Supporting Information

Characterization

Deionized water was got through using Milli-Q IQ 7000. Scanning electron microscopy (SEM, Keol 2012 microscope), energy-dispersive X-ray spectroscopy (EDX, Keol 2012 microscope), Fourier transform infrared spectra (FT-IR, Thermo Fisher Scientific 10 infrared spectrometer analysis).

Standard proteins digests pretreatment

HRP (2 mg) was added to deionized water (200 μL) and denatured at 100℃ for 10 min. After adding ammonium bicarbonate (NH_4HCO_3) (50 mM, 0.5 mL) and trypsin (1 mg mL^{-1}, 0.25 mL), HRP was digest at 37℃ for 16h.

According to the classic method, BSA was pretreated with DTT and IAA. BSA (50 mg) dispersed in NH_4HCO_3 (50 mM, 2.5mL) was boiled and denatured at 100℃ for 10 minutes. Then a mixed solution of DTT (200 mM, 0.25 mL) and NH_4HCO_3 (50 mM, 2.25 mL) was added to it and shaken at 37℃ for 1 h. Afterwards, a mixed solution of IAA (400 mM, 0.5 mL) and NH_4HCO_3 (50 mM, 4.5 mL) was added to it under dark conditions and alkylated at 37℃ for 1h. Finally, trypsin (1 mg mL^{-1}, 125 μL) was added, and enzymatic degradation was carried out at 37℃ for 16 hours in a dark environment.

Enzymatic digestion of serum

Serum samples were collected from multiple healthy volunteers and

volunteers with preeclampsia (PE). 1 mg serum was dissolved in NH_4HCO_3 (50 mM) and denatured at 100°C for 12 minutes. After natural cooling, DTT (200 mM) and NH_4HCO_3 (50 mM) were added to it and shaken at 37°C for 1 h. Subsequently, a mixed solution of IAA (400 mM) and NH_4HCO_3 (50 mM) were added to it in a dark environment and alkylated at 37°C for 1 h. Finally add trypsin (1 mg mL^{-1}) and shake overnight.

Enrichment of glycopeptides from PE serum

1 mg of BCS was ultrasonically dispersed in 100 μL of loading buffer (100 mM NH_4HCO_3), 500 μg of biological samples digests were added and the solution was shaken at 37℃ for 2 hours. The supernatant was removed by centrifugation and washed with loading buffer (100 mM NH_4HCO_3) several times. Then 10 μL of eluting buffer (2% TFA dissolved in 50% ACN aqueous solution) was added and incubated at 37℃ for 1 h and repeat it again. The eluate was collected, desalted and lyophilized for later use.

MALDI-TOF MS analysis

All experiments were recorded by MALDI-TOF MS (Bruker auto flex max). The instrument was operated by an upgraded Nd:YAG laser at 355 nm and an acceleration voltage of TOF at 20 kV with a detection frequency of 1000 Hz. The detection range of the mass-to-charge ratio was 1000-5000 Da. 2,5-

Dihydroxybenzoic acid (DHB) (20 mg mL^{-1}, dissolved in ACN:H_2O = 30:70, v/v) was applied as the matrix.

Nano LC-MS/MS analysis

Liquid phase A was a 0.1% formic acid aqueous solution, and B was a 0.1% formic acid acetonitrile solution (acetonitrile is 100%). Column Thermo Scientific analytical column (75μm×25 cm, 5μm, 100 Å, C18) was equilibrated with 95% A liquid. The sample was loaded by the autosampler to the Thermo Scientific EASY trap column (100μm×2cm, 5μm, 100Å, C18), and then separated by the chromatographic column. The relevant liquid gradient was as follows: from 0 min to 40 min, linear gradient of liquid B was from 5% to 28%; from 40 minutes to 42 minutes, the linear gradient of liquid B was from 28% to 90%; from 42 minutes to 60 minutes, the liquid B was maintained at 90%. The enzymatic hydrolysis products were desalted and separated by capillary high performance liquid chromatography, and then analyzed by mass spectrometry using Obitrap Fusion Lumos mass spectrometer (Thermo Finnigan, San Jose, CA). Analysis time: 60min, detection method: positive ion, precursor ion scan range: 375-1800 m/z, primary mass spectrometry resolution: 120,000 at m/z 200, scan mode: Top-Speed, AGC target: 4e5, first-level Maximum IT: 50 ms, Number of scan ranges: 1, Dynamic exclusion: 40.0 s, Data Dependent Mode: Cycle Time, Time between Master Scan: 3s. The mass-to-charge ratios of peptides and peptide fragments were collected according to the following

method: the secondary spectrum scan (MS2 scan) was performed at the same time as each primary scan (Master scan), the scanning cycle was 3s, MS2 Activation Type: HCD, secondary mass spectrometry Resolution: 50,000 at m/z 200, Microscans: 1, Level 2 Maximum IT: 105 ms, AGC target: 1e5.

Data analysis

The original data of mass spectrometry analysis was RAW file, and the built-in software Proteome Discoverer 2.4 (Thermo Scientific) was used for library identification and quantitative analysis. The uniprot database is used this time: uniprot_human_20210621_202249.fasta. When searching the library, submitting the RAW file to SequestHT through Proteome Discoverer, selecting the established database, and then searching the database. The search parameters were as follows: monoisotopic mass, trypsin digestion, maximum 2 missing cut sites, peptides Charged number: 2+, 3+ and 4+, fixed modification to carbamidomethylation (C), dynamic modification to oxidation (M), Acethyl (protein N-term) and Deamidated [N]. The maximum error of the precursor ion was 10 ppm, and the maximum error of the fragment ion was 0.05 Da. Proteome Discoverer 2.4 performs Peptide high Confidence screening based on the peptide identification results and outputed the results.

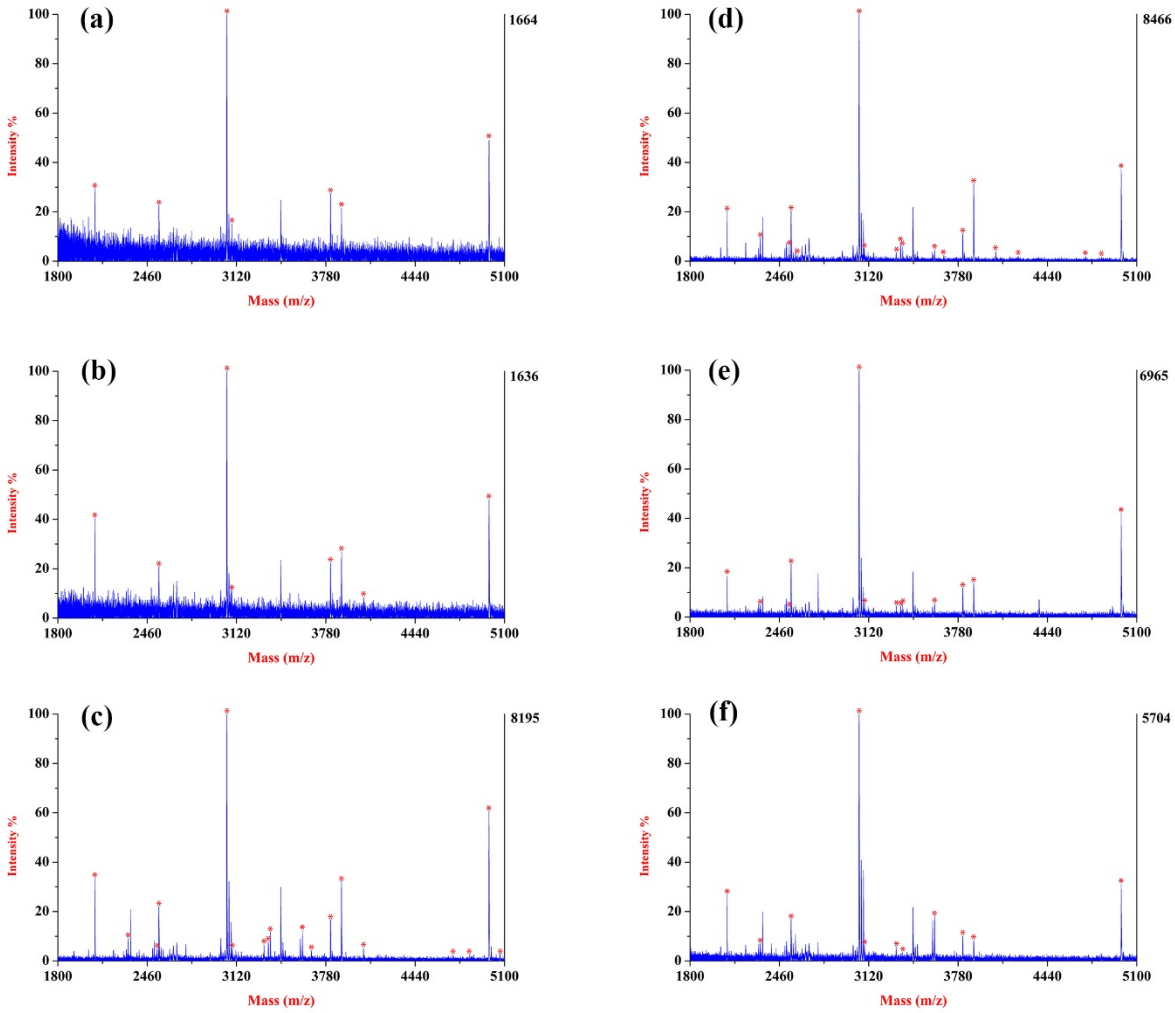

Fig. S1. The enrichment performance of BCS prepared at different mass ratios: (a) $G_{10}B_1N_1$, (b) $G_{10}B_3N_1$, (c) $G_{10}B_{10}N_1$, (d) $G_{10}B_{10}N_1$, (e) $G_{10}B_{10}N_5$, (f) $G_{10}B_3N_{10}$.

