

Supporting Information

Rapid identification of low level glycation sites in recombinant antibodies by isotopic labeling with $^{13}\text{C}_6$ - reducing sugars

Jennifer Zhang,^{*,†} Taylor Zhang,[†] Lihua Jiang,[‡] Daniel Hewitt,[†] YungFu Huang,[†]

Yung-Hsiang Kao[†] and Viswanatham Katta[†]

[†]Protein Analytical Chemistry, Genentech Inc., 1 DNA Way, South San Francisco, California 94080, USA

[‡]Thermo Fisher Scientific, 355 River Oaks Parkway, San Jose, California 95134, USA

*To whom correspondence may be addressed. Email: Zhang.jennifer@gene.com. Phone: +1 650 467 5681. Fax: +1 650 225 3554.

Script

```
import sys
import os
dirname = 'C:\\lihua_software\\TempS_N_50'
first_line_num = 14
print 'Filename', '\t', 'Charge', '\t', 'Monoisotope mass', '\t', 'm/z', '\t', 'Charge', '\t', 'Monoisotope mass', '\t', 'm/z', '\t', 'mass difference'
for filename in os.listdir(dirname) :
    rows = []
    filepath = os.path.join(dirname, filename)
    f = open(filepath)
    i = 0
    for line in f :
        i = i + 1
        line = line.strip('\n')
        if i >= first_line_num and len(line) > 0 :
            row = line.split('\t');
            if len(row) > 1:
                if len(row) != 8 :
                    print filename, ' The format is not correct in Line ', i
                else :
                    a = []
                    for j in range(len(row)) :
                        if len(row[j].strip()) == 0 :
                            a.append(0.0)
                        else :
                            try :
                                a.append(float(row[j].strip()))
                            except ValueError:
                                print "Exception at Line ", i, " Cell ", j, row[j]
                    rows.append(a)
    for j in range(len(rows) - 1) :
        for k in range(j+1, len(rows)) :
            if abs(rows[k][2] - rows[j][2] - 6.018) < 0.01 and rows[k][1] == rows[j][1]:
```

```
    print filename, '\t', rows[j][1], '\t', rows[j][2], '\t', rows[j][4], '\t', rows[k][1], '\t', rows[k][2], '\t', rows[k][4], '\t', rows[k][2] -  
rows[j][2]  
    f.close();
```

Supplementary Table S-1: Output of script processing for the in-vitro glycosylated rhuMAb A with 1:1 of $^{13}\text{C}_6$: $^{12}\text{C}_6$ glucose.

Filename	Charge	Monoisotope mass	m/z	Charge	Monoisotope mass	m/z	mass difference	Number of real glycosylated peptide
xt_result_4335.xls	1	470.04061	471.04788	1	476.05751	477.06479	6.0169	
xt_result_4497.xls	1	470.04073	471.048	1	476.05763	477.06491	6.0169	
xt_result_1128.xls	1	470.04088	471.04816	1	476.05773	477.065	6.01685	
xt_result_2367.xls	1	470.04085	471.04813	1	476.05773	477.065	6.01688	
xt_result_3790.xls	1	470.04079	471.04807	1	476.05773	477.065	6.01694	
xt_result_4325.xls	1	470.04088	471.04816	1	476.05773	477.065	6.01685	
xt_result_9602.xls	1	470.04079	471.04807	1	476.05773	477.065	6.01694	
xt_result_10456.xls	1	470.041	471.04828	1	476.05779	477.06506	6.01679	
xt_result_4772.xls	1	470.04091	471.04819	1	476.05779	477.06506	6.01688	
xt_result_5702.xls	1	470.04091	471.04819	1	476.05779	477.06506	6.01688	
xt_result_10037.xls	1	470.04097	471.04825	1	476.05782	477.06509	6.01685	
xt_result_2296.xls	1	470.04094	471.04822	1	476.05782	477.06509	6.01688	
xt_result_4401.xls	1	470.04097	471.04825	1	476.05782	477.06509	6.01685	
xt_result_1765.xls	1	470.04091	471.04819	1	476.05785	477.06512	6.01694	
xt_result_3202.xls	1	470.041	471.04828	1	476.05785	477.06512	6.01685	
xt_result_7749.xls	1	470.04088	471.04816	1	476.05785	477.06512	6.01697	
xt_result_9948.xls	1	470.04097	471.04825	1	476.05785	477.06512	6.01688	
xt_result_2434.xls	1	470.04097	471.04825	1	476.05788	477.06516	6.01691	
xt_result_3186.xls	1	470.04097	471.04825	1	476.05788	477.06516	6.01691	
xt_result_5738.xls	1	470.04097	471.04825	1	476.05788	477.06516	6.01691	
xt_result_7777.xls	1	470.04094	471.04822	1	476.05788	477.06516	6.01694	
xt_result_9109.xls	1	470.04094	471.04822	1	476.05788	477.06516	6.01694	
xt_result_9240.xls	1	470.04097	471.04825	1	476.05788	477.06516	6.01691	
xt_result_10031.xls	1	470.04094	471.04822	1	476.05791	477.06519	6.01697	
xt_result_10316.xls	1	470.04103	471.04831	1	476.05791	477.06519	6.01688	
xt_result_4838.xls	1	470.041	471.04828	1	476.05791	477.06519	6.01691	
xt_result_9035.xls	1	470.041	471.04828	1	476.05791	477.06519	6.01691	
xt_result_9041.xls	1	470.041	471.04828	1	476.05791	477.06519	6.01691	

xt_result_10413.xls	1	470.04097	471.04825	1	476.05794	477.06522	6.01697
xt_result_4288.xls	1	470.041	471.04828	1	476.05794	477.06522	6.01694
xt_result_5758.xls	1	470.04097	471.04825	1	476.05794	477.06522	6.01697
xt_result_5761.xls	1	470.04103	471.04831	1	476.05794	477.06522	6.01691
xt_result_9619.xls	1	470.04103	471.04831	1	476.05794	477.06522	6.01691
xt_result_4504.xls	1	470.04109	471.04837	1	476.05797	477.06525	6.01688
xt_result_8851.xls	1	470.04109	471.04837	1	476.05797	477.06525	6.01688
xt_result_9038.xls	1	470.04106	471.04834	1	476.05797	477.06525	6.01691
xt_result_9454.xls	1	470.04106	471.04834	1	476.05797	477.06525	6.01691
xt_result_10350.xls	1	470.04109	471.04837	1	476.058	477.06528	6.01691
xt_result_1259.xls	1	470.04109	471.04837	1	476.058	477.06528	6.01691
xt_result_2290.xls	1	470.04106	471.04834	1	476.058	477.06528	6.01694
xt_result_2553.xls	1	470.04109	471.04837	1	476.058	477.06528	6.01691
xt_result_8981.xls	1	470.04112	471.0484	1	476.058	477.06528	6.01688
xt_result_1733.xls	1	470.04112	471.0484	1	476.05803	477.06531	6.01691
xt_result_1837.xls	1	470.04112	471.0484	1	476.05803	477.06531	6.01691
xt_result_1841.xls	1	470.04112	471.0484	1	476.05803	477.06531	6.01691
xt_result_2583.xls	1	470.04103	471.04831	1	476.05803	477.06531	6.017
xt_result_3574.xls	1	470.04115	471.04843	1	476.05803	477.06531	6.01688
xt_result_4538.xls	1	470.04112	471.0484	1	476.05803	477.06531	6.01691
xt_result_6962.xls	1	470.04112	471.0484	1	476.05803	477.06531	6.01691
xt_result_8844.xls	1	470.04112	471.0484	1	476.05803	477.06531	6.01691
xt_result_8906.xls	1	470.04115	471.04843	1	476.05803	477.06531	6.01688
xt_result_9014.xls	1	470.04115	471.04843	1	476.05803	477.06531	6.01688
xt_result_1425.xls	1	470.04112	471.0484	1	476.05806	477.06534	6.01694
xt_result_1692.xls	1	470.04119	471.04846	1	476.05806	477.06534	6.01687
xt_result_2525.xls	1	470.04115	471.04843	1	476.05806	477.06534	6.01691
xt_result_2829.xls	1	470.04106	471.04834	1	476.05806	477.06534	6.017
xt_result_4346.xls	1	470.04115	471.04843	1	476.05806	477.06534	6.01691
xt_result_1817.xls	1	470.04115	471.04843	1	476.05809	477.06537	6.01694
xt_result_5750.xls	1	470.04112	471.0484	1	476.05809	477.06537	6.01697
xt_result_7768.xls	1	470.04119	471.04846	1	476.05809	477.06537	6.0169
xt_result_1336.xls	1	470.04122	471.04849	1	476.05812	477.0654	6.0169
xt_result_1808.xls	1	470.04119	471.04846	1	476.05812	477.0654	6.01693
xt_result_2529.xls	1	470.04119	471.04846	1	476.05812	477.0654	6.01693
xt_result_2535.xls	1	470.04125	471.04852	1	476.05812	477.0654	6.01687

