

Protein Descriptions

>sp|Q8TDL5|LPLC1_HUMAN Long palate, lung and nasal epithelium carcinoma-associated protein 1 OS=Homo sa
 >sp|P15311|EZRI_HUMAN Ezrin OS=Homo sapiens GN=EZR PE=1 SV=4;>tr|E7EQR4|E7EQR4_HUMAN Ezrin OS=H
 >sp|P63261|ACTG_HUMAN Actin, cytoplasmic 2 OS=Homo sapiens GN
 >sp|P03973|SLPI_HUMAN Antileukoproteainase OS=Homo sapiens GN=SLPI PE=1 SV=2
 >sp|O00299|CLIC1_HUMAN Chloride intracellular channel protein 1 OS=Homo sapiens GN=CLIC1 PE=1 SV=4
 >sp|P01024|CO3_HUMAN Complement C3 OS=Homo sapiens GN=C3 PE=1 SV=2
 >sp|Q9NP55|PLUNC_HUMAN Protein Plunc OS=Homo sapiens GN=PLUNC PE=1 SV=1
 >sp|P27487|DPP4_HUMAN Dipeptidyl peptidase 4 OS=Homo sapiens GN=DPP4 PE=1 SV=2
 >sp|P01833|PIGR_HUMAN Polymeric immunoglobulin receptor OS=Homo sapiens GN=PIGR PE=1 SV=4
 >sp|P80723|BASP1_HUMAN Brain acid soluble protein 1 OS=Homo sapiens GN=BASP1
 >sp|P68371|TBB2C_HUMAN Tubulin beta-2C chain OS=Homo sapiens GN=TUBB2C PE=1 SV=1;>sp|Q13885|TBB2
 >sp|P21926|CD9_HUMAN CD9 antigen OS=Homo sapiens GN=CD9 PE=1 SV=4;>tr|A6NNI4|A6NNI4_HUMAN Uncl
 >sp|P06396|GELS_HUMAN Gelsolin OS=Homo sapiens
 >sp|P00441|SODC_HUMAN Superoxide dismutase [Cu-Zn] OS=Homo sapiens GN=SOD1 PE=1 SV=2;>tr|A8MST3|/
 >sp|P07355-2|ANXA2_HUMAN Isoform 2 of Annexin A2 OS=Homo sapiens GN=ANXA2;>sp|P07355|AN
 >sp|Q9H223|EHD4_HUMAN EH domain-containing protein 4 OS=Homo sapiens GN=EHD4 PE=1 SV=1
 >sp|P06733|ENOA_HUMAN Alpha-enolase OS=Homo sapiens GN=ENO1 PE=1 SV=2;>sp|P06733-2|ENOA_HUMAI
 >sp|O60635|TSN1_HUMAN Tetraspanin-1 OS=Homo sapiens GN=TSPAN1 PE=1 SV=2
 >sp|O14745|NHRF1_HUMAN Na(+)/H(+) exchange regulatory cofactor NHE-RF1 OS=Homo sapiens GN=SLC9A3R1
 >tr|B4E1Z4|B4E1Z4_HUMAN Complement factor B Ba fragment
 >sp|P31949|S10AB_HUMAN Protein S100-A11 OS=Homo sapiens GN=S100A11 PE=1 SV=2
 >sp|Q06830|PRDX1_HUMAN Peroxiredoxin-1 OS=Homo sapiens GN=PRDX1 PE=1 SV=1
