S_l}\right) - S_M*\left(\frac{S_{m+4}}{S_m}\right)}{S_L - S_M*\left(\frac{S_{m-4}}{S_m}\right) - S_H*\left(\frac{S_{h-8}}{S_h}\right)} \qquad \text{Equation (S2)}$$

L: Light ($2CH_3$, +28.031) labeled DMEN-amidated N-glycopeptides.

M: Middle ($2CD_2H$, +32.056) labeled DMEN-amidated N-glycopeptides.

H: Heavy ($2^{13}CD_3$, +36.076) labeled DMEN-amidated N-glycopeptides.

$S_L$: The area of XIC of monoisotope peak in the mixture labeled samples (light, middle and heavy).

$S_M$: The area of XIC of 4 Da higher peak in the mixture labeled samples (light, middle and heavy).

$S_H$: The area of XIC of 8 Da higher peak in the mixture labeled samples (light, middle and heavy).

$S_l$: The area of XIC of monoisotope peak in the light labeled samples.

$S_{l+4}$: The area of XIC of 4 Da higher peak in the light labeled samples.

$S_{l+8}$: The area of XIC of 8 Da higher peak in the light labeled samples.

$S_m$: The area of XIC of monoisotope peak in the middle labeled samples.

$S_{m-4}$: The area of XIC of 4 Da lower peak in the middle labeled samples.

$S_{m+4}$: The area of XIC of 4 Da higher peak in the middle labeled samples.

$S_h$: The area of XIC of monoisotope peak in the heavy labeled samples.

$S_{h-4}$: The area of XIC of 4 Da lower peak in the middle labeled samples.

$S_{h-8}$: The area of XIC of 8 Da lower peak in the middle labeled samples.

Three N-glycopeptides (IgG1, IgG3-G0F) from IgG standard was selected in this study as example. For N-glycopeptides IgG1-G0F, an isotopic pair of at m/z 718.84, 719.85 and 720.85 (z = +4) were selected in this study as example. The area of XICs ratio of m/z 719.85/718.84 ($S_{l+4}/S_l$), 720.85/718.84 ($S_{l+8}/S_l$) in the light labeled sample, 718.84/719.85 ($S_{m-4}/S_m$), 720.85/719.85 ($S_{m+4}/S_m$) in the middle labeled sample, 718.84/ 720.85 ($S_{h-8}/S_h$), 719.85/720.85 ($S_{h-4}/S_h$) in the heavy labeled sample were obtained from MS spectra (without mixing), respectively. The area of XICs at m/z 718.84 ($S_L$), 719.85($S_M$) and 1372.39 ($S_H$) were obtained from MS spectra after the three samples were mixed. The area of XICs of 4 Da higher species in the light labeled sample was $S_L\times(S_{l+4}/S_l)$ and 8 Da higher species in the light labeled sample was $S_L\times(S_{l+8}/S_l)$. The area of XICs of 4 Da lower species in the middle labeled sample was $S_M\times(S_{m-4}/S_m)$ and 4 Da higher species in the middle labeled sample was $S_M\times(S_{m+4}/S_m)$. The area of XICs of 8 Da lower species in the heavy labeled sample was $S_H\times(S_{h-8}/S_h)$ and 4 Da lower species in the heavy labeled sample was $S_H\times(S_{h-4}/S_h)$. Thus, the ratio of middle/light labeled N-glycopeptides after overlapping-peak deconvolution was $[S_M- S_L\times(S_{l+4}/S_l)-S_H\times(S_{h-4}/S_h)]/[S_L-S_M\times(S_{m-4}/S_m) - S_H\times(S_{h-8}/S_h]$. And the ratio of heavy/light labeled N-glycopeptides after overlapping-peak deconvolution was $[S_H-S_L\times(S_{l+8}/S_l)-S_M\times(S_{m+4}/S_m)]/[S_L-S_M\times(S_{m-4}/S_m) -S_H\times(S_{h-8}/S_h]$ (Table S2). In addition, for the N-glycopeptides from serum, the ratio was further were normalized to that the expression of their protein level based on its corresponding unique peptide.

For IgG3-G0F N-glycopeptide, the area of extracted ion chromatograms $XICs_{(IgG3/4\text{-}G0F)}$ were extracted and deconvolution described as above. After that, the XICs of $z_5$ for IgG3-G0F and IgG4-G0F were extracted respectively in the light, medium and heavy sample to relative quantification of IgG3 and IgG4 glycopeptode, and then the $XICs_{(IgG3/4\text{-}G0F)\text{-}light}$ was divided into two parts by proportion. For instance, the relative ratio of $z_5$ for IgG3-G0F/IgG4-G0F in the light standard IgG sample was 0.53 (CV = 4.96%, n = 3), and then the $XICs_{(IgG3/4\text{-}G0F)\text{-}light}$ was divided into two parts, 35% for IgG3-G0F and 65% for IgG4-G0F, so as for middle and heavy labeled peaks. And the relative quantify of IgG3-G0F were under the formula, $35\%*(S_M- S_L\times(S_{l+4}/S_l)-S_H\times(S_{h-4}/S_h))/(35\%*(S_L-S_M\times(S_{m-4}/S_m)-S_H\times(S_{h-8}/S_h)))$ for $S_M/S_L$, and $35\%*(S_H-S_L\times(S_{l+8}/S_l)-S_M\times(S_{m+4}/S_m))/(35\%*(S_L-S_M\times(S_{m-4}/S_m) -S_H\times(S_{h-8}/S_h)))$ for $S_H/S_L$.

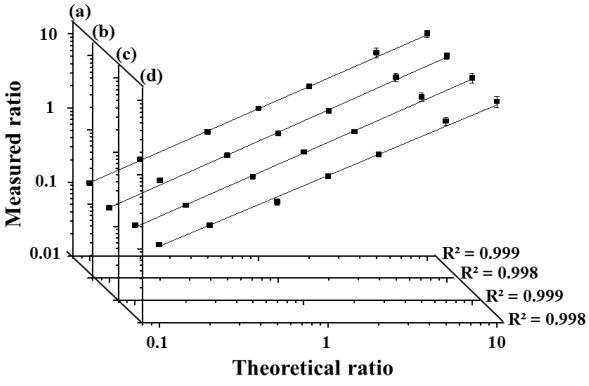



**Fig. S7** Isotopic dimethylation combined with DMEN-amidation strategy for IgG glycopeptides quantitation. (a) IgG1-G0F (L/M), (b) IgG1-G0F (H/M), (c) IgG3-G0F (L/M) and (d) IgG3-G0F (H/M).

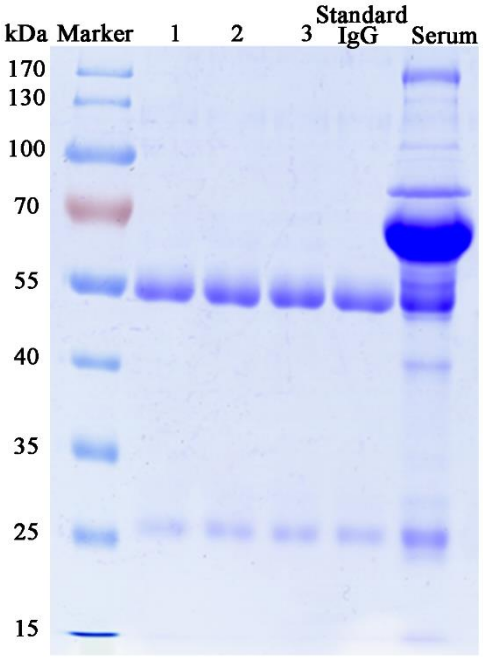



**Fig. S8** SDS-PAGE-CBB (Coomassie Brilliant Blue) of IgG captured by protein G from human serum for 3 repetitions (lane 1-3). Standard IgG and serum were employed as reference.

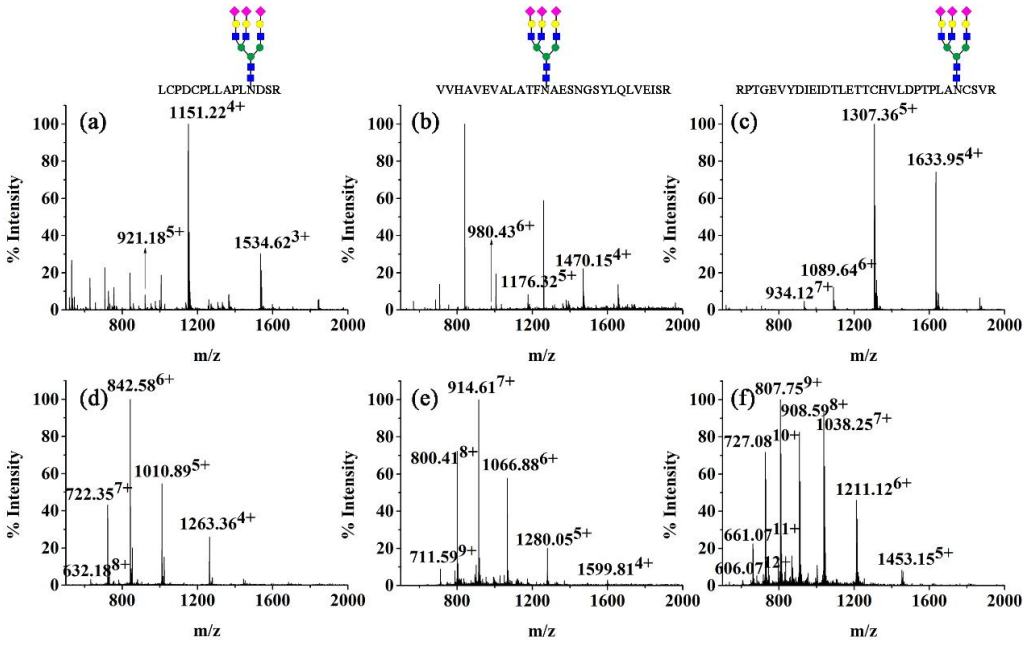



**Fig. S9** LC-ESI mass spectra of N-glycopeptides from bovine fetuin. (a) native N-glycopeptide with the peptide backbone of LCPDCPLLAPLN#DSR, N-glycosylated with $HexNAc_5Hex_6NeuAc_3$, (b) native N-glycopeptide with the peptide backbone of VVHAVEVALATFN#AESNGSYLQLVEISR, N-glycosylated with $HexNAc_5Hex_6NeuAc_3$, (c) native N-glycopeptide with the peptide backbone of RPTGEVYDIEIDTLETTCHVLDPTPLAN#CSVR, N-glycosylated with $HexNAc_5Hex_6NeuAc_3$, (d) DMEN-amidated N-glycopeptide with the peptide backbone of LCPDCPLLAPLN#DSR, N-glycosylated with $HexNAc_5Hex_6NeuAc_3$, (e) DMEN-amidated N-glycopeptide with the peptide backbone of VVHAVEVALATFN#AESNGSYLQLVEISR, N-glycosylated with $HexNAc_5Hex_6NeuAc_3$ and (f) DMEN-amidated N-glycopeptide with the peptide backbone of RPTGEVYDIEIDTLETTCHVLDPTPLAN#CSVR, N-glycosylated with $HexNAc_5Hex_6NeuAc_3$.

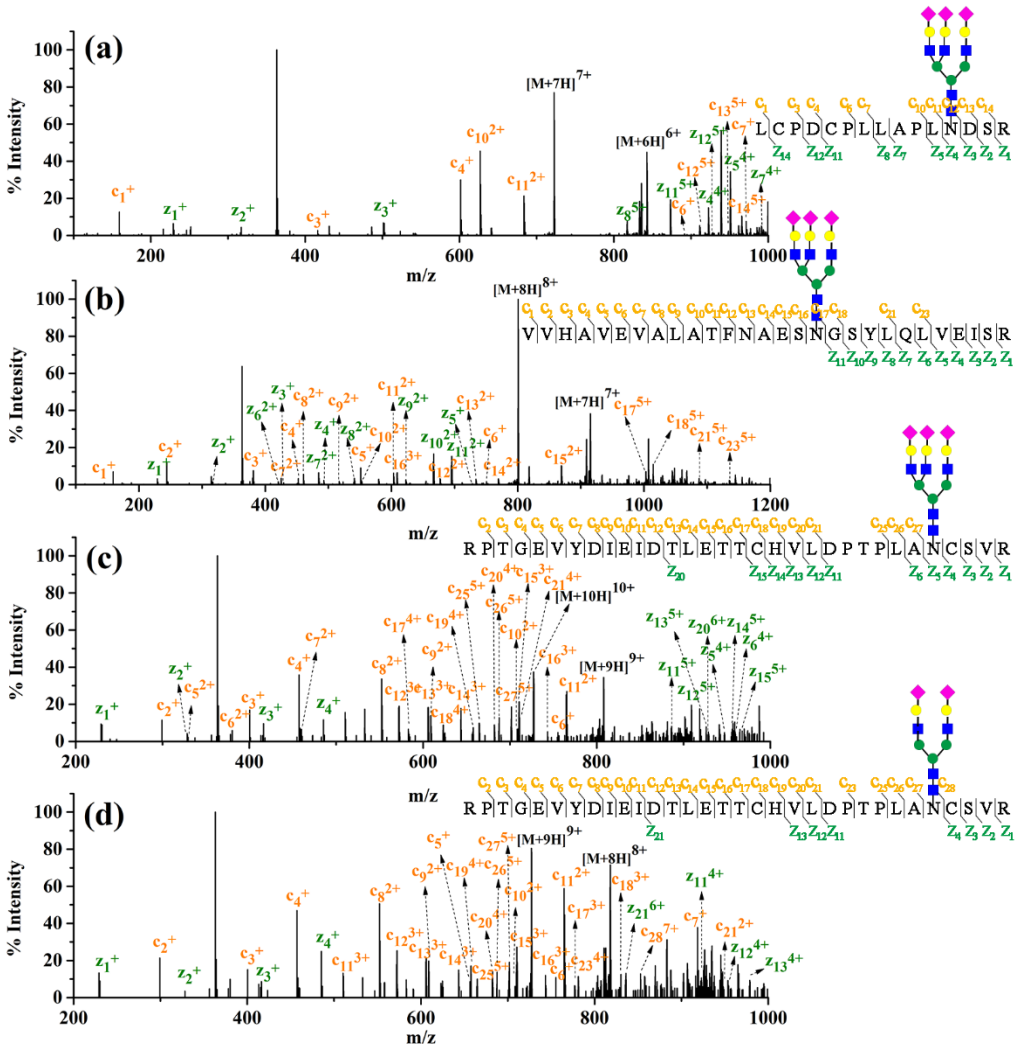



**Fig. S10** The ETD MS/MS spectra of the DMEN-amidated N-glycopeptides from fetuin. (a) DMEN-amidated N-glycopeptide with the peptide backbone of LCPDCPLLAPLN#DSR, N-glycosylated with $HexNAc_5Hex_6NeuAc_3$, with the precursor $[M+7H]^{7+}$ at m/z 722.35, (b) DMEN-amidated N-glycopeptide with the peptide backbone of VVHAVEVALATFN#AESNGSYLQLVEISR, N-glycosylated with $HexNAc_5Hex_6NeuAc_3$, with the precursor $[M+8H]^{8+}$ at m/z 800.41, (c) DMEN-amidated N-glycopeptide with the peptide backbone of RPTGEVYDIEIDTLETTCHVLDPTPLAN#CSVR, N-glycosylated with $HexNAc_5Hex_6NeuAc_3$, with the precursor $[M+10H]^{10+}$ at m/z 727.08, and (d) DMEN-amidated N-glycopeptide with the peptide backbone of RPTGEVYDIEIDTLETTCHVLDPTPLAN#CSVR, N-glycosylated with $HexNAc_4Hex_5NeuAc_2$, with the precursor $[M+9H]^{9+}$ at m/z 727.05.

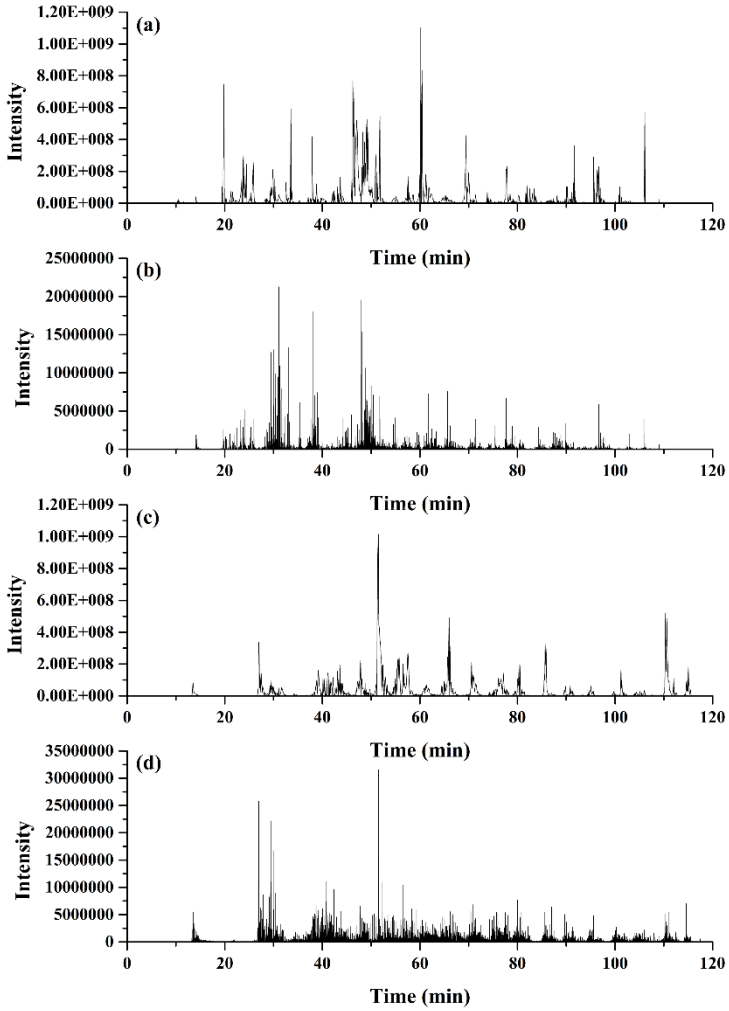



**Fig. S11** LC−MS/MS analysis of serum glycopeptides. (a) base peak intensity chromatography of native glycopeptides, (b) XIC of native glycopeptides generated for oxonium ions of GlcNAc, 204.09, at the MS/MS level. (c) base peak intensity chromatography of DMEN-amidated N-glycopeptide and (d) XIC of DMEN-amidated N-glycopeptide generated for oxonium ions of GlcNAc, 204.09, at the MS/MS level.

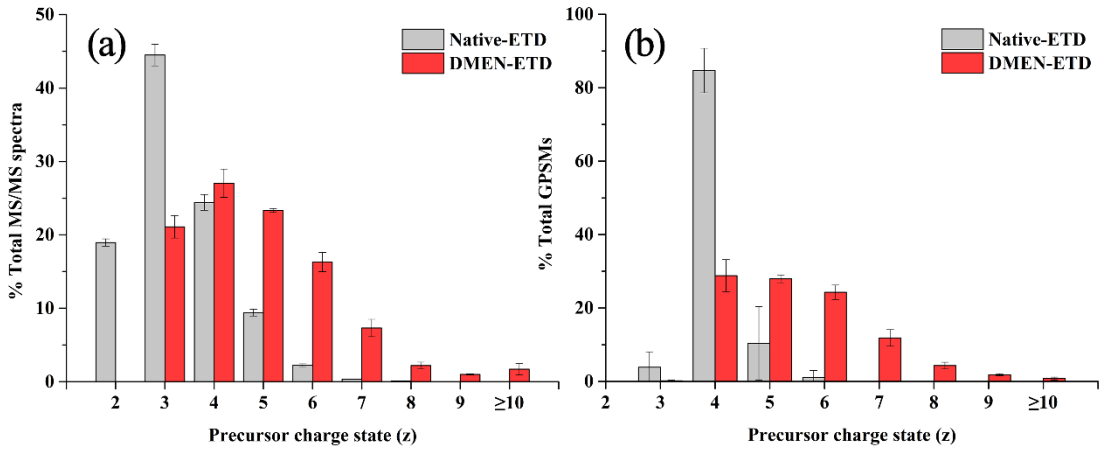



**Fig. S12** The distribution of precursors charge states in (a) all ETD MS/MS spectra and (b) all GPSMs (ETD and Byonic score≥ 150) from serum sample (n=3). Byonic score at a minimum of 150 was suggested for N-glycopeptides identified.[5]

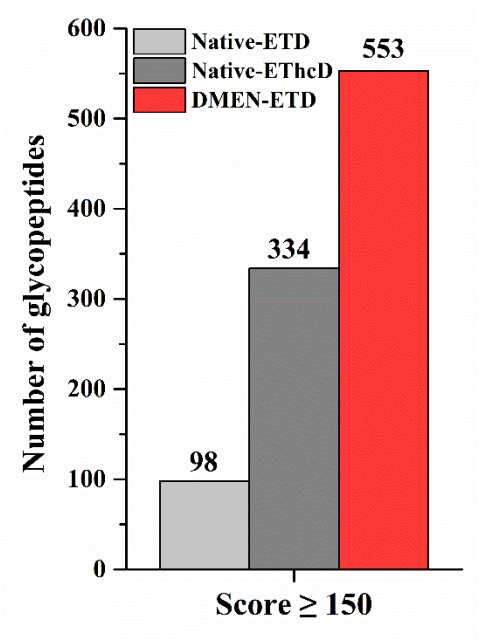



**Fig. S13** The number of N-glycopeptides identified from human serum (three technical repetitions). The highest score was used for the repeated identification of N-glycopeptides. The results were filtered to 1% FDR and Byonic score ≥150.

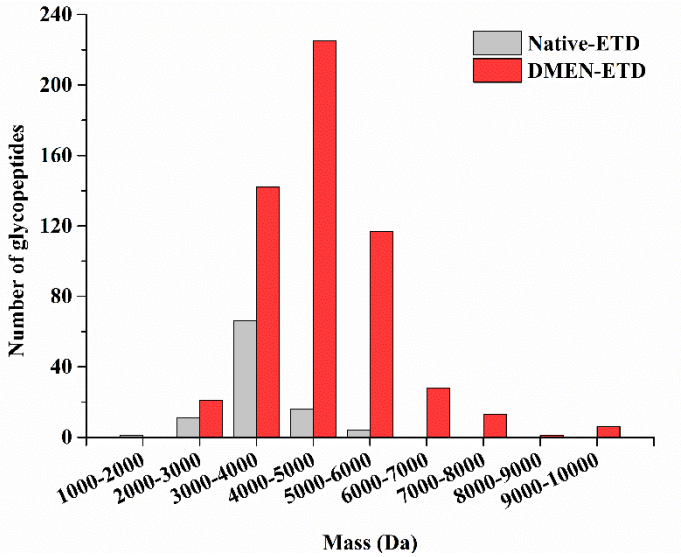



**Fig. S14** Molecular weight distribution of N-glycopeptides identified from human serum.

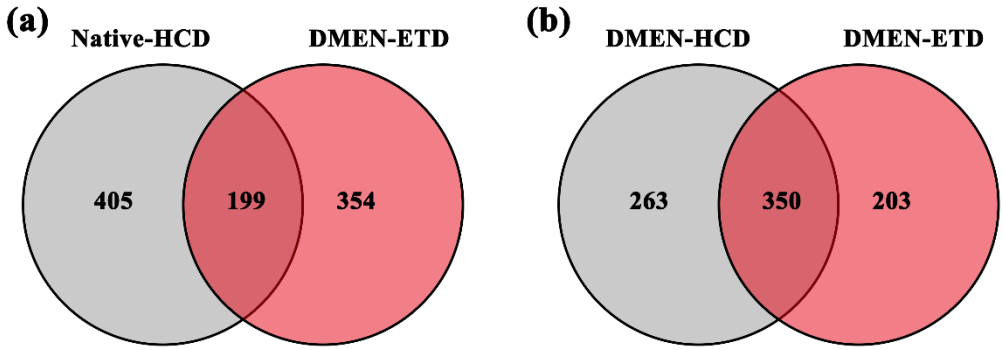



**Fig. S15** Glycopeptides identified from human serum with different method. (a) Native-HCD method and DMEN-ETD method and (b) DMEN-HCD and DMEN-ETD method. The results were filtered to 1% FDR and Byonic score⩾150.

