Preparation and application of silver nanoparticles functionalized magnetic graphene oxide nanocomposites

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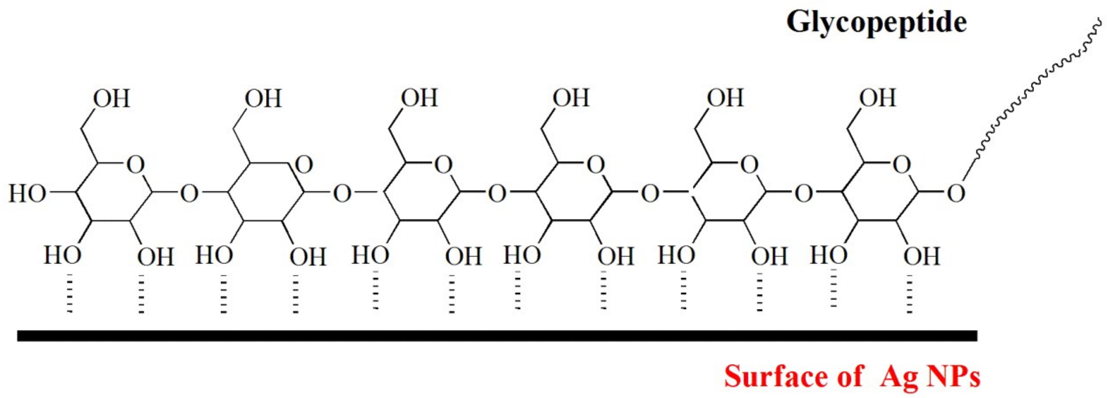

Scheme. S1 Proposed mechanism of the multivalent interactions between Ag nanoparticles and the glycan of glycopeptide.[1]

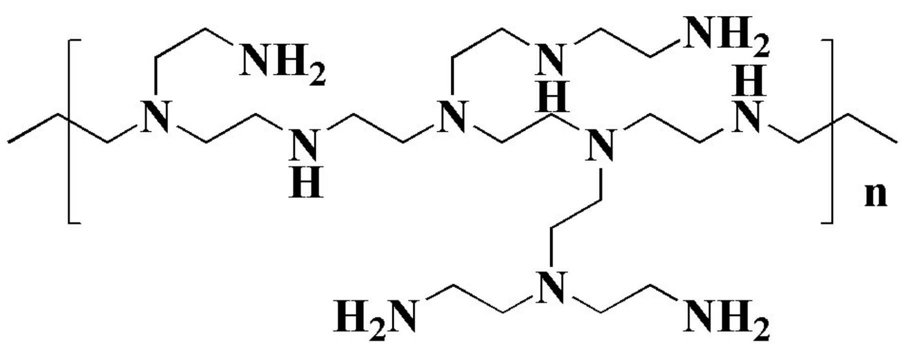

Fig. S1 Chemical structure of PEI.

