

Supplementary Materials

HPV16 induces formation of virus-p62-PML hybrid bodies to enable infection

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Supplementary Materials and Methods

Plasmids

Expression plasmid encoding LC3-GFP (pEGFP-C1/LC3-B full-length VK325) was a kind gift by Ivan Dikic (Institute of Biochemistry II, Goethe University Medical School, Frankfurt am Main, Germany).

Quantitative mass spectrometry

Protein digest preparation: Early endosomes were pelleted by ultracentrifugation (100.000 x g, 1 h, 4°C). Pelleted endosomes were solubilized in 25 mM ammonium bicarbonate containing 0.1 % RapiGest (Waters, Eschborn, Germany) (80°C, 15 min). Proteins were reduced by adding 5 mM DTT (45 min, 56 °C) and free cysteines alkylated with iodoacetamide (Sigma, Taufkirchen, Germany) (15 mM, 25°C, 1 h in dark). 0.2 µg porcine sequencing grade trypsin (Promega, Mannheim, Germany) were added and the samples were incubated overnight at 37°C. After digestion, RapiGest was hydrolyzed by adding 10 mM HCl (37°C, 10 min) and the resulting precipitate was removed by centrifugation (13.000 x g, 15 min, 4°C) and the supernatant was transferred into an autosampler vial for peptide analysis via LCMS.

UPLC configuration: Capillary liquid chromatography of tryptic peptides was performed with a Waters NanoAcquity UPLC system equipped with a 75 µm x 150 mm BEH C18 reversed phase column and a 2.6 µl PEEKSIL-sample loop (SGE, Darmstadt, Germany). The aqueous mobile phase (mobile phase A) was H₂O (LC-MS Grade, Roth, Freiburg, Germany) with 0.1 % formic acid. The organic mobile phase (mobile phase B) was 0.1 % formic acid in acetonitrile (LC-MS grade, Roth). Samples (2.6 µl injection)

were loaded onto the column in direct injection mode with 3 % mobile phase B for 15 min at 400 nl/min, followed by an additional 10 min wash (3 % B) for 10 min at 300 nl/min. Peptides were eluted from the column with a gradient from 3-35 % mobile phase B over 90 min at 300 nl/min followed by a 20 min rinse of 80 % mobile phase B. The column was immediately re-equilibrated at initial conditions (3 % mobile phase B) for 20 min. [Glu1]fibrinopeptide was used as lockmass at 300 fmol/ μ l. Lockmass solution was delivered from the auxiliary pump of the NanoAcquity system at 400 nl/min to the reference sprayer of the NanoLockSprayTM source. Samples were analyzed in triplicate.

Mass spectrometer configuration: Mass spectrometry analysis of tryptic peptides was performed using a Waters Q-TOF Premier API system, operated in V-mode with typical resolving power of at least 10,000. All analyses were performed using positive mode ESI using a NanoLockSpray source. The lock mass channel was sampled every 30 s. The mass spectrometer was calibrated with a [Glu1]fibrinopeptide solution (300 fmol/ μ l) delivered through the reference sprayer of the NanoLockSpray source. Accurate mass LCMS data were collected in an alternating, low energy (MS) and elevated energy (MSE) mode of acquisition. The spectral acquisition time in each mode was 0.7 s with a 0.05-s interscan delay. In low energy MS mode, data were collected at constant collision energy of 3 eV. In MSE mode, collision energy was ramped from 16 to 36 eV during each 0.7 s data collection cycle. One cycle of MS and MSE data was acquired every 1.5 s. The radio frequency applied to the quadrupole mass analyzer was adjusted such that ions from m/z 300 to 1500 were efficiently transmitted, ensuring that any ions observed in the LC/MSE data less than m/z 300 were known to arise from dissociations in the collision cell.

Data processing and protein identification: The continuum LCMSE data were processed and searched using the IDENTITYE- Algorithm of ProteinLynx Global Server (PLGS) version 2.3. The resulting peptide and protein identifications were evaluated by the software using statistical models similar to those described by Skilling et al. [1]. Protein identifications were assigned by searching the UniProtKB/Swiss-Prot Protein Knowledgebase Release 52.3 for human proteins (12920 entries) supplemented with known possible contaminants and standard proteins (porcine trypsin, yeast enolase) using the precursor and fragmentation data afforded by the LCMS acquisition method as described before. The search parameter values for each precursor and associated fragment ions were set by the software using the measured mass error obtained from processing the raw continuum data. Peptide identifications were restricted to tryptic peptides with no more than one missed cleavage. Carbamidomethyl cysteine was set as fixed modification, and oxidized methionine, protein N-acetylation, and deamidation of asparagine and glutamine were searched as variable modifications. Database search was performed allowing a maximal mass deviation of 15 ppm for precursor ions and 30 ppm for fragment ions. For a valid protein identification, the following criteria had to be met: at least 2 peptides detected with together at least 7 fragments. All reported peptide identifications provided by

the IDENTITYE-algorithm are correct with >95% probability. The initial false positive rate for protein identification was set to 3 % based on search of a 5x randomized database, which was generated automatically using PLGS 2.3 by randomizing the primary amino acid sequence of each entry. Subsequently, by using a minimum replication rate of identification in two separate technical replicates as a filter, the false positive rate is further reduced to below 0.2%.

Western blot analysis of phosphorylated p62

For analysis of p62 phosphorylation, HeLa cells were seeded in a 12-well plate in DMEM medium with FCS (without antibiotics). On the next day, the cells were starved for 1 hour in DMEM without FCS prior to PsV addition. Afterwards, all tested samples were lysed at the same time in lysis buffer containing 5 mM Tris-HCl pH 7.4, 1 mM EGTA, 250 mM sucrose and 1% Triton X-100, and phosphatase inhibitor cocktail PhosSTOP (Roche, Penzberg, Germany). Samples underwent three freeze-thaw cycles (freezing at -80°C and thawing at 4°C), were transferred to the Eppis, centrifuged, and denatured at 95°C for 5 min in SDS sample buffer. Equal amounts of protein were loaded on an SDS-PAGE gel. The samples were electro-transferred onto a nitrocellulose membrane and blocked with 5% bovine serum albumin (BSA) in Tris-buffered saline supplemented with 0.01% Tween (TBST). After incubation with primary antibodies (in 5% BSA-TBST), proteins were detected using HRP-conjugated secondary antibodies. Detection was carried out using Western Lightning Plus ECL detection reagent (PerkinElmer, Waltham, MA). Signals were recorded with X-ray films for Western blot detection Super RX-N (Fujifilm, Duesseldorf, Germany).

Detection of L1-7 epitope by immunofluorescence

HeLa cells were grown on coverslips in a 12-well plate and transfected with siRNAs. 48 hours later cells were infected with HPV16 PsVs and incubated for 7 hours at 37 °C. Subsequently, the cells were fixed with methanol and processed for staining with mAb 33L1-7 (L1-7). This mAb recognizes a specific epitope located in the interior of the PsV capsid and is not accessible in intact virions [2]. The samples were analyzed by fluorescence microscopy using a Zeiss Axiovert 200M microscope and quantified by ImageJ software. Quantification of fluorescent pixels was performed with ImageJ software.