**Table S1.** Relative quantitation results of standard IgG N-glycopeptides.

| No | Glycopeptide | Ratio | Min CV (n=3) | Max CV (n=3) | Slope | Y intercept (X=0) |
|---|---|---|---|---|---|---|
| a | IgG1-G0F | SL/SM | 1.81% | 15.05% | 1.00 | -0.01 |
| b | IgG1-G0F | SH/SM | 1.02% | 13.56% | 1.02 | -0.03 |
| c | IgG3-G0F | SL/SM | 1.42% | 14.92% | 1.00 | -0.01 |
| d | IgG3-G0F | SH/SM | 0.80% | 17.84% | 0.95 | -0.01 |

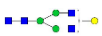
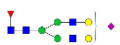
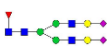
**Table S2.** IgG N-glycopeptides identified from healthy, CIR and HCC serum.

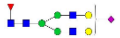
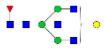
| No | Subclass | Glycan composition |
|---|---|---|
| 1 | IgG1 | $HexNAc_2Hex_3Fuc_1$ |
| 2 | IgG1 | $HexNAc_2Hex_4$ |
| 3 | IgG1 | $HexNAc_2Hex_5$ |
| 4 | IgG1 | $HexNAc_2Hex_6$ |
| 5 | IgG1 | $HexNAc_3Hex_3$ |
| 6 | IgG1 | $HexNAc_3Hex_3Fuc_1$ |
| 7 | IgG1 | $HexNAc_3Hex_4$ |
| 8 | IgG1 | $HexNAc_3Hex_4Fuc_1$ |
| 9 | IgG1 | $HexNAc_3Hex_4Fuc_1NeuAc_1$ |
| 10 | IgG1 | $HexNAc_3Hex_4NeuAc_1$ |
| 11 | IgG1 | $HexNAc_3Hex_5Fuc_1$ |
| 12 | IgG1 | $HexNAc_3Hex_5Fuc_1NeuAc_1$ |
| 13 | IgG1 | $HexNAc_3Hex_5NeuAc_1$ |
| 14 | IgG1 | $HexNAc_3Hex_6Fuc_1NeuAc_1$ |
| 15 | IgG1 | $HexNAc_3Hex_6NeuAc_1$ |
| 16 | IgG1 | $HexNAc_4Hex_3$ |
| 17 | IgG1 | $HexNAc_4Hex_3Fuc_1$ |
| 18 | IgG1 | $HexNAc_4Hex_4$ |
| 19 | IgG1 | $HexNAc_4Hex_4Fuc_1$ |
| 20 | IgG1 | $HexNAc_4Hex_4Fuc_1NeuAc_1$ |
| 21 | IgG1 | $HexNAc_4Hex_4NeuAc_1$ |
| 22 | IgG1 | $HexNAc_4Hex_5$ |
| 23 | IgG1 | $HexNAc_4Hex_5Fuc_1$ |
| 24 | IgG1 | $HexNAc_4Hex_5Fuc_1NeuAc_1$ |
| 25 | IgG1 | $HexNAc_4Hex_5Fuc_1NeuAc_2$ |
| 26 | IgG1 | $HexNAc_4Hex_5Fuc_2$ |
| 27 | IgG1 | $HexNAc_4Hex_5NeuAc_1$ |
| 28 | IgG1 | $HexNAc_4Hex_5NeuAc_2$ |
| 29 | IgG1 | $HexNAc_4Hex_6Fuc_1$ |
| 30 | IgG1 | $HexNAc_4Hex_6Fuc_1NeuAc_1$ |
| 31 | IgG1 | $HexNAc_5Hex_3$ |
| 32 | IgG1 | $HexNAc_5Hex_3Fuc_1$ |
| 33 | IgG1 | $HexNAc_5Hex_4$ |

| | | |
|---|---|---|
| 34 | IgG1 | $HexNAc_5Hex_4Fuc_1$ |
| 35 | IgG1 | $HexNAc_5Hex_4Fuc_1NeuAc_1$ |
| 36 | IgG1 | $HexNAc_5Hex_4NeuAc_1$ |
| 37 | IgG1 | $HexNAc_5Hex_5$ |
| 38 | IgG1 | $HexNAc_5Hex_5Fuc_1$ |
| 39 | IgG1 | $HexNAc_5Hex_5Fuc_1NeuAc_1$ |
| 40 | IgG1 | $HexNAc_5Hex_5Fuc_1NeuAc_2$ |
| 41 | IgG1 | $HexNAc_5Hex_7Fuc_1$ |
| 42 | IgG2 | $HexNAc_2Hex_5$ |
| 43 | IgG2 | $HexNAc_2Hex_6$ |
| 44 | IgG2 | $HexNAc_3Hex_3$ |
| 45 | IgG2 | $HexNAc_3Hex_3Fuc_1$ |
| 46 | IgG2 | $HexNAc_3Hex_4Fuc_1$ |
| 47 | IgG2 | $HexNAc_3Hex_4Fuc_1NeuAc_1$ |
| 48 | IgG2 | $HexNAc_3Hex_5Fuc_1$ |
| 49 | IgG2 | $HexNAc_3Hex_5Fuc_1NeuAc_1$ |
| 50 | IgG2 | $HexNAc_3Hex_6Fuc_1NeuAc_1$ |
| 51 | IgG2 | $HexNAc_3Hex_7Fuc_1NeuAc_1$ |
| 52 | IgG2 | $HexNAc_4Hex_3$ |
| 53 | IgG2 | $HexNAc_4Hex_3Fuc_1$ |
| 54 | IgG2 | $HexNAc_4Hex_4$ |
| 55 | IgG2 | $HexNAc_4Hex_4Fuc_1$ |
| 56 | IgG2 | $HexNAc_4Hex_4Fuc_1NeuAc_1$ |
| 57 | IgG2 | $HexNAc_4Hex_4NeuAc_1$ |
| 58 | IgG2 | $HexNAc_4Hex_5$ |
| 59 | IgG2 | $HexNAc_4Hex_5Fuc_1$ |
| 60 | IgG2 | $HexNAc_4Hex_5Fuc_1NeuAc_1$ |
| 61 | IgG2 | $HexNAc_4Hex_5Fuc_1NeuAc_2$ |
| 62 | IgG2 | $HexNAc_4Hex_5Fuc_2$ |
| 63 | IgG2 | $HexNAc_4Hex_5NeuAc_1$ |
| 64 | IgG2 | $HexNAc_4Hex_6Fuc_1$ |
| 65 | IgG2 | $HexNAc_4Hex_6Fuc_1NeuAc_1$ |
| 66 | IgG2 | $HexNAc_5Hex_3$ |
| 67 | IgG2 | $HexNAc_5Hex_3Fuc_1$ |
| 68 | IgG2 | $HexNAc_5Hex_4$ |
| 69 | IgG2 | $HexNAc_5Hex_4Fuc_1$ |
| 70 | IgG2 | $HexNAc_5Hex_4Fuc_1NeuAc_1$ |
| 71 | IgG2 | $HexNAc_5Hex_5$ |
| 72 | IgG2 | $HexNAc_5Hex_5Fuc_1NeuAc_1$ |
| 73 | IgG2 | $HexNAc_5Hex_5Fuc_1NeuAc_2$ |
| 74 | IgG3 | $HexNAc_3Hex_3Fuc_1$ |
| 75 | IgG3 | $HexNAc_3Hex_4Fuc_1$ |
| 76 | IgG3 | $HexNAc_4Hex_3$ |
| 77 | IgG3 | $HexNAc_4Hex_3Fuc_1$ |
| 78 | IgG3 | $HexNAc_4Hex_4$ |
| 79 | IgG3 | $HexNAc_4Hex_4Fuc_1$ |
| 80 | IgG3 | $HexNAc_4Hex_4Fuc_1NeuAc_1$ |
| 81 | IgG3 | $HexNAc_4Hex_5$ |

| | | |
|---|---|---|
| 82 | IgG3 | $HexNAc_4Hex_5Fuc_1$ |
| 83 | IgG3 | $HexNAc_4Hex_5Fuc_1NeuAc_1$ |
| 84 | IgG3 | $HexNAc_4Hex_5NeuAc_1$ |
| 85 | IgG3 | $HexNAc_5Hex_3$ |
| 86 | IgG3 | $HexNAc_5Hex_3Fuc_1$ |
| 87 | IgG3 | $HexNAc_5Hex_4$ |
| 88 | IgG3 | $HexNAc_5Hex_4Fuc_1$ |
| 89 | IgG3 | $HexNAc_5Hex_4Fuc_1NeuAc_1$ |
| 90 | IgG3 | $HexNAc_5Hex_5$ |
| 91 | IgG3 | $HexNAc_5Hex_5Fuc_1$ |
| 92 | IgG4 | $HexNAc_3Hex_3Fuc_1$ |
| 93 | IgG4 | $HexNAc_3Hex_4Fuc_1$ |
| 94 | IgG4 | $HexNAc_4Hex_3$ |
| 95 | IgG4 | $HexNAc_4Hex_3Fuc_1$ |
| 96 | IgG4 | $HexNAc_4Hex_4$ |
| 97 | IgG4 | $HexNAc_4Hex_4Fuc_1$ |
| 98 | IgG4 | $HexNAc_4Hex_4Fuc_1NeuAc_1$ |
| 99 | IgG4 | $HexNAc_4Hex_5$ |
| 100 | IgG4 | $HexNAc_4Hex_5Fuc_1$ |
| 101 | IgG4 | $HexNAc_4Hex_5Fuc_1NeuAc_1$ |
| 102 | IgG4 | $HexNAc_4Hex_5NeuAc_1$ |
| 103 | IgG4 | $HexNAc_5Hex_3$ |
| 104 | IgG4 | $HexNAc_5Hex_3Fuc_1$ |
| 105 | IgG4 | $HexNAc_5Hex_4$ |
| 106 | IgG4 | $HexNAc_5Hex_4Fuc_1$ |
| 107 | IgG4 | $HexNAc_5Hex_4Fuc_1NeuAc_1$ |
| 108 | IgG4 | $HexNAc_5Hex_5$ |
| 109 | IgG4 | $HexNAc_5Hex_5Fuc_1$ |

**Table S3.** Relative quantitative results of the IgG N-glycopeptides from CIR and healthy serum.

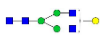
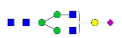
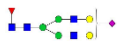
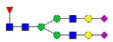
| No | Subclass | Glycan composition | Formula | Proposed structure | CIR/Normal[a] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ratio-1 | CV-1 | Ratio-2 | CV-2 | Ratio-3 | CV-3 | Ratio-4 | CV-4 | Ratio-5 | CV-5 |
| 1 | IgG1 | $HexNAc_3Hex_3$ | G0-N |  | 0.06 | 76.91% | 0.50 | 5.12% | 1.02 | 30.59% | 0.11 | 65.26% | 0.63 | 13.46% |
| 2 | IgG1 | $HexNAc_3Hex_3Fuc_1$ | G0F-N |  | 1.00 | 1.98% | 0.90 | 17.73% | 1.29 | 18.01% | 1.23 | 21.28% | 1.00 | 9.13% |
| 3 | IgG1 | $HexNAc_3Hex_4Fuc_1$ | G1F-N |  | 0.70 | 4.98% | 0.87 | 15.49% | 0.65 | 4.42% | 0.59 | 10.06% | 0.58 | 13.05% |
| 4 | IgG1 | $HexNAc_4Hex_3$ | G0 |  | 0.15 | 22.37% | 0.20 | 42.82% | 0.87 | 23.60% | 0.12 | 5.89% | 0.58 | 11.81% |
| 5 | IgG1 | $HexNAc_4Hex_3Fuc_1$ | G0F |  | 1.23 | 3.90% | 0.97 | 6.60% | 1.55 | 2.12% | 2.28 | 1.70% | 1.31 | 2.22% |
| 6 | IgG1 | $HexNAc_4Hex_4$ | G1 |  | 0.24 | 3.87% | 0.47 | 3.56% | 0.62 | 1.75% | 0.20 | 47.31% | 0.66 | 19.59% |
| 7 | IgG1 | $HexNAc_4Hex_4Fuc_1$ | G1F |  | 0.72 | 4.57% | 0.86 | 1.60% | 0.78 | 5.51% | 0.57 | 8.18% | 0.69 | 3.35% |
| 8 | IgG1 | $HexNAc_4Hex_4Fuc_1NeuAc_1$ | G1FS |  | 0.86 | 11.33% | 0.84 | 5.87% | 0.66 | 7.72% | 0.81 | 9.17% | 0.54 | 12.04% |
| 9 | IgG1 | $HexNAc_4Hex_4NeuAc_1$ | G1S |  | 0.10 | 22.93% | 0.48 | 38.63% | 0.52 | 1.90% | 0.23 | 20.30% | 0.65 | 18.28% |
| 10 | IgG1 | $HexNAc_4Hex_5$ | G2 |  | 0.29 | 5.72% | 0.76 | 12.40% | 0.61 | 14.12% | 0.18 | 15.32% | 0.51 | 2.24% |
| 11 | IgG1 | $HexNAc_4Hex_5Fuc_1$ | G2F |  | 0.67 | 3.54% | 0.93 | 1.94% | 0.64 | 15.03% | 0.29 | 5.32% | 0.46 | 8.74% |
| 12 | IgG1 | $HexNAc_4Hex_5Fuc_1NeuAc_1$ | G2FS |  | 0.81 | 1.52% | 1.07 | 3.80% | 0.58 | 15.97% | 0.40 | 14.84% | 0.28 | 17.99% |
| 13 | IgG1 | $HexNAc_4Hex_5Fuc_1NeuAc_2$ | G2FS2 |  | 0.67 | 12.70% | 0.63 | 5.56% | 0.20 | 36.70% | 0.50 | 17.90% | 0.22 | 17.94% |

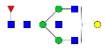
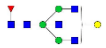
| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | IgG1 | $HexNAc_4Hex_5NeuAc_1$ | G2S |  | 0.23 | 5.57% | ND[b] | ND[b] | 0.36 | 6.93% | 0.36 | 24.85% | 0.39 | 20.75% |
| 15 | IgG1 | $HexNAc_5Hex_3Fuc_1$ | G0FN |  | 1.56 | 1.93% | 0.96 | 14.12% | 2.99 | 9.66% | 3.34 | 4.82% | 1.56 | 4.69% |
| 16 | IgG1 | $HexNAc_5Hex_4Fuc_1$ | G1FN |  | 1.11 | 8.53% | 1.13 | 11.85% | 2.16 | 35.72% | 1.20 | 16.33% | 1.10 | 6.39% |
| 17 | IgG1 | $HexNAc_5Hex_5Fuc_1$ | G2FN |  | 1.01 | 8.44% | 1.13 | 3.10% | 4.74 | 8.65% | 0.66 | 1.85% | 0.76 | 7.26% |
| 18 | IgG2 | $HexNAc_3Hex_3Fuc_1$ | G0F-N |  | 0.78 | 4.61% | 0.93 | 6.55% | 0.81 | 2.25% | 0.96 | 6.89% | 0.95 | 11.69% |
| 19 | IgG2 | $HexNAc_3Hex_4Fuc_1$ | G1F-N |  | 0.78 | 0.71% | 0.85 | 10.27% | 0.64 | 10.38% | 0.53 | 9.92% | 0.55 | 17.80% |
| 20 | IgG2 | $HexNAc_4Hex_3$ | G0 |  | 0.14 | 18.67% | 0.48 | 4.78% | 0.49 | 20.19% | ND[b] | ND[b] | 0.43 | 7.81% |
| 21 | IgG2 | $HexNAc_4Hex_3Fuc_1$ | G0F |  | 0.85 | 0.90% | 1.10 | 2.14% | 0.95 | 4.38% | 1.26 | 4.55% | 1.23 | 0.84% |
| 22 | IgG2 | $HexNAc_4Hex_4$ | G1 |  | 0.31 | 1.88% | 0.61 | 7.03% | 0.69 | 22.43% | 0.13 | 14.57% | 0.31 | 7.44% |
| 23 | IgG2 | $HexNAc_4Hex_4Fuc_1$ | G1F |  | 0.62 | 4.74% | 0.88 | 2.05% | 0.69 | 1.98% | 0.54 | 6.18% | 0.64 | 4.20% |
| 24 | IgG2 | $HexNAc_4Hex_4Fuc_1NeuAc_1$ | G1FS |  | 0.78 | 4.57% | 0.86 | 6.12% | 0.40 | 20.03% | 0.68 | 4.13% | 0.46 | 2.84% |
| 25 | IgG2 | $HexNAc_4Hex_5$ | G2 |  | 0.35 | 7.59% | 0.66 | 5.15% | 0.76 | 6.95% | ND[b] | ND[b] | 0.22 | 15.97% |
| 26 | IgG2 | $HexNAc_4Hex_5Fuc_1$ | G2F |  | 0.90 | 4.95% | 0.70 | 5.05% | 0.42 | 5.48% | 0.25 | 6.77% | 0.36 | 4.08% |
| 27 | IgG2 | $HexNAc_4Hex_5Fuc_1NeuAc_1$ | G2FS |  | 0.99 | 8.70% | 0.66 | 6.35% | 0.11 | 13.57% | 0.27 | 4.86% | 0.17 | 8.84% |
| 28 | IgG2 | $HexNAc_5Hex_3Fuc_1$ | G0FN |  | 1.32 | 4.11% | 1.13 | 5.29% | 1.37 | 7.53% | 1.75 | 7.33% | 1.63 | 2.09% |
| 29 | IgG2 | $HexNAc_5Hex_4Fuc_1$ | G1FN |  | 0.91 | 10.39% | 0.76 | 2.60% | 0.87 | 1.10% | 0.82 | 5.37% | 0.75 | 3.99% |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | IgG2 | $HexNAc_5Hex_5Fuc_1$ | G2FN |  | 1.37 | 5.56% | 0.74 | 3.46% | 0.53 | 3.12% | 0.37 | 9.91% | 0.39 | 5.79% |
| 31 | IgG3 | $HexNAc_4Hex_3Fuc_1$ | G0F |  | 0.06 | 8.98% | 1.24 | 6.89% | 1.52 | 37.23% | 0.43 | 2.29% | 2.57 | 3.42% |
| 32 | IgG3 | $HexNAc_4Hex_4Fuc_1$ | G1F |  | 0.04 | 9.33% | 0.96 | 6.86% | 1.24 | 4.20% | 0.23 | 3.19% | 0.88 | 2.99% |
| 33 | IgG3 | $HexNAc_4Hex_5Fuc_1$ | G2F |  | 0.04 | 3.03% | 0.85 | 1.02% | 0.60 | 7.52% | 0.13 | 11.53% | 0.45 | 3.62% |
| 34 | IgG3 | $HexNAc_5Hex_3Fuc_1$ | G0FN |  | 0.07 | 20.31% | 1.04 | 5.11% | 1.60 | 19.28% | 1.48 | 6.46% | 2.80 | 14.30% |
| 35 | IgG3 | $HexNAc_5Hex_4Fuc_1$ | G1FN |  | 0.12 | 20.17% | 0.85 | 3.82% | 1.25 | 16.66% | 0.63 | 3.61% | 0.84 | 14.60% |
| 36 | IgG4 | $HexNAc_4Hex_3Fuc_1$ | G0F |  | 1.67 | 8.97% | 1.21 | 6.89% | 1.18 | 37.23% | 1.69 | 2.29% | 1.00 | 3.42% |
| 37 | IgG4 | $HexNAc_4Hex_4Fuc_1$ | G1F |  | 0.58 | 9.32% | 1.01 | 6.86% | 0.59 | 4.20% | 0.59 | 3.19% | 0.78 | 2.99% |
| 38 | IgG4 | $HexNAc_4Hex_5Fuc_1$ | G2F |  | 0.29 | 3.03% | 1.57 | 1.02% | 0.68 | 7.52% | 0.26 | 11.53% | 0.36 | 3.62% |
| 39 | IgG4 | $HexNAc_5Hex_3Fuc_1$ | G0FN |  | 4.11 | 20.31% | 1.34 | 5.11% | 1.16 | 19.28% | 3.21 | 6.46% | 3.27 | 14.30% |
| 40 | IgG4 | $HexNAc_5Hex_4Fuc_1$ | G1FN |  | 1.66 | 20.17% | 0.47 | 3.82% | 1.37 | 16.66% | 1.21 | 3.61% | 1.19 | 14.60% |

[a] Ratios and CVs value were calculated by three repeated experiments, i.e. n = 3. [b] ND stands for that N-intact glycopeptide was not quantified.