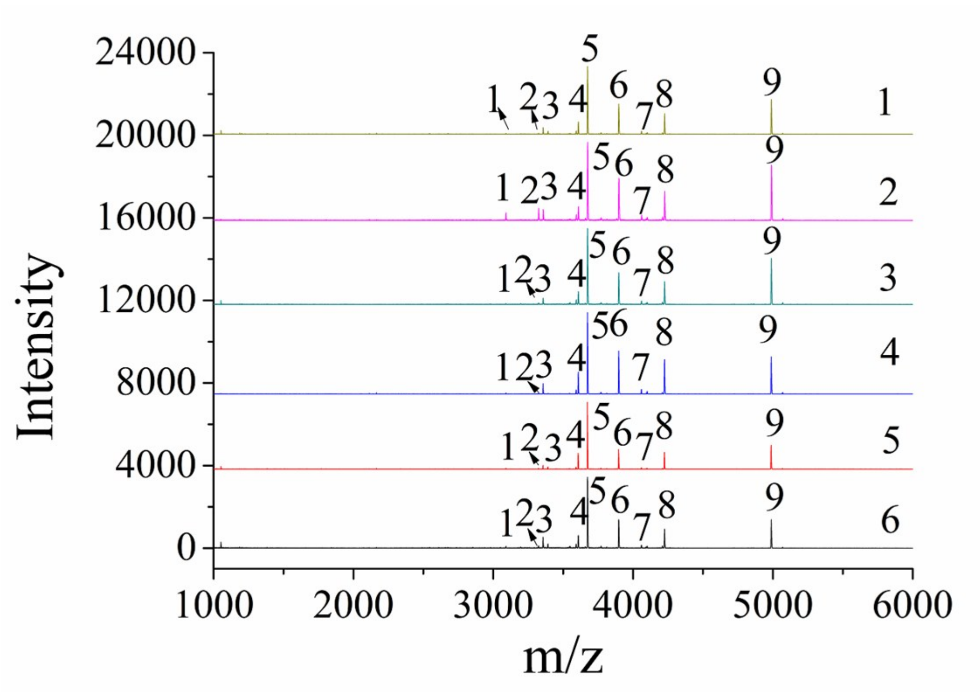

Fig. S2 The repeatability performance of the $GO/Fe_3O_4/PEI/Ag$ nanocomposites. $GO/Fe_3O_4/PEI/Ag$ nanocomposites was used to enrich 2.5 pmol tryptic HRP in consecutive times. The peaks was mapped as glycopeptides.

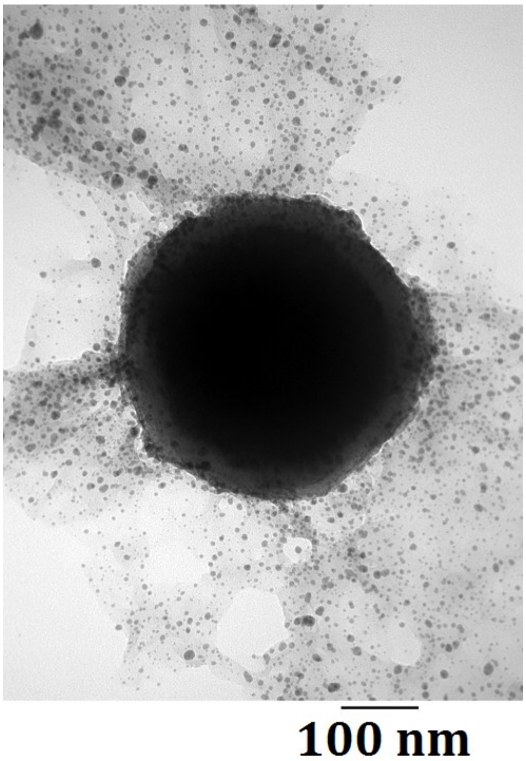

Fig. S3 TEM image of GO/Fe_3O_4/PEI/Ag nanocomposites after 6 enrichment runs.

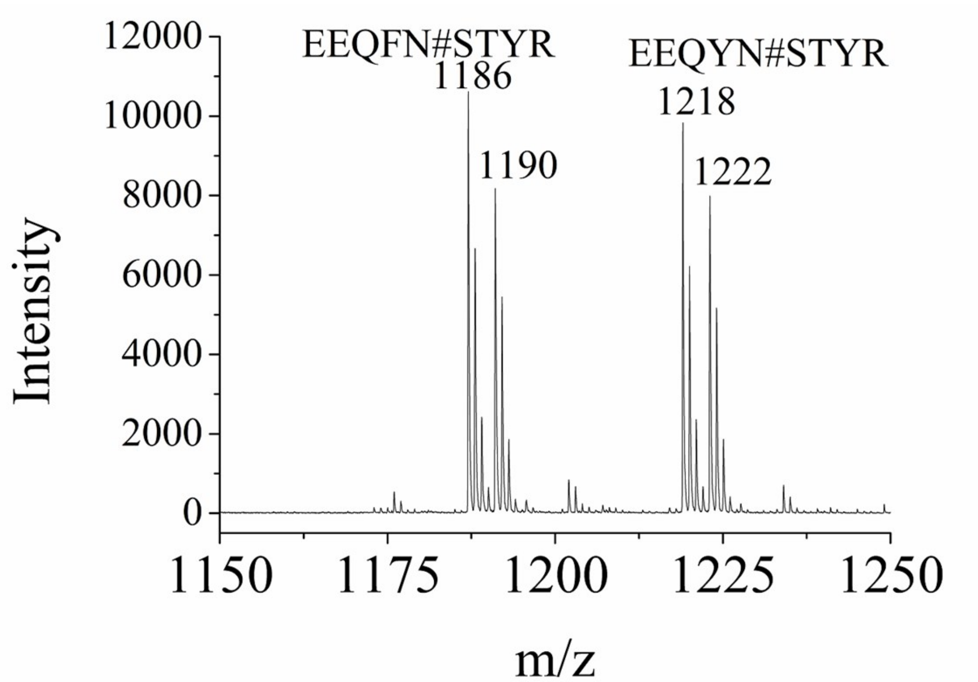

Fig. S4 MALDI-TOF MS spectra of two human IgG deglycosylated peptides of by PNGase F.