References

1. Skilling, J.; Denny, R.; Richardson, K.; Young, P.; McKenna, T.; Campuzano, I.; Ritchie, M. ProbSeq--a Fragmentation Model for Interpretation of Electrospray Tandem Mass Spectrometry Data. *Comparative and functional genomics* 2004, 5, 61–68, doi:10.1002/cfg.370.
2. Spoden, G.; Freitag, K.; Husmann, M.; Boller, K.; Sapp, M.; Lambert, C.; Florin, L. Clathrin- and Caveolin-Independent Entry of Human Papillomavirus Type 16--Involvement of Tetraspanin-Enriched Microdomains (TEMs). *PLoS ONE* 2008, 3, e3313, doi:10.1371/journal.pone.0003313.

Supplementary Figures

MS 1, HeLa

Accession	Entry	Description	mW (Da)	pI (pH)	MW Score			MW ppm			SD ppm			NI → 4h	4h → 7h	NI → 7h
					0h	4h	7h	0h	4h	7h	0h	4h	7h			
Q9H4L4	SEN3_HUMAN	Sentin specific protease 3 EC 3.4.22.2 Sentin SUMO specific protease SEN3 SUMO 1 specific pr	64968	8,5898		118	245		6020	6986			6848			1,16
RAND0MS903	RAND0MS903	Random Sequence 5903	59244	9,1978		125	223		3358	4361		428				1,30
P03101.2	VLL_HPV16	HPV16 Major capsid protein L1	59435	7,9459		722	1400		1744	3306		347	219			1,86
P55283	CADH4_HUMAN	Cadherin 4 precursor Retinal cadherin R cadherin R CAD Homo sapiens Human	100217	4,4557		142	119		2438	2106		1522				0,86
P63267	ACTH_HUMAN	Actin gamma enteric smooth muscle Smooth muscle gamma actin Gamma 2 actin Alpha actin 3 Hom	41849	5,1594				10776		2065			652			
P11488	GNAT1_HUMAN	Guanine nucleotide binding protein G 1 alpha 1 subunit Transducin alpha 1 chain Homo sapiens	40015	5,2696		1388	1443		689	1662		164	1219			2,41
Q99808	S29A1_HUMAN	Equilibrative nucleoside transporter 1 Equilibrative nitrobenzylmercaptapurine riboside sensitive n	50186	8,2727		179	353		914	1157			294			1,27
P60033	CD81_HUMAN	CD81 antigen 26 kDa cell surface protein TAPA-1 Target of the antiproliferative antibody 1 Tetr	25792	4,9124		1425	613		1269	900		164				0,71
P20338	RAB4A_HUMAN	Ras related protein Rab 4A4 Homo sapiens Human	23856	5,7224		3261	1506		295	700		35				2,37
P59190	RAB15_HUMAN	Ras related protein Rab 15 Homo sapiens Human	24375	5,3015		1184	3018		916	659		625	491			0,72
Q6ZMR3	LDH6A_HUMAN	L lactate dehydrogenase A like 6A EC 1.1.1.27 Homo sapiens Human	36644	6,5543		272	152		3444	611		433				0,18
Q9Y2C5	MAPP_HUMAN	Mitogen activated protein binding protein interacting protein Late endosomal lysosomal Mp1 interact	13498	5,1074		502	3364		513	608		229				1,18
Q92930	RAB8B_HUMAN	Ras related protein Rab 8B Homo sapiens Human	23569	9,4318			3254			591		151				
P13929	ENOB_HUMAN	Beta enolase EC 4.2.1.11 2-phospho-D-glycerate hydrolyase Muscle specific enolase MSE Ske	46957	7,658		780	377		733	529		279				0,72
P30483	1B45_HUMAN	HLA class I histocompatibility antigen B 45 alpha chain precursor MHC class I antigen B 45 Bw 45	40389	6,0086		2640	2123		189	450			410			2,39
Q15771	RAB30_HUMAN	Ras related protein Rab 30 Homo sapiens Human	23043	4,7109		3380	2313		291	413		95	11			1,42
Q8Y656	RAB43_HUMAN	Ras related protein Rab 43 Ras related protein Rab 41 Homo sapiens Human	23324	5,3031		3716	2234		306	408		39	199			1,33
Q9Y280	MSAP_HUMAN	MIR interacting saposin like protein precursor Transmembrane protein 4 Putative secreted protein	20639	4,6177		2391	900		568	408		161	0			0,72
P48666	K26C6_HUMAN	Keratin type II cytoskeletal 6C Cytokeratin 6C CK 6C K6C keratin Homo sapiens Human	60163	8,0537		825	500		944	400			248			0,42
A43657	TSME_HUMAN	Tetraspanin 6 Tspan 6 Transmembrane 4 superfamily member 6 T245 protein Tetraspanin TM4 D A	27545	8,0574		395	405		470	396		101				0,84
Q13162	1B73_HUMAN	HLA class I histocompatibility antigen B 73 alpha chain precursor MHC class I antigen B 73 Homo	40409	5,801		3911	3651		234	225		37				0,96
Q70613	K1N6_HUMAN	Keratin type I cuticular Hb4 Hair keratin type I H46 Homo sapiens Human	52214	4,7048		106	372	403	377	2305	4002			6,12	1,74	10,62
P18463	1B73_HUMAN	HLA class I histocompatibility antigen B 37 alpha chain precursor MHC class I antigen B 37 Homo	40421	5,7189	5746	7915	5906	108	588	1140		481	1720	5,44	1,94	10,54
P13646	K1C13_HUMAN	Keratin type I cytoskeletal 13 Cytokeratin 13 CK 13 Keratin 13 K13 Homo sapiens Human	49555	4,712	395	678	531	317	638	2773	35	229	3279	2,01	4,35	8,76
Q368K4	L2752_HUMAN	Leucine zipper putative tumor suppressor 2 Protein LPSER1 Homo sapiens Human	27214	6,0859	104		99	436		3230	188					7,41
P84077	ARF1_HUMAN	ADP-ribosylation factor 1 Homo sapiens Human	20683	6,3746	4305	985	951	193	450	1132		484	544	2,32	2,52	5,85
P63027	VAMP2_HUMAN	Vesicle associated membrane protein 2 VAMP 2 Synaptobrevin 2 Homo sapiens Human	12640	8,7006	2336		2407	138		772	38					5,61
Q05524	ENO1B_HUMAN	Alpha enolase lung specific EC 4.2.1.11 2-phospho-D-glycerate hydrolyase Non neural enolase	49446	5,705	264	480	303	234	1395	1296		572	159	5,97	0,93	5,54
P5749	MYH11_HUMAN	Myosin 11 Myosin heavy chain 11 Myosin heavy chain smooth muscle isoform SMMHHC Homo sapiens	227157	5,2498	691	250	479	2538	10981	12373	1032	11708	5953	4,33	1,13	4,88
Q9H9B4	SFXN1_HUMAN	Sideroflexin 1 Tricarboxylate carrier protein TCC Homo sapiens Human	33596	9,3448	417		513	663		3125	30		763			4,71
Q07900	H500A_HUMAN	Head shock protein HSP 90 alpha HSP 86 Renal carcinoma antigen NY REN 38 Homo sapiens Human	84606	4,747	1074	889	751	1457	3703	6592	548	423	3622	2,54	1,78	4,53
Q9Y548	S9RB_HUMAN	Signal recognition particle receptor subunit beta SR beta Protein APMFC1 Homo sapiens Human	29683	9,3957	763	717	465	463	404	2079	65	48	2320	0,87	5,14	4,50
Q13501	Q5QTM_HUMAN	p62/Sequestosome 1 Phosphotyrosine independent ligand for the Lck SH2 domain of E2 KDa Ubiquitin bind	47956	4,9312	1860		4504	2091	5417	9147	72	301	1345	2,59	1,69	4,37
P23229	ITAC_HUMAN	Integrin alpha 6 precursor VLA 6 CD49 antigen Contains Integrin alpha 6 heavy chain Integrin	126539	6,3675	154	112	248	1179	2872	5331				2,44	1,79	4,35
P15153	RAC2_HUMAN	Ras related G2 betulinum toxin substrate 2 precursor p23 Rac2 Small G protein G12 Homo sapiens	21415	7,5566	1008	4783	3457	270	1326	1117	52	167	278	4,92	0,84	4,14
Q01546	K220_HUMAN	Keratin type II cytoskeletal 2 oral Cytokeratin 2P K2P CK 2P Keratin 76 Homo sapiens Hum	65830	8,0982	260	299	443	301	642	1181		246	728	2,14	1,84	3,93