**Table S4.** Relative quantitative results of the IgG N-glycopeptides from HCC and healthy serum.

| No | Subclass | Glycan composition | Formula | Proposed structure | HCC/Normal[a] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ratio-1 | CV-1 | Ratio-2 | CV-2 | Ratio-3 | CV-3 | Ratio-4 | CV-4 | Ratio-5 | CV-5 |
| 1 | IgG1 | $HexNAc_3Hex_3$ | G0-N |  | 1.10 | 5.90% | 0.53 | 28.59% | 1.33 | 31.83% | 0.53 | 29.62% | 0.60 | 39.65% |
| 2 | IgG1 | $HexNAc_3Hex_3Fuc_1$ | G0F-N |  | 1.89 | 5.68% | 1.23 | 6.67% | 1.00 | 12.38% | 0.95 | 19.72% | 1.23 | 9.99% |
| 3 | IgG1 | $HexNAc_3Hex_4Fuc_1$ | G1F-N |  | 0.42 | 5.13% | 0.73 | 11.13% | 0.56 | 3.02% | 1.09 | 19.61% | 0.70 | 6.78% |
| 4 | IgG1 | $HexNAc_4Hex_3$ | G0 |  | 2.03 | 14.44% | 0.54 | 26.82% | 1.29 | 29.75% | 0.54 | 26.87% | 0.49 | 19.95% |
| 5 | IgG1 | $HexNAc_4Hex_3Fuc_1$ | G0F |  | 3.11 | 3.57% | 1.62 | 7.61% | 1.34 | 4.88% | 1.25 | 4.41% | 1.63 | 1.46% |
| 6 | IgG1 | $HexNAc_4Hex_4$ | G1 |  | 0.64 | 10.86% | 0.61 | 9.59% | 0.64 | 3.78% | 0.75 | 21.34% | 0.52 | 11.30% |
| 7 | IgG1 | $HexNAc_4Hex_4Fuc_1$ | G1F |  | 0.84 | 3.22% | 0.83 | 1.86% | 0.67 | 4.67% | 0.87 | 5.68% | 0.83 | 5.07% |
| 8 | IgG1 | $HexNAc_4Hex_4Fuc_1NeuAc_1$ | G1FS |  | 1.04 | 8.08% | 0.82 | 2.59% | 0.75 | 7.33% | 0.91 | 13.21% | 0.80 | 16.06% |
| 9 | IgG1 | $HexNAc_4Hex_4NeuAc_1$ | G1S |  | 0.54 | 34.14% | 0.51 | 14.79% | 0.71 | 2.89% | 0.63 | 53.81% | 0.33 | 18.82% |
| 10 | IgG1 | $HexNAc_4Hex_5$ | G2 |  | 0.35 | 5.06% | 0.81 | 4.25% | 0.53 | 12.70% | 0.66 | 18.13% | 0.45 | 5.61% |
| 11 | IgG1 | $HexNAc_4Hex_5Fuc_1$ | G2F |  | 0.47 | 5.04% | 0.86 | 1.36% | 0.60 | 2.87% | 0.91 | 4.75% | 0.68 | 4.96% |
| 12 | IgG1 | $HexNAc_4Hex_5Fuc_1NeuAc_1$ | G2FS |  | 0.37 | 4.04% | 0.93 | 3.97% | 0.84 | 6.89% | 1.05 | 8.60% | 0.64 | 2.26% |
| 13 | IgG1 | $HexNAc_4Hex_5Fuc_1NeuAc_2$ | G2FS2 |  | 0.47 | 8.56% | 0.57 | 8.31% | 0.98 | 3.91% | 0.95 | 20.14% | 0.62 | 13.95% |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | IgG1 | $HexNAc_4Hex_5NeuAc_1$ | G2S |  | 0.21 | 7.67% | 0.28 | 30.63% | 0.63 | 3.21% | 1.11 | 3.20% | 0.47 | 11.84% |
| 15 | IgG1 | $HexNAc_5Hex_3Fuc_1$ | G0FN |  | 4.03 | 0.46% | 1.56 | 24.40% | 1.18 | 9.30% | 1.58 | 14.05% | 1.24 | 14.24% |
| 16 | IgG1 | $HexNAc_5Hex_4Fuc_1$ | G1FN |  | 1.49 | 10.53% | 0.95 | 16.15% | 0.55 | 28.74% | 1.21 | 22.29% | 0.76 | 10.86% |
| 17 | IgG1 | $HexNAc_5Hex_5Fuc_1$ | G2FN |  | 0.40 | 13.07% | 1.07 | 5.60% | 1.97 | 16.97% | 1.27 | 2.91% | 0.69 | 8.12% |
| 18 | IgG2 | $HexNAc_3Hex_3Fuc_1$ | G0F-N |  | 1.16 | 12.31% | 1.10 | 9.26% | 0.84 | 10.60% | 0.86 | 11.84% | 0.81 | 7.23% |
| 19 | IgG2 | $HexNAc_3Hex_4Fuc_1$ | G1F-N |  | 0.52 | 15.69% | 0.64 | 25.89% | 0.54 | 11.69% | 0.74 | 11.87% | 0.77 | 8.28% |
| 20 | IgG2 | $HexNAc_4Hex_3$ | G0 |  | 0.79 | 15.86% | 0.86 | 3.82% | 0.79 | 6.64% | 1.55 | 11.53% | 0.44 | 24.40% |
| 21 | IgG2 | $HexNAc_4Hex_3Fuc_1$ | G0F |  | 1.95 | 0.49% | 1.76 | 1.70% | 1.25 | 0.97% | 1.08 | 1.88% | 0.97 | 0.65% |
| 22 | IgG2 | $HexNAc_4Hex_4$ | G1 |  | 0.86 | 1.19% | 1.32 | 8.81% | 0.43 | 8.42% | 1.26 | 1.45% | 0.40 | 12.69% |
| 23 | IgG2 | $HexNAc_4Hex_4Fuc_1$ | G1F |  | 0.74 | 3.22% | 0.98 | 2.65% | 0.71 | 2.66% | 0.89 | 0.90% | 0.86 | 3.80% |
| 24 | IgG2 | $HexNAc_4Hex_4Fuc_1NeuAc_1$ | G1FS |  | 0.99 | 3.81% | 0.76 | 11.16% | 0.72 | 16.37% | 0.80 | 6.13% | 0.97 | 1.67% |
| 25 | IgG2 | $HexNAc_4Hex_5$ | G2 |  | 0.48 | 9.29% | 0.93 | 8.19% | 0.57 | 15.37% | ND[b] | ND[b] | 0.61 | 9.83% |
| 26 | IgG2 | $HexNAc_4Hex_5Fuc_1$ | G2F |  | 0.49 | 1.10% | 0.81 | 3.87% | 0.44 | 3.70% | 0.89 | 3.08% | 0.72 | 0.60% |
| 27 | IgG2 | $HexNAc_4Hex_5Fuc_1NeuAc_1$ | G2FS |  | 0.63 | 19.60% | 0.64 | 6.04% | 0.56 | 3.32% | 1.05 | 2.87% | 0.97 | 1.25% |
| 28 | IgG2 | $HexNAc_5Hex_3Fuc_1$ | G0FN |  | 2.70 | 4.27% | 1.81 | 5.18% | 1.12 | 5.32% | 1.23 | 7.49% | 1.11 | 4.43% |
| 29 | IgG2 | $HexNAc_5Hex_4Fuc_1$ | G1FN |  | 0.95 | 7.08% | 0.84 | 4.32% | 0.58 | 6.73% | 0.90 | 2.91% | 0.78 | 3.36% |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | IgG2 | $HexNAc_5Hex_5Fuc_1$ | G2FN |  | 0.46 | 17.69% | 0.66 | 2.84% | 0.36 | 4.99% | 0.92 | 2.16% | 0.66 | 4.01% |
| 31 | IgG3 | $HexNAc_4Hex_3Fuc_1$ | G0F |  | 3.95 | 6.28% | 0.22 | 3.86% | 2.30 | 12.54% | 1.16 | 3.79% | 2.35 | 5.26% |
| 32 | IgG3 | $HexNAc_4Hex_4Fuc_1$ | G1F |  | 0.76 | 2.11% | 0.08 | 3.51% | 1.39 | 2.88% | 1.46 | 0.89% | 1.33 | 0.77% |
| 33 | IgG3 | $HexNAc_4Hex_5Fuc_1$ | G2F |  | 0.29 | 10.40% | 0.11 | 14.02% | 0.60 | 3.82% | 0.93 | 0.47% | 0.71 | 3.74% |
| 34 | IgG3 | $HexNAc_5Hex_3Fuc_1$ | G0FN |  | 3.73 | 12.37% | 0.09 | 10.29% | 1.50 | 17.63% | 0.97 | 4.64% | 2.10 | 9.36% |
| 35 | IgG3 | $HexNAc_5Hex_4Fuc_1$ | G1FN |  | 0.96 | 5.65% | 0.12 | 16.08% | 0.77 | 5.92% | 0.88 | 5.73% | 1.20 | 5.51% |
| 36 | IgG4 | $HexNAc_4Hex_3Fuc_1$ | G0F |  | 2.48 | 6.28% | 1.94 | 3.86% | 1.51 | 12.54% | 1.03 | 3.79% | 1.26 | 5.26% |
| 37 | IgG4 | $HexNAc_4Hex_4Fuc_1$ | G1F |  | 0.51 | 2.11% | 0.97 | 3.50% | 0.68 | 2.88% | 0.54 | 0.89% | 0.69 | 0.77% |
| 38 | IgG4 | $HexNAc_4Hex_5Fuc_1$ | G2F |  | 0.13 | 10.40% | 0.67 | 14.02% | 0.58 | 3.82% | 0.84 | 0.47% | 0.68 | 3.74% |
| 39 | IgG4 | $HexNAc_5Hex_3Fuc_1$ | G0FN |  | 4.72 | 12.37% | 2.76 | 10.29% | 1.32 | 17.63% | 0.76 | 4.64% | 2.06 | 9.36% |
| 40 | IgG4 | $HexNAc_5Hex_4Fuc_1$ | G1FN |  | 1.06 | 5.65% | 1.24 | 16.08% | 0.39 | 5.92% | 0.80 | 5.73% | 0.45 | 5.51% |

[a] Ratios and CVs value were calculated by three repeated experiments, i.e. n = 3. [b] ND stands for that N-intact glycopeptide was not quantified.

**Table S5.** N-glycopeptides identified from human serum using DMEN-amidated derivatization.

| No | Protein[c] | Glycopeptide | Glycan composition |
|---|---|---|---|
| 1 | O75882 | K.[+28.031]ID[+70.089]STGN[+1216.423]VTNE[+70.089]LR.[+70.089].V | $HexNAc_2Hex_5$ |
| 2 | O75882 | K.[+28.031]ID[+70.089]STGN[+1378.476]VTNE[+70.089]LR.[+70.089].V | $HexNAc_2Hex_6$ |
| 3 | O75882 | R.[+28.031]E[+70.089]WLPLN[+2204.772][+140.178]R.[+70.089].S | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 4 | P00450 | K.[+28.031]AGLQAFFQVQE[+70.089]C[+57.021]N[+2204.772][+140.178]K[+28.031].[+70.089].S | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 5 | P00450 | K.[+28.031]E[+70.089]HE[+70.089]GAIYPD[+70.089]N[+2204.772][+140.178]TTD[+70.089]FQR.[+70.089].A | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 6 | P00450 | K.[+28.031]E[+70.089]LHHLQE[+70.089]QN[+2204.772][+140.178]VSNAFLD[+70.089]K[+28.031].[+70.089].G | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 7 | P00450 | K.[+28.031]E[+70.089]LHHLQE[+70.089]QN[+2861.000][+210.267]VSNAFLD[+70.089]K[+28.031].[+70.089].G | $HexNAc_5Hex_6NeuAc_3$ 210.2673 |
| 8 | P00450 | K.[+28.031]E[+70.089]LHHLQE[+70.089]QN[+3007.058][+210.267]VSNAFLD[+70.089]K[+28.031].[+70.089].G | $HexNAc_5Hex_6Fuc_1NeuAc_3$ 210.2673 |
| 9 | P00450 | K.[+28.031]E[+70.089]N[+2204.772][+140.178]LTAPGSD[+70.089]SAVFFE[+70.089]QGTTR.[+70.089].I | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 10 | P00734 | R.[+28.031]GHVN[+2204.772][+140.178]ITR.[+70.089].S | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 11 | P00734 | R.[+28.031]WVLTAAHC[+57.021]LLYPPWD[+70.089]K[+28.031]N[+2204.772][+140.178]FTE[+70.089]ND[+70.089]LLVR.[+70.089].I | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 12 | P00734 | R.[+28.031]YPHK[+28.031]PE[+70.089]IN[+2204.772][+140.178]STTHPGAD[+70.089]LQE[+70.089]NFC[+57.021]R.[+70.089].N | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 13 | P00738 | K.[+28.031]GSFPWQAK[+28.031]MVSHHN[+1054.370]LTTGATLINE[+70.089]QWLLTTAK[+28.031].[+70.089].N | $HexNAc_2Hex_4$ |
| 14 | P00738 | K.[+28.031]GSFPWQAK[+28.031]MVSHHN[+1419.502]LTTGATLINE[+70.089]QWLLTTAK[+28.031].[+70.089].N | $HexNAc_3Hex_5$ |
| 15 | P00738 | K.[+28.031]M[+15.995]VSHHN[+1913.677][+70.089]LTTGATLINE[+70.089]QWLLTTAK[+28.031].[+70.089].N | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 16 | P00738 | K.[+28.031]M[+15.995]VSHHN[+2204.772][+140.178]LTTGATLINE[+70.089]QWLLTTAK[+28.031].[+70.089].N | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 17 | P00738 | K.[+28.031]MVSHHN[+1241.454]LTTGATLINE[+70.089]QWLLTTAK[+28.031]NLFLN[+2204.772][+140.178]HSE[+70.089]NATAK[+28.031].[+70.089].D | $HexNAc_3Hex_3Fuc_1$,$HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 18 | P00738 | K.[+28.031]MVSHHN[+1913.677][+70.089]LTTGATLINE[+70.089]QWLLTTAK[+28.031].[+70.089].N | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 19 | P00738 | K.[+28.031]MVSHHN[+2012.745]LTTGATLINE[+70.089]QWLLTTAK[+28.031].[+70.089].N | $HexNAc_6Hex_4Fuc_1$ |
| 20 | P00738 | K.[+28.031]MVSHHN[+2204.772][+140.178]LTTGATLINE[+70.089]QWLLTTAK[+28.031].[+70.089].N | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 21 | P00738 | K.[+28.031]MVSHHN[+2245.799][+140.178]LTTGATLINE[+70.089]QWLLTTAK[+28.031].[+70.089].N | $HexNAc_5Hex_4NeuAc_2$ 140.1782 |
| 22 | P00738 | K.[+28.031]MVSHHN[+2272.846]LTTGATLINE[+70.089]QWLLTTAK[+28.031].[+70.089].N | $HexNAc_8Hex_4$ |
| 23 | P00738 | K.[+28.031]MVSHHN[+2569.905][+140.178]LTTGATLINE[+70.089]QWLLTTAK[+28.031].[+70.089].N | $HexNAc_5Hex_6NeuAc_2$ 140.1782 |
| 24 | P00738 | K.[+28.031]NLFLN[+1913.677][+70.089]HSE[+70.089]N[+2204.772][+140.178]ATAK[+28.031].[+70.089].D | $HexNAc_4Hex_5NeuAc_1$ 70.0891,$HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 25 | P00738 | K.[+28.031]NLFLN[+1913.677][+70.089]HSE[+70.089]N[+2272.846]ATAK[+28.031].[+70.089].D | $HexNAc_4Hex_5NeuAc_1$ 70.0891,$HexNAc_8Hex_4$ |
| 26 | P00738 | K.[+28.031]NLFLN[+1913.677][+70.089]HSE[+70.089]N[+2861.000][+210.267]ATAK[+28.031].[+70.089].D | $HexNAc_4Hex_5NeuAc_1$ 70.0891,$HexNAc_5Hex_6NeuAc_3$ 210.2673 |
| 27 | P00738 | K.[+28.031]NLFLN[+2204.772][+140.178]HSE[+70.089]N[+1622.582]ATAK[+28.031].[+70.089].D | $HexNAc_4Hex_5NeuAc_2$ 140.1782,$HexNAc_4Hex_5$ |
| 28 | P00738 | K.[+28.031]NLFLN[+2204.772][+140.178]HSE[+70.089]N[+2278.809][+70.089]ATAK[+28.031].[+70.089].D | $HexNAc_4Hex_5NeuAc_2$ 140.1782,$HexNAc_5Hex_6NeuAc_1$ 70.0891 |
| 29 | P00738 | K.[+28.031]NLFLN[+2204.772][+140.178]HSE[+70.089]N[+2861.000][+210.267]ATAK[+28.031].[+70.089].D | $HexNAc_4Hex_5NeuAc_2$ 140.1782,$HexNAc_5Hex_6NeuAc_3$ 210.2673 |
| 30 | P00738 | K.[+28.031]NLFLN[+2204.772][+140.178]HSE[+70.089]NATAK[+28.031].[+70.089].D | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 31 | P00738 | K.[+28.031]NLFLN[+2569.905][+140.178]HSE[+70.089]N[+2861.000][+210.267]ATAK[+28.031].[+70.089].D | $HexNAc_5Hex_6NeuAc_2$ 140.1782,$HexNAc_5Hex_6NeuAc_3$ 210.2673 |
| 32 | P00738 | K.[+28.031]NLFLN[+2759.005]HSE[+70.089]N[+1622.582]ATAK[+28.031].[+70.089].D | $HexNAc_8Hex_7$,$HexNAc_4Hex_5$ |
| 33 | P00738 | K.[+28.031]NLFLN[+2861.000][+210.267]HSE[+70.089]N[+1257.449]ATAK[+28.031].[+70.089].D | $HexNAc_5Hex_6NeuAc_3$ 210.2673,$HexNAc_3Hex_4$ |

| | | | |
|---|---|---|---|
| 34 | P00738 | K.[+28.031]NLFLN[+2861.000][+210.267]HSE[+70.089]N[+1548.545][+70.089]ATAK[+28.031].[+70.089].D | $HexNAc_5Hex_6NeuAc_3$ 210.2673,$HexNAc_3Hex_4NeuAc_1$ 70.0891 |
| 35 | P00738 | K.[+28.031]NLFLN[+2861.000][+210.267]HSE[+70.089]N[+2204.772][+140.178]ATAK[+28.031].[+70.089].D | $HexNAc_5Hex_6NeuAc_3$ 210.2673,$HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 36 | P00738 | K.[+28.031]NLFLN[+3007.058][+210.267]HSE[+70.089]N[+1257.449]ATAK[+28.031].[+70.089].D | $HexNAc_5Hex_6Fuc_1NeuAc_3$ 210.2673,$HexNAc_3Hex_4$ |
| 37 | P00738 | K.[+28.031]NLFLN[+3372.190][+210.267]HSE[+70.089]N[+1694.603][+70.089]ATAK[+28.031].[+70.089].D | $HexNAc_6Hex_7Fuc_1NeuAc_3$ 210.2673,$HexNAc_3Hex_4Fuc_1NeuAc_1$ 70.0891 |
| 38 | P00738 | K.[+28.031]VVLHPN[+1913.677][+70.089]YSQVD[+70.089]IGLIK[+28.031].[+70.089].L | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 39 | P00738 | K.[+28.031]VVLHPN[+2075.730][+70.089]YSQVD[+70.089]IGLIK[+28.031].[+70.089].L | $HexNAc_4Hex_6NeuAc_1$ 70.0891 |
| 40 | P00738 | K.[+28.031]VVLHPN[+2204.772][+140.178]YSQVD[+70.089]IGLIK[+28.031].[+70.089].L | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 41 | P00738 | K.[+28.031]VVLHPN[+2256.851]YSQVD[+70.089]IGLIK[+28.031].[+70.089].L | $HexNAc_8Hex_3Fuc_1$ |
| 42 | P00738 | K.[+28.031]VVLHPN[+2272.846]YSQVD[+70.089]IGLIK[+28.031].[+70.089].L | $HexNAc_8Hex_4$ |
| 43 | P00738 | K.[+28.031]VVLHPN[+2278.809][+70.089]YSQVD[+70.089]IGLIK[+28.031].[+70.089].L | $HexNAc_5Hex_6NeuAc_1$ 70.0891 |
| 44 | P00738 | K.[+28.031]VVLHPN[+2350.830][+140.178]YSQVD[+70.089]IGLIK[+28.031].[+70.089].L | $HexNAc_4Hex_5Fuc_1NeuAc_2$ 140.1782 |
| 45 | P00738 | K.[+28.031]VVLHPN[+2569.905][+140.178]YSQVD[+70.089]IGLIK[+28.031].[+70.089].L | $HexNAc_5Hex_6NeuAc_2$ 140.1782 |
| 46 | P00738 | K.[+28.031]VVLHPN[+2861.000][+210.267]YSQVD[+70.089]IGLIK[+28.031].[+70.089].L | $HexNAc_5Hex_6NeuAc_3$ 210.2673 |
| 47 | P00751 | K.[+28.031]ALQAVYSMMSWPD[+70.089]D[+70.089]VPPE[+70.089]GWN[+2204.772][+140.178]R.[+70.089].T | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 48 | P00751 | K.[+28.031]IVLD[+70.089]PSGSM[+15.995]NIYLVLD[+70.089]GSD[+70.089]SIGASN[+2204.772][+140.178]FTGAK[+28.031].[+70.089].K | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 49 | P00751 | K.[+28.031]IVLD[+70.089]PSGSMNIYLVLD[+70.089]GSD[+70.089]SIGASN[+2204.772][+140.178]FTGAK[+28.031].[+70.089].K | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 50 | P00751 | K.[+28.031]IVLD[+70.089]PSGSMNIYLVLD[+70.089]GSD[+70.089]SIGASN[+2221.788][+70.089]FTGAK[+28.031].[+70.089].K | $HexNAc_4Hex_6Fuc_1NeuAc_1$ 70.0891 |
| 51 | P00751 | K.[+28.031]IVLD[+70.089]PSGSMNIYLVLD[+70.089]GSD[+70.089]SIGASN[+2919.042][+140.178]FTGAK[+28.031].[+70.089].K | $HexNAc_6Hex_6Fuc_1NeuAc_2$ 140.1782 |
| 52 | P00751 | R.[+28.031]K[+28.031]IVLD[+70.089]PSGSMNIYLVLD[+70.089]GSD[+70.089]SIGASN[+2190.793]FTGAK[+28.031]K[+28.031].[+70.089].C | $HexNAc_6Hex_6$ |
| 53 | P00751 | R.[+28.031]K[+28.031]IVLD[+70.089]PSGSMNIYLVLD[+70.089]GSD[+70.089]SIGASN[+2204.772][+140.178]FTGAK[+28.031].[+70.089].K | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 54 | P00751 | R.[+28.031]SPYYN[+1913.677][+70.089]VSD[+70.089]E[+70.089]ISFHC[+57.021]YD[+70.089]GYTLR.[+70.089].G | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 55 | P00751 | R.[+28.031]SPYYN[+2204.772][+140.178]VSD[+70.089]E[+70.089]ISFHC[+57.021]YD[+70.089]GYTLR.[+70.089].G | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 56 | P01008 | K.[+28.031]LGAC[+57.021]N[+1913.677][+70.089]D[+70.089]TLQQLME[+70.089]VFK[+28.031].[+70.089].F | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 57 | P01008 | K.[+28.031]LGAC[+57.021]N[+2204.772][+140.178]D[+70.089]TLQQLM[+15.995]E[+70.089]VFK[+28.031].[+70.089].F | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 58 | P01008 | K.[+28.031]LGAC[+57.021]N[+2204.772][+140.178]D[+70.089]TLQQLME[+70.089]VFK[+28.031].[+70.089].F | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 59 | P01008 | K.[+28.031]SLTFN[+1872.651][+70.089]E[+70.089]TYQD[+70.089]ISE[+70.089]LVYGAK[+28.031].[+70.089].L | $HexNAc_3Hex_6NeuAc_1$ 70.0891 |
| 60 | P01008 | K.[+28.031]SLTFN[+2204.772][+140.178]E[+70.089]TYQD[+70.089]ISE[+70.089]LVYGAK[+28.031].[+70.089].L | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 61 | P01009 | K.[+28.031]AD[+70.089]THD[+70.089]E[+70.089]ILE[+70.089]GLNFN[+2204.772][+140.178]LTE[+70.089]IPE[+70.089]AQIHE[+70.089]GFQE[+70.089]LLR.[+70.089].T | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 62 | P01009 | K.[+28.031]AD[+70.089]THD[+70.089]E[+70.089]ILE[+70.089]GLNFN[+2272.846]LTE[+70.089]IPE[+70.089]AQIHE[+70.089]GFQE[+70.089]LLR.[+70.089].T | $HexNAc_8Hex_4$ |
| 63 | P01009 | K.[+28.031]AD[+70.089]THD[+70.089]E[+70.089]ILE[+70.089]GLNFN[+2861.000][+210.267]LTE[+70.089]IPE[+70.089]AQIHE[+70.089]GFQE[+70.089]LLR.[+70.089].T | $HexNAc_5Hex_6NeuAc_3$ 210.2673 |
| 64 | P01009 | K.[+28.031]AD[+70.089]THD[+70.089]E[+70.089]ILE[+70.089]GLNFN[+3007.058][+210.267]LTE[+70.089]IPE[+70.089]AQIHE[+70.089]GFQE[+70.089]LLR.[+70.089].T | $HexNAc_5Hex_6Fuc_1NeuAc_3$ 210.2673 |
| 65 | P01009 | K.[+28.031]YLGN[+1913.677][+70.089]ATAIFFLPD[+70.089]E[+70.089]GK[+28.031].[+70.089].L | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 66 | P01009 | K.[+28.031]YLGN[+2204.772][+140.178]ATAIFFLPD[+70.089]E[+70.089]GK[+28.031].[+70.089].L | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 67 | P01009 | K.[+28.031]YLGN[+2204.772][+140.178]ATAIFFLPD[+70.089]E[+70.089]GK[+28.031]LQHLE[+70.089]NE[+70.089]LTHD[+70.089]IITK[+28.031].[+70.089].F | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 68 | P01009 | K.[+28.031]YLGN[+2272.846]ATAIFFLPD[+70.089]E[+70.089]GK[+28.031].[+70.089].L | $HexNAc_8Hex_4$ |