 >sp|P32119|PRDX2_HUMAN Peroxiredoxin-2 OS=Homo sapiens GN=PRDX2 PE=1 SV=5;>tr|B4DF70|B4DF70_HUM
 >tr|H9KV70|H9KV70_HUMAN Neutrophil gelatinase-associated lipocalin OS=Homo sapiens GN=LCN2 PE
 >sp|Q99828|CIB1_HUMAN Calcium and integrin-binding protein 1 OS=Homo sapiens GN=CIB1 PE=1 SV=4
 >sp|P30838|AL3A1_HUMAN Aldehyde dehydrogenase, dimeric NADP-preferring OS=Homo sapien
 >sp|P11684|UTER_HUMAN Uteroglobulin OS=Homo sapiens GN=SCGB1A1
 >sp|P14618|KPYM_HUMAN Pyruvate kinase isozymes M1/M2 OS=Homo sapiens GN=PKM2 PE=1 SV=4;>sp|P146
 >sp|P15941-2|MUC1_HUMAN Isoform 2 of Mucin-1 OS=Homo sapiens GN=MUC1;>sp|P15941|MUC1_HUMAN M
 >sp|P09211|GSTP1_HUMAN Glutathione S-transferase P OS=Homo sapiens GN=GSTP1 PE=1 SV=2;>tr|A8MX94|A
 >tr|E9PK25|E9PK25_HUMAN Uncharacterized protein OS=Homo sapiens GN=CFL1 PE=4 SV=1;>sp|P23528|COF1_>sp|Q9BW30|TPPP3_HUMAN Tubulin polymerization-promoting protein family member 3
 >sp|Q13938|CAYP1_HUMAN Calcyphosin OS=Homo sapiens GN=CAPS PE=1 SV=1
 >sp|P00450|CERU_HUMAN Ceruloplasmin OS=Homo sapiens GN=CP PE=1 SV=1;>tr|E9PFZ2|E9PFZ2_HUMAN Un
 >sp|P37802|TAGL2_HUMAN Transgelin-2 OS=Homo sapiens GN=TAGLN2 PE=1 SV=3
 >tr|E7ETZ0|E7ETZ0_HUMAN Uncharacterized protein Calmodulin OS=Homo sapiens GN=CALM1 PE=4 SV=1;>tr|B
 >sp|P27105|STOM_HUMAN Erythrocyte band 7 integral membrane protein
 >sp|P08758|ANXA5_HUMAN Annexin A5 OS=Homo sapiens GN=ANXA5 PE=1 SV=2;>tr|D6RBL5|D6RBL5_HUMAN
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 >sp|O43490|PROM1_HUMAN Prominin-1 OS=Homo sapiens GN=PROM1 PE=1 SV=1;>sp|O43490-2|PRC
 >sp|P10909-2|CLUS_HUMAN Isoform 2 of Clusterin OS=Homo sapiens GN=CLU;>sp|P10909-5|CLUS_HU
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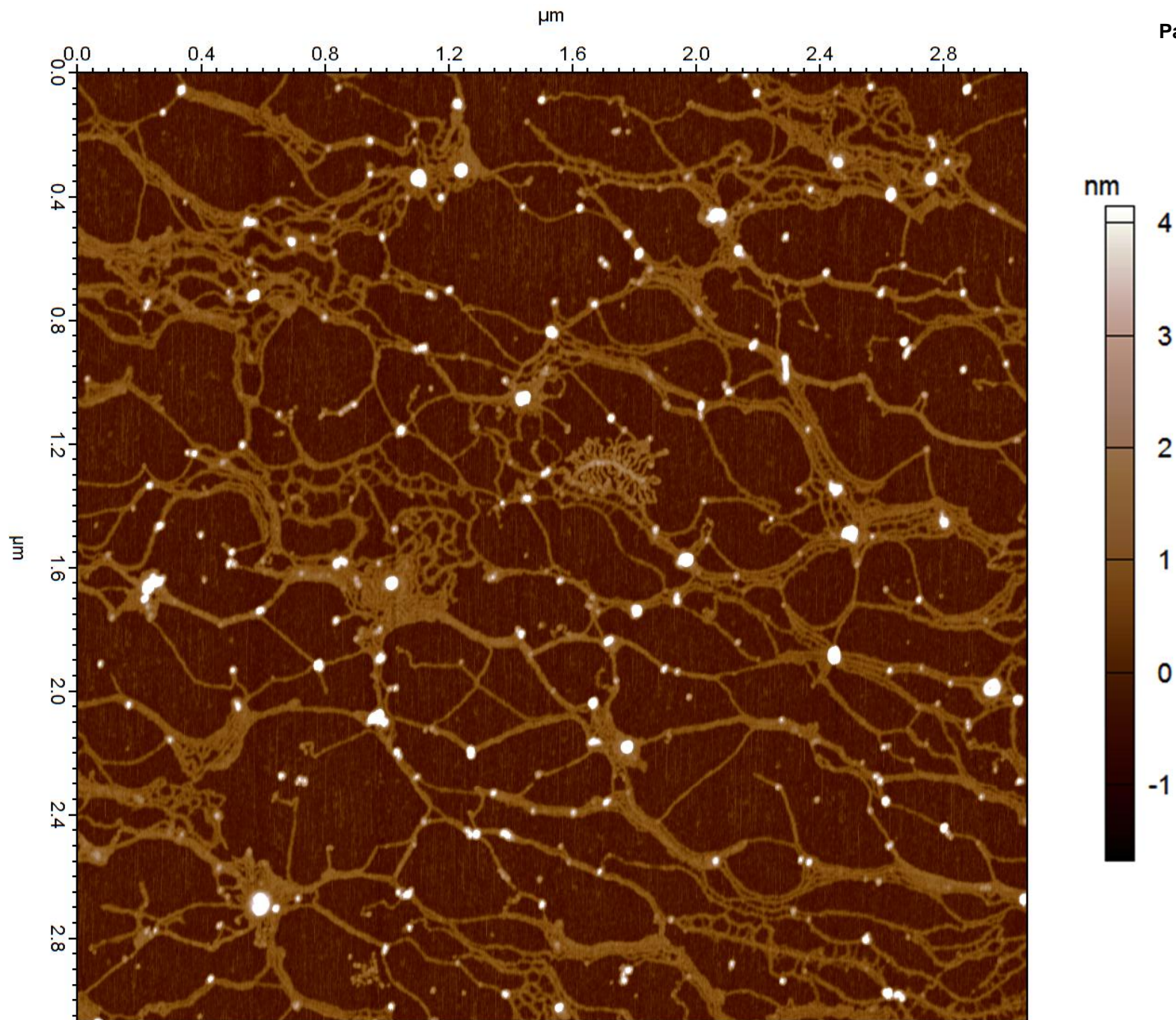
Cell proliferation-inducing gene 35 protein;EPC-1;Pigment epithelium-derived factor;Serpin F1
