Deep Proteomics

Here we demonstrate a new LC-MS/MS analysis method for peptide mixtures with high resolution by combining ion exchange chromatography and C18 long monolith column chromatography. Analysis of standard cultured cells resulted that more than 6000 proteins were identified at a quantifiable level.

Deep proteomics workflow

All biological samples can be analyzed

Cultured cell
Culture supernatant

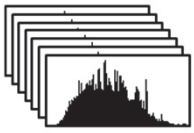
Biological tissues

Body fluid
(Serum/Plasma)

Extraction
Peptidization

Strong cation exchange chromatography (SCX)

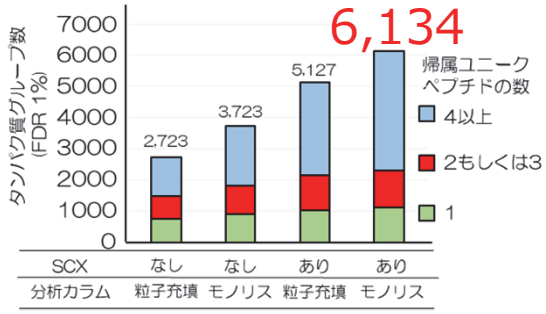
High resolution LC-MS/MS combined with C18 long monolith column chromatography



Label-free quantitative analysis

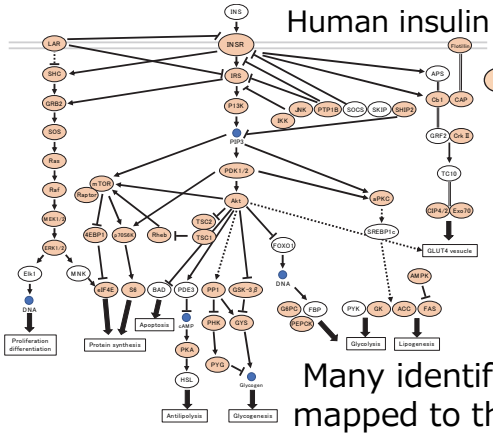
Analysis for human cultured cell (HeLa cell)

Effect of SCX and monolith column



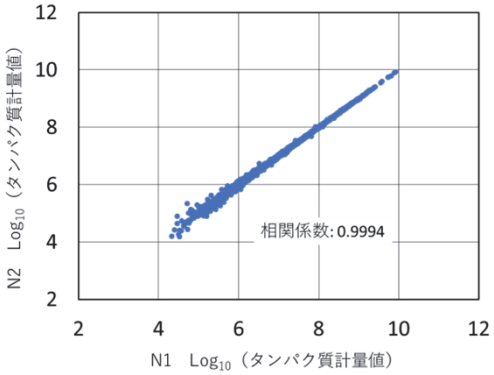
The number of identified proteins was significantly increased.

Mapping to signaling pathway



Many identified proteins were mapped to the signal pathway.