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|---|---|---|---|
| 69 | P01009 | K.[+28.031]YLGN[+2350.830][+140.178]ATAIFFLPD[+70.089]E[+70.089]GK[+28.031].[+70.089].L | $HexNAc_4Hex_5Fuc_1NeuAc_2$ 140.1782 |
| 70 | P01009 | R.[+28.031]QLAHQSN[+2204.772][+140.178]STNIFFSPVSIATAFAM[+15.995]LSLGTK[+28.031].[+70.089].A | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 71 | P01009 | R.[+28.031]QLAHQSN[+2204.772][+140.178]STNIFFSPVSIATAFAMLSLGTK[+28.031].[+70.089].A | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 72 | P01011 | K.[+28.031]FN[+2861.000][+210.267]LTE[+70.089]TSE[+70.089]AE[+70.089]IHQSFQHLLR.[+70.089].T | $HexNAc_5Hex_6NeuAc_3$ 210.2673 |
| 73 | P01011 | R.[+28.031]TLN[+1913.677][+70.089]QSSD[+70.089]E[+70.089]LQLSMGNAMFVK[+28.031].[+70.089].E | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 74 | P01011 | R.[+28.031]TLN[+2204.772][+140.178]QSSD[+70.089]E[+70.089]LQLSMGNAMFVK[+28.031].[+70.089].E | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 75 | P01011 | R.[+28.031]TLN[+2272.846]QSSD[+70.089]E[+70.089]LQLSMGNAMFVK[+28.031].[+70.089].E | $HexNAc_8Hex_4$ |
| 76 | P01011 | R.[+28.031]TLN[+2569.905][+140.178]QSSD[+70.089]E[+70.089]LQLSMGNAMFVK[+28.031].[+70.089].E | $HexNAc_5Hex_6NeuAc_2$ 140.1782 |
| 77 | P01011 | R.[+28.031]TLN[+2861.000][+210.267]QSSD[+70.089]E[+70.089]LQLSMGNAMFVK[+28.031].[+70.089].E | $HexNAc_5Hex_6NeuAc_3$ 210.2673 |
| 78 | P01011 | R.[+28.031]TLN[+3007.058][+210.267]QSSD[+70.089]E[+70.089]LQLSMGNAMFVK[+28.031].[+70.089].E | $HexNAc_5Hex_6Fuc_1NeuAc_3$ 210.2673 |
| 79 | P01023 | K.[+28.031]GC[+57.021]VLLSYLN[+1913.677][+70.089]E[+70.089]TVTVSASLE[+70.089]SVR.[+70.089].G | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 80 | P01023 | K.[+28.031]GC[+57.021]VLLSYLN[+2012.745]E[+70.089]TVTVSASLE[+70.089]SVR.[+70.089].G | $HexNAc_6Hex_4Fuc_1$ |
| 81 | P01023 | K.[+28.031]GC[+57.021]VLLSYLN[+2059.735][+70.089]E[+70.089]TVTVSASLE[+70.089]SVR.[+70.089].G | $HexNAc_4Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 82 | P01023 | K.[+28.031]GC[+57.021]VLLSYLN[+2204.772][+140.178]E[+70.089]TVTVSASLE[+70.089]SVR.[+70.089].G | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 83 | P01023 | K.[+28.031]GC[+57.021]VLLSYLN[+2272.846]E[+70.089]TVTVSASLE[+70.089]SVR.[+70.089].G | $HexNAc_8Hex_4$ |
| 84 | P01023 | K.[+28.031]GC[+57.021]VLLSYLN[+2350.830][+140.178]E[+70.089]TVTVSASLE[+70.089]SVR.[+70.089].G | $HexNAc_4Hex_5Fuc_1NeuAc_2$ 140.1782 |
| 85 | P01023 | K.[+28.031]IITILE[+70.089]E[+70.089]E[+70.089]M[+15.995]N[+1622.582]VSVC[+57.021]GLYTYGK[+28.031].[+70.089].P | $HexNAc_4Hex_5$ |
| 86 | P01023 | K.[+28.031]IITILE[+70.089]E[+70.089]E[+70.089]M[+15.995]N[+1913.677][+70.089]VSVC[+57.021]GLYTYGK[+28.031].[+70.089].P | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 87 | P01023 | K.[+28.031]IITILE[+70.089]E[+70.089]E[+70.089]M[+15.995]N[+2204.772][+140.178]VSVC[+57.021]GLYTYGK[+28.031].[+70.089].P | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 88 | P01023 | K.[+28.031]IITILE[+70.089]E[+70.089]E[+70.089]MN[+1419.502]VSVC[+57.021]GLYTYGK[+28.031].[+70.089].P | $HexNAc_3Hex_5$ |
| 89 | P01023 | K.[+28.031]IITILE[+70.089]E[+70.089]E[+70.089]MN[+1622.582]VSVC[+57.021]GLYTYGK[+28.031].[+70.089].P | $HexNAc_4Hex_5$ |
| 90 | P01023 | K.[+28.031]IITILE[+70.089]E[+70.089]E[+70.089]MN[+1622.582]VSVC[+57.021]GLYTYGK[+28.031]PVPGHVTVSIC[+57.021]R.[+70.089].K | $HexNAc_4Hex_5$ |
| 91 | P01023 | K.[+28.031]IITILE[+70.089]E[+70.089]E[+70.089]MN[+1866.688]VSVC[+57.021]GLYTYGK[+28.031].[+70.089].P | $HexNAc_6Hex_4$ |
| 92 | P01023 | K.[+28.031]IITILE[+70.089]E[+70.089]E[+70.089]MN[+1872.651][+70.089]VSVC[+57.021]GLYTYGK[+28.031].[+70.089].P | $HexNAc_3Hex_6NeuAc_1$ 70.0891 |
| 93 | P01023 | K.[+28.031]IITILE[+70.089]E[+70.089]E[+70.089]MN[+1913.677][+70.089]VSVC[+57.021]GLYTYGK[+28.031].[+70.089].P | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 94 | P01023 | K.[+28.031]IITILE[+70.089]E[+70.089]E[+70.089]MN[+1913.677][+70.089]VSVC[+57.021]GLYTYGK[+28.031]PVPGHVTVSIC[+57.021]R.[+70.089].K | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 95 | P01023 | K.[+28.031]IITILE[+70.089]E[+70.089]E[+70.089]MN[+1930.692]VSVC[+57.021]GLYTYGK[+28.031].[+70.089].P | $HexNAc_4Hex_6Fuc_1$ |
| 96 | P01023 | K.[+28.031]IITILE[+70.089]E[+70.089]E[+70.089]MN[+2012.745]VSVC[+57.021]GLYTYGK[+28.031].[+70.089].P | $HexNAc_6Hex_4Fuc_1$ |
| 97 | P01023 | K.[+28.031]IITILE[+70.089]E[+70.089]E[+70.089]MN[+2012.745]VSVC[+57.021]GLYTYGK[+28.031]PVPGHVTVSIC[+57.021]R.[+70.089].K | $HexNAc_6Hex_4Fuc_1$ |
| 98 | P01023 | K.[+28.031]IITILE[+70.089]E[+70.089]E[+70.089]MN[+2028.740]VSVC[+57.021]GLYTYGK[+28.031].[+70.089].P | $HexNAc_6Hex_5$ |
| 99 | P01023 | K.[+28.031]IITILE[+70.089]E[+70.089]E[+70.089]MN[+2204.772][+140.178]VSVC[+57.021]GLYTYGK[+28.031].[+70.089].P | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 100 | P01023 | K.[+28.031]IITILE[+70.089]E[+70.089]E[+70.089]MN[+2204.772][+140.178]VSVC[+57.021]GLYTYGK[+28.031]PVPGHVTVSIC[+57.021]R.[+70.089].K | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 101 | P01023 | K.[+28.031]IITILE[+70.089]E[+70.089]E[+70.089]MN[+2434.899]VSVC[+57.021]GLYTYGK[+28.031]PVPGHVTVSIC[+57.021]R.[+70.089].K | $HexNAc_8Hex_5$ |
| 102 | P01023 | K.[+28.031]SLGNVN[+1216.423]FTVSAE[+70.089]ALE[+70.089]SQE[+70.089]LC[+57.021]GTE[+70.089]VPSVPE[+70.089]HGR.[+70.089].K | $HexNAc_2Hex_5$ |
| 103 | P01023 | K.[+28.031]SLGNVN[+1378.476]FTVSAE[+70.089]ALE[+70.089]SQE[+70.089]LC[+57.021]GTE[+70.089]VPSVPE[+70.089]HGR.[+70.089].K | $HexNAc_2Hex_6$ |
| 104 | P01023 | K.[+28.031]SLGNVN[+1548.545][+70.089]FTVSAE[+70.089]ALE[+70.089]SQE[+70.089]LC[+57.021]GTE[+70.089]VPSVPE[+70.089]HGR.[+70.089].K | $HexNAc_3Hex_4NeuAc_1$ 70.0891 |
| 105 | P01023 | K.[+28.031]SLGNVN[+1581.555]FTVSAE[+70.089]ALE[+70.089]SQE[+70.089]LC[+57.021]GTE[+70.089]VPSVPE[+70.089]HGR.[+70.089].K | $HexNAc_3Hex_6$ |
| 106 | P01023 | K.[+28.031]SLGNVN[+1647.613]FTVSAE[+70.089]ALE[+70.089]SQE[+70.089]LC[+57.021]GTE[+70.089]VPSVPE[+70.089]HGR.[+70.089].K | $HexNAc_5Hex_3Fuc_1$ |

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|---|---|---|---|
| 107 | P01023 | K.[+28.031]SLGNVN[+1710.598][+70.089]FTVSAE[+70.089]ALE[+70.089]SQE[+70.089]LC[+57.021]GTE[+70.089]VPSVPE[+70.089]HGR.[+70.089].K | $HexNAc_3Hex_5NeuAc_1$ 70.0891 |
| 108 | P01023 | K.[+28.031]SLGNVN[+1751.624][+70.089]FTVSAE[+70.089]ALE[+70.089]SQE[+70.089]LC[+57.021]GTE[+70.089]VPSVPE[+70.089]HGR.[+70.089].K | $HexNAc_4Hex_4NeuAc_1$ 70.0891 |
| 109 | P01023 | K.[+28.031]SLGNVN[+1850.693]FTVSAE[+70.089]ALE[+70.089]SQE[+70.089]LC[+57.021]GTE[+70.089]VPSVPE[+70.089]HGR.[+70.089].K | $HexNAc_6Hex_3Fuc_1$ |
| 110 | P01023 | K.[+28.031]SLGNVN[+1872.651][+70.089]FTVSAE[+70.089]ALE[+70.089]SQE[+70.089]LC[+57.021]GTE[+70.089]VPSVPE[+70.089]HGR.[+70.089].K | $HexNAc_3Hex_6NeuAc_1$ 70.0891 |
| 111 | P01023 | K.[+28.031]SLGNVN[+1913.677][+70.089]FTVSAE[+70.089]ALE[+70.089]SQE[+70.089]LC[+57.021]GTE[+70.089]VPSVPE[+70.089]HGR.[+70.089].K | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 112 | P01023 | K.[+28.031]SLGNVN[+2012.745]FTVSAE[+70.089]ALE[+70.089]SQE[+70.089]LC[+57.021]GTE[+70.089]VPSVPE[+70.089]HGR.[+70.089].K | $HexNAc_6Hex_4Fuc_1$ |
| 113 | P01023 | K.[+28.031]SLGNVN[+2204.772][+140.178]FTVSAE[+70.089]ALE[+70.089]SQE[+70.089]LC[+57.021]GTE[+70.089]VPSVPE[+70.089]HGR.[+70.089].K | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 114 | P01023 | K.[+28.031]VSN[+1913.677][+70.089]QTLSLFFTVLQD[+70.089]VPVR.[+70.089].D | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 115 | P01023 | K.[+28.031]VSN[+2012.745]QTLSLFFTVLQD[+70.089]VPVR.[+70.089].D | $HexNAc_6Hex_4Fuc_1$ |
| 116 | P01023 | K.[+28.031]VSN[+2059.735][+70.089]QTLSLFFTVLQD[+70.089]VPVR.[+70.089].D | $HexNAc_4Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 117 | P01023 | K.[+28.031]VSN[+2204.772][+140.178]QTLSLFFTVLQD[+70.089]VPVR.[+70.089].D | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 118 | P01023 | K.[+28.031]VSN[+2262.814][+70.089]QTLSLFFTVLQD[+70.089]VPVR.[+70.089].D | $HexNAc_5Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 119 | P01023 | K.[+28.031]VSN[+2350.830][+140.178]QTLSLFFTVLQD[+70.089]VPVR.[+70.089].D | $HexNAc_4Hex_5Fuc_1NeuAc_2$ 140.1782 |
| 120 | P01023 | K.[+28.031]VSN[+2569.905][+140.178]QTLSLFFTVLQD[+70.089]VPVR.[+70.089].D | $HexNAc_5Hex_6NeuAc_2$ 140.1782 |
| 121 | P01023 | K.[+28.031]VSN[+2715.963][+140.178]QTLSLFFTVLQD[+70.089]VPVR.[+70.089].D | $HexNAc_5Hex_6Fuc_1NeuAc_2$ 140.1782 |
| 122 | P01023 | K.[+28.031]VSN[+2861.000][+210.267]QTLSLFFTVLQD[+70.089]VPVR.[+70.089].D | $HexNAc_5Hex_6NeuAc_3$ 210.2673 |
| 123 | P01023 | K.[+28.031]VSN[+3007.058][+210.267]QTLSLFFTVLQD[+70.089]VPVR.[+70.089].D | $HexNAc_5Hex_6Fuc_1NeuAc_3$ 210.2673 |
| 124 | P01024 | K.[+28.031]TVLTPATNHM[+15.995]GN[+1378.476]VTFTIPANR.[+70.089].E | $HexNAc_2Hex_6$ |
| 125 | P01024 | K.[+28.031]TVLTPATNHMGN[+1216.423]VTFTIPANR.[+70.089].E | $HexNAc_2Hex_5$ |
| 126 | P01024 | K.[+28.031]TVLTPATNHMGN[+1378.476]VTFTIPANR.[+70.089].E | $HexNAc_2Hex_6$ |
| 127 | P01024 | K.[+28.031]TVLTPATNHMGN[+1540.529]VTFTIPANR.[+70.089].E | $HexNAc_2Hex_7$ |
| 128 | P01042 | K.[+28.031]LNAE[+70.089]NN[+2204.772][+140.178]ATFYFK[+28.031].[+70.089].I | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 129 | P01042 | K.[+28.031]LNAE[+70.089]NN[+2861.000][+210.267]ATFYFK[+28.031].[+70.089].I | $HexNAc_5Hex_6NeuAc_3$ 210.2673 |
| 130 | P01042 | K.[+28.031]LNAE[+70.089]NN[+3007.058][+210.267]ATFYFK[+28.031].[+70.089].I | $HexNAc_5Hex_6Fuc_1NeuAc_3$ 210.2673 |
| 131 | P01042 | R.[+28.031]ITYSIVQTN[+2204.772][+140.178]C[+57.021]SK[+28.031].[+70.089].E | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 132 | P01591 | R.[+28.031]E[+70.089]N[+1622.582]ISD[+70.089]PTSPLR.[+70.089].T | $HexNAc_4Hex_5$ |
| 133 | P01591 | R.[+28.031]E[+70.089]N[+1663.608]ISD[+70.089]PTSPLR.[+70.089].T | $HexNAc_5Hex_4$ |
| 134 | P01591 | R.[+28.031]E[+70.089]N[+1710.598][+70.089]ISD[+70.089]PTSPLR.[+70.089].T | $HexNAc_3Hex_5NeuAc_1$ 70.0891 |
| 135 | P01591 | R.[+28.031]E[+70.089]N[+1825.661]ISD[+70.089]PTSPLR.[+70.089].T | $HexNAc_5Hex_5$ |
| 136 | P01591 | R.[+28.031]E[+70.089]N[+1913.677][+70.089]ISD[+70.089]PTSPLR.[+70.089].T | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 137 | P01591 | R.[+28.031]E[+70.089]N[+2059.735][+70.089]ISD[+70.089]PTSPLR.[+70.089].T | $HexNAc_4Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 138 | P01591 | R.[+28.031]E[+70.089]N[+2116.756][+70.089]ISD[+70.089]PTSPLR.[+70.089].T | $HexNAc_5Hex_5NeuAc_1$ 70.0891 |
| 139 | P01591 | R.[+28.031]E[+70.089]N[+2204.772][+140.178]ISD[+70.089]PTSPLR.[+70.089].T | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 140 | P01591 | R.[+28.031]IIVPLNNRE[+70.089]N[+2059.735][+70.089]ISD[+70.089]PTSPLR.[+70.089].T | $HexNAc_4Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 141 | P01591 | R.[+28.031]IIVPLNNRE[+70.089]N[+2350.830][+140.178]ISD[+70.089]PTSPLR.[+70.089].T | $HexNAc_4Hex_5Fuc_1NeuAc_2$ 140.1782 |
| 142 | P01859 | K.[+28.031]TK[+28.031]PRE[+70.089]E[+70.089]QFN[+1444.534]STFR.[+70.089].V | $HexNAc_4Hex_3Fuc_1$ |
| 143 | P01859 | K.[+28.031]TK[+28.031]PRE[+70.089]E[+70.089]QFN[+1606.587]STFR.[+70.089].V | $HexNAc_4Hex_4Fuc_1$ |
| 144 | P01859 | K.[+28.031]TK[+28.031]PRE[+70.089]E[+70.089]QFN[+1647.613]STFR.[+70.089].V | $HexNAc_5Hex_3Fuc_1$ |
| 145 | P01859 | K.[+28.031]TK[+28.031]PRE[+70.089]E[+70.089]QFN[+1768.640]STFR.[+70.089].V | $HexNAc_4Hex_5Fuc_1$ |
| 146 | P01859 | K.[+28.031]TK[+28.031]PRE[+70.089]E[+70.089]QFN[+1897.682][+70.089]STFR.[+70.089].V | $HexNAc_4Hex_4Fuc_1NeuAc_1$ 70.0891 |
| 147 | P01859 | R.[+28.031]E[+70.089]E[+70.089]QFN[+1241.454]STFR.[+70.089].V | $HexNAc_3Hex_3Fuc_1$ |
| 148 | P01859 | R.[+28.031]E[+70.089]E[+70.089]QFN[+1298.476]STFR.[+70.089].V | $HexNAc_4Hex_3$ |
| 149 | P01859 | R.[+28.031]E[+70.089]E[+70.089]QFN[+1403.507]STFR.[+70.089].V | $HexNAc_3Hex_4Fuc_1$ |
| 150 | P01859 | R.[+28.031]E[+70.089]E[+70.089]QFN[+1444.534]STFR.[+70.089].V | $HexNAc_4Hex_3Fuc_1$ |

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|---|---|---|---|
| 151 | P01859 | R.[+28.031]E[+70.089]E[+70.089]QFN[+1460.529]STFR.[+70.089].V | $HexNAc_4Hex_4$ |
| 152 | P01859 | R.[+28.031]E[+70.089]E[+70.089]QFN[+1501.555]STFR.[+70.089].V | $HexNAc_5Hex_3$ |
| 153 | P01859 | R.[+28.031]E[+70.089]E[+70.089]QFN[+1606.587]STFR.[+70.089].V | $HexNAc_4Hex_4Fuc_1$ |
| 154 | P01859 | R.[+28.031]E[+70.089]E[+70.089]QFN[+1622.582]STFR.[+70.089].V | $HexNAc_4Hex_5$ |
| 155 | P01859 | R.[+28.031]E[+70.089]E[+70.089]QFN[+1647.613]STFR.[+70.089].V | $HexNAc_5Hex_3Fuc_1$ |
| 156 | P01859 | R.[+28.031]E[+70.089]E[+70.089]QFN[+1663.608]STFR.[+70.089].V | $HexNAc_5Hex_4$ |
| 157 | P01859 | R.[+28.031]E[+70.089]E[+70.089]QFN[+1694.603][+70.089]STFR.[+70.089].V | $HexNAc_3Hex_4Fuc_1NeuAc_1$ 70.0891 |
| 158 | P01859 | R.[+28.031]E[+70.089]E[+70.089]QFN[+1751.624][+70.089]STFR.[+70.089].V | $HexNAc_4Hex_4NeuAc_1$ 70.0891 |
| 159 | P01859 | R.[+28.031]E[+70.089]E[+70.089]QFN[+1768.640]STFR.[+70.089].V | $HexNAc_4Hex_5Fuc_1$ |
| 160 | P01859 | R.[+28.031]E[+70.089]E[+70.089]QFN[+1809.666]STFR.[+70.089].V | $HexNAc_5Hex_4Fuc_1$ |
| 161 | P01859 | R.[+28.031]E[+70.089]E[+70.089]QFN[+1897.682][+70.089]STFR.[+70.089].V | $HexNAc_4Hex_4Fuc_1NeuAc_1$ 70.0891 |
| 162 | P01859 | R.[+28.031]E[+70.089]E[+70.089]QFN[+1913.677][+70.089]STFR.[+70.089].V | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 163 | P01859 | R.[+28.031]E[+70.089]E[+70.089]QFN[+1971.719]STFR.[+70.089].V | $HexNAc_5Hex_5Fuc_1$ |
| 164 | P01859 | R.[+28.031]E[+70.089]E[+70.089]QFN[+2059.735][+70.089]STFR.[+70.089].V | $HexNAc_4Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 165 | P01859 | R.[+28.031]E[+70.089]E[+70.089]QFN[+2100.761][+70.089]STFR.[+70.089].V | $HexNAc_5Hex_4Fuc_1NeuAc_1$ 70.0891 |
| 166 | P01859 | R.[+28.031]E[+70.089]E[+70.089]QFN[+2262.814][+70.089]STFR.[+70.089].V | $HexNAc_5Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 167 | P01860 | K.[+28.031]GFYPSD[+70.089]IAVE[+70.089]WE[+70.089]SSGQPE[+70.089]NNYN[+1825.661]TTPPMLD[+70.089]SD[+70.089]GSFFLYSK[+28.031].[+70.089].L | $HexNAc_5Hex_5$ |
| 168 | P01860 | K.[+28.031]PRE[+70.089]E[+70.089]QYN[+1938.709][+70.089]STFR.[+70.089].V | $HexNAc_5Hex_3Fuc_1NeuAc_1$ 70.0891 |
| 169 | P01860 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1298.476]STFR.[+70.089].V | $HexNAc_4Hex_3$ |
| 170 | P01860 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1444.534]STFR.[+70.089].V | $HexNAc_4Hex_3Fuc_1$ |
| 171 | P01860 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1460.529]STFR.[+70.089].V | $HexNAc_4Hex_4$ |
| 172 | P01860 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1606.587]STFR.[+70.089].V | $HexNAc_4Hex_4Fuc_1$ |
| 173 | P01860 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1622.582]STFR.[+70.089].V | $HexNAc_4Hex_5$ |
| 174 | P01860 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1647.613]STFR.[+70.089].V | $HexNAc_5Hex_3Fuc_1$ |
| 175 | P01860 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1663.608]STFR.[+70.089].V | $HexNAc_5Hex_4$ |
| 176 | P01860 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1768.640]STFR.[+70.089].V | $HexNAc_4Hex_5Fuc_1$ |
| 177 | P01860 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1784.634]STFR.[+70.089].V | $HexNAc_4Hex_6$ |
| 178 | P01860 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1809.666]STFR.[+70.089].V | $HexNAc_5Hex_4Fuc_1$ |
| 179 | P01860 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1897.682][+70.089]STFR.[+70.089].V | $HexNAc_4Hex_4Fuc_1NeuAc_1$ 70.0891 |
| 180 | P01860 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1946.687]STFR.[+70.089].V | $HexNAc_4Hex_7$ |
| 181 | P01860 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1971.719]STFR.[+70.089].V | $HexNAc_5Hex_5Fuc_1$ |
| 182 | P01860 | R.[+28.031]E[+70.089]E[+70.089]QYN[+2059.735][+70.089]STFR.[+70.089].V | $HexNAc_4Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 183 | P01860 | R.[+28.031]E[+70.089]E[+70.089]QYN[+2069.767]STFR.[+70.089].V | $HexNAc_7Hex_4$ |
| 184 | P01860 | R.[+28.031]E[+70.089]E[+70.089]QYN[+2555.925]STFR.[+70.089].V | $HexNAc_7Hex_7$ |
| 185 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1216.423]VSLVMSD[+70.089]TAGTC[+57.021].[+70.089].Y | $HexNAc_2Hex_5$ |
| 186 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1216.423]VSLVMSD[+70.089]TAGTC[+57.021]Y.[+70.089].- | $HexNAc_2Hex_5$ |
| 187 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1378.476]VSLVM[+15.995]SD[+70.089]TAGTC[+57.021].[+70.089].Y | $HexNAc_2Hex_6$ |
| 188 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1378.476]VSLVM[+15.995]SD[+70.089]TAGTC[+57.021]Y.[+70.089].- | $HexNAc_2Hex_6$ |
| 189 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1378.476]VSLVMSD[+70.089]TAGTC[+57.021].[+70.089].Y | $HexNAc_2Hex_6$ |
| 190 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1378.476]VSLVMSD[+70.089]TAGTC[+57.021]Y.[+70.089].- | $HexNAc_2Hex_6$ |
| 191 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1540.529]VSLVM[+15.995]SD[+70.089]TAGTC[+57.021].[+70.089].Y | $HexNAc_2Hex_7$ |
| 192 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1540.529]VSLVM[+15.995]SD[+70.089]TAGTC[+57.021]Y.[+70.089].- | $HexNAc_2Hex_7$ |
| 193 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1540.529]VSLVMSD[+70.089]TAGTC[+57.021].[+70.089].Y | $HexNAc_2Hex_7$ |
| 194 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1540.529]VSLVMSD[+70.089]TAGTC[+57.021]Y.[+70.089].- | $HexNAc_2Hex_7$ |
| 195 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1548.545][+70.089]VSLVM[+15.995]SD[+70.089]TAGTC[+57.021].[+70.089].Y | $HexNAc_3Hex_4NeuAc_1$ 70.0891 |
| 196 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1548.545][+70.089]VSLVMSD[+70.089]TAGTC[+57.021].[+70.089].Y | $HexNAc_3Hex_4NeuAc_1$ 70.0891 |
| 197 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1548.545][+70.089]VSLVMSD[+70.089]TAGTC[+57.021]Y.[+70.089].- | $HexNAc_3Hex_4NeuAc_1$ 70.0891 |
| 198 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1647.613]VSLVMSD[+70.089]TAGTC[+57.021].[+70.089].Y | $HexNAc_5Hex_3Fuc_1$ |
| 199 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1647.613]VSLVMSD[+70.089]TAGTC[+57.021]Y.[+70.089].- | $HexNAc_5Hex_3Fuc_1$ |