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 >sp|Q9UGM3-6|DMBT1_HUMAN Isoform 6 of Deleted in malignant brain tumors 1 protein OS=Homo sapiens GN
 >sp|P04083|ANXA1_HUMAN Annexin A1 OS=Homo sapiens GN=ANXA1 PE=1 SV=2;>tr|Q5TZZ9|Q5TZZ9_HUMAN
 >tr|E9PR17|E9PR17_HUMAN CD59 glycoprotein OS=Homo sapiens
 >sp|P07339|CATD_HUMAN Cathepsin D OS=Homo sapiens GN=CTSD PE=1 SV=1;>tr|C9JH19|C9JH19_HU
 >sp|P54707-2|AT12A_HUMAN Isoform 2 of Potassium-transporting ATPase alpha chain 2 OS=Homo sapiens
 >sp|Q9HC84|MUC5B_HUMAN Mucin-5B OS=Homo sapiens GN=MUC5B PE=1 SV=3;>tr|E9PBJ0|E9PBJ0_HUMAN
 >sp|O43653|PSCA_HUMAN Prostate stem cell antigen OS=Homo sapiens GN=PSCA PE=1 SV=1
 >sp|O00182|LEG9_HUMAN Galectin-9 OS=Homo sapiens GN=LGALS9 PE=1 SV=2;>sp|O00182-2|LEG9_HUMAN Is
 >sp|P30740|ILEU_HUMAN Leukocyte elastase inhibitor OS=Homo sapiens GN=SERPINB1 PE=1 SV=1
 >sp|Q08380|LG3BP_HUMAN Galectin-3-binding protein OS=Homo sapiens GN=LGALS3BP PE=1 SV=1;>tr|E7EW56
 >sp|P17931|LEG3_HUMAN Galectin-3 OS=Homo sapiens GN=LGALS3 PE=1 SV=5
 >sp|Q14508|WFDC2_HUMAN WAP four-disulfide core domain protein 2 OS=Homo sapiens GN=WFDC2 PE=1 SV=
 >sp|P59665|DEF1_HUMAN Neutrophil defensin 1 OS=Homo sapiens GN=DEFA1 PE=1 SV=1;>sp|P59666|DEF3_HU
 >sp|O00214-2|LEG8_HUMAN Isoform 2 of Galectin-8 OS=Homo sapiens GN=LGALS8;>tr|C9JNF5|C9JNF5_HUMAN
 >sp|P61626|LYSC_HUMAN Lysozyme C OS=Homo sapiens
 >sp|P29508|SPB3_HUMAN Serpin B3 OS=Homo sapiens GN=SERPINB3 PE=1 SV=2;>sp|P29508-2|SPB3_HUMAN I
 >sp|P35237|SPB6_HUMAN Serpin B6 OS=Homo sapiens GN=SERPINB6 PE=1 SV=3
 >tr|E9PDY6|E9PDY6_HUMAN Uncharacterized protein OS=Homo sapiens GN=MUC4 PE=4 SV=1;>tr|E7ESK3|E7ES
 >sp|P98088|MUC5A_HUMAN Mucin-5AC (Fragments) OS=Homo sapiens GN=MUC5AC PE=1 SV=3
 >sp|Q8WXI7|MUC16_HUMAN Mucin-16 OS=Homo sapiens GN=MUC16 PE=1 SV=2
 >sp|Q8N307|MUC20_HUMAN Mucin-20 OS=Homo sapiens GN=MUC20 PE=1 SV=3;>sp|Q8N307-3|MUC20_HUM