Table. S1 Molecular masses and proposed oligosaccharide composition of the glycopeptides from HRP after enrichment. N# denotes the N-linked glycosylation site.

Number	m/z	Glycan composite	Amino acid sequence
1	3089	[Hex]3[HexNAc]2[Fuc]1[Xyl]1	GLCPLNGN#LSALVDFDLR
2	3322	[Hex]3[HexNAc]2[Fuc]1[Xyl]1	QLTPTFYDNSCPN#VSNIVR
3	3354	[Hex]3[HexNAc]2[Fuc]1[Xyl]1	SFAN#STQTFFNAFVEAMDR
4	3607	[Hex]3[HexNAc]2[Fuc]1[Xyl]1	NQCRGLCPLNGN#LSALVDFDLR
5	3673	[Hex]3[HexNAc]2[Fuc]1[Xyl]1	GLIQSDQELFSSPN#ATDTIPLVR
6	3895	[Hex]3[HexNAc]2[Fuc]1[Xyl]1	LHFHDCFVNGCDASILLDN#TTSFR
7	4057	[Hex]3[HexNAc]2[Xyl]1	QLTPTFYDNSC(AAVESACPR)PN#VSNIVR-H_2O
8	4224	[Hex]3[HexNAc]2[Fuc]1[Xyl]1	QLTPTFYDNSC(AAVESACPR)PN#VSNIVR
9	4985	[Hex]3[HexNAc]2[Fuc]1[Xyl]1 [Hex]3[HexNAc]2[Fuc]1[Xyl]1	LYN#FSNTGLPDPTLN#TTYLQTLR

HexNAc=N-acetylglucosamine, Fuc=fuctose, Hex=mannose, Xyl=xylose.

Table. S2 The recovery of GO/Fe_3O_4/PEI/Ag nanocomposites.

Ratio (%)	**EEQFN#STYR**	**EEQYN#STYR**
D/H 1	75.8	82.2
D/H 2	80.3	88.7
D/H 3	77.3	87.6
Average recovery	77.8±2.3	86.2±3.5

Table. S3 The list of glycopeptides sequence and glycosylation sites.

Number	Glycopeptide sequence
1	AAINKWVSNKTEGR
2	AAIPSALDTNSSK
3	AALAAFNAQNNGSNFQLEEISR
4	ADGTVNQIEGEATPVNLTEPAKLEVK
5	AELSNHTRPVILVPGCLGNQLEAK
6	AENQVNVTCQVR
7	AFGSNPNLTK
8	ALGFENATQALGR
9	ALPQPQNVTSLLGCTH
10	ANYTILK
11	AQLLQGLGFNLTER
12	DDILNGSHPVSFDK
13	DIENFNSTQK
14	DIVEYYNDSNGSHVLQGR
15	DRDGNTLTYYR
16	DTFVNASR
17	DVQIIVFPEDGIHGFNFTR
18	EEQFNSTFR
19	EEQFNSTYR
20	EEQYNSTFR
21	EEQYNSTYR
22	EGHFYYNISEVK
23	EGYSNISYIVVNHQGISSR
24	EHEGAIYPDNTTDFQR
25	ELHHLQEQNVSNAFLDK
26	ELHHLQEQNVSNAFLDKGEFYIGSK
27	ENISDPTSPLR
28	ENLTAPGSDSAVFFEQGTTR
29	ERSWPAVGNCSSALR
30	ETFFNLSK
31	ETFFNLSKR
32	ETPENLSNGTSSNVEAAK
33	EVFVHPNYSK
34	EVNDTLLVNELK
35	FEVDSPVYNATWSASLK
36	FLNNGTCTAEGK
37	FNDTEVLQR
38	FNPGAESVVLSNNSTLK