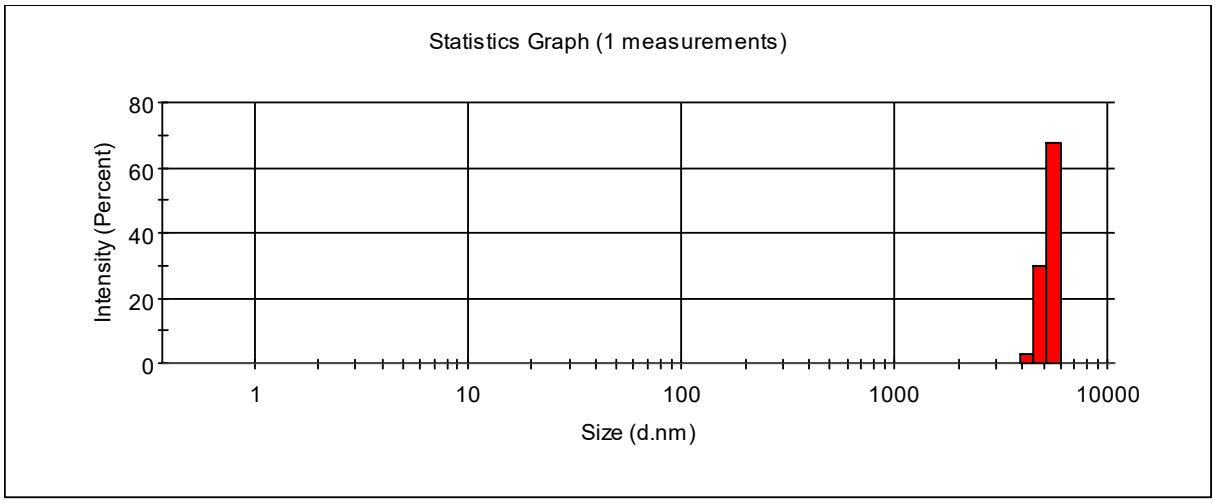

Fig. S2. DLS measurement showing size distribution of BCS.

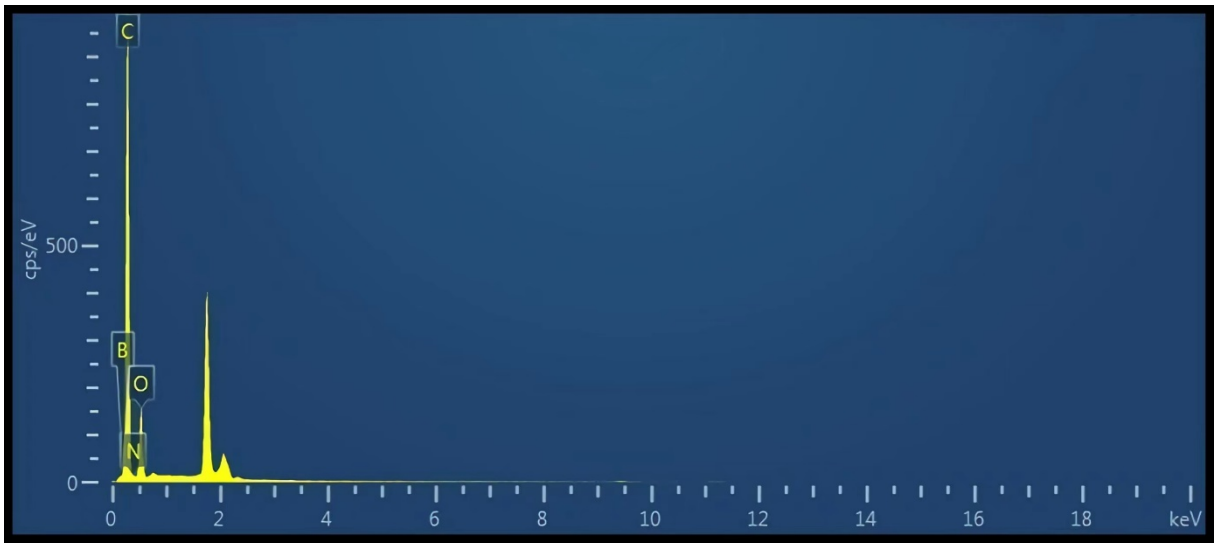

Fig. S3. The EDX spectrum of BCS.

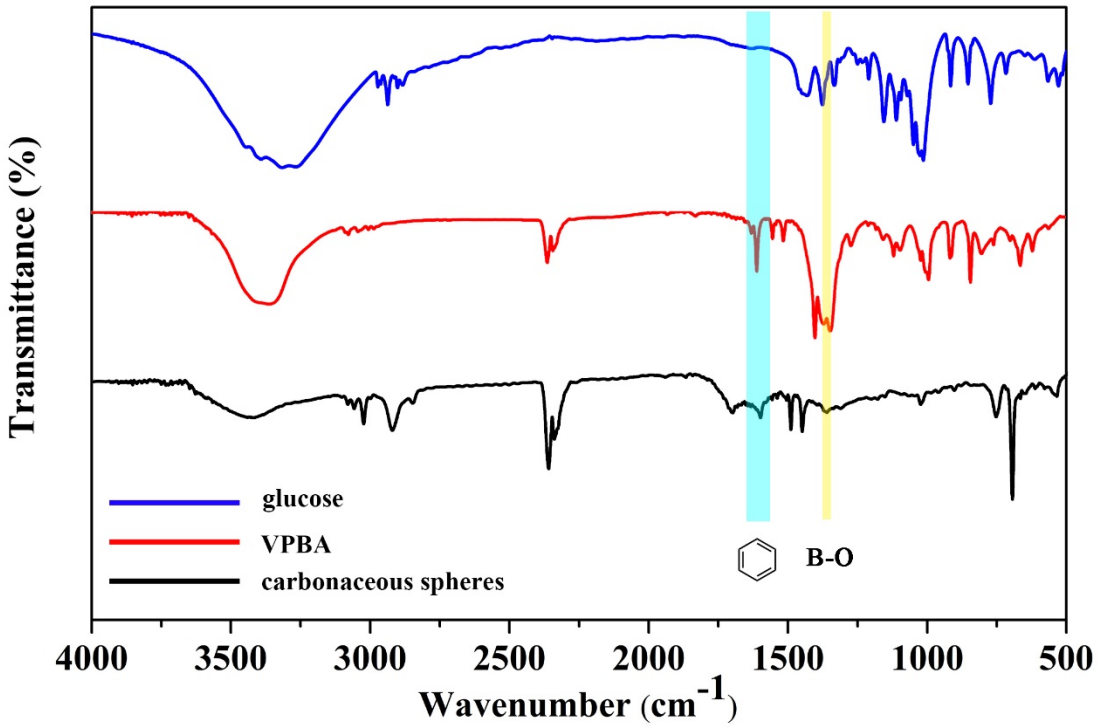

Fig. S4. The FT-IR spectra of BCS.