xt_result_2701.xls	1	470.04115	471.04843	1	476.05812	477.0654	6.01697	
xt_result_2787.xls	1	470.04122	471.04849	1	476.05812	477.0654	6.0169	
xt_result_3559.xls	1	470.04115	471.04843	1	476.05812	477.0654	6.01697	
xt_result_7587.xls	1	470.04128	471.04855	1	476.05812	477.0654	6.01684	
xt_result_7771.xls	1	470.04119	471.04846	1	476.05812	477.0654	6.01693	
xt_result_8974.xls	1	470.04122	471.04849	1	476.05812	477.0654	6.0169	
xt_result_1302.xls	1	470.04115	471.04843	1	476.05815	477.06543	6.017	
xt_result_2256.xls	1	470.04119	471.04846	1	476.05815	477.06543	6.01696	
xt_result_2311.xls	1	470.04122	471.04849	1	476.05815	477.06543	6.01693	
xt_result_7650.xls	1	470.04119	471.04846	1	476.05815	477.06543	6.01696	
xt_result_2404.xls	1	470.04122	471.04849	1	476.05818	477.06546	6.01696	
xt_result_3538.xls	1	470.04128	471.04855	1	476.05818	477.06546	6.0169	
xt_result_7658.xls	1	470.04122	471.04849	1	476.05818	477.06546	6.01696	
xt_result_3257.xls	1	470.04125	471.04852	1	476.05821	477.06549	6.01696	
xt_result_9181.xls	1	470.04131	471.04858	1	476.05821	477.06549	6.0169	
xt_result_1929.xls	1	470.04131	471.04858	1	476.05824	477.06552	6.01693	
xt_result_1953.xls	1	470.04131	471.04858	1	476.05824	477.06552	6.01693	
xt_result_2316.xls	1	470.04131	471.04858	1	476.05824	477.06552	6.01693	
xt_result_3144.xls	1	470.04131	471.04858	1	476.05824	477.06552	6.01693	
xt_result_1335.xls	1	470.04134	471.04861	1	476.05828	477.06555	6.01694	
xt_result_6763.xls	1	470.0414	471.04868	1	476.05828	477.06555	6.01688	
xt_result_7215.xls	1	470.04134	471.04861	1	476.05828	477.06555	6.01694	
xt_result_7179.xls	1	470.0414	471.04868	1	476.05831	477.06558	6.01691	
xt_result_2204.xls	1	470.04149	471.04877	1	476.0584	477.06567	6.01691	
xt_result_7591.xls	1	471.04448	472.05176	1	477.06151	478.06879	6.01703	
xt_result_3036.xls	1	872.37407	873.38135	1	878.39092	879.39819	6.01685	
xt_result_1065.xls	2	1051.4813	526.74792	2	1057.50144	529.758	6.02014	1
xt_result_1056.xls	2	1051.48154	526.74805	2	1057.50156	529.75806	6.02002	
xt_result_1062.xls	2	1051.48154	526.74805	2	1057.50168	529.75812	6.02014	
xt_result_3096.xls	2	1427.78647	714.90051	2	1433.80649	717.91052	6.02002	2
xt_result_3084.xls	2	1427.78684	714.9007	2	1433.80661	717.91058	6.01977	
xt_result_3114.xls	2	1427.78659	714.90057	2	1433.80698	717.91077	6.02039	
xt_result_3120.xls	2	1427.78684	714.9007	2	1433.80698	717.91077	6.02014	
xt_result_3102.xls	2	1427.78672	714.90063	2	1433.8071	717.91083	6.02038	
xt_result_3078.xls	2	1427.78696	714.90076	2	1433.80722	717.91089	6.02026	
xt_result_3108.xls	2	1427.7872	714.90088	2	1433.80747	717.91101	6.02027	

xt_result_3072.xls	2	1427.78733	714.90094	2	1433.80759	717.91107	6.02026	
xt_result_3090.xls	2	1427.78806	714.90131	2	1433.80808	717.91132	6.02002	
xt_result_4421.xls	2	1428.80613	715.41034	2	1434.82614	718.42035	6.02001	3
xt_result_4423.xls	2	1428.80552	715.41003	2	1434.82614	718.42035	6.02062	
xt_result_4408.xls	2	1428.80637	715.41046	2	1434.82639	718.42047	6.02002	
xt_result_4418.xls	2	1428.80661	715.41058	2	1434.82651	718.42053	6.0199	
xt_result_4404.xls	2	1428.80649	715.41052	2	1434.82676	718.42065	6.02027	
xt_result_4407.xls	2	1428.80686	715.41071	2	1434.82688	718.42072	6.02002	
xt_result_4416.xls	2	1428.80686	715.41071	2	1434.82688	718.42072	6.02002	
xt_result_4402.xls	2	1428.8071	715.41083	2	1434.827	718.42078	6.0199	
xt_result_4411.xls	2	1428.8071	715.41083	2	1434.827	718.42078	6.0199	
xt_result_4413.xls	2	1428.8071	715.41083	2	1434.827	718.42078	6.0199	
xt_result_5062.xls	2	1539.69663	770.85559	2	1545.71372	773.86414	6.01709	
xt_result_5056.xls	2	1539.69699	770.85577	2	1545.71421	773.86438	6.01722	
xt_result_5011.xls	2	1539.69736	770.85596	2	1545.71433	773.86444	6.01697	
xt_result_3348.xls	2	1716.89597	859.45526	2	1722.91599	862.46527	6.02002	4
xt_result_3366.xls	2	1716.89634	859.45544	2	1722.91623	862.46539	6.01989	
xt_result_3354.xls	2	1716.89621	859.45538	2	1722.91635	862.46545	6.02014	
xt_result_3360.xls	2	1716.89634	859.45544	2	1722.91672	862.46564	6.02038	
xt_result_4350.xls	2	1803.89731	902.95593	2	1809.9177	905.96613	6.02039	5
xt_result_4352.xls	2	1803.89841	902.95648	2	1809.91843	905.96649	6.02002	
xt_result_4362.xls	2	1803.89829	902.95642	2	1809.91843	905.96649	6.02014	
xt_result_4357.xls	2	1803.89902	902.95679	2	1809.91892	905.96674	6.0199	
xt_result_3985.xls	2	1941.88193	971.94824	2	1947.89865	974.9566	6.01672	
xt_result_7374.xls	2	1982.96677	992.49066	2	1988.98276	995.49866	6.01599	
xt_result_7354.xls	2	1982.96628	992.49042	2	1988.98337	995.49896	6.01709	
xt_result_7392.xls	2	1982.96653	992.49054	2	1988.98337	995.49896	6.01684	
xt_result_7390.xls	2	1982.96738	992.49097	2	1988.98374	995.49915	6.01636	
xt_result_7394.xls	2	1982.96714	992.49084	2	1988.98374	995.49915	6.0166	
xt_result_7326.xls	2	1982.96762	992.49109	2	1988.98398	995.49927	6.01636	
xt_result_7399.xls	2	1982.9675	992.49103	2	1988.98398	995.49927	6.01648	
xt_result_7332.xls	2	1982.96762	992.49109	2	1988.98423	995.49939	6.01661	
xt_result_7407.xls	2	1982.96787	992.49121	2	1988.98447	995.49951	6.0166	
xt_result_2112.xls	2	2172.90879	1087.4617	2	2178.92417	1090.46936	6.01538	
xt_result_5200.xls	2	2270.06821	1136.0414	2	2276.08799	1139.05127	6.01978	6
xt_result_5170.xls	2	2270.06845	1136.0415	2	2276.08823	1139.05139	6.01978	

xt_result_5182.xls	3	2270.06832	757.69672	3	2276.08846	759.70343	6.02014	
xt_result_5182.xls	2	2270.06894	1136.0418	2	2276.08872	1139.05164	6.01978	
xt_result_5194.xls	2	2270.0687	1136.0416	2	2276.08872	1139.05164	6.02002	
xt_result_5206.xls	2	2270.06845	1136.0415	2	2276.08872	1139.05164	6.02027	
xt_result_5188.xls	3	2270.06887	757.6969	3	2276.08883	759.70355	6.01996	
xt_result_5188.xls	2	2270.06943	1136.042	2	2276.08896	1139.05176	6.01953	
xt_result_5164.xls	2	2270.06943	1136.042	2	2276.08969	1139.05212	6.02026	
xt_result_3668.xls	3	2303.10824	768.71002	3	2309.12819	770.71667	6.01995	7
xt_result_3672.xls	3	2303.10933	768.71039	3	2309.12874	770.71686	6.01941	
xt_result_3676.xls	3	2303.10952	768.71045	3	2309.12929	770.71704	6.01977	
xt_result_3672.xls	2	2303.10923	1152.5619	2	2309.12973	1155.57214	6.0205	
xt_result_5170.xls	3	2321.14248	774.72144	3	2327.16207	776.72797	6.01959	8
xt_result_5176.xls	3	2321.14266	774.7215	3	2327.16244	776.72809	6.01978	
xt_result_5182.xls	3	2321.14303	774.72162	3	2327.16262	776.72815	6.01959	
xt_result_5194.xls	3	2321.14339	774.72174	3	2327.16262	776.72815	6.01923	
xt_result_5188.xls	3	2321.14376	774.72186	3	2327.16317	776.72833	6.01941	
xt_result_5164.xls	3	2321.14376	774.72186	3	2327.16372	776.72852	6.01996	
xt_result_8107.xls	2	2389.25351	1195.634	2	2395.27451	1198.64453	6.021	9
xt_result_8101.xls	3	2389.2546	797.42548	3	2395.27456	799.43213	6.01996	
xt_result_8107.xls	3	2389.25423	797.42535	3	2395.27456	799.43213	6.02033	
xt_result_8112.xls	2	2389.25498	1195.6348	2	2395.27549	1198.64502	6.02051	
xt_result_8112.xls	3	2389.25625	797.42603	3	2395.27602	799.43262	6.01977	
xt_result_8117.xls	3	2389.25588	797.4259	3	2395.27657	799.4328	6.02069	10
xt_result_7053.xls	2	2651.33603	1326.6753	2	2657.35556	1329.68506	6.01953	
xt_result_7053.xls	3	2651.33639	884.78607	3	2657.35634	886.79272	6.01995	
xt_result_7047.xls	2	2651.33677	1326.6757	2	2657.35678	1329.68567	6.02001	
xt_result_7047.xls	3	2651.3373	884.78638	3	2657.35744	886.79309	6.02014	
xt_result_4096.xls	3	2838.31453	947.11212	3	2844.33431	949.11871	6.01978	11
xt_result_4096.xls	2	2838.31479	1420.1647	2	2844.33432	1423.17444	6.01953	
xt_result_4102.xls	2	2838.31406	1420.1643	2	2844.33432	1423.17444	6.02026	
xt_result_4125.xls	2	2838.31455	1420.1646	2	2844.33457	1423.17456	6.02002	
xt_result_4134.xls	2	2838.31455	1420.1646	2	2844.33481	1423.17468	6.02026	
xt_result_4102.xls	3	2838.31545	947.11243	3	2844.33504	949.11896	6.01959	
xt_result_4129.xls	2	2838.31504	1420.1648	2	2844.3353	1423.17493	6.02026	
xt_result_4134.xls	3	2838.31508	947.1123	3	2844.33541	949.11908	6.02033	
xt_result_4114.xls	2	2838.31577	1420.1652	2	2844.33579	1423.17517	6.02002	