Mol. Weight [kDa]	Unique Peptides EXP1	Unique Peptides EXP2	Unique Peptides EXP3
52.441	15	13	17
69.4	6	3	8
64.5	5	4	6
14.326	4	2	4
26	6	0	3
187.15	27	21	31
26.712	5	6	6
88.278	14	11	16
83.283	11	12	12
22.6	6	3	2
49.83	1	1	2
25.416	5	3	6
85	2	2	2
15.936	2	2	3
40,411	22	29	36
61.174	15	17	18
47.168	16	17	21
26.301	4	1	3
38.8	3	5	3
140.94	40	35	38
11.74	3	5	5
22.11	8	8	9
21.892	4	6	6
22.902	16	15	16
21.703	10	11	11
50.3	12	4	12
9.9	2	2	2
57.936	21	25	27
122.94	8	8	9
24.35	9	9	9
22.728	5	8	9
18.9	8	3	6
20.9	13	11	8
122.2	18	16	21
22.3	5	2	7
16.966	10	11	12
32	3	2	4
35.936	6	10	12
77.469	17	20	23
97,201	15	7	15
57,832	9	10	12
11.139	4	5	5

46.3	5	6	8
10.18	2	2	2
10.834	1	2	2
13.242	4	4	5
11.662	6	6	7
11.801	4	6	7
274.46	18	15	19
38.714	16	20	21
14.5	5	3	6
44.5	8	8	10
116.5	5	2	7
596.33	64	63	72
26.3	3	3	3
39.518	4	4	4
42.741	9	12	12
65.33	7	6	8
26.152	7	6	7
12.993	5	6	8
10.6	1	1	1
40.397	6	5	7
16.5	2	3	1
44.564	7	8	9
42.621	4	3	6
542.3	26	28	32
526.6	37	10	38
2284.3	19	25	21
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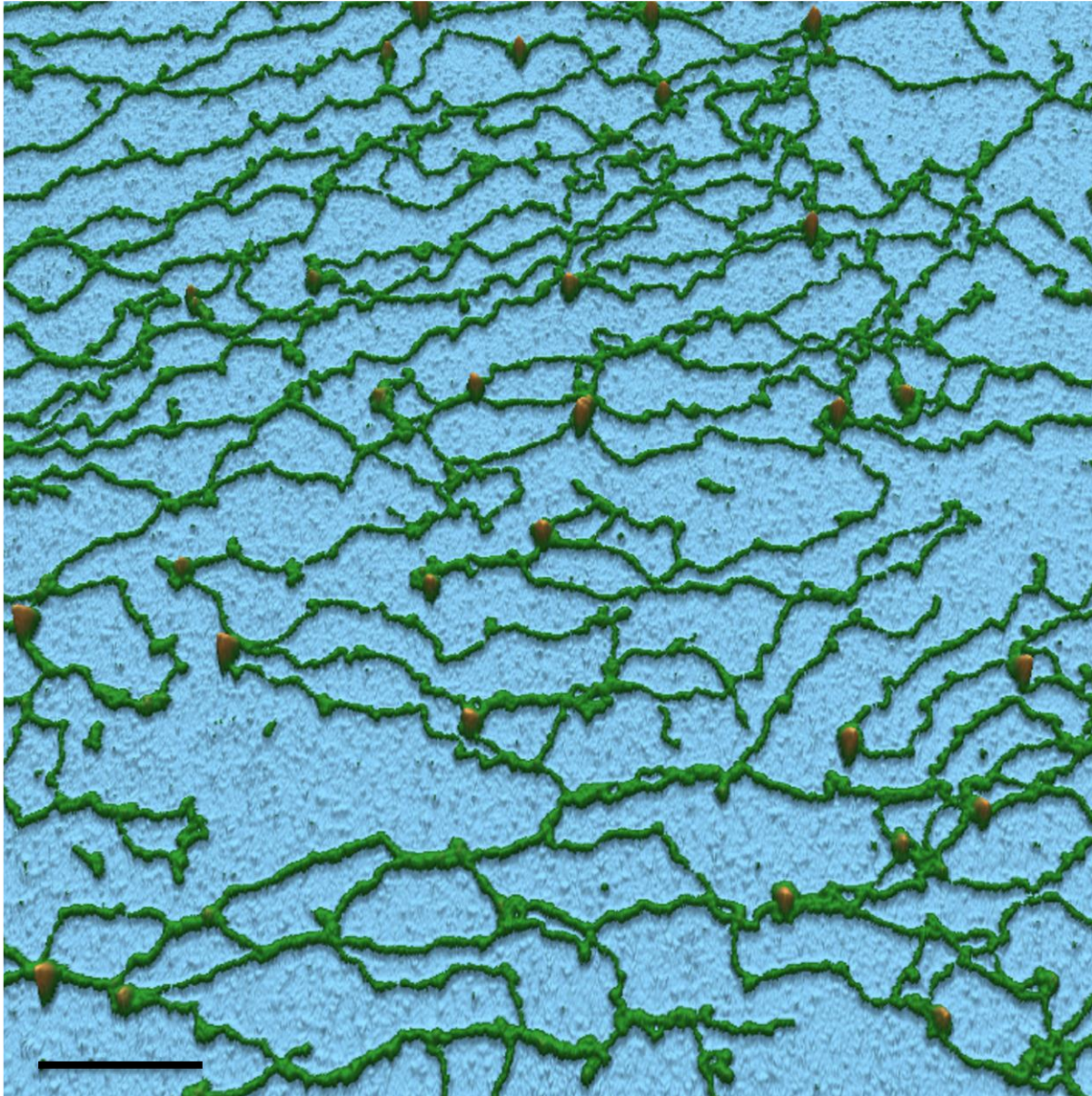
average unique peptide	Sequence Coverage [%]
15	46.5
6	34.3
5	18
3	22.7
3	27
26	22.4
6	34.4
14	19.5
12	20.7
4	63
1	43.1
5	25.4
2	26
2	32.5
29	65
17	44.9
18	52.5
3	15.4
4	15
38	23
4	43.8
8	53.3
5	32.3
16	75
11	63.9
9	40
2	61
24	53.9
8	8.9
9	55
7	43.6
6	58
11	53
18	22
5	30
11	58
3	22
9	42.8
20	35.9
12	23
10	20
5	79.6