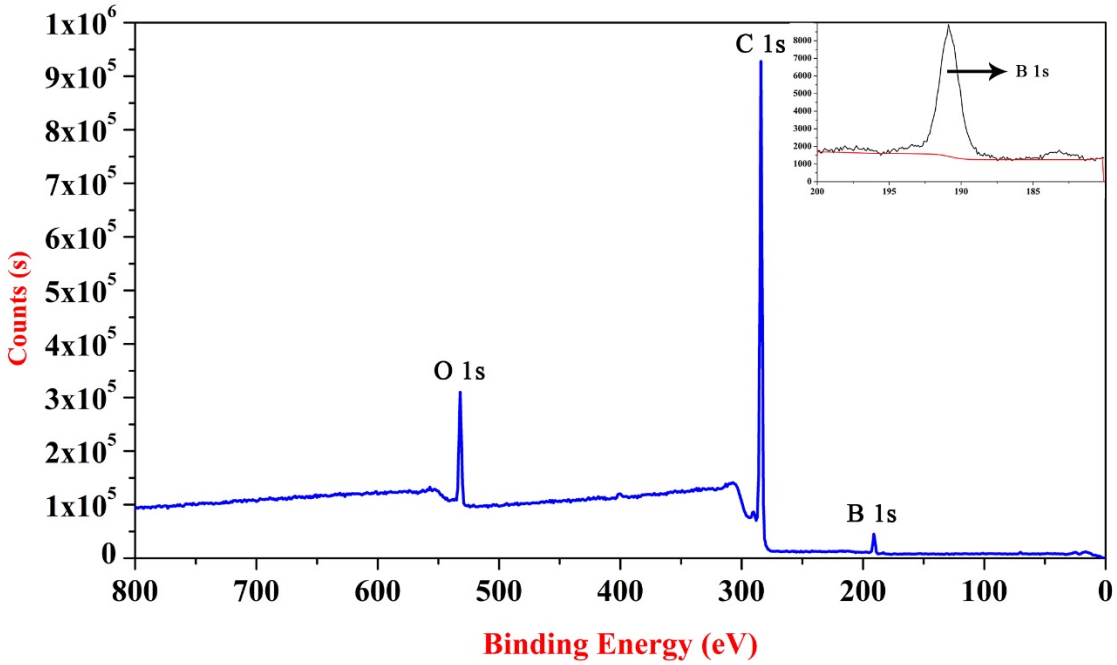

Fig. S5. XPS spectra of BCS nanocomposite. Inset: XPS spectra of elemental boron.

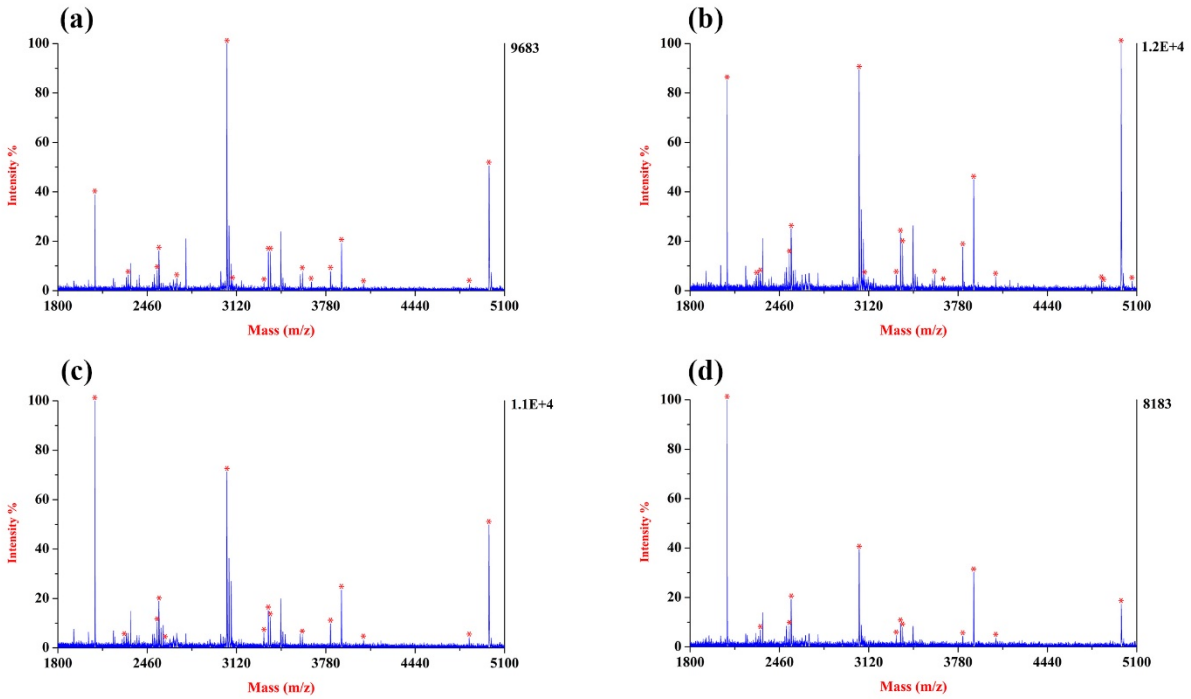

Fig. S6. MALDI-TOF MS spectra of HRP tryptic digest eluted with different eluting buffer by BCS: (a) for 1% TFA dissolved in 50% ACN aqueous solution, (b) for 2% TFA dissolved in 50% ACN aqueous solution, (c) for 3% TFA dissolved in 50% ACN aqueous solution, (d) 4% TFA dissolved in 50% ACN aqueous solution. Asterisk (*) indicates peaks associated with glycopeptide.

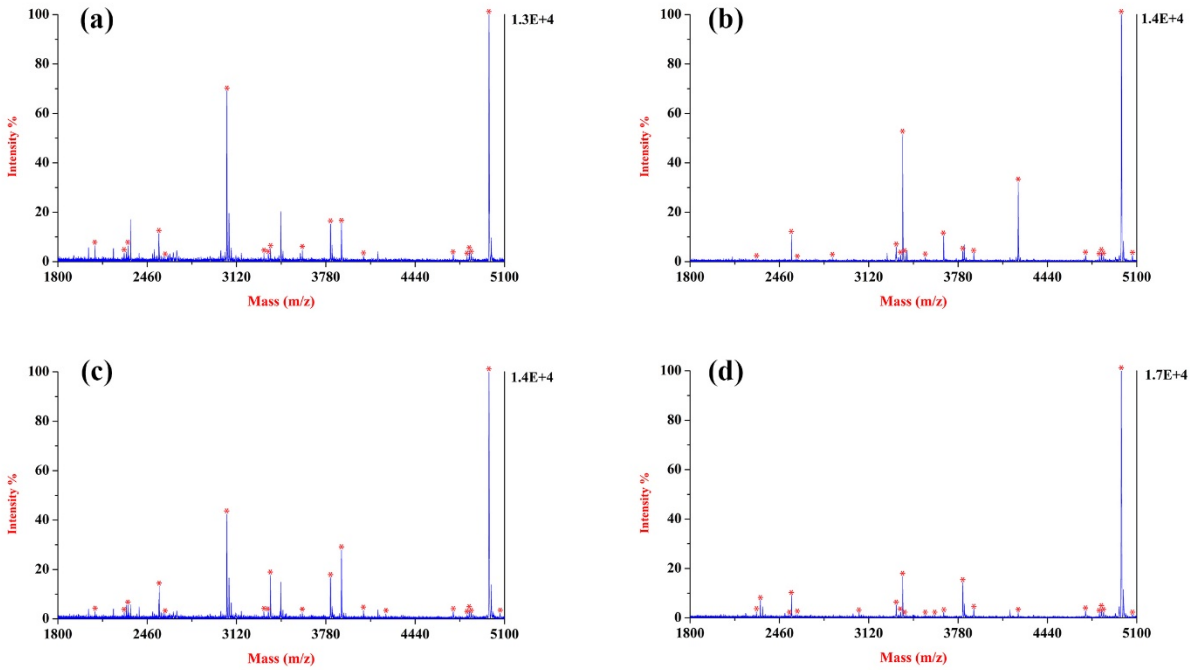

Fig. S7. MALDI-TOF MS spectra of HRP tryptic digest eluted with different loading buffer by BCS: (a) for 25 mM NH_4HCO_3, (b) for 50 mM NH_4HCO_3, (c) for 75 mM NH_4HCO_3, (d) 100 mM NH_4HCO_3. Asterisk (*) indicates peaks associated with glycopeptide.

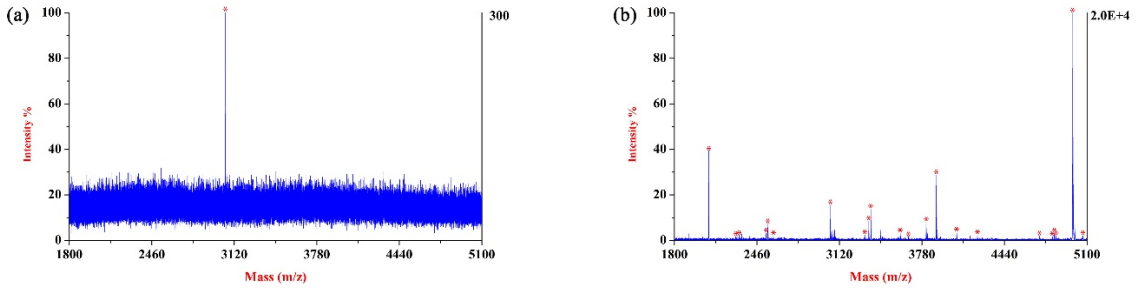

Fig. S8. MALDI-TOF MS spectra of HRP tryptic digest: (a) before the enrichment, (b) after the enrichment by BCS. Asterisk (*) indicates peaks associated with glycopeptide.