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|---|---|---|---|
| 200 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1694.603][+70.089]VSLVM[+15.995]SD[+70.089]TAGTC[+57.021].[+70.089].Y | $HexNAc_3Hex_4Fuc_1NeuAc_1$ 70.0891 |
| 201 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1702.581]VSLVM[+15.995]SD[+70.089]TAGTC[+57.021].[+70.089].Y | $HexNAc_2Hex_8$ |
| 202 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1702.581]VSLVM[+15.995]SD[+70.089]TAGTC[+57.021]Y.[+70.089].- | $HexNAc_2Hex_8$ |
| 203 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1702.581]VSLVMSD[+70.089]TAGTC[+57.021].[+70.089].Y | $HexNAc_2Hex_8$ |
| 204 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1702.581]VSLVMSD[+70.089]TAGTC[+57.021]Y.[+70.089].- | $HexNAc_2Hex_8$ |
| 205 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1704.635]VSLVMSD[+70.089]TAGTC[+57.021].[+70.089].Y | $HexNAc_6Hex_3$ |
| 206 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1710.598][+70.089]VSLVM[+15.995]SD[+70.089]TAGTC[+57.021].[+70.089].Y | $HexNAc_3Hex_5NeuAc_1$ 70.0891 |
| 207 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1710.598][+70.089]VSLVM[+15.995]SD[+70.089]TAGTC[+57.021]Y.[+70.089].- | $HexNAc_3Hex_5NeuAc_1$ 70.0891 |
| 208 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1710.598][+70.089]VSLVMSD[+70.089]TAGTC[+57.021].[+70.089].Y | $HexNAc_3Hex_5NeuAc_1$ 70.0891 |
| 209 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1710.598][+70.089]VSLVMSD[+70.089]TAGTC[+57.021]Y.[+70.089].- | $HexNAc_3Hex_5NeuAc_1$ 70.0891 |
| 210 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1751.624][+70.089]VSLVMSD[+70.089]TAGTC[+57.021]Y.[+70.089].- | $HexNAc_4Hex_4NeuAc_1$ 70.0891 |
| 211 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1809.666]VSLVMSD[+70.089]TAGTC[+57.021].[+70.089].Y | $HexNAc_5Hex_4Fuc_1$ |
| 212 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1864.634]VSLVM[+15.995]SD[+70.089]TAGTC[+57.021].[+70.089].Y | $HexNAc_2Hex_9$ |
| 213 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1864.634]VSLVMSD[+70.089]TAGTC[+57.021].[+70.089].Y | $HexNAc_2Hex_9$ |
| 214 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1864.634]VSLVMSD[+70.089]TAGTC[+57.021]Y.[+70.089].- | $HexNAc_2Hex_9$ |
| 215 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1872.651][+70.089]VSLVM[+15.995]SD[+70.089]TAGTC[+57.021]Y.[+70.089].- | $HexNAc_3Hex_6NeuAc_1$ 70.0891 |
| 216 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1872.651][+70.089]VSLVMSD[+70.089]TAGTC[+57.021].[+70.089].Y | $HexNAc_3Hex_6NeuAc_1$ 70.0891 |
| 217 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1872.651][+70.089]VSLVMSD[+70.089]TAGTC[+57.021]Y.[+70.089].- | $HexNAc_3Hex_6NeuAc_1$ 70.0891 |
| 218 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1913.677][+70.089]VSLVMSD[+70.089]TAGTC[+57.021]Y.[+70.089].- | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 219 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+1971.719]VSLVMSD[+70.089]TAGTC[+57.021]Y.[+70.089].- | $HexNAc_5Hex_5Fuc_1$ |
| 220 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+2018.708][+70.089]VSLVM[+15.995]SD[+70.089]TAGTC[+57.021].[+70.089].Y | $HexNAc_3Hex_6Fuc_1NeuAc_1$ 70.0891 |
| 221 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+2018.708][+70.089]VSLVM[+15.995]SD[+70.089]TAGTC[+57.021]Y.[+70.089].- | $HexNAc_3Hex_6Fuc_1NeuAc_1$ 70.0891 |
| 222 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+2059.735][+70.089]VSLVMSD[+70.089]TAGTC[+57.021].[+70.089].Y | $HexNAc_4Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 223 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+2059.735][+70.089]VSLVMSD[+70.089]TAGTC[+57.021]Y.[+70.089].- | $HexNAc_4Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 224 | P01871 | K.[+28.031]STGK[+28.031]PTLYN[+2295.824]VSLVMSD[+70.089]TAGTC[+57.021].[+70.089].Y | $HexNAc_5Hex_7Fuc_1$ |
| 225 | P01871 | K.[+28.031]YK[+28.031]N[+1694.603][+70.089]NSD[+70.089]ISSTR.[+70.089].G | $HexNAc_3Hex_4Fuc_1NeuAc_1$ 70.0891 |
| 226 | P01871 | K.[+28.031]YK[+28.031]N[+1809.666]NSD[+70.089]ISSTR.[+70.089].G | $HexNAc_5Hex_4Fuc_1$ |
| 227 | P01871 | K.[+28.031]YK[+28.031]N[+1872.651][+70.089]NSD[+70.089]ISSTR.[+70.089].G | $HexNAc_3Hex_6NeuAc_1$ 70.0891 |
| 228 | P01871 | K.[+28.031]YK[+28.031]N[+1913.677][+70.089]NSD[+70.089]ISSTR.[+70.089].G | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 229 | P01871 | K.[+28.031]YK[+28.031]N[+2059.735][+70.089]NSD[+70.089]ISSTR.[+70.089].G | $HexNAc_4Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 230 | P01871 | K.[+28.031]YK[+28.031]N[+2100.761][+70.089]NSD[+70.089]ISSTR.[+70.089].G | $HexNAc_5Hex_4Fuc_1NeuAc_1$ 70.0891 |
| 231 | P01871 | K.[+28.031]YK[+28.031]N[+2116.756][+70.089]NSD[+70.089]ISSTR.[+70.089].G | $HexNAc_5Hex_5NeuAc_1$ 70.0891 |
| 232 | P01871 | K.[+28.031]YK[+28.031]N[+2204.772][+140.178]NSD[+70.089]ISSTR.[+70.089].G | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 233 | P01871 | K.[+28.031]YK[+28.031]N[+2262.814][+70.089]NSD[+70.089]ISSTR.[+70.089].G | $HexNAc_5Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 234 | P01871 | K.[+28.031]YK[+28.031]N[+2350.830][+140.178]NSD[+70.089]ISSTR.[+70.089].G | $HexNAc_4Hex_5Fuc_1NeuAc_2$ 140.1782 |
| 235 | P01871 | K.[+28.031]YK[+28.031]N[+2432.884][+140.178]NSD[+70.089]ISSTR.[+70.089].G | $HexNAc_6Hex_3Fuc_1NeuAc_2$ 140.1782 |
| 236 | P01871 | R.[+28.031]GLTFQQN[+1913.677][+70.089]ASSMC[+57.021]VPD[+70.089]QD[+70.089]TAIR.[+70.089].V | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 237 | P01871 | R.[+28.031]GLTFQQN[+1971.719]ASSMC[+57.021]VPD[+70.089]QD[+70.089]TAIR.[+70.089].V | $HexNAc_5Hex_5Fuc_1$ |

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|---|---|---|---|
| 238 | P01871 | R.[+28.031]GLTFQQN[+2059.735][+70.089]ASSM[+15.995]C[+57.021]VPD[+70.089]QD[+70.089]TAIR.[+70.089].V | $HexNAc_4Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 239 | P01871 | R.[+28.031]GLTFQQN[+2059.735][+70.089]ASSMC[+57.021]VPD[+70.089]QD[+70.089]TAIR.[+70.089].V | $HexNAc_4Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 240 | P01871 | R.[+28.031]GLTFQQN[+2100.761][+70.089]ASSMC[+57.021]VPD[+70.089]QD[+70.089]TAIR.[+70.089].V | $HexNAc_5Hex_4Fuc_1NeuAc_1$ 70.0891 |
| 241 | P01871 | R.[+28.031]GLTFQQN[+2116.756][+70.089]ASSMC[+57.021]VPD[+70.089]QD[+70.089]TAIR.[+70.089].V | $HexNAc_5Hex_5NeuAc_1$ 70.0891 |
| 242 | P01871 | R.[+28.031]GLTFQQN[+2204.772][+140.178]ASSMC[+57.021]VPD[+70.089]QD[+70.089]TAIR.[+70.089].V | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 243 | P01871 | R.[+28.031]GLTFQQN[+2262.814][+70.089]ASSM[+15.995]C[+57.021]VPD[+70.089]QD[+70.089]TAIR.[+70.089].V | $HexNAc_5Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 244 | P01871 | R.[+28.031]GLTFQQN[+2262.814][+70.089]ASSMC[+57.021]VPD[+70.089]QD[+70.089]TAIR.[+70.089].V | $HexNAc_5Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 245 | P01871 | R.[+28.031]GLTFQQN[+2350.830][+140.178]ASSMC[+57.021]VPD[+70.089]QD[+70.089]TAIR.[+70.089].V | $HexNAc_4Hex_5Fuc_1NeuAc_2$ 140.1782 |
| 246 | P01871 | R.[+28.031]GLTFQQN[+2391.857][+140.178]ASSMC[+57.021]VPD[+70.089]QD[+70.089]TAIR.[+70.089].V | $HexNAc_5Hex_4Fuc_1NeuAc_2$ 140.1782 |
| 247 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+1200.428]VSVVM[+15.995]AE[+70.089]VD[+70.089]GTC[+57.021]Y.[+70.089].- | $HexNAc_2Hex_4Fuc_1$ |
| 248 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+1216.423]VSVVMAE[+70.089]VD[+70.089]GTC[+57.021].[+70.089].Y | $HexNAc_2Hex_5$ |
| 249 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+1216.423]VSVVMAE[+70.089]VD[+70.089]GTC[+57.021]Y.[+70.089].- | $HexNAc_2Hex_5$ |
| 250 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+1378.476]VSVVMAE[+70.089]VD[+70.089]GTC[+57.021]Y.[+70.089].- | $HexNAc_2Hex_6$ |
| 251 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+1663.608]VSVVMAE[+70.089]VD[+70.089]GTC[+57.021]Y.[+70.089].- | $HexNAc_5Hex_4$ |
| 252 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+1809.666]VSVVMAE[+70.089]VD[+70.089]GTC[+57.021]Y.[+70.089].- | $HexNAc_5Hex_4Fuc_1$ |
| 253 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+1897.682][+70.089]VSVVMAE[+70.089]VD[+70.089]GTC[+57.021]Y.[+70.089].- | $HexNAc_4Hex_4Fuc_1NeuAc_1$ 70.0891 |
| 254 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+1913.677][+70.089]VSVVM[+15.995]AE[+70.089]VD[+70.089]GTC[+57.021]Y.[+70.089].- | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 255 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+1913.677][+70.089]VSVVMAE[+70.089]VD[+70.089]GTC[+57.021].[+70.089].Y | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 256 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+1913.677][+70.089]VSVVMAE[+70.089]VD[+70.089]GTC[+57.021]Y.[+70.089].- | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 257 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+1971.719]VSVVMAE[+70.089]VD[+70.089]GTC[+57.021]Y.[+70.089].- | $HexNAc_5Hex_5Fuc_1$ |
| 258 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+2012.745]VSVVMAE[+70.089]VD[+70.089]GTC[+57.021]Y.[+70.089].- | $HexNAc_6Hex_4Fuc_1$ |
| 259 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+2059.735][+70.089]VSVVM[+15.995]AE[+70.089]VD[+70.089]GTC[+57.021].[+70.089].Y | $HexNAc_4Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 260 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+2059.735][+70.089]VSVVMAE[+70.089]VD[+70.089]GTC[+57.021].[+70.089].Y | $HexNAc_4Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 261 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+2059.735][+70.089]VSVVMAE[+70.089]VD[+70.089]GTC[+57.021]Y.[+70.089].- | $HexNAc_4Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 262 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+2075.730][+70.089]VSVVMAE[+70.089]VD[+70.089]GTC[+57.021].[+70.089].Y | $HexNAc_4Hex_6NeuAc_1$ 70.0891 |
| 263 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+2100.761][+70.089]VSVVMAE[+70.089]VD[+70.089]GTC[+57.021]Y.[+70.089].- | $HexNAc_5Hex_4Fuc_1NeuAc_1$ 70.0891 |
| 264 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+2116.756][+70.089]VSVVMAE[+70.089]VD[+70.089]GTC[+57.021]Y.[+70.089].- | $HexNAc_5Hex_5NeuAc_1$ 70.0891 |
| 265 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+2204.772][+140.178]VSVVMAE[+70.089]VD[+70.089]GTC[+57.021]Y.[+70.089].- | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 266 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+2262.814][+70.089]VSVVM[+15.995]AE[+70.089]VD[+70.089]GTC[+57.021].[+70.089].Y | $HexNAc_5Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 267 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+2262.814][+70.089]VSVVMAE[+70.089]VD[+70.089]GTC[+57.021].[+70.089].Y | $HexNAc_5Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 268 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+2262.814][+70.089]VSVVMAE[+70.089]VD[+70.089]GTC[+57.021]Y.[+70.089].- | $HexNAc_5Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 269 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+2278.809][+70.089]VSVVMAE[+70.089]VD[+70.089]GTC[+57.021].[+70.089].Y | $HexNAc_5Hex_6NeuAc_1$ 70.0891 |
| 270 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+2350.830][+140.178]VSVVM[+15.995]AE[+70.089]VD[+70.089]GTC[+57.021].[+70.089].Y | $HexNAc_4Hex_5Fuc_1NeuAc_2$ 140.1782 |
| 271 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+2350.830][+140.178]VSVVM[+15.995]AE[+70.089]VD[+70.089]GTC[+57.021]Y.[+70.089].- | $HexNAc_4Hex_5Fuc_1NeuAc_2$ 140.1782 |
| 272 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+2350.830][+140.178]VSVVMAE[+70.089]VD[+70.089]GTC[+57.021].[+70.089].Y | $HexNAc_4Hex_5Fuc_1NeuAc_2$ 140.1782 |
| 273 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+2350.830][+140.178]VSVVMAE[+70.089]VD[+70.089]GTC[+57.021]Y.[+70.089].- | $HexNAc_4Hex_5Fuc_1NeuAc_2$ 140.1782 |
| 274 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+2407.852][+140.178]VSVVMAE[+70.089]VD[+70.089]GTC[+57.021]Y.[+70.089].- | $HexNAc_5Hex_5NeuAc_2$ 140.1782 |
| 275 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+2424.867][+70.089]VSVVMAE[+70.089]VD[+70.089]GTC[+57.021].[+70.089].Y | $HexNAc_5Hex_6Fuc_1NeuAc_1$ 70.0891 |

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|---|---|---|---|
| 276 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+2475.926]VSVVM[+15.995]AE[+70.089]VD[+70.089]GTC[+57.021].[+70.089].Y | $HexNAc_9Hex_4$ |
| 277 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+2553.910][+140.178]VSVVM[+15.995]AE[+70.089]VD[+70.089]GTC[+57.021].[+70.089].Y | $HexNAc_5Hex_5Fuc_1NeuAc_2$ 140.1782 |
| 278 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+2553.910][+140.178]VSVVMAE[+70.089]VD[+70.089]GTC[+57.021].[+70.089].Y | $HexNAc_5Hex_5Fuc_1NeuAc_2$ 140.1782 |
| 279 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+2553.910][+140.178]VSVVMAE[+70.089]VD[+70.089]GTC[+57.021]Y.[+70.089].- | $HexNAc_5Hex_5Fuc_1NeuAc_2$ 140.1782 |
| 280 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+2555.925]VSVVM[+15.995]AE[+70.089]VD[+70.089]GTC[+57.021].[+70.089].Y | $HexNAc_7Hex_7$ |
| 281 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+2569.905][+140.178]VSVVM[+15.995]AE[+70.089]VD[+70.089]GTC[+57.021].[+70.089].Y | $HexNAc_5Hex_6NeuAc_2$ 140.1782 |
| 282 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+2569.905][+140.178]VSVVMAE[+70.089]VD[+70.089]GTC[+57.021].[+70.089].Y | $HexNAc_5Hex_6NeuAc_2$ 140.1782 |
| 283 | P01876 | R.[+28.031]LAGK[+28.031]PTHVN[+2715.963][+140.178]VSVVMAE[+70.089]VD[+70.089]GTC[+57.021].[+70.089].Y | $HexNAc_5Hex_6Fuc_1NeuAc_2$ 140.1782 |
| 284 | P01876 | R.[+28.031]LSLHRPALE[+70.089]D[+70.089]LLLGSE[+70.089]AN[+1216.423]LTC[+57.021]TLTGLR.[+70.089].D | $HexNAc_2Hex_5$ |
| 285 | P01876 | R.[+28.031]LSLHRPALE[+70.089]D[+70.089]LLLGSE[+70.089]AN[+1501.555]LTC[+57.021]TLTGLR.[+70.089].D | $HexNAc_5Hex_3$ |
| 286 | P01876 | R.[+28.031]LSLHRPALE[+70.089]D[+70.089]LLLGSE[+70.089]AN[+1548.545][+70.089]LTC[+57.021]TLTGLR.[+70.089].D | $HexNAc_3Hex_4NeuAc_1$ 70.0891 |
| 287 | P01876 | R.[+28.031]LSLHRPALE[+70.089]D[+70.089]LLLGSE[+70.089]AN[+1622.582]LTC[+57.021]TLTGLR.[+70.089].D | $HexNAc_4Hex_5$ |
| 288 | P01876 | R.[+28.031]LSLHRPALE[+70.089]D[+70.089]LLLGSE[+70.089]AN[+1663.608]LTC[+57.021]TLTGLR.[+70.089].D | $HexNAc_5Hex_4$ |
| 289 | P01876 | R.[+28.031]LSLHRPALE[+70.089]D[+70.089]LLLGSE[+70.089]AN[+1710.598][+70.089]LTC[+57.021]TLTGLR.[+70.089].D | $HexNAc_3Hex_5NeuAc_1$ 70.0891 |
| 290 | P01876 | R.[+28.031]LSLHRPALE[+70.089]D[+70.089]LLLGSE[+70.089]AN[+1751.624][+70.089]LTC[+57.021]TLTGLR.[+70.089].D | $HexNAc_4Hex_4NeuAc_1$ 70.0891 |
| 291 | P01876 | R.[+28.031]LSLHRPALE[+70.089]D[+70.089]LLLGSE[+70.089]AN[+1809.666]LTC[+57.021]TLTGLR.[+70.089].D | $HexNAc_5Hex_4Fuc_1$ |
| 292 | P01876 | R.[+28.031]LSLHRPALE[+70.089]D[+70.089]LLLGSE[+70.089]AN[+1825.661]LTC[+57.021]TLTGLR.[+70.089].D | $HexNAc_5Hex_5$ |
| 293 | P01876 | R.[+28.031]LSLHRPALE[+70.089]D[+70.089]LLLGSE[+70.089]AN[+1850.693]LTC[+57.021]TLTGLR.[+70.089].D | $HexNAc_6Hex_3Fuc_1$ |
| 294 | P01876 | R.[+28.031]LSLHRPALE[+70.089]D[+70.089]LLLGSE[+70.089]AN[+1872.651][+70.089]LTC[+57.021]TLTGLR.[+70.089].D | $HexNAc_3Hex_6NeuAc_1$ 70.0891 |
| 295 | P01876 | R.[+28.031]LSLHRPALE[+70.089]D[+70.089]LLLGSE[+70.089]AN[+1913.677][+70.089]LTC[+57.021]TLTGLR.[+70.089].D | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 296 | P01876 | R.[+28.031]LSLHRPALE[+70.089]D[+70.089]LLLGSE[+70.089]AN[+1954.704][+70.089]LTC[+57.021]TLTGLR.[+70.089].D | $HexNAc_5Hex_4NeuAc_1$ 70.0891 |
| 297 | P01876 | R.[+28.031]LSLHRPALE[+70.089]D[+70.089]LLLGSE[+70.089]AN[+1987.714]LTC[+57.021]TLTGLR.[+70.089].D | $HexNAc_5Hex_6$ |
| 298 | P01876 | R.[+28.031]LSLHRPALE[+70.089]D[+70.089]LLLGSE[+70.089]AN[+2012.745]LTC[+57.021]TLTGLR.[+70.089].D | $HexNAc_6Hex_4Fuc_1$ |
| 299 | P01876 | R.[+28.031]LSLHRPALE[+70.089]D[+70.089]LLLGSE[+70.089]AN[+2053.772]LTC[+57.021]TLTGLR.[+70.089].D | $HexNAc_7Hex_3Fuc_1$ |
| 300 | P01876 | R.[+28.031]LSLHRPALE[+70.089]D[+70.089]LLLGSE[+70.089]AN[+2059.735][+70.089]LTC[+57.021]TLTGLR.[+70.089].D | $HexNAc_4Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 301 | P01876 | R.[+28.031]LSLHRPALE[+70.089]D[+70.089]LLLGSE[+70.089]AN[+2116.756][+70.089]LTC[+57.021]TLTGLR.[+70.089].D | $HexNAc_5Hex_5NeuAc_1$ 70.0891 |
| 302 | P01876 | R.[+28.031]LSLHRPALE[+70.089]D[+70.089]LLLGSE[+70.089]AN[+2204.772][+140.178]LTC[+57.021]TLTGLR.[+70.089].D | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 303 | P01876 | R.[+28.031]LSLHRPALE[+70.089]D[+70.089]LLLGSE[+70.089]AN[+2215.825]LTC[+57.021]TLTGLR.[+70.089].D | $HexNAc_7Hex_4Fuc_1$ |
| 304 | P01876 | R.[+28.031]LSLHRPALE[+70.089]D[+70.089]LLLGSE[+70.089]AN[+2262.814][+70.089]LTC[+57.021]TLTGLR.[+70.089].D | $HexNAc_5Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 305 | P01877 | K.[+28.031]TPLTAN[+2262.814][+70.089]ITK[+28.031].[+70.089].S | $HexNAc_5Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 306 | P01877 | K.[+28.031]TPLTAN[+2350.830][+140.178]ITK[+28.031].[+70.089].S | $HexNAc_4Hex_5Fuc_1NeuAc_2$ 140.1782 |
| 307 | P01877 | K.[+28.031]VFPLSLD[+70.089]STPQD[+70.089]GNVVVAC[+57.021]LVQGFFPQE[+70.089]PLSVTWSE[+70.089]SGQN[+2262.814][+70.089]VTAR.[+70.089].N | $HexNAc_5Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 308 | P01877 | K.[+28.031]HYTN[+1362.481]SSQD[+70.089]VTVPC[+57.021]R.[+70.089].V | $HexNAc_2Hex_5Fuc_1$ |
| 309 | P01877 | K.[+28.031]HYTN[+2059.735][+70.089]SSQD[+70.089]VTVPC[+57.021]R.[+70.089].V | $HexNAc_4Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 310 | P01877 | K.[+28.031]HYTN[+2262.814][+70.089]SSQD[+70.089]VTVPC[+57.021]R.[+70.089].V | $HexNAc_5Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 311 | P01877 | K.[+28.031]HYTN[+2350.830][+140.178]SSQD[+70.089]VTVPC[+57.021]R.[+70.089].V | $HexNAc_4Hex_5Fuc_1NeuAc_2$ 140.1782 |
| 312 | P01877 | K.[+28.031]HYTN[+2553.910][+140.178]SSQD[+70.089]VTVPC[+57.021]R.[+70.089].V | $HexNAc_5Hex_5Fuc_1NeuAc_2$ 140.1782 |
| 313 | P01877 | K.[+28.031]TPLTAN[+2059.735][+70.089]ITK[+28.031].[+70.089].S | $HexNAc_4Hex_5Fuc_1NeuAc_1$ 70.0891 |