xt_result_4119.xls	2	2838.31504	1420.1648	2	2844.33579	1423.17517	6.02075	
xt_result_4125.xls	3	2838.31692	947.11292	3	2844.33596	949.11926	6.01904	
xt_result_4129.xls	3	2838.31618	947.11267	3	2844.33614	949.11932	6.01996	
xt_result_4108.xls	2	2838.31601	1420.1653	2	2844.33628	1423.17542	6.02027	
xt_result_4114.xls	3	2838.3171	947.11298	3	2844.33651	949.11945	6.01941	
xt_result_4119.xls	3	2838.31692	947.11292	3	2844.33651	949.11945	6.01959	
xt_result_4108.xls	3	2838.31783	947.11322	3	2844.33706	949.11963	6.01923	
xt_result_8175.xls	3	3007.47341	1003.4984	3	3013.49227	1005.5047	6.01886	12
xt_result_8189.xls	3	3007.47286	1003.4982	3	3013.49227	1005.5047	6.01941	
xt_result_8192.xls	3	3007.47414	1003.4987	3	3013.49264	1005.50482	6.0185	
xt_result_8188.xls	3	3007.47432	1003.4987	3	3013.49282	1005.50488	6.0185	
xt_result_8183.xls	3	3007.47378	1003.4985	3	3013.493	1005.50494	6.01922	
xt_result_8195.xls	3	3007.47323	1003.4984	3	3013.493	1005.50494	6.01977	
xt_result_8178.xls	3	3007.47524	1003.499	3	3013.49318	1005.505	6.01794	
xt_result_8187.xls	3	3007.47341	1003.4984	3	3013.49318	1005.505	6.01977	
xt_result_8200.xls	3	3007.47396	1003.4986	3	3013.49318	1005.505	6.01922	
xt_result_8181.xls	3	3007.47414	1003.4987	3	3013.49337	1005.50507	6.01923	
xt_result_8095.xls	3	3498.64065	1167.2208	3	3504.65786	1169.22656	6.01721	13
xt_result_8128.xls	3	3498.63955	1167.2205	3	3504.65896	1169.22693	6.01941	
xt_result_8123.xls	3	3498.64174	1167.2212	3	3504.65932	1169.22705	6.01758	
xt_result_8130.xls	3	3498.64065	1167.2208	3	3504.65932	1169.22705	6.01867	
xt_result_8011.xls	3	3498.64211	1167.2213	3	3504.65969	1169.22717	6.01758	
xt_result_8042.xls	3	3498.64101	1167.221	3	3504.65969	1169.22717	6.01868	
xt_result_8053.xls	3	3498.64211	1167.2213	3	3504.65969	1169.22717	6.01758	
xt_result_8107.xls	3	3498.64211	1167.2213	3	3504.65969	1169.22717	6.01758	
xt_result_8015.xls	3	3498.64174	1167.2212	3	3504.66005	1169.22729	6.01831	
xt_result_8018.xls	3	3498.64211	1167.2213	3	3504.66005	1169.22729	6.01794	
xt_result_8021.xls	3	3498.64211	1167.2213	3	3504.66005	1169.22729	6.01794	
xt_result_8031.xls	3	3498.64358	1167.2218	3	3504.66005	1169.22729	6.01647	
xt_result_8050.xls	3	3498.64101	1167.221	3	3504.66005	1169.22729	6.01904	
xt_result_8126.xls	3	3498.64101	1167.221	3	3504.66005	1169.22729	6.01904	
xt_result_8036.xls	3	3498.64248	1167.2214	3	3504.66042	1169.22742	6.01794	
xt_result_8045.xls	3	3498.64138	1167.2211	3	3504.66042	1169.22742	6.01904	
xt_result_8047.xls	3	3498.64138	1167.2211	3	3504.66042	1169.22742	6.01904	
xt_result_8055.xls	3	3498.64138	1167.2211	3	3504.66042	1169.22742	6.01904	
xt_result_8013.xls	3	3498.64284	1167.2216	3	3504.66079	1169.22754	6.01795	

xt_result_8040.xls	3	3498.64284	1167.2216	3	3504.66079	1169.22754	6.01795	
xt_result_8041.xls	3	3498.64174	1167.2212	3	3504.66079	1169.22754	6.01905	
xt_result_8089.xls	3	3498.64174	1167.2212	3	3504.66079	1169.22754	6.01905	
xt_result_8091.xls	3	3498.64248	1167.2214	3	3504.66079	1169.22754	6.01831	
xt_result_8101.xls	3	3498.64248	1167.2214	3	3504.66079	1169.22754	6.01831	
xt_result_8117.xls	3	3498.64394	1167.2219	3	3504.66079	1169.22754	6.01685	
xt_result_8025.xls	3	3498.64358	1167.2218	3	3504.66152	1169.22778	6.01794	
xt_result_8034.xls	3	3498.64284	1167.2216	3	3504.66152	1169.22778	6.01868	
xt_result_8044.xls	3	3498.64321	1167.2217	3	3504.66152	1169.22778	6.01831	
xt_result_8052.xls	3	3498.64248	1167.2214	3	3504.66189	1169.22791	6.01941	
xt_result_8112.xls	3	3498.64467	1167.2222	3	3504.66225	1169.22803	6.01758	
xt_result_8028.xls	3	3498.64394	1167.2219	3	3504.66262	1169.22815	6.01868	
xt_result_5354.xls	3	3780.75124	1261.2577	3	3786.77065	1263.26416	6.01941	14
xt_result_5366.xls	3	3780.75307	1261.2583	3	3786.77138	1263.2644	6.01831	
xt_result_5372.xls	3	3780.75197	1261.2579	3	3786.77175	1263.26453	6.01978	
xt_result_5360.xls	3	3780.75344	1261.2584	3	3786.77212	1263.26465	6.01868	
xt_result_8711.xls	3	3823.88869	1275.6368	3	3829.90481	1277.64221	6.01612	15
xt_result_8655.xls	3	3823.88979	1275.6372	3	3829.90517	1277.64233	6.01538	
xt_result_8659.xls	3	3823.89016	1275.6373	3	3829.90627	1277.6427	6.01611	
xt_result_8652.xls	3	3823.88979	1275.6372	3	3829.90664	1277.64282	6.01685	
xt_result_8702.xls	3	3823.88942	1275.6371	3	3829.90664	1277.64282	6.01722	
xt_result_8697.xls	3	3823.88942	1275.6371	3	3829.907	1277.64294	6.01758	
xt_result_8696.xls	3	3823.89126	1275.6377	3	3829.90737	1277.64307	6.01611	
xt_result_8708.xls	3	3823.89016	1275.6373	3	3829.90737	1277.64307	6.01721	
xt_result_8650.xls	3	3823.89052	1275.6375	3	3829.90774	1277.64319	6.01722	
xt_result_8668.xls	3	3823.89126	1275.6377	3	3829.90774	1277.64319	6.01648	
xt_result_8692.xls	3	3823.89089	1275.6376	3	3829.90774	1277.64319	6.01685	
xt_result_8690.xls	3	3823.89126	1275.6377	3	3829.9081	1277.64331	6.01684	
xt_result_8698.xls	3	3823.89126	1275.6377	3	3829.9081	1277.64331	6.01684	
xt_result_8662.xls	3	3823.89235	1275.6381	3	3829.90847	1277.64343	6.01612	
xt_result_8693.xls	3	3823.89089	1275.6376	3	3829.90847	1277.64343	6.01758	
xt_result_8648.xls	3	3823.89089	1275.6376	3	3829.90883	1277.64355	6.01794	
xt_result_8664.xls	3	3823.89199	1275.6379	3	3829.90883	1277.64355	6.01684	
xt_result_8683.xls	3	3823.89345	1275.6384	3	3829.90883	1277.64355	6.01538	
xt_result_8694.xls	3	3823.89162	1275.6378	3	3829.90883	1277.64355	6.01721	
xt_result_8710.xls	3	3823.89089	1275.6376	3	3829.90883	1277.64355	6.01794	

xt_result_8684.xls	3	3823.89309	1275.6383	3	3829.9092	1277.64368	6.01611	
xt_result_8691.xls	3	3823.89199	1275.6379	3	3829.9092	1277.64368	6.01721	
xt_result_8695.xls	3	3823.89126	1275.6377	3	3829.9092	1277.64368	6.01794	
xt_result_8682.xls	3	3823.89235	1275.6381	3	3829.90957	1277.6438	6.01722	
xt_result_8689.xls	3	3823.89272	1275.6382	3	3829.90957	1277.6438	6.01685	
xt_result_8704.xls	3	3823.89052	1275.6375	3	3829.90957	1277.6438	6.01905	
xt_result_8670.xls	3	3823.89345	1275.6384	3	3829.90993	1277.64392	6.01648	
xt_result_8681.xls	3	3823.89382	1275.6386	3	3829.90993	1277.64392	6.01611	
xt_result_8685.xls	3	3823.89309	1275.6383	3	3829.9103	1277.64404	6.01721	
xt_result_8676.xls	3	3823.89419	1275.6387	3	3829.91067	1277.64417	6.01648	
xt_result_8678.xls	3	3823.89345	1275.6384	3	3829.91067	1277.64417	6.01722	
xt_result_8679.xls	3	3823.89345	1275.6384	3	3829.91067	1277.64417	6.01722	
xt_result_8672.xls	3	3823.89419	1275.6387	3	3829.9114	1277.64441	6.01721	
xt_result_8674.xls	3	3823.89492	1275.6389	3	3829.9114	1277.64441	6.01648	
xt_result_8686.xls	3	3823.89419	1275.6387	3	3829.9114	1277.64441	6.01721	
xt_result_8688.xls	3	3823.89492	1275.6389	3	3829.91286	1277.6449	6.01794	
xt_result_8376.xls	3	3881.89504	1294.9723	3	3887.91372	1296.97852	6.01868	16
xt_result_8382.xls	3	3881.89651	1294.9728	3	3887.91372	1296.97852	6.01721	
xt_result_8531.xls	4	4315.05976	1079.7722	4	4321.07539	1081.27612	6.01563	17
xt_result_8536.xls	3	4315.05996	1439.3606	3	4321.0757	1441.36584	6.01574	
xt_result_8509.xls	3	4315.05886	1439.3602	3	4321.07607	1441.36597	6.01721	
xt_result_8522.xls	3	4315.06106	1439.361	3	4321.07607	1441.36597	6.01501	
xt_result_8531.xls	3	4315.06032	1439.3607	3	4321.07607	1441.36597	6.01575	
xt_result_8549.xls	3	4315.06032	1439.3607	3	4321.07607	1441.36597	6.01575	
xt_result_8507.xls	3	4315.06142	1439.3611	3	4321.07644	1441.36609	6.01502	
xt_result_8513.xls	3	4315.06069	1439.3608	3	4321.07644	1441.36609	6.01575	
xt_result_8527.xls	3	4315.06069	1439.3608	3	4321.07644	1441.36609	6.01575	
xt_result_8520.xls	3	4315.06215	1439.3613	3	4321.0768	1441.36621	6.01465	
xt_result_8532.xls	3	4315.06106	1439.361	3	4321.0768	1441.36621	6.01574	
xt_result_8553.xls	3	4315.06032	1439.3607	3	4321.0768	1441.36621	6.01648	
xt_result_8556.xls	3	4315.06032	1439.3607	3	4321.0768	1441.36621	6.01648	
xt_result_8559.xls	3	4315.06215	1439.3613	3	4321.0768	1441.36621	6.01465	
xt_result_8545.xls	3	4315.06215	1439.3613	3	4321.07717	1441.36633	6.01502	
xt_result_8516.xls	3	4315.06179	1439.3612	3	4321.07754	1441.36646	6.01575	
xt_result_8518.xls	3	4315.06106	1439.361	3	4321.07754	1441.36646	6.01648	
xt_result_8536.xls	4	4315.06123	1079.7726	4	4321.07783	1081.27673	6.0166	