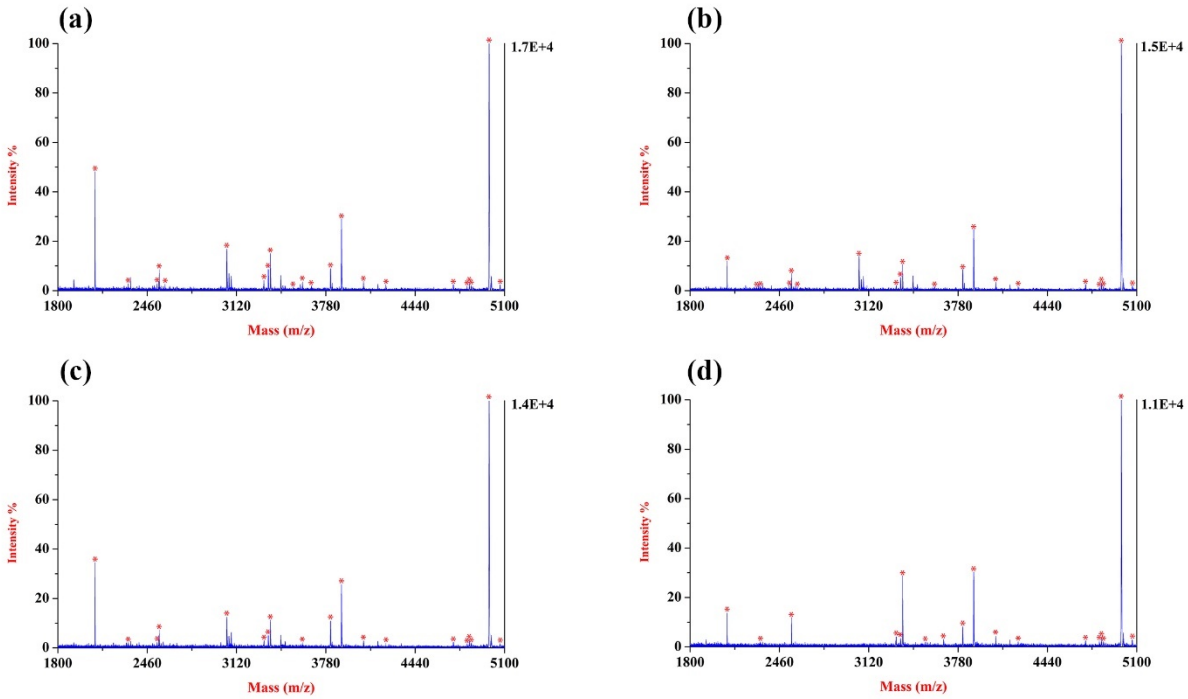

Fig. S9. MALDI-TOF MS spectra analysis of glycopeptides from HRP tryptic digest after enriched by BCS, (a) The third time, (b) The fifth time, (c) The seventh time, and (d) The tenth time. Asterisk (*) indicates peaks associated with glycopeptide.

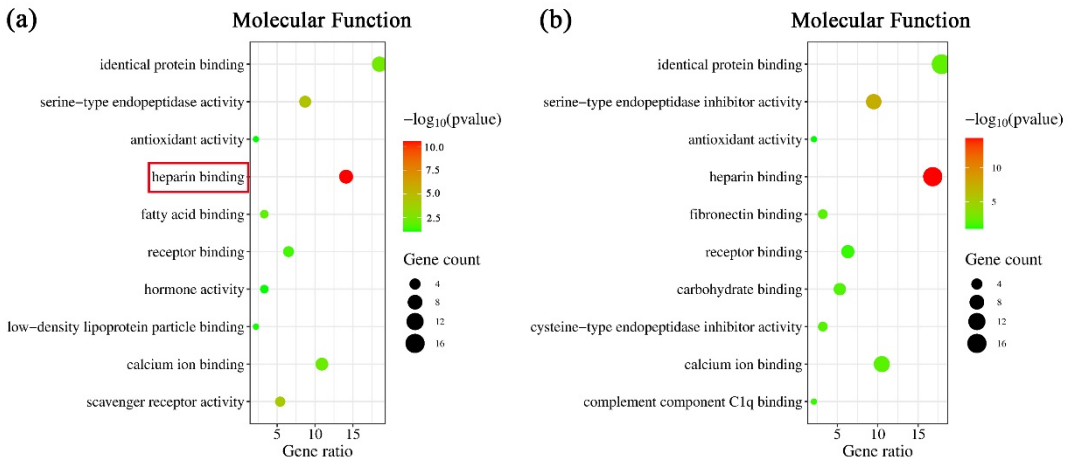

Fig. S10. The GO analysis of the molecular function for the identified glycoproteins from serum of (a) PE patients and (b) normal pregnancy controls.

Table S1 Preparation of carbonaceous spheres GxByNz at different mass ratio.

Carbonaceous Spheres	Glucose	VPBA	Initiator
$G_{10}B_1N_1$	10	1	1
$G_{10}B_3N_1$	10	3	1
$G_{10}B_{10}N_1$	10	10	1
$G_{10}B_{10}N_5$	10	10	5
$G_{10}B_{10}N_{10}$	10	10	10

Table S2. Elemental compositions and relative contents of BCS obtained from EDX analysis.

element	Wt%	At%
C	75.27	78.45
O	18.87	14.77
N	0.00	0.00
B	5.86	6.78

Table S3. Detailed information of the observed glycopeptides derived from HRP tryptic digest. “N#”: N-glycosylation site.

1	2073	Man3GlcNAc2	DSFRNVGLN#R
2	2290	XylMan2GlcNAc2	SILLDN#TTSFR
3	2320	Man2GlcNAc2	MGN#ITPLTGTQGQIR
4	2533	FucGlcNAc	SFAN#STQTFFNAFVEAMDR
5	2544	XylMan3FucGlcNAc2	SSPN#ATDTIPLVR
6	2591	XylMan3FucGlcNAc2	PTLN#TTYLQTLR
7	3048	XylMan2GlcNAc2	SFAN#STQTFFNAFVEAMDR
8	3323	XylMan3FucGlcNAc2	QLTPTFYDNSCPN#VSNIVR
9	3354	XylMan3FucGlcNAc2	SFAN#STQTFFNAFVEAMDR
10	3369	XylMan3FucGlcNAc2	SFAN#STQTFFNAFVEAM*DR
11	3606	XylMan3FucGlcNAc2	NQCRGLCPLNGN#LSALVDFDLR
12	3672	XylMan3FucGlcNAc2	GLIQSDQELFSSPN#ATDTIPLVR
13	3812	XylMan3FucGlcNAc2	LHFHDCFVNGCDASILLDN#TTSFR
14	3895	XylMan3FucGlcNAc2	LHFHDCFVNGCDASILLDN#TTSFR
15	4057	XylMan3GlcNAc2	QLTPTFYDNSC(AAVESACPR)PN#VSNIVR-H2O
16	4223	XylMan3FucGlcNAc2	QLTPTFYDNSC(AAVESACPR)PN#VSNIVR
17	4720	Man3FucGlcNAc2, Man3FucGlcNAc2	LYN#FSNTGLPDPTLN#TTYLQTLR
18	4823	XylMan2FucGlcNAc2, XylMan2GlcNAc2	LYN#FSNTGLPDPTLN#TTYLQTLR
19	4838	XylMan3FucGlcNAc2, XylMan3GlcNAc2	LYN#FSNTGLPDPTLN#TTYLQTLR
20	4854	Man3FucGlcNAc2, XylMan3FucGlcNAc2	LYN#FSNTGLPDPTLN#TTYLQTLR
21	4985	XylMan3FucGlcNAc2, XylMan3FucGlcNAc2	LYN#FSNTGLPDPTLN#TTYLQTLR
22	5068	Xyl Man3GlcNAc2	QLTPTFYDNSC(AAVESACPR)PN#VSNIVR

Table S4. Details of enriched glycopeptides derived from serum of the PE patients and healthy pregnant women by BCS. N: N-glycosylation site.