6	26
2	16.7
2	23.7
4	44.7
6	80.8
6	58.3
17	33
19	60.4
5	19
9	35
5	10
66	20.3
3	15
4	13.2
11	38
7	16.4
7	28.8
6	25.8
1	9.6
6	20.6
2	13
8	46.2
4	22.3
29	7.9
28	15
22	16.7
2	2.8



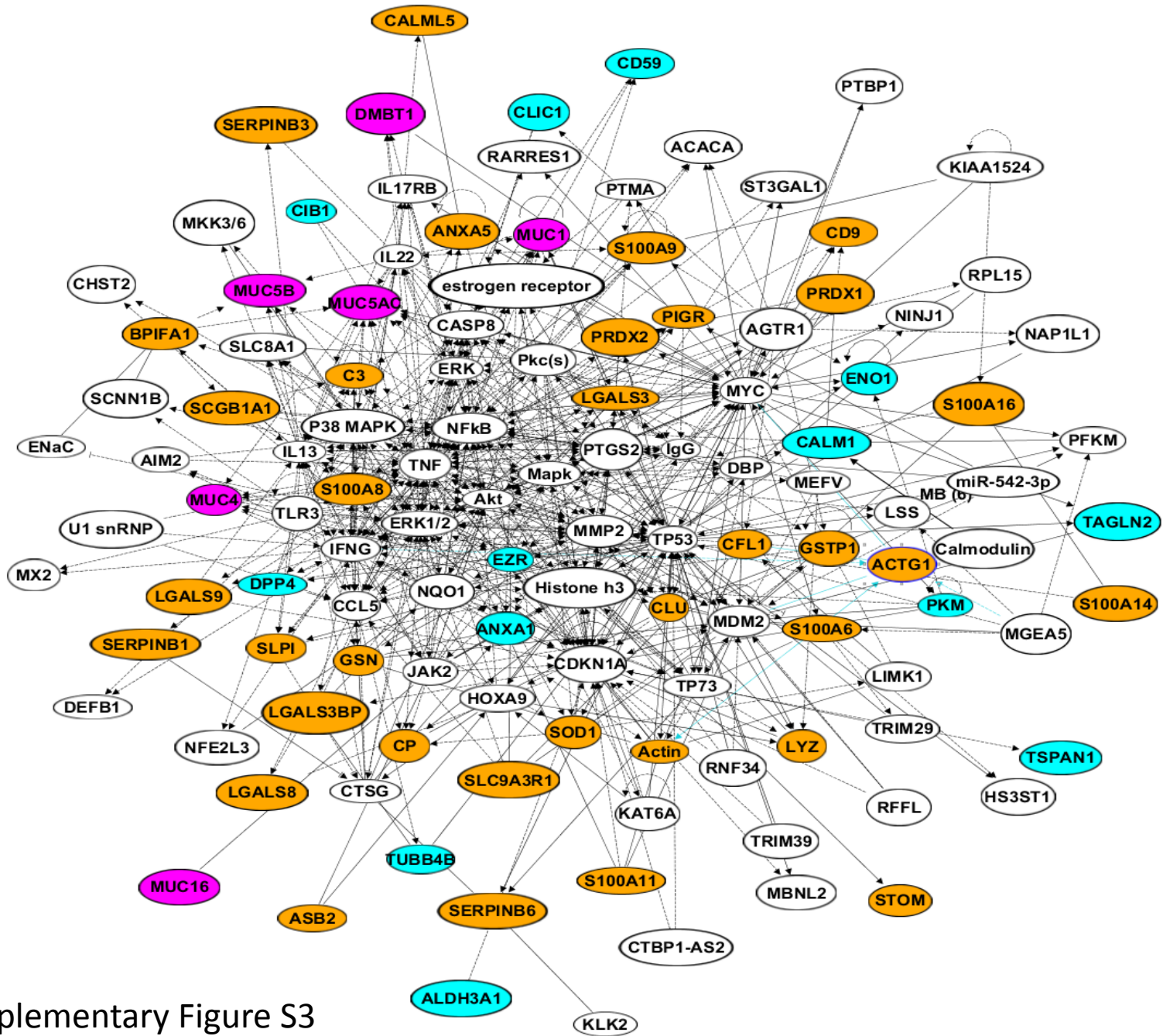
Supplementary Figure S1

- **Supplementary figure S1:** A raw topographical high resolution AFM image of the mucin interactome, mucins and their associated proteins, derived from HBE cells deposited on a mica surface. Mucins can be seen as the long fibers, both in individual and clustered configurations, while other proteins, as well as the hydrophobic non-glycosylated regions of the mucins, appear as circular nodes with different heights and sizes. A 3 dimensional rendering of this image, as well as detailed information can be found in figure 3. The height scale on the right is capped at 4 nm to emphasize the difference between glycosylated and protein regions of mucins, and other proteins. Features in bright white range in height from 4-14 nm.



Supplementary Figure S2

- **Supplementary figure S2: A 3-dimensional rendering of an Atomic Force Microscope image of the organizational framework of the purified MUC5B:** MUC5B was isolated as essentially described previously (ref 16, 43) under dissociative conditions and deposited onto mica and observed in the Cypher AFM. Glycosylated domains/chains of the mucins are shown in green and measure approximately 1 nm in height. The brown coloring represents protein regions of the framework and mostly consist of the naked protein domains of the mucins. Although the mucin was highly purified, there may be residual proteins that covalently interact with the mucin's protein domains on the brown nodes. As compared to Figure 3, the number of brown protein nodes are significantly reduced, and the mucin network is more uniform and linear with almost no clustering and no compact form present. Scale bar 250 nm.



Supplementary Figure S3

- **Supplementary Figure S3. The pathways in which the proteins in the mucin interactome are involved, as demonstrated by the Ingenuity Pathway analysis:** Of the 66 proteins detected, the application used 56 to generate nine networks that we were able to merge including the networks Cell-To-Cell Signaling and Interaction, Tissue Development, Cellular Movement, Cell Death and Survival, Cell Signaling, Molecular Transport, Inflammatory Disease, and Inflammatory Response networks. We highlighted the mucin and mucin-like proteins with magenta, the exosomal proteins with light blue and the mucin interactome proteins with orange. The white proteins are the proteins that interacted with our data set. The different protein shapes suggest different protein functions. We used the default molecule shapes except for the enzymes, to which we have assigned a pentagonal shape. Magenta: Mucins, Blue: exosomal/vesicular proteins, Orange: mucin interactome, White: putative interacting proteins of mucin-interactome