xt_result_8523.xls	3	4315.06106	1439.361	3	4321.0779	1441.36658	6.01684	
xt_result_8541.xls	3	4315.06215	1439.3613	3	4321.0779	1441.36658	6.01575	
xt_result_8526.xls	3	4315.06289	1439.3616	3	4321.07827	1441.3667	6.01538	
xt_result_8530.xls	3	4315.06252	1439.3615	3	4321.07827	1441.3667	6.01575	
xt_result_8561.xls	3	4315.06142	1439.3611	3	4321.07827	1441.3667	6.01685	
xt_result_8563.xls	3	4315.06289	1439.3616	3	4321.07827	1441.3667	6.01538	
xt_result_8528.xls	3	4315.06215	1439.3613	3	4321.07863	1441.36682	6.01648	
xt_result_8565.xls	3	4315.06289	1439.3616	3	4321.0801	1441.36731	6.01721	
xt_result_9315.xls	3	5286.41433	1763.1454	3	5292.43007	1765.15063	6.01574	18
xt_result_9314.xls	3	5286.41799	1763.1466	3	5292.43117	1765.151	6.01318	
xt_result_9312.xls	3	5286.41762	1763.1465	3	5292.43227	1765.15137	6.01465	
xt_result_9316.xls	3	5286.41689	1763.1462	3	5292.43227	1765.15137	6.01538	
xt_result_9324.xls	3	5286.41543	1763.1458	3	5292.43227	1765.15137	6.01684	
xt_result_9329.xls	3	5286.41616	1763.146	3	5292.43227	1765.15137	6.01611	
xt_result_9345.xls	3	5286.41433	1763.1454	3	5292.43227	1765.15137	6.01794	
xt_result_9313.xls	3	5286.41579	1763.1459	3	5292.43264	1765.15149	6.01685	
xt_result_9322.xls	3	5286.41762	1763.1465	3	5292.433	1765.15161	6.01538	
xt_result_9311.xls	3	5286.41909	1763.147	3	5292.43337	1765.15173	6.01428	
xt_result_9328.xls	3	5286.41872	1763.1469	3	5292.43337	1765.15173	6.01465	
xt_result_9318.xls	3	5286.41799	1763.1466	3	5292.43374	1765.15186	6.01575	
xt_result_9325.xls	3	5286.41762	1763.1465	3	5292.43374	1765.15186	6.01612	
xt_result_9337.xls	3	5286.41469	1763.1455	3	5292.43374	1765.15186	6.01905	
xt_result_9320.xls	3	5286.41872	1763.1469	3	5292.4341	1765.15198	6.01538	
xt_result_9331.xls	3	5286.41872	1763.1469	3	5292.4341	1765.15198	6.01538	
xt_result_9343.xls	3	5286.41506	1763.1456	3	5292.4341	1765.15198	6.01904	
xt_result_9336.xls	3	5286.41689	1763.1462	3	5292.43447	1765.1521	6.01758	
xt_result_9326.xls	3	5286.41872	1763.1469	3	5292.43484	1765.15222	6.01612	
xt_result_9332.xls	3	5286.41799	1763.1466	3	5292.43484	1765.15222	6.01685	
xt_result_9335.xls	3	5286.42019	1763.1473	3	5292.43484	1765.15222	6.01465	
xt_result_9327.xls	3	5286.42055	1763.1475	3	5292.4352	1765.15234	6.01465	
xt_result_9330.xls	3	5286.42019	1763.1473	3	5292.43593	1765.15259	6.01574	
xt_result_9333.xls	3	5286.42019	1763.1473	3	5292.43593	1765.15259	6.01574	
xt_result_10135.xls	8	8178.98476	1023.3804	8	8185.00136	1024.13245	6.0166	19

Note: shown in red color are the positive glycosylated peptides after manual screening

Supplementary Table S-2: Output of script processing for the in-vitro glycosylated rhuMAb A with 1:1 of $^{13}\text{C}_6$: $^{12}\text{C}_6$ galactose

Filename	Charge	Monoisotope mass	m/z	Charge	Monoisotope mass	m/z	mass difference	Number of real glycosylated peptide
xt_result_967.xls	1	307.97032	308.9776	1	313.98726	314.99454	6.01694	
xt_result_954.xls	1	307.97035	308.97763	1	313.98732	314.9946	6.01697	
xt_result_963.xls	1	307.97035	308.97763	1	313.98735	314.99463	6.017	
xt_result_10325.xls	1	423.88933	424.89661	1	429.90618	430.91345	6.01685	
xt_result_9886.xls	1	423.8897	424.89697	1	429.90657	430.91385	6.01687	
xt_result_948.xls	1	577.99297	579.00024	1	584.00987	585.01715	6.0169	
xt_result_942.xls	1	577.99364	579.00092	1	584.01048	585.01776	6.01684	
xt_result_4155.xls	1	846.3803	847.38757	1	852.39678	853.40405	6.01648	
xt_result_4137.xls	1	846.38054	847.38782	1	852.39726	853.40454	6.01672	
xt_result_3551.xls	1	872.37419	873.38147	1	878.39092	879.39819	6.01673	
xt_result_3557.xls	1	872.37432	873.38159	1	878.39092	879.39819	6.0166	
xt_result_3509.xls	1	872.37499	873.38226	1	878.39195	879.39923	6.01696	
xt_result_1866.xls	1	907.28105	908.28833	1	913.29772	914.30499	6.01667	
xt_result_1860.xls	1	907.28179	908.28906	1	913.29814	914.30542	6.01635	
xt_result_3843.xls	1	918.26097	919.26825	1	924.27776	925.28503	6.01679	
xt_result_3849.xls	1	918.26103	919.26831	1	924.27788	925.28516	6.01685	
xt_result_3837.xls	1	918.26128	919.26855	1	924.278	925.28528	6.01672	
xt_result_3026.xls	1	968.34435	969.35162	1	974.36138	975.36865	6.01703	
xt_result_3032.xls	1	968.34441	969.35168	1	974.36144	975.36871	6.01703	
xt_result_3041.xls	1	968.34459	969.35187	1	974.36162	975.3689	6.01703	
xt_result_8063.xls	1	999.46697	1000.47424	1	1005.4821	1006.48938	6.01513	
xt_result_8066.xls	1	999.46709	1000.47437	1	1005.48229	1006.48956	6.0152	
xt_result_1341.xls	2	1051.48239	526.74847	2	1057.50254	529.75854	6.02015	1
xt_result_1347.xls	2	1051.48264	526.7486	2	1057.50278	529.75867	6.02014	
xt_result_1335.xls	2	1051.48325	526.7489	2	1057.50339	529.75897	6.02014	
xt_result_4890.xls	1	1096.37712	1097.3844	1	1102.39409	1103.40137	6.01697	
xt_result_4914.xls	1	1096.37737	1097.38464	1	1102.39433	1103.40161	6.01696	
xt_result_4896.xls	1	1096.37749	1097.38477	1	1102.39458	1103.40186	6.01709	

xt_result_4920.xls	1	1096.37749	1097.38477	1	1102.39446	1103.40173	6.01697	
xt_result_4908.xls	1	1096.37761	1097.38489	1	1102.39446	1103.40173	6.01685	
xt_result_4902.xls	1	1096.37773	1097.38501	1	1102.39495	1103.40222	6.01722	
xt_result_4925.xls	1	1096.37822	1097.3855	1	1102.39519	1103.40247	6.01697	
xt_result_3659.xls	2	1221.62778	611.82117	2	1227.64792	614.83124	6.02014	2
xt_result_3671.xls	2	1221.62802	611.82129	2	1227.64817	614.83136	6.02015	
xt_result_3653.xls	2	1221.62815	611.82135	2	1227.64817	614.83136	6.02002	
xt_result_3665.xls	2	1221.62827	611.82141	2	1227.64841	614.83148	6.02014	
xt_result_3647.xls	2	1221.62839	611.82147	2	1227.64841	614.83148	6.02002	
xt_result_3675.xls	2	1221.62851	611.82153	2	1227.64853	614.83154	6.02002	
xt_result_1571.xls	2	1252.58567	627.30011	2	1258.60581	630.31018	6.02014	3
xt_result_1564.xls	2	1252.58603	627.30029	2	1258.60593	630.31024	6.0199	
xt_result_3244.xls	2	1339.58078	670.79767	2	1345.598	673.80627	6.01722	
xt_result_3220.xls	2	1339.58091	670.79773	2	1345.59812	673.80634	6.01721	
xt_result_3232.xls	2	1339.58103	670.79779	2	1345.59812	673.80634	6.01709	
xt_result_3238.xls	2	1339.58103	670.79779	2	1345.59824	673.8064	6.01721	
xt_result_3250.xls	2	1339.58103	670.79779	2	1345.59824	673.8064	6.01721	
xt_result_3226.xls	2	1339.58164	670.7981	2	1345.59861	673.80658	6.01697	
xt_result_3101.xls	2	1356.49643	679.25549	2	1362.51364	682.2641	6.01721	
xt_result_3131.xls	2	1356.49643	679.25549	2	1362.51316	682.26385	6.01673	
xt_result_3095.xls	2	1356.49717	679.25586	2	1362.51438	682.26447	6.01721	
xt_result_3681.xls	2	1427.78757	714.90106	2	1433.80783	717.91119	6.02026	4
xt_result_3635.xls	2	1427.78769	714.90112	2	1433.80747	717.91101	6.01978	
xt_result_3617.xls	2	1427.78781	714.90118	2	1433.80783	717.91119	6.02002	
xt_result_3623.xls	2	1427.78794	714.90125	2	1433.80783	717.91119	6.01989	
xt_result_3659.xls	2	1427.78818	714.90137	2	1433.80796	717.91125	6.01978	
xt_result_3665.xls	2	1427.78818	714.90137	2	1433.8082	717.91138	6.02002	
xt_result_3629.xls	2	1427.7883	714.90143	2	1433.80796	717.91125	6.01966	
xt_result_3671.xls	2	1427.7883	714.90143	2	1433.80808	717.91132	6.01978	
xt_result_3647.xls	2	1427.78843	714.90149	2	1433.80844	717.9115	6.02001	
xt_result_3653.xls	2	1427.78843	714.90149	2	1433.80832	717.91144	6.01989	
xt_result_3675.xls	2	1427.78855	714.90155	2	1433.80844	717.9115	6.01989	
xt_result_3641.xls	2	1427.78891	714.90173	2	1433.80869	717.91162	6.01978	
xt_result_4998.xls	2	1428.80783	715.41119	2	1434.82773	718.42114	6.0199	5