Q41219	PER1_HUMAN	Peripherin Homo sapiens Human	53618	5,2088	154		363	254		988	86	513		0,00		3,89
P12035	K2C3_HUMAN	Keratin type II cytoskeletal 3 Cytokeratin 3 CK 3 Keratin 3 K3 65 kDa cyokeratin Homo	64464	6,0699	400	207	488	261	806	1011	9	340	3,08	1,25	3,87	
P08727	K1C19_HUMAN	Keratin type I cytoskeletal 19 Cytokeratin 19 CK 19 Keratin 19 K19 Homo sapiens Human	44065	4,8591	2720	1632	2290	616	1005	2127	274	248	1890	1,63	2,12	3,45
Q9NS82	KRT84_HUMAN	Keratin type II cuticular Hb4 Type II hair keratin Hb4 Keratin 84 K84 Homo sapiens Human	64854	7,6144	678	410	816	410	677	1382	34	249	1,65	2,04	3,37	
P62820	RAB1A_HUMAN	Ras related protein Rab 1A YPT1 related protein Homo sapiens Human	22663	5,8482	10135		5671	512		1665	48			0,00		3,25
P12036	NFH_HUMAN	Neurofilament heavy polypeptide NF H Neurofilament triplet H protein 200 kDa neurofilament prot	112411	5,764	61	88	83	537	1039	1732	31	213	952	1,94	1,67	3,23
Q29960	1C16_HUMAN	HLA class I histocompatibility antigen Cw 16 alpha chain precursor MHC class I antigen Cw 16 Ho	40727	6,0786	4638		3114	528		1705	65			0,00		3,23
Q08043	ACTN3_HUMAN	Alpha actinin 3 Alpha actinin skeletal muscle isoform 3 F actin cross linking protein Homo sap	103229	5,2518	514	844	660	860	1589	2740	371	781	3300	1,85	1,72	3,19
P31947	14335_HUMAN	14.3.3 protein sigma Stratifin Epithelial cell marker protein 1 Homo sapiens Human	27776	5,4822	652		524	117		371			42	0,00		3,16
P13637	AT1A3_HUMAN	Sodium potassium transporting ATPase alpha 3 chain EC 3.6.3.9 Sodium pump 3 Na K ATPase 3	116757	5,0544	3839	3738	2572	872	3656	2728	226	2526	1732	4,19	0,75	3,13
P02533	K1C14_HUMAN	Keratin type I cytoskeletal 14 Cytokeratin 14 CK 14 Keratin 14 K14 Homo sapiens Human	51589	4,8973	3404	2357	3319	462	848	1438	276	354	690	1,83	1,70	3,11
P40462	GLCM_HUMAN	Glucosylceramidase precursor EC 3.2.1.45 Beta-glucocerebrosidase Acid beta glucosidase D gluc	59678	7,3423	291	598	425	1090	2201	3289	194	613	1840	2,02	1,49	3,02
P61020	RAB59_HUMAN	Ras related protein Rab 5B Homo sapiens Human	23691	8,2381	3469	1320	178	277	643	838	124	259		2,32	1,29	2,99
Q17294	K2C18_HUMAN	Keratin type II cytoskeletal 18 Keratin 77 Homo sapiens Human	61650	5,5001	822	115	450	494	983	1456	188		130	1,99	1,48	2,95
P21526	CDS9_HUMAN	CD9 antigen p24 Leukocyte antigen M1C3 Motility related protein MRP 1 Tetraspanin 29 Tspa	25398	6,9016	209	605	974	317	485	930		50	80	1,53	1,92	2,94
A43504	XIP_HUMAN	Hepatitis B virus X interacting protein HBX interacting protein HBV X interacting protein Homo	9607	4,448	4432	4380	6950	213	447	622	31	53	80	2,10	1,39	2,92
Q14532	K1H2_HUMAN	Keratin type I cuticular Hb2 Hair keratin type I Hb2 Keratin 32 Homo sapiens Human	50286	4,6132	316	250	239	467	1791	1351		1065	3,84	0,75	2,89	
P08107	HSP71_HUMAN	Heat shock 70 kDa protein 1 HSP70.1 HSP70.2 Homo sapiens Human	69995	5,3154	1765	1856	2498	1096	1378	3106	409	631	457	1,26	2,25	2,83
Q13813	SPTA2_HUMAN	Spectrin alpha chain brain Spectrin non erythroid alpha chain Alpha II spectrin Fodrin alpha	264362	5,0519	259	119	165	6534	9903	18495	2547	462	734	1,52	1,87	2,83
P05093	AT1A2_HUMAN	Sodium potassium transporting ATPase alpha 2 chain precursor EC 3.6.3.9 Sodium pump 2 Na K	112193	5,3243	2896	2782	2173	1205	1054	3352	238	275	1922	0,88	3,18	2,78
Q13733	AT1A4_HUMAN	Sodium potassium transporting ATPase alpha 4 chain EC 3.6.3.9 Sodium pump 4 Na K ATPase 4	114093	6,1998	1186	582	592	1025	1619	2738	361	868	1770	1,58	1,69	2,67
Q00560	SDCB1_HUMAN	Syntenin 1 Syndecan binding protein 1 Melanoma differentiation associated protein 9 MDA 9 Sca	32423	7,353	2054	1114	1066	922	1727	2447	335	1311	1173	1,87	1,42	2,65
P02769	ALBU_BOVIN	Serum albumin precursor Allergen Bos d 6 BSA	69248	5,7574	152	484	781	998	1342	2095	223	469	1086	1,68	1,56	2,63
P26322	CTNA2_HUMAN	Catenin alpha 2 Alpha catenin related protein Alpha N catenin Homo sapiens Human	105246	5,3741	319	309	257	903	1274	2326	365	394	1688	1,41	1,83	2,58
P23119	PRDX2_HUMAN	Peroxiredoxin 2 EC 1.11.1.15 Thioresdoxin peroxidase 1 Thioresdoxin dependent peroxide reductase	21878	5,5671	495	1498	2482	238	246	607		222	1,03	2,47	2,55	
Q9Y411	OXRP_HUMAN	150 kDa oxygen regulated protein precursor Orp150 Hypoxia up regulated 1 Homo sapiens Human	111266	4,9713	713	258	192	4286	6919	10790	3162	2881		1,61	1,56	2,52
Q16352	ANX_HUMAN	Alpha annexin Alpha Ix 66 kDa nuclear protein Neurofilament 66 NF 66 Homo sapiens	55357	5,1687	84	45	175	401	683	1008		715	1,71	1,48	2,52	
P62834	RAP1A_HUMAN	Ras related protein Rap 1A precursor GTP binding protein smg p21A Ras related protein Krev 1 C2	20973	6,5314	6000		7316	454		1138	175		67	0,36	0,00	2,51
P6A0A8	KC059_HUMAN	UPF004 protein C11orf59 Homo sapiens Human	17733	4,8312	5486	4176	3642	500	774	1242	97	67	326	1,55	1,60	2,48
P05787	K2C8_HUMAN	Keratin type II cytoskeletal 8 Cytokeratin 8 CK 8 Keratin 8 K8 Homo sapiens Human	53671	5,3399	13509	3232	9608	5395	3545	13298	372	273	838	0,66	3,71	2,46
P63104	14332_HUMAN	14.3.3 protein zeta Delta Protein kinase C inhibitor protein 1 KOP 1 Homo sapiens Human	27727	4,5273	3682	2957	3810	531	807	1306	55	124	122	1,52	1,62	2,46
Q04695	K1C17_HUMAN	Keratin type I cytoskeletal 17 Cytokeratin 17 CK 17 Keratin 17 K17 39.1 Homo sapiens H	48076	4,7767	10685	5467	11080	4525	2735	10811	529	293	1169	0,60	3,95	2,39
P08729	K2C7_HUMAN	Keratin type II cytoskeletal 7 Cytokeratin 7 CK 7 Keratin 7 K7 Sarcolectin Homo sapiens	51386	5,311	10226	3099	11108	4422	2565	10281	280	241	527	0,58	4,01	2,32
P08670	VIME_HUMAN	Vimentin Homo sapiens Human	53619	4,8629	2574	1070	3069	1931	1234	4465	316	298	2302	0,64	3,62	2,31
Q14254	FLDT2_HUMAN	Dystlin 2 Epidermal surface antigen ESA Homo sapiens Human	41659	5,0414	956	624	438	763	982	1764	121	193	642	1,29	1,80	2,31
Q75923	DYSF_HUMAN	Dystrophin Dytrrophy associated fer 1 like protein Fer 1 like protein 1 Homo sapiens Human	237142	5,3042	57	25	69	3137	3898	425		1608	1,83	1,24	2,28	
P38405	GNAL_HUMAN	Guanine nucleotide binding protein G of subunit Alpha Adenylate cyclase stimulating G alpha prote	44280	6,2172	784	1347	1352	362	1659	824						