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|---|---|---|---|
| 314 | P01877 | K.[+28.031]TPLTAN[+2553.910][+140.178]ITK[+28.031].[+70.089].S | $HexNAc_5Hex_5Fuc_1NeuAc_2$ 140.1782 |
| 315 | P01877 | K.[+28.031]VFPLSLD[+70.089]STPQD[+70.089]GNVVVAC[+57.021]LVQGFFPQE[+70.089]PLSVTWSE[+70.089]SGQN[+2350.830][+140.178]VTAR.[+70.089].N | $HexNAc_4Hex_5Fuc_1NeuAc_2$ 140.1782 |
| 316 | P01877 | R.[+28.031]MAGK[+28.031]PTHIN[+2059.735][+70.089]VSVVMAE[+70.089]AD[+70.089]GTC[+57.021].[+70.089].Y | $HexNAc_4Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 317 | P01877 | R.[+28.031]MAGK[+28.031]PTHIN[+2059.735][+70.089]VSVVMAE[+70.089]AD[+70.089]GTC[+57.021]Y.[+70.089].- | $HexNAc_4Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 318 | P02671 | R.[+28.031]MD[+70.089]GSLNFN[+2204.772][+140.178]R.[+70.089].T | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 319 | P02675 | R.[+28.031]GTAGNALM[+15.995]D[+70.089]GASQLM[+15.995]GE[+70.089]N[+1907.714]R.[+70.089].T | $HexNAc_7Hex_3$ |
| 320 | P02675 | R.[+28.031]GTAGNALM[+15.995]D[+70.089]GASQLMGE[+70.089]N[+1913.677][+70.089]R.[+70.089].T | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 321 | P02675 | R.[+28.031]GTAGNALM[+15.995]D[+70.089]GASQLMGE[+70.089]N[+2204.772][+140.178]R.[+70.089].T | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 322 | P02675 | R.[+28.031]GTAGNALMD[+70.089]GASQLM[+15.995]GE[+70.089]N[+1913.677][+70.089]R.[+70.089].T | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 323 | P02675 | R.[+28.031]GTAGNALMD[+70.089]GASQLM[+15.995]GE[+70.089]N[+2188.740]R.[+70.089].T | $HexNAc_2Hex_{11}$ |
| 324 | P02675 | R.[+28.031]GTAGNALMD[+70.089]GASQLM[+15.995]GE[+70.089]N[+2204.772][+140.178]R.[+70.089].T | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 325 | P02675 | R.[+28.031]GTAGNALMD[+70.089]GASQLMGE[+70.089]N[+1913.677][+70.089]R.[+70.089].T | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 326 | P02675 | R.[+28.031]GTAGNALMD[+70.089]GASQLMGE[+70.089]N[+2012.745]R.[+70.089].T | $HexNAc_6Hex_4Fuc_1$ |
| 327 | P02675 | R.[+28.031]GTAGNALMD[+70.089]GASQLMGE[+70.089]N[+2204.772][+140.178]R.[+70.089].T | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 328 | P02675 | R.[+28.031]GTAGNALMD[+70.089]GASQLMGE[+70.089]N[+2272.846]R.[+70.089].T | $HexNAc_8Hex_4$ |
| 329 | P02679 | K.[+28.031]VD[+70.089]K[+28.031]D[+70.089]LQSLE[+70.089]D[+70.089]ILHQVE[+70.089]N[+1702.581]K[+28.031]TSE[+70.089]VK[+28.031].[+70.089].Q | $HexNAc_2Hex_8$ |
| 330 | P02679 | K.[+28.031]VD[+70.089]K[+28.031]D[+70.089]LQSLE[+70.089]D[+70.089]ILHQVE[+70.089]N[+1751.624][+70.089]K[+28.031].[+70.089].T | $HexNAc_4Hex_4NeuAc_1$ 70.0891 |
| 331 | P02679 | K.[+28.031]VD[+70.089]K[+28.031]D[+70.089]LQSLE[+70.089]D[+70.089]ILHQVE[+70.089]N[+1913.677][+70.089]K[+28.031].[+70.089].T | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 332 | P02679 | K.[+28.031]VD[+70.089]K[+28.031]D[+70.089]LQSLE[+70.089]D[+70.089]ILHQVE[+70.089]N[+2012.745]K[+28.031].[+70.089].T | $HexNAc_6Hex_4Fuc_1$ |
| 333 | P02679 | K.[+28.031]VD[+70.089]K[+28.031]D[+70.089]LQSLE[+70.089]D[+70.089]ILHQVE[+70.089]N[+2059.735][+70.089]K[+28.031].[+70.089].T | $HexNAc_4Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 334 | P02679 | K.[+28.031]VD[+70.089]K[+28.031]D[+70.089]LQSLE[+70.089]D[+70.089]ILHQVE[+70.089]N[+2204.772][+140.178]K[+28.031].[+70.089].T | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 335 | P02748 | R.[+28.031]FSYSK[+28.031]N[+2204.772][+140.178]E[+70.089]TYQLFLSYSSK[+28.031].[+70.089].K | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 336 | P02749 | K.[+28.031]LGN[+1913.677][+70.089]WSAMPSC[+57.021]K[+28.031].[+70.089].A | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 337 | P02749 | R.[+28.031]VYK[+28.031]PSAGN[+1825.661]NSLYR.[+70.089].D | $HexNAc_5Hex_5$ |
| 338 | P02749 | R.[+28.031]VYK[+28.031]PSAGN[+2204.772][+140.178]NSLYR.[+70.089].D | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 339 | P02749 | R.[+28.031]VYK[+28.031]PSAGN[+2861.000][+210.267]NSLYR.[+70.089].D | $HexNAc_5Hex_6NeuAc_3$ 210.2673 |
| 340 | P02749 | R.[+28.031]VYK[+28.031]PSAGN[+3007.058][+210.267]NSLYR.[+70.089].D | $HexNAc_5Hex_6Fuc_1NeuAc_3$ 210.2673 |
| 341 | P02750 | R.[+28.031]K[+28.031]LPPGLLAN[+2204.772][+140.178]FTLLR.[+70.089].T | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 342 | P02750 | R.[+28.031]QLD[+70.089]MLD[+70.089]LSN[+2204.772][+140.178]NSLASVPE[+70.089]GLWASLGQPNWD[+70.089]MR.[+70.089].D | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 343 | P02751 | K.[+28.031]LD[+70.089]APTNLQFVN[+2204.772][+140.178]E[+70.089]TD[+70.089]STVLVR.[+70.089].W | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 344 | P02751 | K.[+28.031]RHE[+70.089]E[+70.089]GHMLN[+1913.677][+70.089]C[+57.021]TC[+57.021]FGQGR.[+70.089].G | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 345 | P02751 | K.[+28.031]RHE[+70.089]E[+70.089]GHMLN[+2204.772][+140.178]C[+57.021]TC[+57.021]FGQGR.[+70.089].G | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 346 | P02751 | R.[+28.031]D[+70.089]QC[+57.021]IVD[+70.089]D[+70.089]ITYNVN[+2204.772][+140.178]D[+70.089]TFHK[+28.031].[+70.089].R | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 347 | P02751 | R.[+28.031]HE[+70.089]E[+70.089]GHMLN[+2012.745]C[+57.021]TC[+57.021]FGQGR.[+70.089].G | $HexNAc_6Hex_4Fuc_1$ |
| 348 | P02751 | R.[+28.031]HE[+70.089]E[+70.089]GHMLN[+2204.772][+140.178]C[+57.021]TC[+57.021]FGQGR.[+70.089].G | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 349 | P02751 | R.[+28.031]IVYSPSVE[+70.089]GSSTE[+70.089]LNLPE[+70.089]TANSVTLSD[+70.089]LQPGVQYN[+2204.772][+140.178]ITIYAVE[+70.089]E[+70.089]NQE[+70.089]STPVVIQQE[+70.089]TTGTPR.[+70.089].S | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 350 | P02760 | K.[+28.031]SK[+28.031]WN[+2018.708][+70.089]ITM[+15.995]E[+70.089]SYVVHTNYD[+70.089]E[+70.089]YAIFLTK[+28.031].[+70.089].K | $HexNAc_3Hex_6Fuc_1NeuAc_1$ 70.0891 |

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|---|---|---|---|
| 351 | P02760 | K.[+28.031]WN[+2204.772][+140.178]ITME[+70.089]SYVVHTNYD[+70.089]E[+70.089]YAIFLTK[+28.031].[+70.089].K | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 352 | P02763 | K.[+28.031]SVQE[+70.089]IQATFFYFTPN[+1913.677][+70.089]K[+28.031].[+70.089].T | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 353 | P02763 | K.[+28.031]SVQE[+70.089]IQATFFYFTPN[+2204.772][+140.178]K[+28.031].[+70.089].T | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 354 | P02763 | K.[+28.031]SVQE[+70.089]IQATFFYFTPN[+2204.772][+140.178]K[+28.031]TE[+70.089]D[+70.089]TIFLR.[+70.089].E | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 355 | P02763 | K.[+28.031]SVQE[+70.089]IQATFFYFTPN[+2272.846]K[+28.031]TE[+70.089]D[+70.089]TIFLR.[+70.089].E | $HexNAc_8Hex_4$ |
| 356 | P02763 | K.[+28.031]SVQE[+70.089]IQATFFYFTPN[+2278.809][+70.089]K[+28.031].[+70.089].T | $HexNAc_5Hex_6NeuAc_1$ 70.0891 |
| 357 | P02763 | K.[+28.031]SVQE[+70.089]IQATFFYFTPN[+2278.809][+70.089]K[+28.031]TE[+70.089]D[+70.089]TIFLR.[+70.089].E | $HexNAc_5Hex_6NeuAc_1$ 70.0891 |
| 358 | P02763 | K.[+28.031]SVQE[+70.089]IQATFFYFTPN[+2569.905][+140.178]K[+28.031].[+70.089].T | $HexNAc_5Hex_6NeuAc_2$ 140.1782 |
| 359 | P02763 | K.[+28.031]SVQE[+70.089]IQATFFYFTPN[+2643.941][+70.089]K[+28.031].[+70.089].T | $HexNAc_6Hex_7NeuAc_1$ 70.0891 |
| 360 | P02763 | K.[+28.031]SVQE[+70.089]IQATFFYFTPN[+2861.000][+210.267]K[+28.031].[+70.089].T | $HexNAc_5Hex_6NeuAc_3$ 210.2673 |
| 361 | P02763 | K.[+28.031]SVQE[+70.089]IQATFFYFTPN[+2861.000][+210.267]K[+28.031]TE[+70.089]D[+70.089]TIFLR.[+70.089].E | $HexNAc_5Hex_6NeuAc_3$ 210.2673 |
| 362 | P02763 | K.[+28.031]SVQE[+70.089]IQATFFYFTPN[+2935.037][+140.178]K[+28.031].[+70.089].T | $HexNAc_6Hex_7NeuAc_2$ 140.1782 |
| 363 | P02763 | K.[+28.031]SVQE[+70.089]IQATFFYFTPN[+2935.037][+140.178]K[+28.031]TE[+70.089]D[+70.089]TIFLR.[+70.089].E | $HexNAc_6Hex_7NeuAc_2$ 140.1782 |
| 364 | P02763 | K.[+28.031]SVQE[+70.089]IQATFFYFTPN[+3007.058][+210.267]K[+28.031].[+70.089].T | $HexNAc_5Hex_6Fuc_1NeuAc_3$ 210.2673 |
| 365 | P02763 | K.[+28.031]SVQE[+70.089]IQATFFYFTPN[+3007.058][+210.267]K[+28.031]TE[+70.089]D[+70.089]TIFLR.[+70.089].E | $HexNAc_5Hex_6Fuc_1NeuAc_3$ 210.2673 |
| 366 | P02763 | K.[+28.031]SVQE[+70.089]IQATFFYFTPN[+3081.095][+140.178]K[+28.031].[+70.089].T | $HexNAc_6Hex_7Fuc_1NeuAc_2$ 140.1782 |
| 367 | P02763 | K.[+28.031]SVQE[+70.089]IQATFFYFTPN[+3226.132][+210.267]K[+28.031].[+70.089].T | $HexNAc_6Hex_7NeuAc_3$ 210.2673 |
| 368 | P02763 | K.[+28.031]SVQE[+70.089]IQATFFYFTPN[+3226.132][+210.267]K[+28.031]TE[+70.089]D[+70.089]TIFLR.[+70.089].E | $HexNAc_6Hex_7NeuAc_3$ 210.2673 |
| 369 | P02763 | K.[+28.031]SVQE[+70.089]IQATFFYFTPN[+3517.228][+280.356]K[+28.031].[+70.089].T | $HexNAc_6Hex_7NeuAc_4$ 280.3564 |
| 370 | P02763 | K.[+28.031]SVQE[+70.089]IQATFFYFTPN[+3517.228][+280.356]K[+28.031]TE[+70.089]D[+70.089]TIFLR.[+70.089].E | $HexNAc_6Hex_7NeuAc_4$ 280.3564 |
| 371 | P02763 | R.[+28.031]E[+70.089]N[+3226.132][+210.267]GTISR.[+70.089].Y | $HexNAc_6Hex_7NeuAc_3$ 210.2673 |
| 372 | P02763 | R.[+28.031]E[+70.089]N[+3517.228][+280.356]GTISR.[+70.089].Y | $HexNAc_6Hex_7NeuAc_4$ 280.3564 |
| 373 | P02763 | R.[+28.031]NE[+70.089]E[+70.089]YN[+2204.772][+140.178]K[+28.031].[+70.089].S | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 374 | P02763 | R.[+28.031]NE[+70.089]E[+70.089]YN[+3007.058][+210.267]K[+28.031].[+70.089].S | $HexNAc_5Hex_6Fuc_1NeuAc_3$ 210.2673 |
| 375 | P02763 | R.[+28.031]QD[+70.089]QC[+57.021]IYN[+2861.000][+210.267]TTYLNVQR.[+70.089].E | $HexNAc_5Hex_6NeuAc_3$ 210.2673 |
| 376 | P02763 | R.[+28.031]QD[+70.089]QC[+57.021]IYN[+3007.058][+210.267]TTYLNVQR.[+70.089].E | $HexNAc_5Hex_6Fuc_1NeuAc_3$ 210.2673 |
| 377 | P02765 | K.[+28.031]AALAAFNAQNN[+2204.772][+140.178]GSNFQLE[+70.089]E[+70.089]ISR.[+70.089].A | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 378 | P02765 | K.[+28.031]VC[+57.021]QD[+70.089]C[+57.021]PLLAPLN[+2204.772][+140.178]D[+70.089]TR.[+70.089].V | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 379 | P02765 | R.[+28.031]K[+28.031]VC[+57.021]QD[+70.089]C[+57.021]PLLAPLN[+2204.772][+140.178]D[+70.089]TR.[+70.089].V | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 380 | P02787 | K.[+28.031]C[+57.021]GLVPVLAE[+70.089]NYN[+1913.677][+70.089]K[+28.031].[+70.089].S | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 381 | P02787 | K.[+28.031]C[+57.021]GLVPVLAE[+70.089]NYN[+2204.772][+140.178]K[+28.031].[+70.089].S | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 382 | P02787 | K.[+28.031]C[+57.021]GLVPVLAE[+70.089]NYN[+2278.809][+70.089]K[+28.031].[+70.089].S | $HexNAc_5Hex_6NeuAc_1$ 70.0891 |
| 383 | P02787 | K.[+28.031]C[+57.021]GLVPVLAE[+70.089]NYN[+2861.000][+210.267]K[+28.031].[+70.089].S | $HexNAc_5Hex_6NeuAc_3$ 210.2673 |
| 384 | P02787 | K.[+28.031]ILRQQQHLFGSN[+1946.687]VTD[+70.089]C[+57.021]SGNFC[+57.021]LFR.[+70.089].S | $HexNAc_4Hex_7$ |
| 385 | P02787 | R.[+28.031]QQQHLFGSN[+1622.582]VTD[+70.089]C[+57.021]SGNFC[+57.021]LFR.[+70.089].S | $HexNAc_4Hex_5$ |
| 386 | P02787 | R.[+28.031]QQQHLFGSN[+1768.640]VTD[+70.089]C[+57.021]SGNFC[+57.021]LFR.[+70.089].S | $HexNAc_4Hex_5Fuc_1$ |
| 387 | P02787 | R.[+28.031]QQQHLFGSN[+1897.682][+70.089]VTD[+70.089]C[+57.021]SGNFC[+57.021]LFR.[+70.089].S | $HexNAc_4Hex_4Fuc_1NeuAc_1$ 70.0891 |
| 388 | P02787 | R.[+28.031]QQQHLFGSN[+2012.745]VTD[+70.089]C[+57.021]SGNFC[+57.021]LFR.[+70.089].S | $HexNAc_6Hex_4Fuc_1$ |

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|---|---|---|---|
| 389 | P02787 | R.[+28.031]QQQHLFGSN[+2204.772][+140.178]VTD[+70.089]C[+57.021]SGNFC[+57.021]LFR.[+70.089].S | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 390 | P02787 | R.[+28.031]QQQHLFGSN[+2262.814][+70.089]VTD[+70.089]C[+57.021]SGNFC[+57.021]LFR.[+70.089].S | $HexNAc_5Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 391 | P02787 | R.[+28.031]QQQHLFGSN[+2272.846]VTD[+70.089]C[+57.021]SGNFC[+57.021]LFR.[+70.089].S | $HexNAc_8Hex_4$ |
| 392 | P02787 | R.[+28.031]QQQHLFGSN[+2350.830][+140.178]VTD[+70.089]C[+57.021]SGNFC[+57.021]LFR.[+70.089].S | $HexNAc_4Hex_5Fuc_1NeuAc_2$ 140.1782 |
| 393 | P02787 | R.[+28.031]QQQHLFGSN[+2861.000][+210.267]VTD[+70.089]C[+57.021]SGNFC[+57.021]LFR.[+70.089].S | $HexNAc_5Hex_6NeuAc_3$ 210.2673 |
| 394 | P02787 | R.[+28.031]QQQHLFGSN[+3007.058][+210.267]VTD[+70.089]C[+57.021]SGNFC[+57.021]LFR.[+70.089].S | $HexNAc_5Hex_6Fuc_1NeuAc_3$ 210.2673 |
| 395 | P02790 | K.[+28.031]ALPQPQN[+1913.677][+70.089]VTSLLGC[+57.021]TH.[+70.089].- | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 396 | P02790 | K.[+28.031]ALPQPQN[+2204.772][+140.178]VTSLLGC[+57.021]TH.[+70.089].- | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 397 | P02790 | K.[+28.031]ALPQPQN[+2237.783][+70.089]VTSLLGC[+57.021]TH.[+70.089].- | $HexNAc_4Hex_7NeuAc_1$ 70.0891 |
| 398 | P02790 | K.[+28.031]ALPQPQN[+2569.905][+140.178]VTSLLGC[+57.021]TH.[+70.089].- | $HexNAc_5Hex_6NeuAc_2$ 140.1782 |
| 399 | P02790 | R.[+28.031]C[+57.021]SD[+70.089]GWSFD[+70.089]ATTLD[+70.089]D[+70.089]N[+1501.555]GTMLFFK[+28.031]GE[+70.089]FVWK[+28.031].[+70.089].S | $HexNAc_5Hex_3$ |
| 400 | P02790 | R.[+28.031]C[+57.021]SD[+70.089]GWSFD[+70.089]ATTLD[+70.089]D[+70.089]N[+1913.677][+70.089]GTMLFFK[+28.031].[+70.089].G | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 401 | P02790 | R.[+28.031]C[+57.021]SD[+70.089]GWSFD[+70.089]ATTLD[+70.089]D[+70.089]N[+2204.772][+140.178]GTM[+15.995]LFFK[+28.031].[+70.089].G | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 402 | P02790 | R.[+28.031]C[+57.021]SD[+70.089]GWSFD[+70.089]ATTLD[+70.089]D[+70.089]N[+2204.772][+140.178]GTMLFFK[+28.031].[+70.089].G | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 403 | P02790 | R.[+28.031]C[+57.021]SD[+70.089]GWSFD[+70.089]ATTLD[+70.089]D[+70.089]N[+2350.830][+140.178]GTMLFFK[+28.031].[+70.089].G | $HexNAc_4Hex_5Fuc_1NeuAc_2$ 140.1782 |
| 404 | P02790 | R.[+28.031]N[+1548.545][+70.089]GTGHGN[+2861.000][+210.267]STHHGPE[+70.089]YMR.[+70.089].C | $HexNAc_3Hex_4NeuAc_1$ 70.0891,$HexNAc_5Hex_6NeuAc_3$ 210.2673 |
| 405 | P02790 | R.[+28.031]N[+3007.058][+210.267]GTGHGN[+1403.507]STHHGPE[+70.089]YMR.[+70.089].C | $HexNAc_5Hex_6Fuc_1NeuAc_3$ 210.2673,$HexNAc_3Hex_4Fuc_1$ |
| 406 | P02790 | R.[+28.031]SWPAVGN[+2204.772][+140.178]C[+57.021]SSALR.[+70.089].W | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 407 | P03952 | K.[+28.031]IYPGVD[+70.089]FGGE[+70.089]E[+70.089]LN[+2204.772][+140.178]VTFVK[+28.031].[+70.089].G | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 408 | P03952 | K.[+28.031]LQAPLN[+2204.772][+140.178]YTE[+70.089]FQK[+28.031]PIC[+57.021]LPSK[+28.031].[+70.089].G | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 409 | P03952 | R.[+28.031]GVNFN[+2204.772][+140.178]VSK[+28.031].[+70.089].V | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 410 | P03952 | R.[+28.031]IVGGTN[+1913.677][+70.089]SSWGE[+70.089]WPWQVSLQVK[+28.031].[+70.089].L | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 411 | P03952 | R.[+28.031]IVGGTN[+2204.772][+140.178]SSWGE[+70.089]WPWQVSLQVK[+28.031].[+70.089].L | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 412 | P03952 | R.[+28.031]IYSGILN[+2204.772][+140.178]LSD[+70.089]ITK[+28.031].[+70.089].D | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 413 | P03952 | R.[+28.031]IYSGILN[+2621.984]LSD[+70.089]ITK[+28.031].[+70.089].D | $HexNAc_9Hex_4Fuc_1$ |
| 414 | P04004 | K.[+28.031]N[+1710.598][+70.089]GSLFAFR.[+70.089].G | $HexNAc_3Hex_5NeuAc_1$ 70.0891 |
| 415 | P04004 | K.[+28.031]N[+1913.677][+70.089]GSLFAFR.[+70.089].G | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 416 | P04004 | K.[+28.031]N[+2204.772][+140.178]GSLFAFR.[+70.089].G | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 417 | P04004 | K.[+28.031]NN[+2861.000][+210.267]ATVHE[+70.089]QVGGPSLTSD[+70.089]LQAQSK[+28.031].[+70.089].G | $HexNAc_5Hex_6NeuAc_3$ 210.2673 |
| 418 | P04004 | K.[+28.031]NN[+3007.058][+210.267]ATVHE[+70.089]QVGGPSLTSD[+70.089]LQAQSK[+28.031].[+70.089].G | $HexNAc_5Hex_6Fuc_1NeuAc_3$ 210.2673 |
| 419 | P04004 | R.[+28.031]N[+2204.772][+140.178]ISD[+70.089]GFD[+70.089]GIPD[+70.089]NVD[+70.089]AALALPAHSYSGR.[+70.089].E | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 420 | P04004 | R.[+28.031]N[+3007.058][+210.267]ISD[+70.089]GFD[+70.089]GIPD[+70.089]NVD[+70.089]AALALPAHSYSGR.[+70.089].E | $HexNAc_5Hex_6Fuc_1NeuAc_3$ 210.2673 |
| 421 | P04070 | K.[+28.031]E[+70.089]VFVHPN[+2204.772][+140.178]YSK[+28.031].[+70.089].S | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 422 | P04114 | K.[+28.031]E[+70.089]LC[+57.021]TISHIFIPAM[+15.995]GN[+1378.476]ITYD[+70.089]FSFK[+28.031].[+70.089].S | $HexNAc_2Hex_6$ |
| 423 | P04114 | K.[+28.031]E[+70.089]LC[+57.021]TISHIFIPAM[+15.995]GN[+1540.529]ITYD[+70.089]FSFK[+28.031].[+70.089].S | $HexNAc_2Hex_7$ |
| 424 | P04114 | K.[+28.031]E[+70.089]LC[+57.021]TISHIFIPAM[+15.995]GN[+1702.581]ITYD[+70.089]FSFK[+28.031].[+70.089].S | $HexNAc_2Hex_8$ |
| 425 | P04114 | K.[+28.031]E[+70.089]LC[+57.021]TISHIFIPAMGN[+1540.529]ITYD[+70.089]FSFK[+28.031].[+70.089].S | $HexNAc_2Hex_7$ |