No.	Sequence	Protein	Modifications
Glycopeptides detected both in normal and PE patient serum			
1	[K].FNLTETSEAEIHQSFQHLLR.[T]	A0A024R6P0	1xDeamidated [N2]
2	[K].ADTHDEILEGLNFNLTEIPEAQIHEGFQELLR.[T]	P01009	1xDeamidated [N14]
3	[K].LGSFEGLVNLTFIHLQHNR.[L]	P00738	1xDeamidated [N9]
4	[R].YPHKPEINSTTHPGADLQENFCR.[N]	G3V387	1xCarbamidomethyl [C22]; 1xDeamidated [N8]
5	[K].NNATVHEQVGGPSLTSDLQAQSK.[G]	D9ZGG2	1xDeamidated [N]
6	[K].AFENVTDLQWLILDHNLLENSK.[I]	Q59HB3; C0JYY2	1xDeamidated [N4]
7	[K].ELHHLQEQNVSNAFLDKGEFYIGSK.[Y]	P20851	2xDeamidated [N9; N12]
8	[K].ADTHDEILEGLNFNLTEIPEAQIH.[-]	P02765	2xDeamidated [N1; N2]
9	[K].DFHSEYIVSASNFTSQLSSQVEQFLHR.[N]	P02787	1xDeamidated [N12]
10	[R].LGHCPDPVLVNGEFSSSGPVNVSDK.[I]	I3L145	1xCarbamidomethyl [C4]; 2xDeamidated [N11; N21]
11	[-K].MVSHHNLTTGATLINEQWLLTTAK.[N]	P01023	1xDeamidated [N6]
12	[R].ADGTVNQIEGEATPVNLTEPAK.[L]	P04003	1xDeamidated [N16]
13	[K].VTVQSLLTVETLEHNQTYECR.[A]	P00734	1xCarbamidomethyl [C20]; 1xDeamidated [N15]
14	[R].SHEIWTHSCPQSPGNGTDASH.[-]	A5PL27	1xCarbamidomethyl [C9]; 1xDeamidated [N15]
15	[K].LPTQNITFQTESSVAEQEAEFQSPK.[Y]	A0A024R462	1xDeamidated [N5]
16	[R].LSLHRPALEDLLLGSEANLTCTLTGLR.[D]	A0A024R035	1xCarbamidomethyl [C21]; 1xDeamidated [N18]
17	[K].LDAPTNLQFVNETDSTVLVR.[W]	P00739; P00738	1xDeamidated [N11]
18	[K].EGYSNISYIVVNHQGISSR.[L]	A0A384N669	1xCarbamidomethyl [C4]; 1xDeamidated [N21]
19	[K].DIVEYYNDSNGSHVLQGR.[F]	P49908	2xDeamidated [N7; N10]
20	[R].KVCQDCPLLAPLNDTR.[V]	B2R950	2xCarbamidomethyl [C3; C6]; 1xDeamidated [N13]
21	[K].VSNQTLSLFFTVLQDVPVR.[D]	P02790	1xDeamidated [N3]
22	[R].NGTGHGNSTHHGPEYMR.[C]	B2RMS9	2xDeamidated [N1; N7]
23	[R].LSHNELADSGIPGNSFNVSSLVELDLSYNK.[L]	P11464	1xDeamidated [N17]

24	[R].SQILEGLGFNLTELSESDVHR.[G]	D9IWP9	1xDeamidated [N10]
25	[K].EHEGAIYPDNTTDFQR.[A]	B7Z539	3xCarbamidomethyl [C6; C10; C22]; 1xDeamidated [N11]
26	[K].IGDENCDPECNHTLTGHDGGDCR.[H]	A8K9A9	2xCarbamidomethyl [C13; C18]; 1xDeamidated [N9]
27	[R].AVNITSENLIDDVVSLIR.[G]	A0A140VK00	2xCarbamidomethyl [C11; C16]; 1xDeamidated [N7]
28	[R].QQQHLFGSNVTDCSGNFCLFR.[S]	P01024	2xDeamidated [N14; N17]
29	[K].ENLTAPGSDSAVFFEQGTTR.[I]	A0A8Q3WKN4	2xDeamidated [N12; N14]
30	[K].LSDLSINSTECLHVHCR.[G]	P0DOX2	1xCarbamidomethyl [C13]; 1xDeamidated [N4]
31	[K].VHNGSEILFSYFQDLVITLPFELR.[K]	A0A384NKS6	2xCarbamidomethyl [C11; C28]; 1xDeamidated [N15]
32	[K].VVLHPNYSQVDIGLIK.[L]	P01833	1xDeamidated [N13]
33	[K].HYTNSSQDVTVPCR.[V]	D3DNU8	1xCarbamidomethyl [C20]; 1xDeamidated [N6]
34	[R].FEVDSPVYNATWSASLK.[N]	B2R9F2	1xDeamidated [N15]
35	[R].ADGTVNQIEGEATPVNLTEPAKLEVK.[F]	B1AKG0	1xCarbamidomethyl [C18]; 1xDeamidated [N10]
36	[R].FSLLGHASISCTVENETIGVWRPSPPTCEK.[I]	C0JYY2	1xCarbamidomethyl [C23]; 2xDeamidated [N4; N11]
37	[K].LGTSLSSGHVLMNGTLK.[Q]	P01871	2xCarbamidomethyl [C2; C5]; 1xDeamidated [N12]
38	[K].SLGNVNFTVSAEALESQELCGTEVPSVPEHGR.[K]	P55058	2xCarbamidomethyl [C3; C15]; 1xDeamidated [N14]
39	[K].SVQEIQATFFYFTPNKTEDTIFLR.[E]	Q9Y5Y7	1xCarbamidomethyl [C15]; 1xDeamidated [N6]
40	[K].VASVININPNTTHSTGSCR.[S]	Q08380	1xCarbamidomethyl [C14]; 1xDeamidated [N7]
41	[K].THTNISESHPNATFSAVGEASICEDDWNSGER.[F]	B4DZ36	1xCarbamidomethyl [C19]; 1xDeamidated [N16]
42	[K].VCQDCPLLAPLNDTR.[V]	B2R8I2	1xCarbamidomethyl [C4]; 1xDeamidated [N7]
43	[K].LQAPLNYTEFQKPICLPSK.[G]	C9JF17	2xDeamidated [N6; N13]
44	[K].ALPQPQNVTSLLGCTH.[-]	B2MUD5	1xCarbamidomethyl [C14]; 1xDeamidated [N5]
45	[K].QSVPAHFVALNGSK.[L]	A0A5C2FVK9	1xDeamidated [N18]
46	[K].VGQLQLSHNLSLVILVPQNLK.[H]	P29622	2xDeamidated [N3; N11]
47	[K].DGAVESISVPDMVDKNLTCPEEEDTVK.[V]	P05156	1xCarbamidomethyl [C20]; 2xDeamidated [N4; N6]
48	[R].QDQCIYNTTYLNVQR.[E]	P07996	1xCarbamidomethyl [C10]; 2xDeamidated [N6; N]
49	[R].ETAYSNASLLIQNVTR.[E]	P02763;	2xDeamidated [N5; N9]

		P19652	
50	[R].FNSSYLQGTNQITGR.[Y]	P80108	1xDeamidated [N8]
51	[R].SPYYNVSDEISFHCYDGYTLR.[G]	H0Y512	2xDeamidated [N5; N6]
52	[K].ALGISPFHEHAEVVFTANDSGPR.[R]	A0A8S0MAG0	2xDeamidated [N2; N10]
53	[K].SENYTYIWWLNGQSLPVSPR.[V]	P19823	1xCarbamidomethyl [C6]; 1xDeamidated [N3]
54	[R].LQNNENNISCVER.[G]	A0A5C2GHF1	1xCarbamidomethyl [C12]; 1xDeamidated [N13]
55	[K].NLFLNHSENATAK.[D]	P27169	1xCarbamidomethyl [C9]; 1xDeamidated [N6]
56	[R].VYKPSAGNNSLYR.[D]	A0A140VKE5	3xCarbamidomethyl [C2; C3; C11]; 1xDeamidated [N1]
57	[K].ELHHLQEQNVSNAFLDK.[G]	P19652	2xDeamidated [N3; N9]
58	[K].VVNSTTGPGEHLR.[N]	P43652	1xCarbamidomethyl [C1]; 1xDeamidated [N8]
59	[R].ALGFENATQALGR.[A]	Q6N093	1xCarbamidomethyl [C1]; 1xDeamidated [N5]
60	[K].SLTFNETYQDISELVYGAK.[L]	Q13201	1xCarbamidomethyl [C4]; 1xDeamidated [N1]
61	[K].YLGNATAIFFLPDEGK.[L]	A0A8Q3WKW7	2xCarbamidomethyl [C4; C16]; 1xDeamidated [N14]
62	[K].MLNTSSLLEQLNEQFNWVSR.[L]	Q15228	2xDeamidated [N8; N9]
63	[K].LNAENNATFYFK.[I]	Q6UY50	1xCarbamidomethyl [C1]; 2xDeamidated [N10; N12]
64	[K].VTQVYAENGTVLQGSTVASVYK.[G]	F2Z3N2; B4E1Z4	1xCarbamidomethyl [C8]; 1xDeamidated [N1]
65	[K].GLNLTEDTYKPR.[I]	D6RHJ6	1xCarbamidomethyl [C9]; 1xDeamidated [N5]
66	[R].LSLLEEPGNGTFTVILNQLTSR.[D]	P43251	1xCarbamidomethyl [C1]; 2xDeamidated [N5; N11]
67	[K].VSNVSCQASVSR.[M]	P04275	1xDeamidated [N1]
68	[K].AGLQAFFQVQECNK.[S]	A0A286YFJ8	1xDeamidated [N7]
69	[K].MDGASNVTCINSR.[W]	F8WF14	1xCarbamidomethyl [C4]; 2xDeamidated [N7; N12]
70	[R].NCCNTENPPGCYR.[Y]	P13727	1xCarbamidomethyl [C10]; 1xDeamidated [N3]
71	[K].LQNLTLPTNASIK.[F]	Q8J009	1xCarbamidomethyl [C1]; 1xDeamidated [N12]
72	[R].VVTVAALGTNISIHKDEIGK.[V]	O95497	1xCarbamidomethyl [C8]; 1xDeamidated [N7]
73	[R].CATPHGDNASLEATFVK.[R-]	Q16557	2xDeamidated [N7; N9]
74	[R].CRPINATLAVEK.[E]	V9HWI6	2xDeamidated [N3; N4]
75	[R].NHSCSEGQISIFR.[Y]	K7ER74	1xCarbamidomethyl [C7]; 1xDeamidated [N4]
76	[K].QEVCEEFSQQLNSNGCITQQV	P19801	1xCarbamidomethyl [C3];