P35900	K1C20_HUMAN	Keratin type I cytoskeletal 20 Cyokeratin 20 CK 20 Keratin 20 Protein IT Homo sapi	48456	5,3912	944	766	940	652	794	1212	325	783	1406	1,22	1,53	1,86
Q9UBR2	CAT2_HUMAN	Cathepsin 2 precursor EC 3.4.22 Cathepsin X Cathepsin P Homo sapiens Human	33846	6,7363	649	334	954	582	744	1081	89	116	223	1,28	1,45	1,86
Q99456	K1C12_HUMAN	Keratin type I cytoskeletal 12 Cyokeratin 12 CK 12 Keratin 12 K12 Homo sapiens Human	53478	4,5073	218	89	162	453	555	840	122		148	1,23	1,51	1,85
P54709	AT1B3_HUMAN	Sodium potassium transporting ATPase subunit beta 3 Sodium potassium dependent ATPase beta 3 subuni	31492	8,4351	3589	1929	914	1155	1718	2133	193	462	389	1,49	1,24	1,85
P34931	H570L_HUMAN	Heat shock 70 kDa protein 1L Heat shock 70 kDa protein 1Lk Heat shock 70 kDa protein 1 Hom H	70331	5,6453	2518	1848	1633	834	1356	1527	101		466	1,63	1,13	1,83
P19022	CADH2_HUMAN	Cadherin 2 precursor Neural cadherin N Cadherin CD325 antigen CDw325 Homo sapiens Human	49747	4,442	661	401	701	3303	4079	6041	296	1085	1685	1,24	1,48	1,83
Q93084	AT2A3_HUMAN	Sarcoplasmic endoplasmic reticulum calcium ATPase 2 EC 3.6.3.8 Calcium pump 3 SERCA3 SR Ca 2	113904	5,2626	26	229	59	925	2096	1688	186	1142	38	2,26	0,81	1,82
P61421	VA0D_HUMAN	Vacuolar ATP synthase subunit A EC 3.6.3.14 V ATPase d subunit Vacuolar proton pump subunit d	40303	4,7043	603	1494	738	834	1352	1502	201	304	349	1,62	1,11	1,80
Q4792	HSPB1_HUMAN	Heat shock 70 kDa protein 1 HspB1 Heat shock 27 kDa protein HSP27 Stress responsive protein 27	22768	5,9588	758	2498	1055	289	582	516		93	26	2,02	0,89	1,79
P31946	I433B_HUMAN	I43 3 protein beta alpha Protein kinase C inhibitor protein 1 KICP 1 Protein 1054 Homo sapi	28064	4,5665	1324	1683	910	254	355	454	103	53	76	1,40	1,28	1,79
P31327	CP5M_HUMAN	Carbamoyl phosphate synthase ammonia mitochondrial precursor EC 6.3.4.16 Carbamoyl phosphate s	164834	6,2785	626		275	3225		5748	307		196	0,00		1,78
P21814	ACTR_HUMAN	Alpha actinin 1 Alpha actinin cytoskeletal isoform Non muscle alpha actinin 1 F actin cross lin	102982	5,0927	1961	1549	1418	1344	1477	2387	164	335	895	1,10	1,62	1,78
P51149	BAB7A_HUMAN	Baz related protein Rab 7a Homo sapiens Human	23474	6,5374	11824	17585	16446	1979	2587	3510	387	238	204	1,81	0,98	1,77
P11142	HSP7C_HUMAN	Heat shock cognate 71 kDa protein Heat shock 70 kDa protein B Homo sapiens Human	70854	5,1998	4644	4527	3948	3866	4785	6736	495	655	527	1,24	1,41	1,74
P05783	K1C18_HUMAN	Keratin type I cytoskeletal 18 Cyokeratin 18 CK 18 Keratin 18 K18 Homo sapiens Human	48028	5,1674	3572	305	1886	1588	500	2755	157	179	373	0,31	5,51	1,73
P62937	PP1A_HUMAN	Peptidyl/prolyl cis trans isomerase A EC 5.2.1.8 PP1ase A Rotamase A Cyclophilin A Cyclospo	18000	7,8525	2351	1538	1617	769	935	1330	103		250	1,22	1,42	1,73
Q70237	PDIA1_HUMAN	Protein disulfide isomerase PDI EC 5.3.4.1 PDI Prolyl 4 hydroxylase subunit beta Cellul	57080	4,5643	10179	6615	8203	4392	5568	7548	650	504	825	1,27	1,36	1,72
Q9HAW0	GBM4_HUMAN	Guanine nucleotide binding protein subunit beta 4 Transducin beta chain 4 Homo sapiens Human	37543	5,527	2136	1543	727	318	325	540	39	22	215	1,02	1,66	1,69
P61769	B2M_HUMAN	Beta 2 microglobulin precursor Contains Beta 2 microglobulin variant pi 53 Homo sapiens Human	13705	6,0716	12780	12583	11733	1005	1671	1671	192	415	498	1,66	1,00	1,66
P21281	VATB2_HUMAN	Vacuolar ATP synthase subunit B brain isoform EC 6.3.6.14 V ATPase B2 subunit Vacuolar prot	54644	5,4487	456	636	426	1217	2243	2023	164	551	418	1,84	0,90	1,66
Q12797	ASPH_HUMAN	Aspartyl asparaginyl beta hydroxylase EC 1.14.11.16 Aspartate beta hydroxylase ASP beta hydroxy	85809	4,7338	603	806	711	2546	2959	4225	265	607	8	1,16	1,43	1,66
Q9Y228	T3JAM_HUMAN	TRAF3 interacting JNK activating modulator TRAF3 interacting protein 3 Homo sapiens Human	63586	8,5594	124	94	138	557	1166	923				2,09	0,79	1,66
Q14108	SCX2B_HUMAN	Lysosome membrane protein 2 Lysosome membrane protein II UMP-II Scavenger receptor class B mem	54255	4,8173	1253	1400	1515	1434	2645	2375	464	266		1,85	0,90	1,66