39	FNSSYLQGTNQITGR
40	FSDGLESNSSTQFEVK
41	FSDGLESNSSTQFEVKK
42	FVEGSHNSTVSLTTK
43	GAFISNFSMTVDGK
44	GFGVAIVGNYTAALPTEAALR
45	GHTLTLNFTR
46	GHVNITR
47	GLCVNASAVSR
48	GLNVTLSSTGR
49	GLNVTLSSTGRNGFK
50	GPECSQNYTTPSGVIK
51	GVNFNVSK
52	HANWTLTPLK
53	HIPGLIHNMTAR
54	IDSTGNVTNELR
55	IPCSQPPQIEHGTINSSR
56	ISEENETTCYMGK
57	ITYSIVQTNCSK
58	IYPGVDFGGEELNVTFVK
59	KEHETCLAPELYNGNYSTTQK
60	KFVQGNSTEVACHPGYGLPK
61	KLHINHNNLTESVGPLPK
62	KLINDYVKNGTR
63	KVCQDCPLLAPLNDTR
64	LANLTQGEDQYYLR
65	LEPVHLQLQCMSQEQLAQVAANATK
66	LETTVNYTDSQRPICLPSK
67	LGACNDTLQQLMEVFK
68	LGNWSAMPSCK
69	LGTSLSSGHVLMNGTLK
70	LHEITNETFR
71	LHINHNNLTESVGPLPK
72	LINDYVKNGTR
63	LLDLSGNNLTHLPK
74	LNAENNATFYFK
75	LPTQNITFQTESSVAEQEAEFQSPK
76	LQAILGVPWKDKNCTSR
77	LQAPLNYTEFQKPICLPSK
78	LQNNENNISCVER
79	LRNVSWATGR
80	LSDLSINSTECLHVHCR
81	LYPIANGNNQSPVDIK
82	MDGASNVTCINSR

83	NFTENDLLVR
84	NGSGAVFPVAGADVQTLR
85	NGTLVAFR
86	NHSCSEGQISIFR
87	NKNCTAIWEAFK
88	NLFLNHSENATAK
89	NLSMPLLPADFHK
90	NLTTSLTESVDR
91	NNATVHEQVGGPSLTSDLQAQSK
92	NNCSGLPDGGLR
93	NPNGTVTVISR
94	NPVGLIGAENATGETDPSHSK
95	QDQCIYNTTYLNVQR
96	QGGVNATQVLIQHLR
97	QSVPAHFVALNGSK
98	RNHSCEPCQTLAVR
99	RNPPMGGNVVIFDTVITNQEEPYQNHSGR
100	SEGSSVNLSPPLEQCVPDRGQQYQGR
101	SHNRSEEFLIAGK
102	SLVTQYLNATGNR
103	SPDVINGSPISQK
104	SRYPHKPEINSTTHPGADLQENFCR
105	SVVAPATDGGLNLTSTFLR
106	SWPAVGNCSSALR
107	SYNVTSVLFR
108	TLNQSSDELQLSMGNAMFVK
109	TMFPNLTDVR
110	TNSTFVQALVEHVK
111	TPLTANITK
112	TVKPPEDQLKSENLEVSSSFNYSVLQHLGQFPPLMPNK
113	TWNQSIALR
114	VASVININPNTTHSTGSCR
115	VCQDCPLLAPLNDTR
116	VIDFNCTTSSVSSALANTK
117	VLNFTTK
118	VLSNNSDANLELINTWVAK
119	VLYLAAYNCTLRPVSK
120	VNESVVSIAAQQK
121	VNQNLVYESGSLNFSK
122	VNSTELFHVDR
123	VSNVSCQASVSR
124	VTACHSSQPNATLYK
125	VVAEGFDFANGINISPDGK
126	VVLHPNYSQVDIGLIK

127	VVNNSPQPQNVVFDVQIPK
128	VVNSTTGPGEHLR
129	VYKPSAGNNSLYR
130	VYSGILNQSEIK
131	WSDIWNATK
132	YAEDKFNETTEK
133	YLGNATAIFFLPDEGK
134	YNSQNQSNNQFVLYR
135	YPHKPEINSTTHPGADLQENFCR
136	YTGNASALFILPDQDK

References

1. W. F. Ma, L. L. Li, Y. Zhang, Q. An, L. J. You, J. M. Li, Y. T. Zhang, S. Xu, M. Yu, J. Guo, H. J. Lu and C. C. Wang, *J. Mater. Chem.*, 2012, **22**, 23981-23988.