	HTK.[M]		1xDeamidated [N8]
77	[R].LANLTQGEDQYYLR.[V]	Q92954	1xCarbamidomethyl [C7]; 2xDeamidated [N3; N4]
78	[K].YKNNSDISSTR.[G]	P22792	1xCarbamidomethyl [C3]; 2xDeamidated [N7; N8]
79	[R].FSDGLESNSSTQFEVK.[K]	P13473	3xDeamidated [N1; N5; N9]
80	[K].CGLVPVLAENYNK.[S]	H0YNF7	1xCarbamidomethyl [C3]; 1xDeamidated [N1]
81	[R].QNQCFYNSSYLNVQR.[E]	A6XND1	1xCarbamidomethyl [C6]; 1xDeamidated [N1]
82	[R].ANLSSQALR.[M]	A0A384MDQ7; P01009	1xCarbamidomethyl [C9]; 2xDeamidated [N6; N11]
83	[R].NETGPYQCEIQDR.[Y]	A0A087WT59	1xCarbamidomethyl [C3]; 1xDeamidated [N5]
84	[R].AQLLQGLGFNLTER.[S]	B4E1B2; P02787	2xDeamidated [N6; N9]
85	[R].ISEENETTCYMGK.[W]	Q5UGI6	1xCarbamidomethyl [C4]; 1xDeamidated [N5]
86	[R].CIQANYSLMENGK.[I]	X6RLJ0	2xCarbamidomethyl [C7; C21]; 2xDeamidated [N16; N26]
87	[K].NGSGAVFPVAGADVQTLR.[E]	A0A024R842	2xDeamidated [N6; N15]
88	[R].NLTTSLTESVDR.[N]	Q16557; P11464; Q8WYY6	1xCarbamidomethyl [C6]; 1xDeamidated [N5]
89	[R].IYSGILNLSDITK.[D]	P01008	2xCarbamidomethyl [C7; C19]; 1xDeamidated [N5]
90	[K].LGNWSAMPSCK.[AE]	E9PEK4	1xCarbamidomethyl [C9]; 1xDeamidated [N16]
91	[R].SWPAVGNCSSALR.[W]	B2RAK1	3xCarbamidomethyl [C2; C27; C42]; 1xDeamidated [N17]
92	[K].LENITNPWSPR.[H]	Q8IZZ5	2xDeamidated [N]
93	[K].IDSTGNVTNELR.[V]	F5GXS0; A0A140TA32	2xDeamidated [N5; N]
94	[K].SPDVINGSPISQK.[I]	P11465; P11464	2xCarbamidomethyl [C13; C18]; 2xDeamidated [N9; N16]
95	[R].LDVDQALNR.[S]	A0A286YEY5	3xDeamidated [N7; N10; N11]
96	[R].VELEDFNGNR.[T]	Q9Y6R7	1xCarbamidomethyl [C12]; 1xDeamidated [N7]
97	[K].NLTCPEEEDTVK.[V]	A0A024R842; Q13219	1xDeamidated [N24]
98	[R].LIIYNASNR.[A]	P02763	1xCarbamidomethyl [C1]; 1xDeamidated [N]
99	[K].IGEADFNR.[S]	Q5SQ11	1xCarbamidomethyl [C21];

			1xDeamidated [N9]
100	[K].AAIPSALDTNSSK.[S]	A0A0F7RQP8	1xDeamidated [N12]; 1xOxidation [M10]
101	[K].HANWTLTPLK.[S]	P23142	1xCarbamidomethyl [C10]; 1xDeamidated [N7]
102	[K].NNSDISSTR.[G]	A0A024R962; A8K5T0	2xDeamidated [N3; N7]
103	[K].EVFVHPNYSK.[S]	P02768	1xCarbamidomethyl [C11]; 1xDeamidated [N7]
104	[R].NETGPYQCEIR.[D]	P05160	1xCarbamidomethyl [C9]; 1xDeamidated [N4]
105	[K].EDALNETR.[E]	A0A024R962	1xCarbamidomethyl [C10]; 1xDeamidated [N9]
106	[R].EEQYNSTFR.[V]	A0A8V8TQ26	3xDeamidated [N3; N6; N8]
107	[R].EEQFNSTFR.[V]	Q00887; P11464; Q8WYY6; M0R276	1xCarbamidomethyl [C2]; 1xDeamidated [N4]
108	[R].FNDTEVLQR.[L]	A0A4W9A917	1xCarbamidomethyl [C9]; 1xDeamidated [N7]
109	[K].GAFISNFSMTVDGK.[T]	Q8WYY6	2xCarbamidomethyl [C4; C7]; 1xDeamidated [N1]
110	[R].EEQFNSTYR.[V]	C9JSN9	3xDeamidated [N10; N11; N14]
111	[K].DVLNFTCEPK.[S]	Q4LDE5	2xCarbamidomethyl [C6; C24]; 1xDeamidated [N2]
112	[R].GGSSGWSGGLAQNR.[S]	P05546	1xCarbamidomethyl [C10]; 2xDeamidated [N6; N7]
113	[R].FGCEIENNR.[S]	Q15238; Q16557; P11464; Q96QL5	1xCarbamidomethyl [C10]; 1xDeamidated [N3]; 1xOxidation [M7]
114	[R].ILILPNVTR.[N]	P02766	
115	[R].ENISDPTSPLR.[T]	Q13219	
116	[K].FLNNGTCTAEGK.[F]	Q00887	
117	[R].DIENFNSTQK.[F]	B4E1Z4	
118	[R].AGPNGTLFVADAYK.[G]	P03951	
119	[K].FVEGSHNSTVSLTTK.[N]	P02750; Q68CK4	
120	[K].ANQQLNFTEAK.[E]	P80188	
121	[K].ELLETVVNR.[T]	Q96QL5	
122	[R].NECFLQHK.[D]	Q15238	
123	[R].DTFVNASR.[T]	G3V0E5	
124	[K].NGTAVCATNR.[R]	Q7Z351	
125	[K].NFTENDLLVR.[I]		
126	[K].YDFNSSMLYSTAK.[G]		
127	[R].EEQYNSTYR.[V]		

128	[K].DFYVDENTTVR.[V]		
129	[R].GLNVTLSSTGR.[N]		
130	[K].WSDIWNATK.[Y]		
131	[R].GLCVNASAVSR.[L]		
132	[K].LGACNDTLQQLMEVFKFDTISEK.[T]		
133	[R].DTAVFECLPQHAMFGNDTITCTTHGNWTK.[L]		
134	[R].VIDFNCTTSSVSSALANTK.[D]		
135	[K].DVLLLVHNLPQNLTGYIWYK.[G]		
136	[R].VLSNNSDANLELINTWVAK.[N]		
137	[K].SRPANHCVYFYGDEISFSCHETSR.[F]		
138	[K].QVFPGLNYCTSGAYSNASSTDSASYYPLTGDTR.[L]		
139	[K].TDCPELAVENAYLNCSSSDR.[Y]		
140	[R].GIASVLQELNVTVVTSLCR.[R]		
141	[K].DCGVYTPQGFLDQWASNASVSHQDQQCPGWVIIGQPAASQVCR.[T]		
142	[K].AALAAFNAQNNGSNFQLEEISR.[A]		
143	[K].NTTCQDLQIEVTVK.[G]		
144	[K].SENYTYIWWLNGQSLPVSPGVK.[R]		
145	[K].LYLGSNNLTALHPALFQNLSK.[L]		
146	[R].GLTFQQNASSMCVPDQDTAIR.[V]		
147	[R].NPPMGGNVVIFDTVITNQEEPYQNHSGR.[F]		
148	[K].STGKPTLYNVSLVMSDTAGTCY.[-]		
149	[K].LETTVNYTDSQRPICLPSK.[G]		
150	[K].YTGNASALFILPDQDK.[M]		
151	[R].FSGSGSGTDFNLTISR.[L]		
152	[K].TVLTPATNHMGNVTFTIPANR.[E]		
153	[K].QNNGAFNETLFR.[N]		
154	[K].FLNDTMAVYEAK.[L]		
155	[K].FNPGAESVVLSNSTLK.[F]		
156	[K].LTGVAGNYTVCQK.[D]		
157	[R].WFSAGLASNSSWLR.[E]		
158	[K].EWDNTTTECR.[L]		
159	[K].NLSMPLLPADFHK.[E]		