Q9UBR6	GBG12_HUMAN	Guanine nucleotide binding protein G1 G 5 G 5 gamma 12 subunit precursor Homo sapiens Human	8001	9,4759	19447	20608	22152	582	852	955	83	168	112	1,46	1,12	1,64
Q15836	VAMP3_HUMAN	Vesicle associated membrane protein 3 VAMP 3 Synaptobrevin 3 Cellubrevin CEB Homo sapiens	11301	9,4081	4898		2115	394	645	53		54		0,00		1,64
Q9J021	STM2L2_HUMAN	Stomatin like protein 2 SLP 2 EP972 like 2 Homo sapiens Human	38510	7,2642	625		512	623		1015	96		118	0,00		1,63
P27348	I43T3_HUMAN	I43 3 protein theta 143 3 protein tau I43 3 protein T cell Hs1 protein Homo sapiens Huma	27746	4,4848	1242	1246	1152	257	270	414	163	84	110	1,06	1,54	1,61
P14618	KPYM_HUMAN	Pyruvate kinase isozyme M1 M2 EC 2.7.1.40 Pyruvate kinase muscle isozyme Pyruvate kinase 2 3	57960	7,7512	4152	1735	2709	3119	3749	5031	180	266	320	1,20	1,34	1,61
Q07195	LDHB_HUMAN	L lactate dehydrogenase B chain EC 1.1.1.27 LDH B LDH heart subunit LDH H Renal carcinoma a	36615	5,6393	3023	2824	4754	1026	818	1652	78	119	105	0,80	2,02	1,61
P46776	RL72A_HUMAN	60S ribosomal protein L27a Homo sapiens Human	16551	11,4214	1011	1357	1032	468	446	754	89	35		0,95	1,69	1,61
Q14315	FLNC_HUMAN	Flamin C Gamma Flamin Flamin 2 Protein FLNC Actin binding like protein ABP 1 ABP 280 I	290775	5,5997	62	55	65	5291	5788	8491	469	1151	2356	1,09	1,47	1,60
P38606	VAT4_HUMAN	Vacuolar ATP synthase catalytic subunit A EC 6.3.6.14 V ATPase subunit A Vacuolar proton pump a	68260	5,1846	1108	1248	836	1260	1768	2016	304	445	515	1,40	1,14	1,60
Q07602	SAP_HUMAN	Proactivator polypeptide precursor Contains Saposin A Protein A Saposin B Val Saposin B Sphin	58073	4,8853	5123	5557	6629	6960	8795	11102	959	1273	709	1,26	1,26	1,60
P30447	I42A3_HUMAN	HLA class I histocompatibility antigen A 23 alpha chain precursor MHC class I antigen A 23 A 9	40707	5,8793	6569	5632	5261	93	129	148	12		1,39	1,15	1,59	
P48047	ATPO_HUMAN	ATP synthase O subunit mitochondrial precursor EC 3.6.3.14 Oligomycin sensitivity conferral prot	23262	10,3627	1547		458	519		815	113		211	0,00		1,57
P35609	ACTN2_HUMAN	Alpha actinin 2 Alpha actinin skeletal muscle isoform 2 F actin cross linking protein Homo sap	103788	5,1522	589	676	907	1532	1939	2400	897	1097	1980	1,27	1,24	1,57
P76886	HEXB_HUMAN	Beta hexosaminidase beta chain precursor EC 3.2.1.52 N acetyl beta glucosaminidase Beta N acety	63071	6,2966	453		380	1077		1670	95			0,00		1,55
Q02838	NUCB1_HUMAN	Nucleobindin 1 precursor CALNHC Homo sapiens Human	53846	4,9794	1063	520	864	1101	1244	1701	175	276	194	1,13	1,37	1,54
P18859	ATPS1_HUMAN	ATP synthase coupling factor 6 mitochondrial precursor EC 6.3.6.14 ATPase subunit F6 Homo sap	12579	9,9822	1517	616	1366	260	146	400				0,56	2,74	1,54
Q43854	EDK3_HUMAN	EGF like repeat and diacidin II like domain containing protein 3 precursor EGF like repeats and ds	53729	6,9921	1021	895	613	960	1488	1466	109	229	422	1,55	0,99	1,53
P17177	MPRN_HUMAN	Cation independent mannose 6 phosphate receptor precursor CI Man 6 P receptor CI MPR M6PR Ins	274097	5,5177	220	206	149	6197	11263	9427	812	4103	4781	1,82	0,84	1,52
Q14525	K1H8_HUMAN	Keratin type I cuticular Hs3 II Hair keratin type I Hs3 II Homo sapiens Human	46184	4,6091	624	106	182	558	620	847				1,11	1,37	1,52
Q07099	HYEP_HUMAN	Epoxide hydrolase 1 EC 3.3.2.9 Microsomal epoxide hydrolase Epoxide hydratase Homo sapiens	52914	6,8355	1567	1489	486	898	1560	1342	175	161	124	1,74	0,86	1,49
Q43707	ACTN4_HUMAN	Alpha actinin 4 Non muscle alpha actin 4 F actin cross linking protein Homo sapiens Human	104788	5,1204	5048	3438	2773	5406	7282	8065	393	350	1280	1,35	1,11	1,49
Q06830	PROX1_HUMAN	Peroxiredoxin 1 EC 1.11.1.15 Thioresdoxin peroxidase 2 Thioresdoxin dependent peroxide reductase	22096	8,2425	4726	2938	3847	1148	1206	1713	224	89	376	1,05	1,42	1,49
P12236	ADP7_HUMAN	ADP ATP translocase 3 Adenine nucleotide translocator 2 ANT 3 ADP ATP carrier protein 3 Solut	32845	10,0611	3172	1268	2440	744	416	1108	132	113	244	0,56	2,66	1,49