| | | | |
|---|---|---|---|
| 426 | P04114 | K.[+28.031]FVE[+70.089]GSHN[+1257.449]STVSLTTK[+28.031].[+70.089].N | $HexNAc_3Hex_4$ |
| 427 | P04114 | K.[+28.031]FVE[+70.089]GSHN[+1419.502]STVSLTTK[+28.031].[+70.089].N | $HexNAc_3Hex_5$ |
| 428 | P04114 | K.[+28.031]FVE[+70.089]GSHN[+1548.545][+70.089]STVSLTTK[+28.031].[+70.089].N | $HexNAc_3Hex_4NeuAc_1$ 70.0891 |
| 429 | P04114 | K.[+28.031]FVE[+70.089]GSHN[+1622.582]STVSLTTK[+28.031].[+70.089].N | $HexNAc_4Hex_5$ |
| 430 | P04114 | K.[+28.031]FVE[+70.089]GSHN[+1710.598][+70.089]STVSLTTK[+28.031].[+70.089].N | $HexNAc_3Hex_5NeuAc_1$ 70.0891 |
| 431 | P04114 | K.[+28.031]FVE[+70.089]GSHN[+1751.624][+70.089]STVSLTTK[+28.031].[+70.089].N | $HexNAc_4Hex_4NeuAc_1$ 70.0891 |
| 432 | P04114 | K.[+28.031]FVE[+70.089]GSHN[+1913.677][+70.089]STVSLTTK[+28.031].[+70.089].N | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 433 | P04114 | K.[+28.031]FVE[+70.089]GSHN[+2204.772][+140.178]STVSLTTK[+28.031].[+70.089].N | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 434 | P04114 | K.[+28.031]IQSPLFTLD[+70.089]ANAD[+70.089]IGN[+2204.772][+140.178]GTTSANE[+70.089]AGIAASITAK[+28.031].[+70.089].G | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 435 | P04114 | K.[+28.031]QVLFLD[+70.089]TVYGN[+1216.423]C[+57.021]STHFTVK[+28.031].[+70.089].T | $HexNAc_2Hex_5$ |
| 436 | P04114 | K.[+28.031]QVLFLD[+70.089]TVYGN[+1540.529]C[+57.021]STHFTVK[+28.031].[+70.089].T | $HexNAc_2Hex_7$ |
| 437 | P04114 | K.[+28.031]QVLFLD[+70.089]TVYGN[+1702.581]C[+57.021]STHFTVK[+28.031].[+70.089].T | $HexNAc_2Hex_8$ |
| 438 | P04114 | K.[+28.031]QVLFLD[+70.089]TVYGN[+1864.634]C[+57.021]STHFTVK[+28.031].[+70.089].T | $HexNAc_2Hex_9$ |
| 439 | P04114 | K.[+28.031]SSVITLNTNAE[+70.089]LFN[+1864.634]QSD[+70.089]IVAHLLSSSSSVID[+70.089]ALQYK[+28.031].[+70.089].L | $HexNAc_2Hex_9$ |
| 440 | P04114 | K.[+28.031]VHN[+1913.677][+70.089]GSE[+70.089]ILFSYFQD[+70.089]LVITLPFE[+70.089]LR.[+70.089].K | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 441 | P04114 | K.[+28.031]VHN[+2204.772][+140.178]GSE[+70.089]ILFSYFQD[+70.089]LVITLPFE[+70.089]LR.[+70.089].K | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 442 | P04114 | K.[+28.031]YD[+70.089]FN[+1913.677][+70.089]SSM[+15.995]LYSTAK[+28.031].[+70.089].G | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 443 | P04114 | K.[+28.031]YD[+70.089]FN[+2204.772][+140.178]SSM[+15.995]LYSTAK[+28.031].[+70.089].G | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 444 | P04114 | R.[+28.031]FE[+70.089]VD[+70.089]SPVYN[+1913.677][+70.089]ATWSASLK[+28.031].[+70.089].N | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 445 | P04114 | R.[+28.031]FE[+70.089]VD[+70.089]SPVYN[+2204.772][+140.178]ATWSASLK[+28.031].[+70.089].N | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 446 | P04114 | R.[+28.031]VNQNLVYE[+70.089]SGSLN[+2204.772][+140.178]FSK[+28.031].[+70.089].L | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 447 | P04196 | R.[+28.031]HSHNN[+2204.772][+140.178]NSSD[+70.089]LHPHK[+28.031].[+70.089].H | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 448 | P04196 | R.[+28.031]HSHNNN[+2204.772][+140.178]SSD[+70.089]LHPHK[+28.031].[+70.089].H | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 449 | P04196 | R.[+28.031]VE[+70.089]N[+2204.772][+140.178]TTVYYLVLD[+70.089]VQE[+70.089]SD[+70.089]C[+57.021]SVLSR.[+70.089].K | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 450 | P04196 | R.[+28.031]VID[+70.089]FN[+1913.677][+70.089]C[+57.021]TTSSVSSALANTK[+28.031].[+70.089].D | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 451 | P04196 | R.[+28.031]VID[+70.089]FN[+2012.745]C[+57.021]TTSSVSSALANTK[+28.031].[+70.089].D | $HexNAc_6Hex_4Fuc_1$ |
| 452 | P04196 | R.[+28.031]VID[+70.089]FN[+2204.772][+140.178]C[+57.021]TTSSVSSALANTK[+28.031].[+70.089].D | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 453 | P04217 | R.[+28.031]FQSPAGTE[+70.089]ALFE[+70.089]LHN[+1548.545][+70.089]ISVAD[+70.089]SAN[+2861.000][+210.267]YSC[+57.021]VYVD[+70.089]LK[+28.031]PPFGGSAPSE[+70.089]R.[+70.089].L | $HexNAc_3Hex_4NeuAc_1$ 70.0891,$HexNAc_5Hex_6NeuAc_3$ 210.2673 |
| 454 | P04217 | R.[+28.031]FQSPAGTE[+70.089]ALFE[+70.089]LHN[+2075.730][+70.089]ISVAD[+70.089]SAN[+2432.884][+140.178]YSC[+57.021]VYVD[+70.089]LK[+28.031]PPFGGSAPSE[+70.089]R.[+70.089].L | $HexNAc_4Hex_6NeuAc_1$ 70.0891,$HexNAc_6Hex_3Fuc_1NeuAc_2$ 140.1782 |
| 455 | P04217 | R.[+28.031]FQSPAGTE[+70.089]ALFE[+70.089]LHN[+2100.761][+70.089]ISVAD[+70.089]SAN[+1702.581]YSC[+57.021]VYVD[+70.089]LK[+28.031]PPFGGSAPSE[+70.089]R.[+70.089].L | $HexNAc_5Hex_4Fuc_1NeuAc_1$ 70.0891,$HexNAc_2Hex_8$ |
| 456 | P04217 | R.[+28.031]FQSPAGTE[+70.089]ALFE[+70.089]LHN[+2407.852][+140.178]ISVAD[+70.089]SAN[+2069.767]YSC[+57.021]VYVD[+70.089]LK[+28.031]PPFGGSAPSE[+70.089]R.[+70.089].L | $HexNAc_5Hex_5NeuAc_2$ 140.1782,$HexNAc_7Hex_4$ |
| 457 | P04217 | R.[+28.031]FQSPAGTE[+70.089]ALFE[+70.089]LHN[+2861.000][+210.267]ISVAD[+70.089]SAN[+1548.545][+70.089]YSC[+57.021]VYVD[+70.089]LK[+28.031]PPFGGSAPSE[+70.089]R.[+70.089].L | $HexNAc_5Hex_6NeuAc_3$ 210.2673,$HexNAc_3Hex_4NeuAc_1$ 70.0891 |
| 458 | P04217 | R.[+28.031]FQSPAGTE[+70.089]ALFE[+70.089]LHN[+3517.228][+280.356]ISVAD[+70.089]SAN[+892.317]YSC[+57.021]VYVD[+70.089]LK[+28.031]PPFGGSAPSE[+70.089]R.[+70.089].L | $HexNAc_6Hex_7NeuAc_4$ 280.3564,$HexNAc_2Hex_3$ |
| 459 | P05090 | R.[+28.031]AD[+70.089]GTVNQIE[+70.089]GE[+70.089]ATPVN[+2350.830][+140.178]LTE[+70.089]PAK[+28.031].[+70.089].L | $HexNAc_4Hex_5Fuc_1NeuAc_2$ 140.1782 |
| 460 | P05543 | K.[+28.031]TLYE[+70.089]TE[+70.089]VFSTD[+70.089]FSN[+2204.772][+140.178]ISAAK[+28.031].[+70.089].Q | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 461 | P05543 | K.[+28.031]VTAC[+57.021]HSSQPN[+2204.772][+140.178]ATLYK[+28.031].[+70.089].M | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |

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|---|---|---|---|
| 462 | P05546 | K.[+28.031]N[+2204.772][+140.178]LSMPLLPAD[+70.089]FHK[+28.031].[+70.089].E | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 463 | P07357 | R.[+28.031]GGSSGWSGGLAQN[+2204.772][+140.178]R.[+70.089].S | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 464 | P08185 | R.[+28.031]AQLLQGLGFN[+2204.772][+140.178]LTE[+70.089]R.[+70.089].S | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 465 | P08603 | K.[+28.031]IPC[+57.021]SQPPQIE[+70.089]HGTIN[+2204.772][+140.178]SSR.[+70.089].S | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 466 | P08603 | K.[+28.031]MD[+70.089]GASN[+2204.772][+140.178]VTC[+57.021]INSR.[+70.089].W | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 467 | P08603 | R.[+28.031]ISE[+70.089]E[+70.089]N[+2204.772][+140.178]E[+70.089]TTC[+57.021]YMGK[+28.031].[+70.089].W | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 468 | P0C0L4 | K.[+28.031]N[+2204.772][+140.178]TTC[+57.021]QD[+70.089]LQIE[+70.089]VTVK[+28.031].[+70.089].G | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 469 | P0C0L4 | R.[+28.031]FSD[+70.089]GLE[+70.089]SN[+1864.634]SSTQFE[+70.089]VK[+28.031].[+70.089].K | $HexNAc_2Hex_9$ |
| 470 | P0C0L4 | R.[+28.031]GLN[+2204.772][+140.178]VTLSSTGR.[+70.089].N | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 471 | P0DOX2 | K.[+28.031]TPLTAN[+2204.772][+140.178]ITK[+28.031].[+70.089].S | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 472 | P0DOX2 | K.[+28.031]VFPLSLD[+70.089]STPQD[+70.089]GNVVVAC[+57.021]LVQGFFPQE[+70.089]PLSVTWSE[+70.089]SGQN[+2059.735][+70.089]VTAR.[+70.089].N | $HexNAc_4Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 473 | P0DOX2 | R.[+28.031]LAGK[+28.031]PTHIN[+1913.677][+70.089]VSVVM[+15.995]AE[+70.089]AD[+70.089]GTC[+57.021]Y.[+70.089].- | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 474 | P0DOX5 | K.[+28.031]PRE[+70.089]E[+70.089]QYN[+1460.529]STYR.[+70.089].V | $HexNAc_4Hex_4$ |
| 475 | P0DOX5 | K.[+28.031]PRE[+70.089]E[+70.089]QYN[+1622.582]STYR.[+70.089].V | $HexNAc_4Hex_5$ |
| 476 | P0DOX5 | K.[+28.031]TK[+28.031]PRE[+70.089]E[+70.089]QYN[+1444.534]STYR.[+70.089].V | $HexNAc_4Hex_3Fuc_1$ |
| 477 | P0DOX5 | K.[+28.031]TK[+28.031]PRE[+70.089]E[+70.089]QYN[+1622.582]STYR.[+70.089].V | $HexNAc_4Hex_5$ |
| 478 | P0DOX5 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1241.454]STYR.[+70.089].V | $HexNAc_3Hex_3Fuc_1$ |
| 479 | P0DOX5 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1298.476]STYR.[+70.089].V | $HexNAc_4Hex_3$ |
| 480 | P0DOX5 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1403.507]STYR.[+70.089].V | $HexNAc_3Hex_4Fuc_1$ |
| 481 | P0DOX5 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1444.534]STYR.[+70.089].V | $HexNAc_4Hex_3Fuc_1$ |
| 482 | P0DOX5 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1460.529]STYR.[+70.089].V | $HexNAc_4Hex_4$ |
| 483 | P0DOX5 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1501.555]STYR.[+70.089].V | $HexNAc_5Hex_3$ |
| 484 | P0DOX5 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1606.587]STYR.[+70.089].V | $HexNAc_4Hex_4Fuc_1$ |
| 485 | P0DOX5 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1622.582]STYR.[+70.089].V | $HexNAc_4Hex_5$ |
| 486 | P0DOX5 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1647.613]STYR.[+70.089].V | $HexNAc_5Hex_3Fuc_1$ |
| 487 | P0DOX5 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1768.640]STYR.[+70.089].V | $HexNAc_4Hex_5Fuc_1$ |
| 488 | P0DOX5 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1809.666]STYR.[+70.089].V | $HexNAc_5Hex_4Fuc_1$ |
| 489 | P0DOX5 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1825.661]STYR.[+70.089].V | $HexNAc_5Hex_5$ |
| 490 | P0DOX5 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1897.682][+70.089]STYR.[+70.089].V | $HexNAc_4Hex_4Fuc_1NeuAc_1$ 70.0891 |
| 491 | P0DOX5 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1913.677][+70.089]STYR.[+70.089].V | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 492 | P0DOX5 | R.[+28.031]E[+70.089]E[+70.089]QYN[+1971.719]STYR.[+70.089].V | $HexNAc_5Hex_5Fuc_1$ |
| 493 | P0DOX5 | R.[+28.031]E[+70.089]E[+70.089]QYN[+2059.735][+70.089]STYR.[+70.089].V | $HexNAc_4Hex_5Fuc_1NeuAc_1$ 70.0891 |
| 494 | P0DOX5 | R.[+28.031]E[+70.089]E[+70.089]QYN[+2100.761][+70.089]STYR.[+70.089].V | $HexNAc_5Hex_4Fuc_1NeuAc_1$ 70.0891 |
| 495 | P10643 | K.[+28.031]INND[+70.089]FNYE[+70.089]FYN[+1216.423]STWSYVK[+28.031].[+70.089].H | $HexNAc_2Hex_5$ |
| 496 | P10909 | K.[+28.031]MLN[+2204.772][+140.178]TSSLLE[+70.089]QLNE[+70.089]QFNWVSR.[+70.089].L | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 497 | P10909 | K.[+28.031]MLN[+2569.905][+140.178]TSSLLE[+70.089]QLNE[+70.089]QFNWVSR.[+70.089].L | $HexNAc_5Hex_6NeuAc_2$ 140.1782 |
| 498 | P10909 | K.[+28.031]MLN[+2861.000][+210.267]TSSLLE[+70.089]QLNE[+70.089]QFNWVSR.[+70.089].L | $HexNAc_5Hex_6NeuAc_3$ 210.2673 |
| 499 | P13056 | R.[+28.031]LM[+15.995]N[+3226.132][+210.267]ATITE[+70.089]E[+70.089]LFFK[+28.031].[+70.089].G | $HexNAc_6Hex_7NeuAc_3$ 210.2673 |
| 500 | P13056 | R.[+28.031]LMN[+3284.174][+140.178]ATITE[+70.089]E[+70.089]LFFK[+28.031].[+70.089].G | $HexNAc_7Hex_7Fuc_1NeuAc_2$ 140.1782 |
| 501 | P19823 | K.[+28.031]GAFISN[+1913.677][+70.089]FSMTVD[+70.089]GK[+28.031].[+70.089].T | $HexNAc_4Hex_5NeuAc_1$ 70.0891 |
| 502 | P19823 | K.[+28.031]GAFISN[+2204.772][+140.178]FSM[+15.995]TVD[+70.089]GK[+28.031].[+70.089].T | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 503 | P19823 | K.[+28.031]GAFISN[+2204.772][+140.178]FSMTVD[+70.089]GK[+28.031].[+70.089].T | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 504 | P19827 | K.[+28.031]IC[+57.021]D[+70.089]LLVANNHFAHFFAPQN[+2204.772][+140.178]LTNMNK[+28.031].[+70.089].N | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 505 | P19827 | R.[+28.031]AN[+2204.772][+140.178]LSSQALQMSLD[+70.089]YGFVTPLTSMSIR.[+70.089].G | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 506 | P19827 | R.[+28.031]AN[+2350.830][+140.178]LSSQALQMSLD[+70.089]YGFVTPLTSMSIR.[+70.089].G | $HexNAc_4Hex_5Fuc_1NeuAc_2$ 140.1782 |