xt_result_5003.xls	2	1428.80796	715.41125	2	1434.82798	718.42126	6.02002	
xt_result_5025.xls	2	1428.80832	715.41144	2	1434.82834	718.42145	6.02002	
xt_result_5008.xls	2	1428.80857	715.41156	2	1434.82871	718.42163	6.02014	
xt_result_5019.xls	2	1428.80869	715.41162	2	1434.82883	718.42169	6.02014	
xt_result_5013.xls	2	1428.80881	715.41168	2	1434.82895	718.42175	6.02014	
xt_result_5620.xls	2	1539.69736	770.85596	2	1545.71396	773.86426	6.0166	
xt_result_5632.xls	2	1539.69736	770.85596	2	1545.71445	773.8645	6.01709	
xt_result_5608.xls	2	1539.69748	770.85602	2	1545.71445	773.8645	6.01697	
xt_result_5614.xls	2	1539.69748	770.85602	2	1545.71469	773.86462	6.01721	
xt_result_5648.xls	2	1539.6976	770.85608	2	1545.71433	773.86444	6.01673	
xt_result_5626.xls	2	1539.69797	770.85626	2	1545.71494	773.86475	6.01697	
xt_result_5638.xls	2	1539.69822	770.85638	2	1545.71518	773.86487	6.01696	
xt_result_5602.xls	2	1539.6987	770.85663	2	1545.71567	773.86511	6.01697	
xt_result_5642.xls	2	1539.69919	770.85687	2	1545.71555	773.86505	6.01636	
xt_result_4973.xls	2	1803.89939	902.95697	2	1809.91928	905.96692	6.01989	6
xt_result_4955.xls	2	1803.89963	902.95709	2	1809.91965	905.9671	6.02002	
xt_result_4984.xls	2	1803.89975	902.95715	2	1809.91989	905.96722	6.02014	
xt_result_4967.xls	2	1803.90012	902.95734	2	1809.92014	905.96735	6.02002	
xt_result_4961.xls	2	1803.90024	902.9574	2	1809.92014	905.96735	6.0199	
xt_result_4986.xls	2	1803.90036	902.95746	2	1809.92026	905.96741	6.0199	
xt_result_4979.xls	2	1803.90049	902.95752	2	1809.92038	905.96747	6.01989	
xt_result_4985.xls	2	1803.90049	902.95752	2	1809.92087	905.96771	6.02038	
xt_result_4990.xls	2	1803.90061	902.95758	2	1809.92075	905.96765	6.02014	
xt_result_8044.xls	2	1982.96543	992.48999	2	1988.98227	995.49841	6.01684	
xt_result_7984.xls	2	1982.9686	992.49158	2	1988.98508	995.49982	6.01648	
xt_result_5824.xls	2	2270.06919	1136.04187	2	2276.08921	1139.05188	6.02002	7
xt_result_5806.xls	3	2270.06942	757.69708	3	2276.08938	759.70374	6.01996	
xt_result_5818.xls	3	2270.06942	757.69708	3	2276.08956	759.7038	6.02014	
xt_result_5824.xls	3	2270.06942	757.69708	3	2276.08993	759.70392	6.02051	
xt_result_5806.xls	2	2270.06968	1136.04211	2	2276.08969	1139.05212	6.02001	
xt_result_5794.xls	3	2270.07033	757.69739	3	2276.09011	759.70398	6.01978	
xt_result_5794.xls	2	2270.07041	1136.04248	2	2276.09043	1139.05249	6.02002	
xt_result_5812.xls	2	2270.07041	1136.04248	2	2276.09043	1139.05249	6.02002	
xt_result_5812.xls	3	2270.07052	757.69745	3	2276.09047	759.7041	6.01995	

xt_result_5788.xls	2	2270.0709	1136.04272	2	2276.09092	1139.05273	6.02002	
xt_result_5800.xls	3	2270.07107	757.69763	3	2276.09084	759.70422	6.01977	
xt_result_5782.xls	2	2270.07114	1136.04285	2	2276.0914	1139.05298	6.02026	
xt_result_5800.xls	2	2270.07138	1136.04297	2	2276.09116	1139.05286	6.01978	
xt_result_5788.xls	3	2270.07143	757.69775	3	2276.09139	759.70441	6.01996	
xt_result_4221.xls	3	2303.11007	768.71063	3	2309.13057	770.71747	6.0205	8
xt_result_4215.xls	3	2303.11098	768.71094	3	2309.13112	770.71765	6.02014	
xt_result_4227.xls	3	2303.11117	768.711	3	2309.13131	770.71771	6.02014	
xt_result_5794.xls	3	2321.14467	774.72217	3	2327.16482	776.72888	6.02015	9
xt_result_5800.xls	3	2321.14522	774.72235	3	2327.16573	776.72919	6.02051	
xt_result_5782.xls	3	2321.14596	774.7226	3	2327.16573	776.72919	6.01977	
xt_result_5788.xls	3	2321.14596	774.7226	3	2327.1661	776.72931	6.02014	
xt_result_8783.xls	3	2389.25295	797.42493	3	2395.27346	799.43176	6.02051	10
xt_result_8793.xls	2	2389.25376	1195.63416	2	2395.27353	1198.64404	6.01977	
xt_result_8785.xls	3	2389.25405	797.42529	3	2395.27474	799.43219	6.02069	
xt_result_8789.xls	3	2389.25423	797.42535	3	2395.27419	799.43201	6.01996	
xt_result_8799.xls	2	2389.25449	1195.63452	2	2395.27451	1198.64453	6.02002	
xt_result_8788.xls	3	2389.25515	797.42566	3	2395.27511	799.43231	6.01996	
xt_result_8805.xls	2	2389.25522	1195.63489	2	2395.27475	1198.64465	6.01953	
xt_result_8793.xls	3	2389.25533	797.42572	3	2395.27456	799.43213	6.01923	
xt_result_8805.xls	3	2389.25551	797.42578	3	2395.27566	799.4325	6.02015	
xt_result_8799.xls	3	2389.2557	797.42584	3	2395.27492	799.43225	6.01922	
xt_result_7159.xls	2	2605.23569	1303.62512	2	2611.25547	1306.63501	6.01978	11
xt_result_7165.xls	2	2605.23594	1303.62524	2	2611.25522	1306.63489	6.01928	
xt_result_7165.xls	3	2605.23684	869.41956	3	2611.25643	871.42609	6.01959	
xt_result_7159.xls	3	2605.23702	869.41962	3	2611.25551	871.42578	6.01849	
xt_result_7705.xls	2	2651.33652	1326.67554	2	2657.35678	1329.68567	6.02026	12
xt_result_7705.xls	3	2651.33767	884.7865	3	2657.35744	886.79309	6.01977	
xt_result_7691.xls	2	2651.33799	1326.67627	2	2657.35898	1329.68677	6.02099	
xt_result_7699.xls	2	2651.33799	1326.67627	2	2657.35776	1329.68616	6.01977	
xt_result_7694.xls	2	2651.33823	1326.67639	2	2657.35776	1329.68616	6.01953	
xt_result_7711.xls	2	2651.33823	1326.67639	2	2657.35801	1329.68628	6.01978	
xt_result_7699.xls	3	2651.33858	884.7868	3	2657.35836	886.7934	6.01978	
xt_result_7694.xls	3	2651.33877	884.78687	3	2657.35891	886.79358	6.02014	

xt_result_7691.xls	3	2651.33895	884.78693	3	2657.35817	886.79333	6.01922	
xt_result_7711.xls	3	2651.33895	884.78693	3	2657.35927	886.7937	6.02032	
xt_result_4692.xls	2	2838.31528	1420.16492	2	2844.33579	1423.17517	6.02051	13
xt_result_4698.xls	2	2838.31552	1420.16504	2	2844.33579	1423.17517	6.02027	
xt_result_4704.xls	2	2838.3165	1420.16553	2	2844.33677	1423.17566	6.02027	
xt_result_4692.xls	3	2838.31673	947.11285	3	2844.33578	949.1192	6.01905	
xt_result_4698.xls	3	2838.31673	947.11285	3	2844.33632	949.11938	6.01959	
xt_result_4686.xls	2	2838.31699	1420.16577	2	2844.33701	1423.17578	6.02002	
xt_result_4669.xls	2	2838.31723	1420.16589	2	2844.3375	1423.17603	6.02027	
xt_result_4675.xls	2	2838.31723	1420.16589	2	2844.33701	1423.17578	6.01978	
xt_result_4680.xls	2	2838.31748	1420.16602	2	2844.33774	1423.17615	6.02026	
xt_result_4704.xls	3	2838.31783	947.11322	3	2844.33742	949.11975	6.01959	
xt_result_4659.xls	3	2838.3182	947.11334	3	2844.33797	949.11993	6.01977	
xt_result_4675.xls	3	2838.31893	947.11359	3	2844.33797	949.11993	6.01904	
xt_result_4663.xls	2	2838.31894	1420.16675	2	2844.33847	1423.17651	6.01953	
xt_result_4669.xls	3	2838.31911	947.11365	3	2844.33834	949.12006	6.01923	
xt_result_4680.xls	3	2838.31911	947.11365	3	2844.33816	949.12	6.01905	
xt_result_4663.xls	3	2838.31984	947.11389	3	2844.33907	949.1203	6.01923	
xt_result_4686.xls	3	2838.32003	947.11395	3	2844.3387	949.12018	6.01867	
xt_result_9444.xls	2	2918.35288	1460.18372	2	2924.37192	1463.19324	6.01904	14
xt_result_9463.xls	2	2918.35288	1460.18372	2	2924.37217	1463.19336	6.01929	
xt_result_9474.xls	2	2918.35312	1460.18384	2	2924.37339	1463.19397	6.02027	
xt_result_9463.xls	3	2918.35323	973.79169	3	2924.37246	975.7981	6.01923	
xt_result_9460.xls	3	2918.35341	973.79175	3	2924.37337	975.7984	6.01996	
xt_result_9444.xls	3	2918.3536	973.79181	3	2924.37301	975.79828	6.01941	
xt_result_9436.xls	2	2918.3541	1460.18433	2	2924.37363	1463.19409	6.01953	
xt_result_9470.xls	2	2918.3541	1460.18433	2	2924.37339	1463.19397	6.01929	
xt_result_9471.xls	2	2918.3541	1460.18433	2	2924.37436	1463.19446	6.02026	
xt_result_9464.xls	2	2918.35434	1460.18445	2	2924.37363	1463.19409	6.01929	
xt_result_9466.xls	3	2918.35451	973.79211	3	2924.37447	975.79877	6.01996	
xt_result_9447.xls	2	2918.35459	1460.18457	2	2924.37412	1463.19434	6.01953	
xt_result_9451.xls	2	2918.35459	1460.18457	2	2924.37314	1463.19385	6.01855	
xt_result_9454.xls	2	2918.35459	1460.18457	2	2924.37412	1463.19434	6.01953	
xt_result_9460.xls	2	2918.35459	1460.18457	2	2924.37314	1463.19385	6.01855	