P11021	GRP78_HUMAN	78 kDa glucose regulated protein precursor GRP 78 Heat shock 70 kDa protein 5 Immunoglobulin he	72288	4,8748	16774	14412	13265	14346	22193	21324	809	761	1333	1,55	0,96	1,49
Q15427	MDT4_HUMAN	Monocarboxylate transporter 4 MCT 4 MCT 3 Solute carrier family 16 member 3 Homo sapiens Hu	49436	7,8856	1600	1161	526	2316	3107	3435	383	393	340	1,34	1,11	1,48
Q9Y277	VDAC3_HUMAN	Voltage dependent anion selective channel protein 3 VDAC 3 HVDAC3 Outer mitochondrial membr	30639	8,8301	1549	1290	1169	773	809	1145	135	188	165	1,05	1,41	1,48
P61106	RAB14_HUMAN	Ras related protein Rab 14 Homo sapiens Human	23881	5,7979	5511	6050	5903	1183	2234	1752	98	300	138	1,89	0,78	1,48
P30499	ICD1_HUMAN	HLA class I histocompatibility antigen Cw 1 alpha chain precursor MHC class I antigen Cw 1 Homo	40939	5,3665	3587	5432	5641	1772	2649	2619	524	172	149	0,98	1,48	
P30396	GNAL1_HUMAN	Guanine nucleotide binding protein G1 alpha 1 subunit Adenylate cyclase inhibiting G alpha prote	40336	5,59	1727	1978	1511	526	612	774	56	165	84	1,17	1,26	1,47
P32969	RLS_HUMAN	60S ribosomal protein L9 Homo sapiens Human	21849	10,3702	1509		1181	423	623	94	34		0,00			1,47
P35212	PHB_HUMAN	Prohibitin Homo sapiens Human	29785	5,4293	3716	934	2717	885	496	1297	70	166	297	0,56	2,61	1,47
P61006	RAB8A_HUMAN	Ras related protein Rab 8A Oncogene c-mel Homo sapiens Human	23653	9,4318	5526	5846	2797	469	798	683	120	166		1,70	0,86	1,46
Q9RC83	TBA6_HUMAN	Tubulin alpha 6 chain Alpha tubulin 6 Homo sapiens Human	49863	4,7856	1214	1583	1676	1311	2159	1900			1055	1,65	0,88	1,45
Q07197	NFM_HUMAN	Neurofilament medium polypeptide NFM Neurofilament triplet M protein 160 kDa neurofilament pr	102386	4,7007	86	27	136	1821	877	2620	1509		2205	0,48	2,99	1,44
Q15907	RB11B_HUMAN	Ras related protein Rab 11B GTP binding protein P13 Homo sapiens Human	24473	5,5464	428	2406	826	876	1910	1256	111	1255	56	2,18	0,66	1,43
Q8TC12	STTB3_HUMAN	Dolichyl dihydrophosphoglycerate protein glycosyltransferase subunit STTB3 EC 2.4.1.119 Oligosa	93613	9,0547	173	316	116	1172	3332	1679	1			2,84	0,50	1,43
P15328	FOLR1_HUMAN	Folate receptor alpha precursor FR Alpha Folate receptor adult Adult folat	29799	7,8569	7692	4228	4903	4570	5698	6544	566	1456	875	1,25	1,15	1,43
P27105	STOM_HUMAN	Erythrocyte band 3 integral membrane protein Stomatin Protein 72b Homo sapiens Human	31710	7,9876	20325	15865	10662	4159	7514	5944	403	609	286	1,81	0,79	1,43
P51153	RAB13_HUMAN	Ras related protein Rab 13 Cell growth inhibiting gene 4 protein Homo sapiens Human	22759	9,5698	1881	1997	1313	600	703	857	277	241	1,17	1,22	1,43	
P30511	HLA_F_HUMAN	HLA class I histocompatibility antigen alpha chain F precursor HLA F antigen Leukocyte antigen F	40543	5,2372	946	1832	505	649	654	926		243		1,01	1,41	1,43
P16615	AT2A2_HUMAN	Sarcoplasmic endoplasmic reticulum calcium ATPase 2 EC 3.6.3.8 Calcium pump 2 SERCA2 SR Ca 2	114682	5,0515	1301	913	503	4017	6199	5720	374	1013	1037	1,54	0,82	1,42
P35223	CTNBL1_HUMAN	Catenin beta 1 Beta catenin Homo sapiens Human	85442	5,4476	1573	808	671	1930	2447	2726	213	550	874	1,27	1,11	1,41
Q07737	PROF1_HUMAN	Profilin 1 Profilin 1 Homo sapiens Human	15044	8,4591	2476	2303	1987	780	872	1098	145	282	431	1,12	1,26	1,41
Q15758	AAAT_HUMAN	Neutral amino acid transporter B 0 ATB 0 Solute carrier family 1 member 5 Sodium dependent ne	56562	5,1749	6651	5289	5284	6396	7774	8999	456	839	706	1,22	1,16	1,41
P13645	K1C10_HUMAN	Keratin type I cytoskeletal 10 Cyokeratin 10 CK 10 Keratin 10 K10 Homo sapiens Human	59482	4,9506	1236	3282	754	1060	3830	1487	186	266	276	3,61	0,39	1,40
P08174	DAF_HUMAN	Complement decay accelerating factor precursor CD55 antigen Homo sapiens Human	41373	7,4581	1348	2182	983	2351	4159	3284	178	636	809	1,77	0,79	1,40
Q70721	CL10BP_HUMAN	Complement component 1 Q subcomponent binding protein mitochondrial precursor Glycoprotein CL10BP	31342	4,5458	2313		2296	944		1310	33		263	0,00		1,39
Q9HC07	TM165_HUMAN	Transmembrane protein 165 Transmembrane protein TPABL Transmembrane protein PT27 Homo sapiens	34883													