Reproducibility of quantitation



Correlation factor : >0.999

Examples of the analyzed data

正規化したピーク強度									Mascot スコア	Uniprot アクセッション	蛋白質名
試料1			試料2			試料3					
測定1	測定2	測定3	測定1	測定2	測定3	測定1	測定2	測定3			
1.95E+06	1.35E+06	1.21E+06	1.69E+06	1.41E+06	1.38E+06	1.89E+06	1.11E+06	1.22E+06	30.1	Q6UPY8	Microtubule-associated protein RP/EB family member 3
1.95E+06	1.35E+06	1.21E+06	1.64E+06	1.57E+06	9.88E+05	2.22E+06	1.49E+06	1.50E+06	104.2	Q5R979	Glucose 1,6-bisphosphate synthase
1.42E+06	9.08E+05	9.61E+05	7.72E+05	6.58E+05	7.19E+05	1.37E+06	1.13E+06	1.12E+06	30.3	P11137	Microtubule-associated protein 2
2.82E+06	1.86E+06	1.20E+06	1.55E+06	1.85E+06	1.38E+06	2.81E+06	1.41E+06	1.73E+06	131.1	Q4R4K0	Protein NDRG2
5.85E+05	4.13E+05	3.95E+05	5.40E+05	5.03E+05	4.81E+05	5.70E+05	4.76E+05	4.66E+05	65.7	P51858	Hepatoma-derived growth factor
1.91E+06	1.01E+06	8.63E+05	1.88E+06	1.23E+06	1.23E+06	3.30E+06	1.35E+06	1.37E+06	62.9	P49840	Glycogen synthase kinase-3 alpha
6.86E+05	6.03E+05	3.82E+05	6.43E+05	4.18E+05	3.23E+05	1.31E+06	5.71E+05	4.94E+05	42.6	P46821	Microtubule-associated protein 1B
4.60E+05	3.47E+05	1.82E+05	5.73E+05	3.90E+05	3.03E+05	7.66E+05	3.96E+05	3.88E+05	70.1	P04792	Heat shock protein beta-1
3.21E+05	2.94E+05	2.80E+05	1.92E+05	1.83E+05	2.23E+05	4.16E+05	3.23E+05	2.86E+05	31.0	Q16643	Drebrin
6.27E+05	5.01E+05	5.77E+05	5.32E+05	4.69E+05	4.51E+05	8.28E+05	6.58E+05	6.96E+05	43.2	Q5RA10	Alpha-adducin
8.23E+05	4.08E+05	2.91E+05	7.67E+05	3.77E+05	3.52E+05	9.04E+05	3.55E+05	3.72E+05	31.0	P37837	Transaldolase
7.57E+05	5.21E+05	4.37E+05	6.71E+05	5.13E+05	3.21E+05	8.08E+05	5.39E+05	4.41E+05	58.9	P11137	Microtubule-associated protein 2
5.17E+05	3.39E+05	3.13E+05	5.86E+05	5.18E+05	3.00E+05	6.58E+05	4.22E+05	4.25E+05	94.6	Q9ULP0	Protein NDRG4
5.26E+05	4.20E+05	2.78E+05	5.12E+05	3.42E+05	3.49E+05	7.31E+05	4.50E+05	4.35E+05	35.7	Q02952	A-kinase anchor protein 12
3.65E+05	3.11E+05	2.16E+05	3.88E+05	2.42E+05	2.27E+05	4.61E+05	4.07E+05	3.42E+05	76.8	P78559	Microtubule-associated protein 1A
6.94E+05	2.04E+05	6.18E+04	5.29E+05	2.27E+05	3.24E+05	9.61E+05	2.14E+05	1.75E+05	144.4	Q4R4K0	Protein NDRG2
2.09E+06	1.73E+06	1.34E+06	1.63E+06	1.50E+06	1.30E+06	2.16E+06	1.74E+06	1.64E+06	98.3	Q6MJX8	Microtubule-associated protein tau
4.85E+05	4.40E+05	3.79E+05	4.77E+05	4.00E+05	4.57E+05	5.21E+05	5.33E+05	3.97E+05	31.0	Q5R9Y6	Phythroxymidinase-related protein 2
4.02E+05	3.12E+05	2.92E+05	3.45E+05	2.89E+05	2.74E+05	4.50E+05	3.51E+05	3.60E+05	31.0	O15075	Serine/threonine-protein kinase DCLK1
4.48E+05	3.43E+05	2.68E+05	5.29E+05	3.86E+05	3.03E+05	7.59E+05	3.73E+05	3.35E+05	67.1	Q6UPY8	Microtubule-associated protein RP/EB family member 3
6.85E+05	3.61E+05	1.54E+05	4.47E+05	2.06E+05	1.84E+05	6.66E+05	2.90E+05	2.10E+05	58.6	Q8NDT6	Cyclin-Y
6.84E+05	5.80E+05	5.02E+05	5.99E+05	5.11E+05	4.12E+05	9.23E+05	7.43E+05	6.11E+05	36.7	Q5RA10	Alpha-adducin
3.21E+05	2.40E+05	1.73E+05	3.05E+05	2.66E+05	2.16E+05	3.32E+05	2.17E+05	2.16E+05	33.3	P51858	Hepatoma-derived growth factor
7.54E+05	5.40E+05	3.08E+05	6.87E+05	6.25E+05	4.32E+05	7.01E+05	5.16E+05	4.91E+05	31.0	Q5R9Y6	Phythroxymidinase-related protein 2
2.55E+05	1.21E+05	1.08E+05	1.77E+05	1.20E+05	1.07E+05	3.44E+05	1.40E+05	1.44E+05	71.6	Q4R4K0	Protein NDRG2
2.14E+05	1.36E+05	1.34E+05	1.82E+05	1.26E+05	1.12E+05	2.57E+05	1.51E+05	1.57E+05	71.2	Q9HYK1	Iron-sulfur cluster assembly enzyme ISCU, mitochondrial
1.14E+05	7.80E+04	5.71E+04	1.11E+05	9.92E+04	5.97E+04	1.83E+05	1.28E+05	1.16E+05	40.7	Q9UNE7	E3 ubiquitin-protein ligase CHIP
1.21E+06	6.24E+05	5.13E+05	5.51E+05	3.28E+05	1.97E+05	5.32E+05	2.40E+05	1.82E+05	69.4	O00499	Myc box-dependent-interacting protein 1

We can provide data suitable for statistical analysis.
We also support pathway analysis for the data.