xt_result_9466.xls	2	2918.35459	1460.18457	2	2924.37436	1463.19446	6.01977	
xt_result_9470.xls	3	2918.3547	973.79218	3	2924.37429	975.79871	6.01959	
xt_result_9439.xls	2	2918.35483	1460.18469	2	2924.37485	1463.1947	6.02002	
xt_result_9458.xls	2	2918.35483	1460.18469	2	2924.37387	1463.19421	6.01904	
xt_result_9454.xls	3	2918.35488	973.79224	3	2924.37447	975.79877	6.01959	
xt_result_9458.xls	3	2918.35506	973.7923	3	2924.37465	975.79883	6.01959	
xt_result_9451.xls	3	2918.35525	973.79236	3	2924.37447	975.79877	6.01922	
xt_result_9447.xls	3	2918.35543	973.79242	3	2924.37502	975.79895	6.01959	
xt_result_9464.xls	3	2918.35543	973.79242	3	2924.37502	975.79895	6.01959	
xt_result_9459.xls	2	2918.35556	1460.18506	2	2924.37485	1463.1947	6.01929	
xt_result_9459.xls	3	2918.35579	973.79254	3	2924.37465	975.79883	6.01886	
xt_result_9439.xls	3	2918.35634	973.79272	3	2924.37649	975.79944	6.02015	
xt_result_8907.xls	3	3007.4714	1003.49774	3	3013.49117	1005.50433	6.01977	15
xt_result_8879.xls	3	3007.47213	1003.49799	3	3013.49172	1005.50452	6.01959	
xt_result_8901.xls	3	3007.47249	1003.49811	3	3013.4919	1005.50458	6.01941	
xt_result_8891.xls	3	3007.47304	1003.49829	3	3013.49227	1005.5047	6.01923	
xt_result_8875.xls	3	3007.47323	1003.49835	3	3013.49264	1005.50482	6.01941	
xt_result_8871.xls	3	3007.47359	1003.49847	3	3013.49337	1005.50507	6.01978	
xt_result_8885.xls	3	3007.47359	1003.49847	3	3013.493	1005.50494	6.01941	
xt_result_8865.xls	3	3007.47378	1003.49854	3	3013.49373	1005.50519	6.01995	
xt_result_8897.xls	3	3007.47396	1003.4986	3	3013.49318	1005.505	6.01922	
xt_result_8867.xls	3	3007.47432	1003.49872	3	3013.4941	1005.50531	6.01978	
xt_result_8881.xls	3	3007.47432	1003.49872	3	3013.49373	1005.50519	6.01941	
xt_result_8888.xls	3	3007.47432	1003.49872	3	3013.4941	1005.50531	6.01978	
xt_result_8765.xls	3	3498.63955	1167.22046	3	3504.65932	1169.22705	6.01977	16
xt_result_8708.xls	3	3498.63991	1167.22058	3	3504.65896	1169.22693	6.01905	
xt_result_8716.xls	3	3498.63991	1167.22058	3	3504.65859	1169.22681	6.01868	
xt_result_8767.xls	3	3498.64028	1167.2207	3	3504.66042	1169.22742	6.02014	
xt_result_8748.xls	3	3498.64065	1167.22083	3	3504.65932	1169.22705	6.01867	
xt_result_8770.xls	3	3498.64065	1167.22083	3	3504.65859	1169.22681	6.01794	
xt_result_8783.xls	3	3498.64101	1167.22095	3	3504.65932	1169.22705	6.01831	

xt_result_8702.xls	3	3498.64138	1167.22107	3	3504.66079	1169.22754	6.01941	
xt_result_8715.xls	3	3498.64138	1167.22107	3	3504.66005	1169.22729	6.01867	
xt_result_8718.xls	3	3498.64138	1167.22107	3	3504.65969	1169.22717	6.01831	
xt_result_8793.xls	3	3498.64138	1167.22107	3	3504.66005	1169.22729	6.01867	
xt_result_8780.xls	3	3498.64174	1167.22119	3	3504.66005	1169.22729	6.01831	
xt_result_8700.xls	3	3498.64211	1167.22131	3	3504.66042	1169.22742	6.01831	
xt_result_8701.xls	3	3498.64211	1167.22131	3	3504.66042	1169.22742	6.01831	
xt_result_8711.xls	3	3498.64211	1167.22131	3	3504.65969	1169.22717	6.01758	
xt_result_8714.xls	3	3498.64211	1167.22131	3	3504.66005	1169.22729	6.01794	
xt_result_8721.xls	3	3498.64211	1167.22131	3	3504.65969	1169.22717	6.01758	
xt_result_8785.xls	3	3498.64211	1167.22131	3	3504.66005	1169.22729	6.01794	
xt_result_8789.xls	3	3498.64211	1167.22131	3	3504.65932	1169.22705	6.01721	
xt_result_8706.xls	3	3498.64248	1167.22144	3	3504.66225	1169.22803	6.01977	
xt_result_8724.xls	3	3498.64248	1167.22144	3	3504.66005	1169.22729	6.01757	
xt_result_8735.xls	3	3498.64248	1167.22144	3	3504.66079	1169.22754	6.01831	
xt_result_8747.xls	3	3498.64248	1167.22144	3	3504.66115	1169.22766	6.01867	
xt_result_8799.xls	3	3498.64248	1167.22144	3	3504.66042	1169.22742	6.01794	
xt_result_8805.xls	3	3498.64248	1167.22144	3	3504.66115	1169.22766	6.01867	
xt_result_8728.xls	3	3498.64284	1167.22156	3	3504.66152	1169.22778	6.01868	
xt_result_8732.xls	3	3498.64284	1167.22156	3	3504.66115	1169.22766	6.01831	
xt_result_8745.xls	3	3498.64284	1167.22156	3	3504.66079	1169.22754	6.01795	
xt_result_8773.xls	3	3498.64284	1167.22156	3	3504.66042	1169.22742	6.01758	
xt_result_8811.xls	3	3498.64284	1167.22156	3	3504.66225	1169.22803	6.01941	
xt_result_8817.xls	3	3498.64284	1167.22156	3	3504.66225	1169.22803	6.01941	
xt_result_8704.xls	3	3498.64321	1167.22168	3	3504.66152	1169.22778	6.01831	
xt_result_8737.xls	3	3498.64321	1167.22168	3	3504.66189	1169.22791	6.01868	
xt_result_8753.xls	3	3498.64321	1167.22168	3	3504.66115	1169.22766	6.01794	
xt_result_8788.xls	3	3498.64321	1167.22168	3	3504.66042	1169.22742	6.01721	
xt_result_8699.xls	3	3498.64358	1167.2218	3	3504.66115	1169.22766	6.01757	
xt_result_8741.xls	3	3498.64394	1167.22192	3	3504.66152	1169.22778	6.01758	
xt_result_8772.xls	3	3498.64431	1167.22205	3	3504.66225	1169.22803	6.01794	
xt_result_8777.xls	3	3498.64431	1167.22205	3	3504.66262	1169.22815	6.01831	
xt_result_7582.xls	3	3604.63454	1202.55212	3	3610.65359	1204.55847	6.01905	17
xt_result_7572.xls	3	3604.63637	1202.55273	3	3610.65505	1204.55896	6.01868	