P25705	ATPA_HUMAN	ATP synthase subunit alpha mitochondrial precursor EC 3 6 3 14 Homo sapiens Human	59713	9,4308	8345	1450	5553	6106	3095	7467	338	1139	587	0,51	2,41	1,22
P20648	ATPA4_HUMAN	Potassium transporting ATPase alpha chain 1 EC 3 6 3 10 Proton pump Gastric H K ATPase u	114017	5,451	510	382	278	1692	3028	2066	939	2582	2415	1,79	0,68	1,22
Q9UBM7	DHCR7_HUMAN	7 dehydrocholesterol reductase EC 1 3 1 21 7 DHCR reductase Sterol Delta 7 reductase Putative	54453	8,7156	149	221	359	897	1001	1094		497		1,12	1,09	1,22
Q9UBW0	SCRB1_HUMAN	Scavenger receptor class B member 1 SRB1 SR B1 CD36 antigen like 1 CD36 and LIMP1 analogues	60837	8,1691	275	186	247	1587	2370	1929	209			1,49	0,81	1,22
P62745	RHOH_HUMAN	Rho related GTP binding protein RHO precursor H6 Homo sapiens Human	22108	4,9136	1923	2787	2395	275	413	333	46	103	89	1,50	0,81	1,21
P11166	GTR1_HUMAN	Solute carrier family 2 facilitated glucose transporter member 1 Glucose transporter type 1 eryth	44048	8,8607	1885	1353	1648	5242	6114	6345	280	532	637	1,17	1,04	1,21
Q10471	GALT2_HUMAN	Polypeptide N acetylglucosaminyltransferase 2 EC 2 4 1 41 Protein UDP acetylglucosaminyltransf	64691	8,3212	3931	1782	1679	3819	3432	4619	414	141	497	0,90	1,35	1,21
P30048	PRDX3_HUMAN	Thioredoxin dependent peroxide reductase mitochondrial precursor EC 1 11 1 15 Peroxiredoxin 3	27675	7,693	1053		478	337		406	13			0,00		1,20
P14314	GLU2B_HUMAN	Glucosidase 2 subunit beta precursor Glucosidase II subunit beta Protein kinase C substrate 60 1	59387	4,1307	2950	1954	1828	3584	3508	4292	184	596	952	0,98	1,22	1,20
P05676	ATPB_HUMAN	ATP synthase subunit beta mitochondrial precursor EC 3 6 3 9 Homo sapiens Human	56524	5,0955	9015	1906	5020	5614	2440	6665	448	307	693	0,43	2,73	1,19
Q9NVJ2	ARL8B_HUMAN	ADP ribosylation factor like protein 8B ADP ribosylation factor like protein 10C Novel small G pr	21525	8,6039	2208	1101	353	617	662	791	243	200		1,07	1,30	1,19
Q04917	I433F_HUMAN	I43 3 protein eta Protein ASI Homo sapiens Human	28201	4,5602	1056	546	298	236	250	279	47	101		1,06	1,11	1,18
P08648	ITAS_HUMAN	Integrin alpha 5 precursor Fibronectin receptor subunit alpha Integrin alpha F VLA 5 CD49 an	114464	5,3917	943	291	330	4829	5009	5705	583	1098		1,04	1,14	1,18
P20202	AT2B1_HUMAN	Plasma membrane calcium transporting ATPase 1 EC 3 6 3 8 PMCA1 Plasma membrane calcium pump iso	138667	5,6429	515	425	336	3470	1813	4080	1179		2579	0,52	2,25	1,18
Q08380	LG3BP_HUMAN	Galectin 3 binding protein precursor Lectin galactoside binding soluble 3 binding protein Mac 2 b	65289	4,9438	363	629	642	1628	2201	1891	486	994	229	1,35	0,86	1,16
Q96AG4	LCS9_HUMAN	Leucine rich repeat containing protein 59 Homo sapiens Human	23498	10,0276	3153	3894	1033	1547	2517	1796	333	176	356	1,63	0,71	1,16
PS1148	RABSC_HUMAN	Ras related protein Rab SC RABSL L880 Homo sapiens Human	34908	8,5794	5037	3283	2156	837	1156	968	93	394	759	1,38	0,84	1,16
P23284	PRIB_HUMAN	Peptidyl prolyl cis trans isomerase B precursor EC 5 2 1 8 PPIase Rotamase Cyclophilin B 5	22728	9,7617	9607	10073	5605	2588	3362	2988	247	326	923	1,30	0,89	1,15
P62424	RL7A_HUMAN	HLA class II histocompatibility antigen B 27 alpha chain precursor MHC class II antigen B 27 Ho	29977	11,057	1019	494	499	1074	1088	1239	21	320		1,01	1,14	1,15
Q75396	SEC22B_HUMAN	Myosin II trafficking protein SEC22B SEC22 vesicle trafficking protein homolog B SEC22 vesicle traf	24724	8,7349	4562	4394	3931	749	827	860	324	337	475	1,10	1,04	1,15
PS3579	MYH9_HUMAN	Myosin 9 Myosin heavy chain 9 Myosin heavy chain nonmuscle Ila Nonmuscle myosin heavy chain II	226390	5,3355	5611	1273	1767	16283	10167	18583	744	762	5931	0,62	1,83	1,14
P05023	AT1A1_HUMAN	Sodium potassium transporting ATPase alpha 1 chain precursor EC 3 6 3 9 Sodium pump 1 Na K	112824	5,1682	5947	5020	3997	14475	16977	16496	950	841	1607	1,17	0,97	1,14
Q09666	AHNK_HUMAN	Neuroblast differentiation associated protein AHNKAS Desmoglein Fragments Homo sapiens Human	312982	6,2635	1991	793	919	34054	31100	38759	4634	3641	3948	0,91	1,25	1,14
P19087	GNAT2_HUMAN	Guanine nucleotide binding protein G1 alpha 2 subunit Transducin alpha 2 chain Homo sapiens	40150	4,9254	796	621	1130	829	722	939	377	13	110	0,87	1,30	1,13
P61916	NPC2_HUMAN	Cytoplasmic secretory protein NPC2 precursor Niemann Pick disease type C2 protein NE1 Homo sapien	16559	7,6346	1489	1315	1398	508	327	576	82	73		0,64	1,76	1,13
P14923	PLAK_HUMAN	Juncton plagolagin Desmoglein 3 Desmoglein III Homo sapiens Human	81577	5,9187	2588	2071	1893	3219	4475	3790	368	759	944	1,35	0,84	1,13
P61026	RAB10_HUMAN	Ras related protein Rab 10 Homo sapiens Human	22526	8,5735	6192	7919	4500	1142	3661	1292	151	297	465	1,45	0,78	1,13
Q15084	PDH46_HUMAN	Protein disulfide isomerase A6 precursor EC 5 3 4 1 Protein disulfide isomerase P5 Thioredoxin	48091	4,7615	4739	5736	4173	3041	3615	3433	339	339	316	1,19	0,95	1,13
Q13162	PRDX4_HUMAN	Peroxiredoxin 4 EC 1 11 1 15 Prx IV Thioredoxin peroxidase A0372 Thioredoxin dependent protei	30520	5,8337	1712	1099	1081	606	724	680	43	132	100	1,20	0,94	1,12
P08155	4F2_HUMAN	4F2 cell surface antigen heavy chain 4F2hc Lymphocyte activation antigen 4F2 large subunit 4F2	57908	5,0268	30828	24188	22617	29299	30042	32874	4741	2036	2638	1,03	1,09	1,12
P30050	RL12_HUMAN	HLA class II histocompatibility antigen B 27 alpha chain precursor MHC class II antigen B 27 Ho	17807	9,8965	3982	938	1573	462	486	519	36		79	1,05	1,07	1,12
P00723	BASP_HUMAN	Brain acid soluble protein 1 BASP1 precursor Neuronal axonal membrane protein NAP 22 22 kDa neuro	26800	4,4231	29701	32891	35334	6049	7366	6753	953	877	1187	1,22	0,92	1,12
Q43852	CALU_HUMAN	Calumenin precursor Crocalbin IEF SP9302 Homo sapiens Human	37083	4,2772	9552	2457	2238	2249	2031	2485	108	310	283	0,90	1,22	1,10
P63010	AP2B1_HUMAN	AP 2 complex subunit beta 1 Adapter related protein complex 2 beta 1 subunit Beta adaptin Plasm	104486	5,0544	217		256	1221		1348	91			0,00		1,10
P09389	18B7_HUMAN	HLA class I histocompatibility antigen B 27 alpha chain precursor MHC class I antigen B 27 Ho	40403	5,4439	4125		1393	957		1044	1092		612	0,00		1,09