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|---|---|---|---|
| 507 | P22792 | R.[+28.031]AFGSNPN[+2204.772][+140.178]LTK[+28.031].[+70.089].V | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 508 | P22792 | R.[+28.031]AFGSNPN[+2861.000][+210.267]LTK[+28.031].[+70.089].V | $HexNAc_5Hex_6NeuAc_3$ 210.2673 |
| 509 | P25311 | R.[+28.031]FGC[+57.021]E[+70.089]IE[+70.089]NN[+2204.772][+140.178]R.[+70.089].S | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 510 | P27169 | K.[+28.031]VTQVYAE[+70.089]N[+2204.772][+140.178]GTVLQGSTVASVYK[+28.031].[+70.089].G | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 511 | P27169 | K.[+28.031]VTQVYAE[+70.089]N[+3007.058][+210.267]GTVLQGSTVASVYK[+28.031].[+70.089].G | $HexNAc_5Hex_6Fuc_1NeuAc_3$ 210.2673 |
| 512 | P29622 | K.[+28.031]FLN[+2204.772][+140.178]D[+70.089]TMAVYE[+70.089]AK[+28.031].[+70.089].L | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 513 | P43652 | R.[+28.031]D[+70.089]IE[+70.089]NFN[+2204.772][+140.178]STQK[+28.031].[+70.089].F | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 514 | P43652 | R.[+28.031]YAE[+70.089]D[+70.089]K[+28.031]FN[+2204.772][+140.178]E[+70.089]TTE[+70.089]K[+28.031].[+70.089].S | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 515 | Q06033 | K.[+28.031]NAHGE[+70.089]E[+70.089]K[+28.031]E[+70.089]N[+2204.772][+140.178]LTAR.[+70.089].A | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 516 | Q06033 | K.[+28.031]TAFITN[+2204.772][+140.178]FTLTID[+70.089]GVTYPGNVK[+28.031].[+70.089].E | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 517 | Q14624 | K.[+28.031]AFITN[+2204.772][+140.178]FSM[+15.995]IID[+70.089]GM[+15.995]TYPGIIK[+28.031].[+70.089].E | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 518 | Q14624 | K.[+28.031]AFITN[+2204.772][+140.178]FSMIID[+70.089]GM[+15.995]TYPGIIK[+28.031].[+70.089].E | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 519 | Q14624 | K.[+28.031]AFITN[+2204.772][+140.178]FSMIID[+70.089]GMTYPGIIK[+28.031].[+70.089].E | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 520 | Q14624 | K.[+28.031]HLQMD[+70.089]IHIFE[+70.089]PQGISFLE[+70.089]TE[+70.089]STFMTNQLVD[+70.089]ALTTWQN[+2018.708][+70.089]K[+28.031]TK[+28.031].[+70.089].A | $HexNAc_3Hex_6Fuc_1NeuAc_1$ 70.0891 |
| 521 | Q14624 | K.[+28.031]HLQMD[+70.089]IHIFE[+70.089]PQGISFLE[+70.089]TE[+70.089]STFMTNQLVD[+70.089]ALTTWQN[+2204.772][+140.178]K[+28.031].[+70.089].T | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 522 | Q14624 | K.[+28.031]K[+28.031]AFITN[+2204.772][+140.178]FSMIID[+70.089]GMTYPGIIK[+28.031].[+70.089].E | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 523 | Q14624 | K.[+28.031]LPTQN[+2204.772][+140.178]ITFQTE[+70.089]SSVAE[+70.089]QE[+70.089]AE[+70.089]FQSPK[+28.031].[+70.089].Y | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 524 | Q14624 | K.[+28.031]LPTQN[+2861.000][+210.267]ITFQTE[+70.089]SSVAE[+70.089]QE[+70.089]AE[+70.089]FQSPK[+28.031].[+70.089].Y | $HexNAc_5Hex_6NeuAc_3$ 210.2673 |
| 525 | Q5T5P2 | R.[+28.031]SMVVPGN[+2481.889][+70.089]ATIPR.[+70.089].D | $HexNAc_6Hex_6NeuAc_1$ 70.0891 |
| 526 | Q5VTT2 | K.[+28.031]K[+28.031]LC[+57.021]N[+1809.666]STYR.[+70.089].R | $HexNAc_5Hex_4Fuc_1$ |
| 527 | Q5VTT2 | K.[+28.031]VK[+28.031]K[+28.031]LC[+57.021]N[+1704.635]STYR.[+70.089].R | $HexNAc_6Hex_3$ |
| 528 | Q5VTT2 | K.[+28.031]VK[+28.031]K[+28.031]LC[+57.021]N[+1850.693]STYR.[+70.089].R | $HexNAc_6Hex_3Fuc_1$ |
| 529 | Q5VTT2 | K.[+28.031]VK[+28.031]K[+28.031]LC[+57.021]N[+1866.688]STYR.[+70.089].R | $HexNAc_6Hex_4$ |
| 530 | Q5VTT2 | K.[+28.031]VK[+28.031]K[+28.031]LC[+57.021]N[+2012.745]STYR.[+70.089].R | $HexNAc_6Hex_4Fuc_1$ |
| 531 | Q5VTT2 | K.[+28.031]VK[+28.031]K[+28.031]LC[+57.021]N[+2053.772]STYR.[+70.089].R | $HexNAc_7Hex_3Fuc_1$ |
| 532 | Q5VTT2 | K.[+28.031]VK[+28.031]K[+28.031]LC[+57.021]N[+2141.788][+70.089]STYR.[+70.089].R | $HexNAc_6Hex_3Fuc_1NeuAc_1$ 70.0891 |
| 533 | Q5VTT2 | K.[+28.031]VK[+28.031]K[+28.031]LC[+57.021]N[+2157.783][+70.089]STYR.[+70.089].R | $HexNAc_6Hex_4NeuAc_1$ 70.0891 |
| 534 | Q6ZRX8 | R.[+28.031]GVHILTPE[+70.089]PGN[+406.159]VTIRGVHNLTPE[+70.089]PGNVTE[+70.089]R.[+70.089].G | $HexNAc_2$ |
| 535 | Q6ZRX8 | R.[+28.031]GVHILTPE[+70.089]PGN[+714.269]VTIRGVHN[+349.137]LTPE[+70.089]PGNVTE[+70.089]R.[+70.089].G | $HexNAc_2Hex_1Fuc_1$,$HexNAc_1Fuc_1$ |
| 536 | Q6ZRX8 | R.[+28.031]GVHN[+349.137]LTPE[+70.089]PGNVTE[+70.089]RGVHNLTPE[+70.089]PGNVTE[+70.089]R.[+70.089].G | $HexNAc_1Fuc_1$ |
| 537 | Q6ZRX8 | R.[+28.031]GVHNLTPE[+70.089]PGN[+568.212]VTE[+70.089]RGVHN[+406.159]LTPE[+70.089]PGNVTE[+70.089]R.[+70.089].G | $HexNAc_2Hex_1$,$HexNAc_2$ |
| 538 | Q86YM7 | K.[+28.031]AIINSTITPN[+1866.688]MTFTK[+28.031].[+70.089].T | $HexNAc_6Hex_4$ |
| 539 | Q86YM7 | K.[+28.031]AIINSTITPN[+1907.714]MTFTK[+28.031].[+70.089].T | $HexNAc_7Hex_3$ |
| 540 | Q86YM7 | K.[+28.031]AIINSTITPN[+2028.740]MTFTK[+28.031].[+70.089].T | $HexNAc_6Hex_5$ |
| 541 | Q86YM7 | K.[+28.031]AIINSTITPN[+2069.767]MTFTK[+28.031].[+70.089].T | $HexNAc_7Hex_4$ |
| 542 | Q86YM7 | K.[+28.031]AIINSTITPN[+2190.793]MTFTK[+28.031].[+70.089].T | $HexNAc_6Hex_6$ |
| 543 | Q86YM7 | K.[+28.031]AIINSTITPN[+2215.825]M[+15.995]TFTK[+28.031].[+70.089].T | $HexNAc_7Hex_4Fuc_1$ |
| 544 | Q86YM7 | K.[+28.031]AIINSTITPN[+2352.846]M[+15.995]TFTK[+28.031].[+70.089].T | $HexNAc_6Hex_7$ |
| 545 | Q86YM7 | K.[+28.031]AIINSTITPN[+2352.846]MTFTK[+28.031].[+70.089].T | $HexNAc_6Hex_7$ |
| 546 | Q8WYA0 | K.[+28.031]PSGN[+1540.529]ATD[+70.089]MSTFR.[+70.089].Q | $HexNAc_2Hex_7$ |
| 547 | Q8WYA0 | K.[+28.031]PSGN[+1727.613]ATD[+70.089]M[+15.995]STFR.[+70.089].Q | $HexNAc_3Hex_6Fuc_1$ |
| 548 | Q96LB4 | K.[+28.031]IM[+15.995]GSQNN[+2432.884][+140.178]LSD[+70.089]E[+70.089]IE[+70.089]E[+70.089]QTLGK[+28.031].[+70.089].I | $HexNAc_6Hex_3Fuc_1NeuAc_2$ 140.1782 |

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|---|---|---|---|
| 549 | Q96PD5 | R.[+28.031]GFGVAIVGN[+2204.772][+140.178]YTAALPTE[+70.089]AALR.[+70.089].T | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 550 | Q96PD5 | R.[+28.031]LE[+70.089]PVHLQLQC[+57.021]MSQE[+70.089]QLAQVAAN[+2204.772][+140.178]ATK[+28.031].[+70.089].E | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 551 | Q96PD5 | R.[+28.031]LYHFLLGAWSLN[+2204.772][+140.178]ATE[+70.089]LD[+70.089]PC[+57.021]PLSPE[+70.089]LLGLTK[+28.031].[+70.089].E | $HexNAc_4Hex_5NeuAc_2$ 140.1782 |
| 552 | Q96PD5 | R.[+28.031]LYHFLLGAWSLN[+2278.809][+70.089]ATE[+70.089]LD[+70.089]PC[+57.021]PLSPE[+70.089]LLGLTK[+28.031].[+70.089].E | $HexNAc_5Hex_6NeuAc_1$ 70.0891 |
| 553 | Q96PD5 | R.[+28.031]LYHFLLGAWSLN[+2350.830][+140.178]ATE[+70.089]LD[+70.089]PC[+57.021]PLSPE[+70.089]LLGLTK[+28.031].[+70.089].E | $HexNAc_4Hex_5Fuc_1NeuAc_2$ 140.1782 |

[C] The number means the UniProt ID in UniProt .

**Table S6** The N-glycan database of IgG.

| No | Glycan composition |
|---|---|
| 1 | $HexNAc_{10}Hex_{11}$ @ NGlycan \| common1 |
| 2 | $HexNAc_2Hex_{10}$ @ NGlycan \| common1 |
| 3 | $HexNAc_2Hex_{11}$ @ NGlycan \| common1 |
| 4 | $HexNAc_2Hex_{12}$ @ NGlycan \| common1 |
| 5 | $HexNAc_2Hex_3$ @ NGlycan \| common1 |
| 6 | $HexNAc_2Hex_3Fuc_1$ @ NGlycan \| common1 |
| 7 | $HexNAc_2Hex_4$ @ NGlycan \| common1 |
| 8 | $HexNAc_2Hex_5$ @ NGlycan \| common1 |
| 9 | $HexNAc_2Hex_6$ @ NGlycan \| common1 |
| 10 | $HexNAc_2Hex_7$ @ NGlycan \| common1 |
| 11 | $HexNAc_2Hex_8$ @ NGlycan \| common1 |
| 12 | $HexNAc_2Hex_9$ @ NGlycan \| common1 |
| 13 | $HexNAc_3Hex_3$ @ NGlycan \| common1 |
| 14 | $HexNAc_3Hex_3Fuc_1$ @ NGlycan \| common1 |
| 15 | $HexNAc_3Hex_3Fuc_1NeuAc_1$ @ NGlycan \| common1 |
| 16 | $HexNAc_3Hex_3Fuc_1NeuAc_2$ @ NGlycan \| common1 |
| 17 | $HexNAc_3Hex_3NeuAc_1$ @ NGlycan \| common1 |
| 18 | $HexNAc_3Hex_4$ @ NGlycan \| common1 |
| 19 | $HexNAc_3Hex_4Fuc_1$ @ NGlycan \| common1 |
| 20 | $HexNAc_3Hex_4Fuc_1NeuAc_1$ @ NGlycan \| common1 |
| 21 | $HexNAc_3Hex_4Fuc_2$ @ NGlycan \| common1 |
| 22 | $HexNAc_3Hex_4NeuAc_1$ @ NGlycan \| common1 |
| 23 | $HexNAc_3Hex_4NeuAc_2$ @ NGlycan \| common1 |
| 24 | $HexNAc_3Hex_5$ @ NGlycan \| common1 |
| 25 | $HexNAc_3Hex_5Fuc_1$ @ NGlycan \| common1 |
| 26 | $HexNAc_3Hex_5Fuc_1NeuAc_1$ @ NGlycan \| common1 |
| 27 | $HexNAc_3Hex_5NeuAc_1$ @ NGlycan \| common1 |
| 28 | $HexNAc_3Hex_5NeuAc_2$ @ NGlycan \| common1 |
| 29 | $HexNAc_3Hex_6$ @ NGlycan \| common1 |
| 30 | $HexNAc_3Hex_6Fuc_1$ @ NGlycan \| common1 |
| 31 | $HexNAc_3Hex_6Fuc_1NeuAc_1$ @ NGlycan \| common1 |
| 32 | $HexNAc_3Hex_6NeuAc_1$ @ NGlycan \| common1 |

| | |
|---|---|
| 33 | $HexNAc_3Hex_6NeuAc_2$ @ NGlycan \| common1 |
| 34 | $HexNAc_3Hex_7Fuc_1$ @ NGlycan \| common1 |
| 35 | $HexNAc_3Hex_7Fuc_1NeuAc_1$ @ NGlycan \| common1 |
| 36 | $HexNAc_3Hex_7NeuAc_1$ @ NGlycan \| common1 |
| 37 | $HexNAc_3Hex_7NeuAc_2$ @ NGlycan \| common1 |
| 38 | $HexNAc_3Hex_8NeuAc_1$ @ NGlycan \| common1 |
| 39 | $HexNAc_3Hex_8NeuAc_2$ @ NGlycan \| common1 |
| 40 | $HexNAc_3Hex_9Fuc_2$ @ NGlycan \| common1 |
| 41 | $HexNAc_4Hex_{11}Fuc_1NeuAc_4$ @ NGlycan \| common1 |
| 42 | $HexNAc_4Hex_{11}NeuAc_1$ @ NGlycan \| common1 |
| 43 | $HexNAc_4Hex_{14}Fuc_1NeuAc_1$ @ NGlycan \| common1 |
| 44 | $HexNAc_4Hex_{14}Fuc_3NeuAc_1$ @ NGlycan \| common1 |
| 45 | $HexNAc_4Hex_{14}NeuAc_1$ @ NGlycan \| common1 |
| 46 | $HexNAc_4Hex_3$ @ NGlycan \| common1 |
| 47 | $HexNAc_4Hex_3Fuc_1$ @ NGlycan \| common1 |
| 48 | $HexNAc_4Hex_3Fuc_1NeuAc_1$ @ NGlycan \| common1 |
| 49 | $HexNAc_4Hex_3Fuc_2$ @ NGlycan \| common1 |
| 50 | $HexNAc_4Hex_3Fuc_3$ @ NGlycan \| common1 |
| 51 | $HexNAc_4Hex_3NeuAc_1$ @ NGlycan \| common1 |
| 52 | $HexNAc_4Hex_4$ @ NGlycan \| common1 |
| 53 | $HexNAc_4Hex_4Fuc_1$ @ NGlycan \| common1 |
| 54 | $HexNAc_4Hex_4Fuc_1NeuAc_1$ @ NGlycan \| common1 |
| 55 | $HexNAc_4Hex_4Fuc_3$ @ NGlycan \| common1 |
| 56 | $HexNAc_4Hex_4NeuAc_1$ @ NGlycan \| common1 |
| 57 | $HexNAc_4Hex_4NeuAc_2$ @ NGlycan \| common1 |
| 58 | $HexNAc_4Hex_5$ @ NGlycan \| common1 |
| 59 | $HexNAc_4Hex_5Fuc_1$ @ NGlycan \| common1 |
| 60 | $HexNAc_4Hex_5Fuc_1NeuAc_1$ @ NGlycan \| common1 |
| 61 | $HexNAc_4Hex_5Fuc_1NeuAc_2$ @ NGlycan \| common1 |
| 62 | $HexNAc_4Hex_5Fuc_2$ @ NGlycan \| common1 |
| 63 | $HexNAc_4Hex_5Fuc_2NeuAc_2$ @ NGlycan \| common1 |
| 64 | $HexNAc_4Hex_5Fuc_3$ @ NGlycan \| common1 |
| 65 | $HexNAc_4Hex_5NeuAc_1$ @ NGlycan \| common1 |
| 66 | $HexNAc_4Hex_5NeuAc_2$ @ NGlycan \| common1 |
| 67 | $HexNAc_4Hex_6$ @ NGlycan \| common1 |
| 68 | $HexNAc_4Hex_6Fuc_1$ @ NGlycan \| common1 |
| 69 | $HexNAc_4Hex_6Fuc_1NeuAc_1$ @ NGlycan \| common1 |
| 70 | $HexNAc_4Hex_6Fuc_1NeuAc_2$ @ NGlycan \| common1 |
| 71 | $HexNAc_4Hex_6Fuc_3NeuAc_1$ @ NGlycan \| common1 |
| 72 | $HexNAc_4Hex_6NeuAc_1$ @ NGlycan \| common1 |
| 73 | $HexNAc_4Hex_6NeuAc_2$ @ NGlycan \| common1 |
| 74 | $HexNAc_4Hex_7$ @ NGlycan \| common1 |

| | |
|---|---|
| 75 | $HexNAc_4Hex_7NeuAc_1$ @ NGlycan \| common1 |
| 76 | $HexNAc_5Hex_{10}NeuAc_1$ @ NGlycan \| common1 |
| 77 | $HexNAc_5Hex_{10}NeuAc_2$ @ NGlycan \| common1 |
| 78 | $HexNAc_5Hex_{11}Fuc_1NeuAc_4$ @ NGlycan \| common1 |
| 79 | $HexNAc_5Hex_{13}Fuc_3NeuAc_1$ @ NGlycan \| common1 |
| 80 | $HexNAc_5Hex_3$ @ NGlycan \| common1 |
| 81 | $HexNAc_5Hex_3Fuc_1$ @ NGlycan \| common1 |
| 82 | $HexNAc_5Hex_4$ @ NGlycan \| common1 |
| 83 | $HexNAc_5Hex_4Fuc_1$ @ NGlycan \| common1 |
| 84 | $HexNAc_5Hex_4Fuc_1NeuAc_1$ @ NGlycan \| common1 |
| 85 | $HexNAc_5Hex_4Fuc_2$ @ NGlycan \| common1 |
| 86 | $HexNAc_5Hex_4Fuc_2NeuAc_1$ @ NGlycan \| common1 |
| 87 | $HexNAc_5Hex_4Fuc_2NeuAc_2$ @ NGlycan \| common1 |
| 88 | $HexNAc_5Hex_4NeuAc_1$ @ NGlycan \| common1 |
| 89 | $HexNAc_5Hex_4NeuAc_2$ @ NGlycan \| common1 |
| 90 | $HexNAc_5Hex_5$ @ NGlycan \| common1 |
| 91 | $HexNAc_5Hex_5Fuc_1$ @ NGlycan \| common1 |
| 92 | $HexNAc_5Hex_5Fuc_1NeuAc_1$ @ NGlycan \| common1 |
| 93 | $HexNAc_5Hex_5Fuc_1NeuAc_2$ @ NGlycan \| common1 |
| 94 | $HexNAc_5Hex_5Fuc_2$ @ NGlycan \| common1 |
| 95 | $HexNAc_5Hex_5Fuc_2NeuAc_1$ @ NGlycan \| common1 |
| 96 | $HexNAc_5Hex_5NeuAc_1$ @ NGlycan \| common1 |
| 97 | $HexNAc_5Hex_5NeuAc_2$ @ NGlycan \| common1 |
| 98 | $HexNAc_5Hex_6$ @ NGlycan \| common1 |
| 99 | $HexNAc_5Hex_6Fuc_1$ @ NGlycan \| common1 |
| 100 | $HexNAc_5Hex_6Fuc_1NeuAc_1$ @ NGlycan \| common1 |
| 101 | $HexNAc_5Hex_6Fuc_1NeuAc_2$ @ NGlycan \| common1 |
| 102 | $HexNAc_5Hex_6Fuc_1NeuAc_3$ @ NGlycan \| common1 |
| 103 | $HexNAc_5Hex_6Fuc_2NeuAc_3$ @ NGlycan \| common1 |
| 104 | $HexNAc_5Hex_6Fuc_2NeuAc_5$ @ NGlycan \| common1 |
| 105 | $HexNAc_5Hex_6NeuAc_1$ @ NGlycan \| common1 |
| 106 | $HexNAc_5Hex_6NeuAc_2$ @ NGlycan \| common1 |
| 107 | $HexNAc_5Hex_6NeuAc_3$ @ NGlycan \| common1 |
| 108 | $HexNAc_5Hex_6NeuAc_4$ @ NGlycan \| common1 |
| 109 | $HexNAc_5Hex_7Fuc_1$ @ NGlycan \| common1 |
| 110 | $HexNAc_5Hex_7Fuc_1NeuAc_1$ @ NGlycan \| common1 |
| 111 | $HexNAc_5Hex_7Fuc_1NeuAc_3$ @ NGlycan \| common1 |
| 112 | $HexNAc_5Hex_7Fuc_3NeuAc_2$ @ NGlycan \| common1 |
| 113 | $HexNAc_5Hex_7NeuAc_1$ @ NGlycan \| common1 |
| 114 | $HexNAc_5Hex_8Fuc_1NeuAc_1$ @ NGlycan \| common1 |
| 115 | $HexNAc_5Hex_8Fuc_2NeuAc_1$ @ NGlycan \| common1 |
| 116 | $HexNAc_5Hex_8Fuc_4NeuAc_1$ @ NGlycan \| common1 |

| | |
|---|---|
| 117 | $HexNAc_5Hex_8NeuAc_1$ @ NGlycan \| common1 |
| 118 | $HexNAc_6Hex_{10}Fuc_5NeuAc_3$ @ NGlycan \| common1 |
| 119 | $HexNAc_6Hex_4Fuc_1$ @ NGlycan \| common1 |
| 120 | $HexNAc_6Hex_6Fuc_1$ @ NGlycan \| common1 |
| 121 | $HexNAc_6Hex_6Fuc_1NeuAc_1$ @ NGlycan \| common1 |
| 122 | $HexNAc_6Hex_6Fuc_1NeuAc_2$ @ NGlycan \| common1 |
| 123 | $HexNAc_6Hex_6Fuc_1NeuAc_3$ @ NGlycan \| common1 |
| 124 | $HexNAc_6Hex_6Fuc_3$ @ NGlycan \| common1 |
| 125 | $HexNAc_6Hex_6Fuc_3NeuAc_1$ @ NGlycan \| common1 |
| 126 | $HexNAc_6Hex_7$ @ NGlycan \| common1 |
| 127 | $HexNAc_6Hex_7Fuc_1NeuAc_1$ @ NGlycan \| common1 |
| 128 | $HexNAc_6Hex_7Fuc_1NeuAc_2$ @ NGlycan \| common1 |
| 129 | $HexNAc_6Hex_7Fuc_1NeuAc_3$ @ NGlycan \| common1 |
| 130 | $HexNAc_6Hex_7Fuc_1NeuAc_4$ @ NGlycan \| common1 |
| 131 | $HexNAc_6Hex_7Fuc_2NeuAc_1$ @ NGlycan \| common1 |
| 132 | $HexNAc_6Hex_7Fuc_2NeuAc_2$ @ NGlycan \| common1 |
| 133 | $HexNAc_6Hex_7Fuc_2NeuAc_3$ @ NGlycan \| common1 |
| 134 | $HexNAc_6Hex_7Fuc_2NeuAc_4$ @ NGlycan \| common1 |
| 135 | $HexNAc_6Hex_7Fuc_3NeuAc_1$ @ NGlycan \| common1 |
| 136 | $HexNAc_6Hex_7NeuAc_1$ @ NGlycan \| common1 |
| 137 | $HexNAc_6Hex_7NeuAc_2$ @ NGlycan \| common1 |
| 138 | $HexNAc_6Hex_7NeuAc_3$ @ NGlycan \| common1 |
| 139 | $HexNAc_6Hex_7NeuAc_4$ @ NGlycan \| common1 |
| 140 | $HexNAc_6Hex_8Fuc_1NeuAc_1$ @ NGlycan \| common1 |
| 141 | $HexNAc_6Hex_8Fuc_1NeuAc_2$ @ NGlycan \| common1 |
| 142 | $HexNAc_6Hex_8Fuc_1NeuAc_3$ @ NGlycan \| common1 |
| 143 | $HexNAc_6Hex_8Fuc_2NeuAc_2$ @ NGlycan \| common1 |
| 144 | $HexNAc_6Hex_8Fuc_3NeuAc_3$ @ NGlycan \| common1 |
| 145 | $HexNAc_7Hex_{10}Fuc_4NeuAc_1$ @ NGlycan \| common1 |
| 146 | $HexNAc_7Hex_{11}Fuc_4NeuAc_1$ @ NGlycan \| common1 |
| 147 | $HexNAc_7Hex_{12}Fuc_1NeuAc_4$ @ NGlycan \| common1 |
| 148 | $HexNAc_7Hex_{12}Fuc_4NeuAc_1$ @ NGlycan \| common1 |
| 149 | $HexNAc_7Hex_{13}Fuc_2NeuAc_1$ @ NGlycan \| common1 |
| 150 | $HexNAc_7Hex_5$ @ NGlycan \| common1 |
| 151 | $HexNAc_7Hex_5Fuc_1NeuAc_1$ @ NGlycan \| common1 |
| 152 | $HexNAc_7Hex_6Fuc_2NeuAc_6$ @ NGlycan \| common1 |
| 153 | $HexNAc_7Hex_7NeuAc_3$ @ NGlycan \| common1 |
| 154 | $HexNAc_7Hex_8$ @ NGlycan \| common1 |
| 155 | $HexNAc_7Hex_8Fuc_1NeuAc_2$ @ NGlycan \| common1 |
| 156 | $HexNAc_7Hex_8Fuc_2NeuAc_3$ @ NGlycan \| common1 |
| 157 | $HexNAc_7Hex_8Fuc_3NeuAc_3$ @ NGlycan \| common1 |
| 158 | $HexNAc_7Hex_9Fuc_1NeuAc_2$ @ NGlycan \| common1 |

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|---|---|
| 159 | $HexNAc_7Hex_9Fuc_4NeuAc_2$ @ NGlycan \| common1 |
| 160 | $HexNAc_7Hex_9NeuAc_1$ @ NGlycan \| common1 |
| 161 | $HexNAc_8Hex_8Fuc_2$ @ NGlycan \| common1 |
| 162 | $HexNAc_8Hex_9Fuc_1$ @ NGlycan \| common1 |
| 163 | $HexNAc_9Hex_9Fuc_1$ @ NGlycan \| common1 |

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