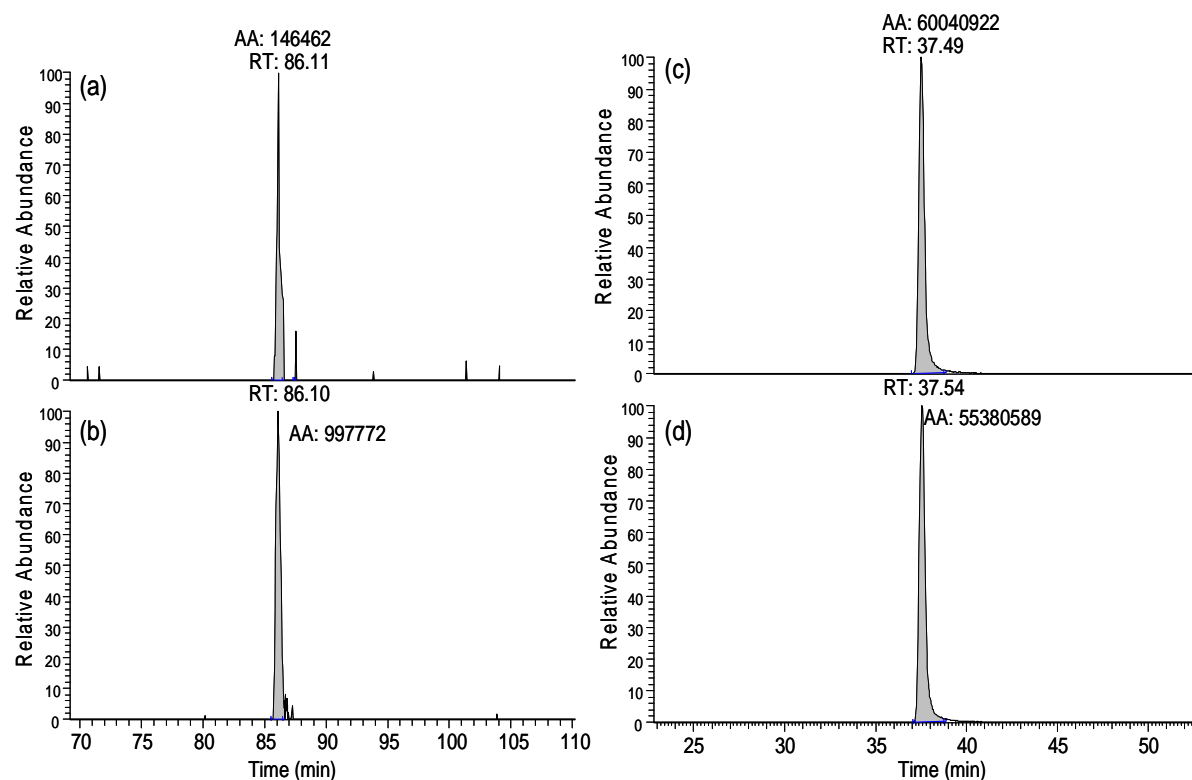
xt_result_7563.xls	3	3604.63674	1202.55286	3	3610.65578	1204.5592	6.01904	
xt_result_7577.xls	3	3604.63674	1202.55286	3	3610.65505	1204.55896	6.01831	
xt_result_7567.xls	3	3604.63747	1202.5531	3	3610.65688	1204.55957	6.01941	
xt_result_7574.xls	3	3604.63747	1202.5531	3	3610.65651	1204.55945	6.01904	
xt_result_5992.xls	3	3780.7549	1261.25891	3	3786.77395	1263.26526	6.01905	18
xt_result_5986.xls	3	3780.756	1261.25928	3	3786.77614	1263.26599	6.02014	
xt_result_5998.xls	3	3780.75637	1261.2594	3	3786.77578	1263.26587	6.01941	
xt_result_5974.xls	3	3780.75783	1261.25989	3	3786.77688	1263.26624	6.01905	
xt_result_9358.xls	3	3823.88723	1275.63635	3	3829.9059	1277.64258	6.01867	19
xt_result_9386.xls	4	3823.88813	956.97931	4	3829.90668	958.48395	6.01855	
xt_result_9434.xls	3	3823.88833	1275.63672	3	3829.90627	1277.6427	6.01794	
xt_result_9406.xls	4	3823.88862	956.97943	4	3829.90815	958.48431	6.01953	
xt_result_9360.xls	3	3823.88869	1275.63684	3	3829.90664	1277.64282	6.01795	
xt_result_9363.xls	3	3823.88869	1275.63684	3	3829.90627	1277.6427	6.01758	
xt_result_9406.xls	3	3823.88869	1275.63684	3	3829.90517	1277.64233	6.01648	
xt_result_9385.xls	4	3823.88886	956.97949	4	3829.90595	958.48376	6.01709	
xt_result_9423.xls	3	3823.88906	1275.63696	3	3829.90627	1277.6427	6.01721	
xt_result_9387.xls	4	3823.88911	956.97955	4	3829.90668	958.48395	6.01757	
xt_result_9425.xls	4	3823.88911	956.97955	4	3829.90888	958.4845	6.01977	
xt_result_9380.xls	4	3823.88935	956.97961	4	3829.90693	958.48401	6.01758	
xt_result_9422.xls	3	3823.88942	1275.63708	3	3829.90664	1277.64282	6.01722	
xt_result_9436.xls	3	3823.88942	1275.63708	3	3829.9059	1277.64258	6.01648	
xt_result_9383.xls	4	3823.88959	956.97968	4	3829.90766	958.48419	6.01807	
xt_result_9368.xls	3	3823.88979	1275.63721	3	3829.907	1277.64294	6.01721	
xt_result_9380.xls	3	3823.88979	1275.63721	3	3829.9059	1277.64258	6.01611	
xt_result_9385.xls	3	3823.88979	1275.63721	3	3829.90664	1277.64282	6.01685	
xt_result_9386.xls	3	3823.88979	1275.63721	3	3829.90517	1277.64233	6.01538	
xt_result_9417.xls	3	3823.88979	1275.63721	3	3829.9081	1277.64331	6.01831	
xt_result_9420.xls	3	3823.88979	1275.63721	3	3829.9081	1277.64331	6.01831	
xt_result_9365.xls	3	3823.89016	1275.63733	3	3829.90627	1277.6427	6.01611	
xt_result_9371.xls	3	3823.89016	1275.63733	3	3829.907	1277.64294	6.01684	
xt_result_9409.xls	3	3823.89016	1275.63733	3	3829.90737	1277.64307	6.01721	
xt_result_9383.xls	3	3823.89052	1275.63745	3	3829.90627	1277.6427	6.01575	
xt_result_9387.xls	3	3823.89052	1275.63745	3	3829.90664	1277.64282	6.01612	

xt_result_9394.xls	3	3823.89052	1275.63745	3	3829.90737	1277.64307	6.01685	
xt_result_9425.xls	3	3823.89052	1275.63745	3	3829.9081	1277.64331	6.01758	
xt_result_9375.xls	4	3823.89082	956.97998	4	3829.90961	958.48468	6.01879	
xt_result_9401.xls	4	3823.89082	956.97998	4	3829.90937	958.48462	6.01855	
xt_result_9403.xls	4	3823.89082	956.97998	4	3829.90913	958.48456	6.01831	
xt_result_9412.xls	3	3823.89089	1275.63757	3	3829.90883	1277.64355	6.01794	
xt_result_9429.xls	3	3823.89089	1275.63757	3	3829.9081	1277.64331	6.01721	
xt_result_9394.xls	4	3823.89106	956.98004	4	3829.90815	958.48431	6.01709	
xt_result_9419.xls	3	3823.89126	1275.6377	3	3829.90847	1277.64343	6.01721	
xt_result_9439.xls	3	3823.89126	1275.6377	3	3829.90957	1277.6438	6.01831	
xt_result_9389.xls	4	3823.8913	956.9801	4	3829.90937	958.48462	6.01807	
xt_result_9405.xls	4	3823.8913	956.9801	4	3829.90888	958.4845	6.01758	
xt_result_9407.xls	4	3823.8913	956.9801	4	3829.90986	958.48474	6.01856	
xt_result_9396.xls	4	3823.89155	956.98016	4	3829.90888	958.4845	6.01733	
xt_result_9412.xls	4	3823.89155	956.98016	4	3829.90986	958.48474	6.01831	
xt_result_9393.xls	3	3823.89162	1275.63782	3	3829.90774	1277.64319	6.01612	
xt_result_9407.xls	3	3823.89162	1275.63782	3	3829.90774	1277.64319	6.01612	
xt_result_9415.xls	3	3823.89162	1275.63782	3	3829.90774	1277.64319	6.01612	
xt_result_9393.xls	4	3823.89179	956.98022	4	3829.90913	958.48456	6.01734	
xt_result_9408.xls	4	3823.89179	956.98022	4	3829.91035	958.48486	6.01856	
xt_result_9389.xls	3	3823.89199	1275.63794	3	3829.9092	1277.64368	6.01721	
xt_result_9403.xls	3	3823.89199	1275.63794	3	3829.9081	1277.64331	6.01611	
xt_result_9396.xls	3	3823.89235	1275.63806	3	3829.90957	1277.6438	6.01722	
xt_result_9408.xls	3	3823.89235	1275.63806	3	3829.9081	1277.64331	6.01575	
xt_result_9375.xls	3	3823.89272	1275.63818	3	3829.90847	1277.64343	6.01575	
xt_result_9401.xls	3	3823.89272	1275.63818	3	3829.90883	1277.64355	6.01611	
xt_result_9405.xls	3	3823.89272	1275.63818	3	3829.9092	1277.64368	6.01648	
xt_result_10980.xls	3	3886.93447	1296.6521	3	3892.95424	1298.65869	6.01977	20
xt_result_10981.xls	3	3886.93557	1296.65247	3	3892.95424	1298.65869	6.01867	
xt_result_10993.xls	3	3886.93557	1296.65247	3	3892.95571	1298.65918	6.02014	
xt_result_10984.xls	3	3886.93593	1296.65259	3	3892.95315	1298.65833	6.01722	
xt_result_10990.xls	3	3886.9363	1296.65271	3	3892.95424	1298.65869	6.01794	
xt_result_10983.xls	3	3886.93703	1296.65295	3	3892.95644	1298.65942	6.01941	
xt_result_9257.xls	3	4315.05886	1439.36023	3	4321.0757	1441.36584	6.01684	21