160	[R].NETGPYECEIR.[D]		
161	[K].NGSLFAFR.[G]		
162	[K].TMFPNLTDVR.[E]		
163	[K].YNSQNQSNNQFVLYR.[I]		
164	[R].ITYSIVQTNCSK.[E]		
165	[K].ISNFTNKNMK.[E]		
166	[K].DAVITGNNFTFR.[N]		
167	[K].LCDNLSTK.[N]		
168	[R].WEYCNLTR.[C]		
169	[R].HGIQYFNNNTQHSSLFTLNEVK.[R]		
170	[K].YLGNATAIFFLPDEGKLQHLENELTHDIITK.[F]		
171	[R].NHSCEPCQTLAVR.[S]		
172	[R].VNQNLVYESGSLNFSK.[L]		
173	[K].VNITVCGEYTYGKPVPGLATVSLCR.[K]		
174	[K].THLSEVQAFFENQSEATFR.[L]		
175	[K].LPPGLLANFTLLR.[T]		
176	[K].SYNVTSVLFR.[KE]		
177	[R].NGTLVAFR.[G]		
178	[R].AFGSNPNLTK.[V]		
Glycopeptides detected only in normal serum			
1	[K].ICDLLVANNHFAHFFAPQNLTNMNK.[N]	A0A384MDV8	1xCarbamidomethyl [C2]; 1xDeamidated [N19]
2	[R].TAGWNVPIGTLRPFLNWTGPPEPIEAAVAR.[F]	Q96DK0; Q9NPP6; P0DOX2; Q8NCL6	1xCarbamidomethyl [C9]; 1xDeamidated [N14]
3	[R].VYLQGLIDCYLFGNSSTVLEDSK.[S]	A0A161I202	2xDeamidated [N3; N12]
4	[R].KLEFALLFLVFDENESWYLDDNIK.[T]	A0A0G2JPR0; P0C0L5	2xDeamidated [N8; N12]
5	[R].GLNVTLSSTGRNGFK.[S]	A0A096LPE2	2xDeamidated [N4; N13]
6	[R].YAEDKFNETTEK.[S]	M0R0B3	1xCarbamidomethyl [C6]; 1xDeamidated [N8]
7	[K].LNVEAANWTVR.[G]	A0A5C2FZY5	2xCarbamidomethyl [C5; C9]; 1xDeamidated [N3]
8	[R].FSGNGSGTDFTLK.[I]	P14151	1xCarbamidomethyl [C3]; 1xDeamidated [N4]
9	[R].DAGVVCTNETR.[S]	M0R0B3; Q00887; P11464	1xDeamidated [N25]
10	[K].IGGIWTWVGTNK.[S]	Q6GMX6; Q7Z351	1xCarbamidomethyl [C12]; 1xDeamidated [N11]
11	[K].GVNVCQETCTK.[M]	P08519	1xCarbamidomethyl [C23]; 2xDeamidated [N8; N19]

12	[R].NINYTER.[G]	Q8AL79	1xCarbamidomethyl [C23]; 1xDeamidated [N19]
13	[KR].WNNTLQQIANK.[L]	D6RAR4	1xDeamidated [N6]; 1xOxidation [M1]
14	[K].EGHFYYNISEVK.[V]	Q96DK0; A0A286YEY5; Q8NCL6	2xDeamidated [N12; N]
15	[R].CFLGNGTGYR.[G]	A0A8Q3SI39	2xDeamidated [N6; N7]
16	[R].VQPFNVTQGK.[Y]	P02743	2xCarbamidomethyl [C1; C17]; 2xDeamidated [N10; N12]
17	[R].GICNSSDVR.[G]	B4DPP8	2xCarbamidomethyl [C4; C16]; 2xDeamidated [N12; N14]
18	[R].RNPPMGGNVVIFDTVITNQEEPYQNHSGR.[F]	A0A1U9X793	1xCarbamidomethyl [C8]; 1xDeamidated [N15]
19	[K].QVLFLDTVYGNCSTHFTVK.[T]	G1CX21	2xCarbamidomethyl [C1; C17]; 1xDeamidated [N10]
20	[R].ESVTDHVNLITPLEKPLQNFTLCFR.[A]	A0A6M6AVS1	2xDeamidated [N6; N15]; 1xOxidation [M1]
21	[K].LHINHNNLTESVGPLPK.[S]	A0A5C2G3W4	1xCarbamidomethyl [C8]; 1xDeamidated [N6]
22	[R].NPNNDQVFPNGTLAPSIPIWGGSWR.[A]	A0A5C2GXE9	1xCarbamidomethyl [C5]; 2xDeamidated [N12; N14]
23	[K].HYLMWGLSSDFWGEKPNLSYIIGK.[D]	Q99650	2xDeamidated [N2; N5]
24	[K].CGLVPVLAENYNKSDNCEDTPEAGYFAVAVVK.[K]	Q7Z682	1xCarbamidomethyl [C8]; 1xDeamidated [N5]
25	[K].TELFSSSCPGGIMLNETGQGYQR.[F]	A0A0G2RKF9	1xCarbamidomethyl [C13]; 1xDeamidated [N2]
26	[R].NISDGFDGIPDNVDAALALPAHSYSGR.[E]	P11465	2xCarbamidomethyl [C4; C13]; 2xDeamidated [N9; N18]
27	[K].LGACNDTLQQLMEVFK.[F]	Q96DK0; P0DOX2; Q8NCL6	1xDeamidated [N6]; 2xOxidation [M27; M32]
28	[R].GNNSATASTITEDSGMK.[N]	P11465; P11464; Q96QL5	1xCarbamidomethyl [C18]; 1xDeamidated [N16]
29	[K].QEPERNECFLQHK.[D]	A0A1I9WE52	2xCarbamidomethyl [C13; C27]; 2xDeamidated [N8; N30]
30	[K].EHETCLAPELYNGNYSTTQK.[T]	A0A024RAA7	1xCarbamidomethyl [C9]; 2xDeamidated [N7; N16]
31	[K].VQLSNDFDEYIMAIEQTIK.[S]	F5GXS0; B7Z1F8; A0A140TA44	1xCarbamidomethyl [C13]; 1xDeamidated [N17]
32	[K].VNQSLSSSNNTELRSSSNYTEL	F5GXS0;	1xCarbamidomethyl [C10];

	K.[N]	A0A140TA44	1xDeamidated [N22]
33	[R].FNGSGSGTDFTLK.[I]	P05164	2xDeamidated [N7; N18]
34	[K].TEDEADYYCQSYDSNK.[S]	Q96PD5	2xCarbamidomethyl [C13; C27]; 1xDeamidated [N30]
35	[R].NIQNNVSCYLEGK.[Q]	Q86U78	1xCarbamidomethyl [C14]; 1xDeamidated [N13]
36	[K].QNPSSGARLNQDK.[R]	A0A140VJJ6	1xDeamidated [N4]; 1xOxidation [M7]
37	[R].KNGTINDNIILPCR.[I]	C3VUZ2	1xCarbamidomethyl [C17]; 2xDeamidated [N7; N16]; 1xOxidation [M14]
38	[R].FQLSETNR.[T]	A0A5J6A018	2xDeamidated [N10; N19]; 1xOxidation [M15]
39	[R].TEVSSNHVLIYLDKVSNQTLSLFFTVLQDVPVR.[D]	K0GQL0	2xDeamidated [N13; N22]
40	[K].AATCINPLNGSVCERPANHSAK.[Q]	Q00887; P11464; Q96QL5	4xCarbamidomethyl [C2; C9; C17; C19]; 1xDeamidated [N5]
41	[K].GLKFNLTETSEAEIHQSFQHLLR.[T]	Q6N093; Q8NF17	
42	[R].NVTNANGTSITTNSGGTNTTSNAEERMVREQMK.[N]	A0A5C2GIU8	
43	[K].VPGLYYFVYHASHTANLCVLLYR.[S]		
44	[K].DQYVEPENVTIQCDSGYGVVGPQSITCSGNR.[T]		
45	[R].ALLPFDNLHDDPCLLTNR.[S]		
46	[R].LEPVHLQLQCMSQEQLAQVAANATK.[E]		
47	[R].RKLEFALLFLVFDENESWYLDDNIK.[T]		
48	[R].LQAILGVPWKDKNCTSR.[L]		
49	[R].KLPPGLLANFTLLR.[T]		
50	[K].DLQSLEDILHQVENK.[T]		
51	[K].NISISRNSSMFEEMRNCSFNITTELR.[D]		
52	[R].VLAEAMSHANSSIMMQRGNFR.[N]		
53	[K].VSEHIPVYQQEENQTDVWTLLNGSK.[D]		
54	[R].HCDGNVSSCGDHPSEGCFCPPDK.[V]		
55	[R].KAHCEINETQWNDILGQVAK.[K]		
56	[K].ISNFTNKNMKEVK.[K]		
57	[R].FSASGSGTNFTLR.[I]		
Glycopeptides detected only in PE patient serum			