xt_result_9260.xls	3	4315.05922	1439.36035	3	4321.07607	1441.36597	6.01685	
xt_result_9271.xls	3	4315.05922	1439.36035	3	4321.07534	1441.36572	6.01612	
xt_result_9263.xls	3	4315.05959	1439.36047	3	4321.07497	1441.3656	6.01538	
xt_result_9240.xls	4	4315.05976	1079.77222	4	4321.07636	1081.27637	6.0166	
xt_result_9242.xls	4	4315.05976	1079.77222	4	4321.07832	1081.27686	6.01856	
xt_result_9265.xls	3	4315.05996	1439.3606	3	4321.0768	1441.36621	6.01684	
xt_result_9240.xls	3	4315.06032	1439.36072	3	4321.07644	1441.36609	6.01612	
xt_result_9243.xls	3	4315.06032	1439.36072	3	4321.07644	1441.36609	6.01612	
xt_result_9279.xls	3	4315.06032	1439.36072	3	4321.07534	1441.36572	6.01502	
xt_result_9225.xls	3	4315.06069	1439.36084	3	4321.07827	1441.3667	6.01758	
xt_result_9234.xls	3	4315.06069	1439.36084	3	4321.07754	1441.36646	6.01685	
xt_result_9262.xls	3	4315.06069	1439.36084	3	4321.07717	1441.36633	6.01648	
xt_result_9242.xls	3	4315.06106	1439.36096	3	4321.0779	1441.36658	6.01684	
xt_result_9273.xls	3	4315.06106	1439.36096	3	4321.07644	1441.36609	6.01538	
xt_result_9246.xls	4	4315.06123	1079.77258	4	4321.07783	1081.27673	6.0166	
xt_result_9254.xls	4	4315.06123	1079.77258	4	4321.0788	1081.27698	6.01757	
xt_result_9249.xls	3	4315.06142	1439.36108	3	4321.07827	1441.3667	6.01685	
xt_result_9254.xls	3	4315.06179	1439.36121	3	4321.07717	1441.36633	6.01538	
xt_result_9232.xls	3	4315.06215	1439.36133	3	4321.07863	1441.36682	6.01648	
xt_result_9229.xls	3	4315.06252	1439.36145	3	4321.07827	1441.3667	6.01575	
xt_result_9238.xls	3	4315.06289	1439.36157	3	4321.07863	1441.36682	6.01574	
xt_result_9246.xls	3	4315.06289	1439.36157	3	4321.07827	1441.3667	6.01538	
xt_result_9238.xls	4	4315.06318	1079.77307	4	4321.07978	1081.27722	6.0166	
xt_result_9231.xls	3	4315.06325	1439.36169	3	4321.07937	1441.36707	6.01612	
xt_result_10665.xls	3	4991.40651	1664.80945	3	4997.42519	1666.81567	6.01868	22
xt_result_10659.xls	3	4991.40761	1664.80981	3	4997.4219	1666.81458	6.01429	
xt_result_10945.xls	3	5191.52285	1731.51489	3	5197.54189	1733.52124	6.01904	23
xt_result_10947.xls	3	5191.52871	1731.51685	3	5197.54226	1733.52136	6.01355	
xt_result_10104.xls	3	5286.41726	1763.14636	3	5292.43337	1765.15173	6.01611	24
xt_result_10114.xls	3	5286.41762	1763.14648	3	5292.43337	1765.15173	6.01575	
xt_result_10119.xls	3	5286.41799	1763.14661	3	5292.43264	1765.15149	6.01465	
xt_result_10121.xls	3	5286.41799	1763.14661	3	5292.43447	1765.1521	6.01648	
xt_result_10106.xls	3	5286.41836	1763.14673	3	5292.43374	1765.15186	6.01538	
xt_result_10107.xls	3	5286.41836	1763.14673	3	5292.43557	1765.15247	6.01721	

xt_result_10110.xls	3	5286.41836	1763.14673	3	5292.43374	1765.15186	6.01538	
xt_result_10117.xls	3	5286.41872	1763.14685	3	5292.43557	1765.15247	6.01685	
xt_result_10108.xls	3	5286.41909	1763.14697	3	5292.4341	1765.15198	6.01501	
xt_result_10109.xls	3	5286.41909	1763.14697	3	5292.43337	1765.15173	6.01428	
xt_result_10101.xls	3	5286.41982	1763.14722	3	5292.43447	1765.1521	6.01465	
xt_result_10105.xls	3	5286.41982	1763.14722	3	5292.4341	1765.15198	6.01428	
xt_result_10122.xls	3	5286.41982	1763.14722	3	5292.43484	1765.15222	6.01502	
xt_result_10125.xls	3	5286.41982	1763.14722	3	5292.43374	1765.15186	6.01392	
xt_result_10126.xls	3	5286.42019	1763.14734	3	5292.43447	1765.1521	6.01428	
xt_result_10131.xls	3	5286.42019	1763.14734	3	5292.43593	1765.15259	6.01574	
xt_result_10113.xls	3	5286.42055	1763.14746	3	5292.43557	1765.15247	6.01502	
xt_result_10111.xls	3	5286.42129	1763.14771	3	5292.4363	1765.15271	6.01501	
xt_result_10103.xls	3	5286.42202	1763.14795	3	5292.43593	1765.15259	6.01391	
xt_result_10116.xls	3	5286.42202	1763.14795	3	5292.43593	1765.15259	6.01391	
xt_result_10133.xls	3	5286.42202	1763.14795	3	5292.4363	1765.15271	6.01428	
xt_result_10760.xls	3	5379.55056	1794.1908	3	5385.56191	1796.19458	6.01135	
xt_result_11136.xls	3	5947.92019	1983.64734	3	5953.9374	1985.65308	6.01721	25
xt_result_11128.xls	3	5947.92422	1983.64868	3	5953.93703	1985.65295	6.01281	
xt_result_11128.xls	4	5947.92548	1487.98865	4	5953.93867	1489.49194	6.01319	
xt_result_11136.xls	4	5947.92646	1487.98889	4	5953.93916	1489.49207	6.0127	
xt_result_11134.xls	4	5947.92744	1487.98914	4	5953.93916	1489.49207	6.01172	
xt_result_11177.xls	4	6785.30732	1697.33411	4	6791.32197	1698.83777	6.01465	26
xt_result_11172.xls	4	6785.31123	1697.33508	4	6791.32636	1698.83887	6.01513	
xt_result_11168.xls	4	6785.31367	1697.33569	4	6791.32539	1698.83862	6.01172	
xt_result_11151.xls	4	6785.31416	1697.33582	4	6791.32587	1698.83875	6.01171	
xt_result_11141.xls	4	6785.31464	1697.33594	4	6791.32685	1698.83899	6.01221	
xt_result_11159.xls	4	6785.31708	1697.33655	4	6791.33027	1698.83984	6.01319	
xt_result_11026.xls	4	7651.71748	1913.93665	4	7657.73164	1915.44019	6.01416	27
xt_result_10933.xls	9	8178.99103	909.78406	9	8185.00494	910.45227	6.01391	28
xt_result_10944.xls	9	8178.99323	909.7843	9	8185.00934	910.45276	6.01611	
xt_result_10959.xls	7	8178.99447	1169.43506	7	8185.0101	1170.29443	6.01563	

Note: shown in red color are the positive glycosylated peptides after manual screening



Supplementary Figure S-1. (a) (b): Extracted ion chromatograms of m/z 1261.2592 (+3) (corresponding to the glycated peptide VDNALQSGNSQESVTEQDSK₂₀DSTYLSLSTLTLTK) in the tryptic digest of native ruhMab A (a) and in-vitro glycated ruhMab A with glucose (b); (c) (d): Extracted ion chromatograms of m/z 1068.4880 (+2) (corresponding to unmodified peptide VDNALQSGNSQESVTEQDSK₂₀) in the tryptic digest of native ruhMab A (c) and in-vitro glycated ruhMab A with glucose (d). The mass tolerance window is ± 5 ppm. The approximate percentage of glycation at Lys-20 is calculated by the peak area of m/z 1261.2592 divided by the total peak area of m/z 1261.2592 and m/z 1068.4880.

Supplementary Table S-3: list of glycated peptides identified in tryptic digest of native rhuMAB A and after in-vitro glycation

Observed monoisotopic m/z	Peptide sequence in rhuMAB A	Mass error (ppm)	Lysine Position No.	Percentage of glycation ^a (%) in native rhuMAB A	Percentage of glycation ^a (%) after in-vitro glycation by ¹² C ₆ -Glucose	Percentage of glycation ^a (%) after in-vitro glycation by ¹² C ₆ -Galactose
1763.1462(+3)	LC aa61-aa106	-0.23	LC: K102	1.1	16.19	11.57
1294.9728(+3)	LC aa85-aa116 ^b	-0.50	LC: K102 or K106	Not observed	0.32	0.35
1296.6521(+3)	LC aa108-aa141	0.14	LC: K125	Not observed	0.40	0.69
1420.1641(+2)	LC aa145-aa168	-0.7	LC: K148	0.27	4.04	5.28
1261.2592(+3)	LC aa149-aa182	0.25	LC: K168	0.24	1.77	2.71
1136.0419(+2)	LC aa169-aa187	0.14	LC: K182	0.75	9.17	13.20
902.9574(+2)	LC aa173-aa187	0.93	LC: K182	Not observed	0.22	2.76
526.7484(+2)	LC aa183-aa189	0.02	LC: K187	0.73	1.72	4.35
768.7110(+3)	LC aa188-aa206	0.39	LC: K189	0.05	0.36	0.59
1303.6233(+2)	HC aa44-aa65	-0.78	HC: K63	Not observed	1.16	1.18
1326.6737(+2)	HC aa127-aa152	-1.4	HC: K138	0.14	1.4	1.45
1460.1846(+2)	HC aa139-aa164 ^c	0.55	HC: K152	Not observed	0.55	3.30
1664.8091(+3)	HC aa139-aa185 ^c	-0.16	HC: K152	Not observed	0.22	3.53
1731.5149(+3)	HC aa139-aa187 ^c	0.11	HC: K152	Not observed	Not observed	0.36
1487.9889 (+4)	HC aa139-aa195 ^c	0.41	HC: K152	Not observed	Not observed	2.91
1697.3358(+4)	HC aa139-aa203 ^c	0.48	HC: K152	Not observed	0.16	6.0

1913.9377(+4)	HC aa139-aa210 ^c	0.52	HC: K152	Not observed	0.17	6.11
1636.8054(+5)	HC aa139-aa215	0.3	HC: K152	0.20	3.04	6.54
627.3001(+2)	HC aa219-aa227 ^b	0.02	HC: K219 or K223	Not observed	Not observed	3.47
1361.0026(+3)	HC aa219-aa253 ^b	-1.9	HC: K219, K223, K227, or K251	0.04	0.59	0.37
1167.2196(+3)	HC aa224-aa253 ^b	-0.3	HC: K227 or K251	0.50	5.29	4.79
1439.3588(+3)	HC aa224-aa260 ^b	-0.65	HC: K227, K251 or K253	0.50	7.30	3.24
1003.4987(+3)	HC aa228-aa253	1.1	HC: K251	Not observed	0.22	2.79
1275.6368(+3)	HC aa228-aa260 ^b	0.3	HC: K251 or K253	0.05	1.32	7.06
611.8214(+2)	HC aa252- aa260	0.77	HC: K253	Not observed	0.77	8.44
774.7226(+3)	HC aa280-aa297	0.90	HC: K293	0.14	2.70	2.52
797.4245(+3)	HC aa307-aa325	-0.57	HC: K322	0.03	0.78	1.78
859.4556(+2)	HC aa326-aa339 ^b	-0.05	HC: K327 or K331	0.18	2.50	1.64
714.9008(+2)	HC aa328-aa339	-0.08	HC: K331	0.94	10.92	17.66
715.4108(+2)	HC aa332-aa343	-0.38	HC: K339	0.10	1.09	1.79
1202.5527(+3)	HC aa422-aa451	0.33	HC: K444	0.03	0.57	0.52

^a The percentages of glycation at the corresponding peptides were calculated based on integrated peak area of extracted ion chromatogram of the ketoamine-modified peptide divided by the total peak area of ketoamine and unmodified tryptic peptides.

^b Sequence contains more than one lysine residues

^c Semi-tryptic cleavage