1	[K].YRLINCNTSTITQACPKVSFDP IPIHYCAPAGFAILKCNNK.[T]	P0DOX2; Q8NCL6	4xCarbamidomethyl [C6; C15; C28; C38]; 2xDeamidated [N5; N7]
2	[K].TDCPELAVENASLNCSSSDR.[Y]	A0A384MR0 3; P02751	2xDeamidated [N6; N16]
3	[R].FNFDGGECCDPEITNVTQTCF DPDSPHR.[A]	W0G7N9	3xCarbamidomethyl [C8; C9; C20]; 1xDeamidated [N15]
4	[R].DQCIVDDITYNVNDTFHK.[R]	B4DVE1	1xCarbamidomethyl [C3]; 1xDeamidated [N13]
5	[K].ELFPNGTIQFNASSGGDLEITT HIFNC.[-]	J9QLY4	1xCarbamidomethyl [C27]; 1xDeamidated [N5]
6	[K].GLEWIGEIYHSGSINYNPSLK.[S]	A0A7S5BX W1	2xDeamidated [N15; N17]
7	[R].LEDLEVTGSSFLNLSTNIFSNL TSLGK.[L]	Q8AE58	2xDeamidated [N17; N21]
8	[R].IGPGQAFFTSDIIGDIRQAHCN VSKSAWNETLQQVVK.[Q]	F5GXS0; B7Z1F8; A0A140TA3 2	1xCarbamidomethyl [C21]; 1xDeamidated [N29]
9	[K].VPGNVTAVLGETLK.[V]	Q96QJ4	2xCarbamidomethyl [C8; C9]; 1xDeamidated [N1]
10	[K].NVTSESTCCVAK.[S]	Q6N096	2xCarbamidomethyl [C1; C4]; 1xDeamidated [N3]
11	[K].EFYVDQNVSIK.[C]	Q12841	1xCarbamidomethyl [C20]; 1xDeamidated [N]
12	[R].NDTLEWENQQR.[L]	P02751	1xCarbamidomethyl [C23]; 3xDeamidated [N3; N7; N16]
13	[K].GSNYSEILDK.[Y]	Q96DK0; Q9NPP6; Q96K68; Q8NCL6	2xCarbamidomethyl [C3; C15]; 2xDeamidated [N10; N14]
14	[R].WTPLNSSTIIGYR.[I]	Q9YSZ6	2xCarbamidomethyl [C13; C18]; 1xDeamidated [N]
15	[K].CGNCSLTTLK.[D]	P11464; M0R276	1xCarbamidomethyl [C5]; 2xDeamidated [N8; N20]; 1xOxidation [M37]
16	[R].SQNLSDNAKIIIVHLNESVEIN CTGPGNNTRRSIHIGPNR.[A]	Q16557; Q15228; P11464; Q8WYY6	1xCarbamidomethyl [C29]; 1xDeamidated [N]
17	[R].GTINCLSNITGIILTRDGGNNIK NNKTEIFRPGGGDMK.[D]	A0A0R6D66 8	2xDeamidated [N13; N17]
18	[R].VTMSVDTSKNQFSLNLSSVTA ADTAIYYCAR.[H]	A0A5C2GH5 1	1xCarbamidomethyl [C7]; 2xDeamidated [N12; N13]; 1xOxidation [M20]
19	[R].VYLQGLIDYYLFGNSSTVLED SK.[S]	B4DGC3	3xDeamidated [N6; N7; N18]
20	[K].GAVQINCTRPNNNTRKSIHMG	B2R5G8	1xCarbamidomethyl [C14];

	PGR.[T]		3xDeamidated [N11; N15; N21]
21	[R].YTTFEYPNTINFSCNTGFYLNGADSAK.[C]	D2XT44	1xCarbamidomethyl [C1]; 1xDeamidated [N15]
22	[K].TLYETEVFSTDFSNISAAK.[Q]	B4DPN0	2xDeamidated [N6; N11]
23	[R].CSDGWSFDATTLDDNGTMLFFK.[G]	P05543	1xCarbamidomethyl [C16]; 1xDeamidated [N19]; 1xOxidation [M5]
24	[R].AGKAMYAPPIRGKIECVSNITGLMLTR.[D]	Q49GB3	2xDeamidated [N5; N8]
25	[K].NLSAIWDNMTWMEWEREINNYTGLIYSLIAESQNQQEK.[N]	B4DPN0; D9IWP9	2xDeamidated [N18; N31]; 1xOxidation [M28]
26	[R].FSGSGSDTNFTLTISR.[V]	A0A193L127	1xAcetyl [N-Term]; 1xCarbamidomethyl [C6]; 2xDeamidated [N10; N11]
27	[R].SNITGLLLTRDGGNNNTNETFRPLGGDMRDNWRSELYR.[Y]	A0A5C2GWP7	1xCarbamidomethyl [C26]; 3xDeamidated [N27; N34; N35]; 1xOxidation [M5]
28	[-].SVQIVCTRPNNNTR.[K]	W0GBR4	2xCarbamidomethyl [C2; C6]; 1xDeamidated [N5]
29	[R].FQLLNFSSSELK.[V]	C6GG66	1xCarbamidomethyl [C6]; 2xDeamidated [N13; N15]
30	[R].KSIHMGPGSTFYATGAIIGDIRQAHCNLSRADWNNTLNQIATK.[L]	X5D8W0	1xCarbamidomethyl [C13]; 1xDeamidated [N10]
31	[K].NCGVNCSGDVFTALIGEIASPNYPKPYPENSR.[C]	P0DOX5	3xCarbamidomethyl [C7; C8; C17]; 1xDeamidated [N]
32	[R].KEHETCLAPELYNGNYSTTQK.[T]	Q9UIR5	1xCarbamidomethyl [C10]; 1xDeamidated [N]
33	[K].GLEWIGEIYHNGTSNYNPSLK.[S]	D1L7D2	3xCarbamidomethyl [C7; C8; C17]; 2xDeamidated [N6; N11]
34	[R].AVYAPPIAGNITCKSNITGLLLTHDGSNNATLIFRPGGGDMR.[D]	A0A286YEY5; Q8NCL6; Q6P089	1xCarbamidomethyl [C7]; 1xDeamidated [N6]
35	[R].SDFASNCCSINSPPLYCDSEIDAELK.[N]	P11464; Q96QL5	1xCarbamidomethyl [C5]; 1xDeamidated [N3]
36	[K].EFYLFPTVFDENESLLLEDNIR.[M]	P09871	
37	[K].DVQIIVFPEDGIHGFNFTR.[T]	A0A7S5EWV5	
38	[K].EDAAVNCTDISVQK.[T]	C9EBH2	
39	[K].VDGLKWNETLEK.[V]	A0A8Q3WKW7; A8K5T0	
40	[K].TLNICEVGTIR.[C]	P11464; Q96QL5; M0R276	
41	[R].VITVQVANFTLR.[L]	H0YGZ7	
42		A0MT85	

43		P13671	

Table S5. Gene ontology analysis of PE associated differentially expressed proteins.

Analysis	Pathway	Protein Group Accessions	Protein Names	Official Gene Symbol
Molecular Function	Heparin binding	P19801	Amine oxidase copper containing 1	AOC1
		C0JYY2	Apolipoprotein B	APOB
		P00734	Coagulation factor II, thrombin	F2
		P03951	Coagulation factor XI	F11
		A0A8Q3WKW7	Complement factor H	CFH
		P02751, A0A024R462	Fibronectin 1	FN1
		Q12841	Follistatin like 1	FSTL1
		D3DNU8	Kininogen 1	KNG1
		P13727	Proteoglycan 2, pro eosinophil major basic protein	PRG2
		P01008	Serpin family C member 1	SERPINC1
		P05546	Serpin family D member 1	SERPIND1
		P07996	Thrombospondin 1	THBS1
		D9ZGG2	Vitronectin	VTN
Biological Process	Complement activation	X6RLJ0	complement C1q A chain	C1QA
		F2Z3N2	complement C2	C2
		P01024	complement C3	C3
		A0A140TA32	complement C4A (Rodgers blood group)	C4A
		P20851	complement C4B (Chido blood group)	C4B
		P13671	complement C6	C6
		A0A8Q3WKN4	complement C8 alpha chain	C8A

		A0A024R035	complement C9	C9
		A0A8V8TQ26	complement factor H related 1	CFHR1
		A0A8V8TQ26	complement factor H	CFH, hCG_40889
		Q6UY50	ficolin 3(FCN3)	UNQ172
	Positive regulation of immune response	P13671	complement C6	C6
		A0A8Q3WKN4	complement C8 alpha chain	C8A
		A0A024R035	complement C9	C9
	Positive regulation of tumor necrosis factor production	P02763	orosomucoid 1	ORM1
		P19652	orosomucoid 2	ORM2
		P07996	thrombospondin 1	THBS1