Q9NP58	ABC8_HUMAN	Mitochondrial ATP binding cassette subunit B member 6 Mitochondrial ABC transporter 3 M ABCCT	98326	8,4981	313	310	368	2029	2133	2214	1081	198		1,05	1,04	1,09
P05990	TCP1_HUMAN	T complex protein 1 subunit beta TCP 1 beta CCT theta Remal carcinoma antigen NY REN 15 Ho	59582	5,2714	2381	1134	827	2138	1966	2330	344	380	1284	0,92	1,19	1,09
P63000	RAC1_HUMAN	Ras related C botulinum toxin substrate 1 precursor p31 Rac1 Ras like protein TC25 Cell migrat	21436	8,5715	1547	3553	3229	951	1392	1029	112	42	678	1,46	0,74	1,08
P46940	IGC4L_HUMAN	Ras GTPase activating like protein IGC4L1 p195 Homo sapiens Human	189132	6,0403	1837	1214	1020	8527	9988	9229	609	936	1479	1,17	0,92	1,08
Q13740	CD166_HUMAN	CD166 antigen precursor Activated leukocyte cell adhesion molecule ALCAM Homo sapiens Human	65061	5,8473	1178	812	746	2316	2671	2503	356	291	390	1,15	0,94	1,08
Q01039	MYO1C_HUMAN	Myosin K Myosin I beta Myosin beta MMb Homo sapiens Human	117965	9,7381	1036	793	532	3335	4705	3599	333	664	573	1,41	0,76	1,08
Q04843	RIB1_HUMAN	Dolichyl diphosphooligosaccharide protein glycosyltransferase 67 kDa subunit precursor EC 2 4 1 11	68526	5,9266	2436	2216	1404	2816	4368	3020	222	1435	1003	1,55	0,69	1,07
Q10Q22	RAB12_HUMAN	Ras related protein Rab 12 Homo sapiens Human	27231	8,5098	1096	1481	1434	282	283	300				1,01	1,06	1,07
P05026	AT1B1_HUMAN	Sodium potassium transporting ATPase beta subunit beta 1 Sodium potassium dependent ATPase beta 1 subu	35038	8,6472	1276	878	1091	1935	2191	2041	224	454	325	1,13	0,93	1,05
P08754	GNAI3_HUMAN	Guanine nucleotide binding protein G alpha 3 subunit alpha 1 G alpha 3 Homo sapiens Human	40506	5,3582	3934	4594	3931	2041	2859	2145	347	362	212	1,40	0,75	1,05
P35221	CTNA1_HUMAN	Catenin alpha 1 Catherin associated protein Alpha 1 catenin NY REN 13 antigen Homo sapiens	100008	8,8751	3781	1824	1005	4150	4257	4339	397	619	236	1,03	1,02	1,05
P19105	MURM_HUMAN	Myosin regulatory light chain 2 nonsarcomeric Myosin RLC Homo sapiens Human	19781	4,4518	4033	2085	1945	767	627	798	99	2	93	0,82	1,27	1,04
P61604	CH10_HUMAN	10 kDa heat shock protein mitochondrial Hsp10 10 kDa chaperonin CPN10 Early pregnancy factor	10924	9,4693	11605	3783	8126	1239	343	1283	160	60	155	0,28	3,74	1,04
P10809	CH60_HUMAN	60 kDa heat shock protein mitochondrial precursor Hsp60 60 kDa chaperonin CPN60 Heat shock p	61016	5,5503	21588	3831	14649	9501	4078	9833	915	325	513	0,43	2,41	1,03
P53388	RLA0_HUMAN	60S acidic ribosomal protein P0 L10E Homo sapiens Human	34251	5,6049	3535	1845	1333	1166	1053	1203	62	124	157	0,90	1,14	1,03
PS4652	HSF72_HUMAN	Heat shock related 70 kDa protein 2 Heat shock 70 kDa protein 2 Homo sapiens Human	69977	5,4073	3179	3245	2645	1642	1744	1112	801	199	33	1,61	0,64	1,03
P06756	ITAV_HUMAN	Integrin alpha V precursor Vitronectin receptor subunit alpha CD51 antigen Contains Integrin a	115964	5,3102	409	651	426	3172	4221	3225	625	384	234	1,33	0,76	1,02
P16435	NCP1_HUMAN	NADPH cytochrome P450 reductase EC 1 6 2 4 CPR P450R Homo sapiens Human	76641	5,241	232	209	331	1362	1417	1383	643	212	196	1,04	0,98	1,02
Q95573	ACL3_HUMAN	Long chain fatty acid CoA ligase 3 EC 6 2 1 3 Long chain acyl CoA synthetase 3 LACS 3 Homo	80368	8,3719	403	311	293	1902	1724	1925		221	69	0,91	1,12	1,01
Q9YHK3	CD109_HUMAN	CD109 antigen precursor p180 150 kDa TGF beta 1 binding protein r150 Platelet specific Gov an	161586	5,4761	254		198	3386		3427	58		69	0,00		1,01
Q10160	AT1A2_HUMAN	HLA class II histocompatibility antigen B 27 alpha chain precursor MHC class II antigen B 27 Ho	54974	7,6304	10987	7660	8089	11756	11885	11893	2022	1176	2782	1,01	1,00	1,01
P14625	ENPL_HUMAN	Endoplasmic precursor Heat shock protein 90 kDa beta member 1 94 kDa glucose regulated prote	92411	4,5643	8238	6456	4189	11377	14759	11488	534	523	1218	1,30	0,78	1,01
P43121	MUC18_HUMAN	Cell surface glycoprotein MUC18 precursor Melanoma associated antigen MUC18 Melanoma cell adhesio	71562	5,4534	1384	702	690	2934	2526	2961	608	222	912	0,86	1,17	1,01
P40926	MDHM_HUMAN	Malate dehydrogenase mitochondrial precursor EC 1 1 1 37 Homo sapiens Human	35508	8,8202	2234	159	257	1090	970	1095	135		105	0,89	1,13	1,00
P01891	JA68_HUMAN	HLA class II histocompatibility antigen A 68 alpha chain precursor MHC class I antigen A 68 Aw 68	40883	6,2267	10313	11278	8028	3503	4044	3494	457	577	1299	1,15	0,86	1,00
P06733	ENDA_HUMAN	Alpha enolase EC 4 2 1 11 2 phospho D glyceraldehyde lyase Non neural enolase NNE Enolase	47139	7,1713	1949	1589	1095	1793	1685	1788	280	410	416	0,94	1,06	1,00
P30040	EPB29_HUMAN	Endoplasmic reticulum protein ERp29 precursor ERp31 ERp28 Homo sapiens Human	28975	7,2823	1599		503	634		198			138	0,00		0,98
Q03135	CAVI1_HUMAN	Caveolin 1 Homo sapiens Human	20458	5,5891	11219	6345	5587	1318	1154	1294	229	184	127	0,88	1,12	0,98
P45890	VDAC2_HUMAN	Voltage dependent anion selective channel protein 2 VDAC 2 VDAC2 Outer mitochondrial membrane	38068	6,3333	2086	1009	1351	1728	1320	1684	247	418	468	0,76	1,28	0,97
P15291	BGLT1_HUMAN	Beta 1 4 galactosyltransferase 1 EC 2 4 1 Beta 1 4 GalTase 1 Beta4Gal T1 b4Gal T1 UDP gal	43892	8,7054	1170	521	1010	1240	899	1196	76	133	62	0,73	1,33	0,96
Q8EMK4	VASN_HUMAN	Vasoin precursor Protein Slt like 2 Homo sapiens Human	71667	7,0876	265	358	245	1118	1386	1075	420	181		1,78	0,54	0,96
P27824	CALX_HUMAN	Major histocompatibility complex class I antigen binding protein p88 p90 iP9	67525	4,2675	6295	4080	2240	12323	12366	11662	889	1017	1182	1,00	0,94	0,95
P01893	HLA_HUMAN	HLA class I histocompatibility antigen alpha chain H precursor HLA AR HLA 12 4 Homo sapiens	40824	5,8671	5741	6109	4928	2122	1654	2007	288	990	527	0,78	1,21	0,95
P68363	TBAK_HUMAN	Tubulin alpha ubiquitous chain Alpha chain H precursor Tubulin alpha 1 4F2 light c	50119	4,7622	832	2553	2072	2007	1676	1896	127	103	856	0,84	1,13	0,94
P23528	COF1_HUMAN	Cofilin 1 Cofilin non muscle isoform 18 kDa phosphoprotein p18 Homo sapiens Human	18490	8,2196	10240	5758	5666	1556	1413	1461	423					

Q96DA2	RB39B_HUMAN	Ras related protein Rab 39B Homo sapiens Human	24606	7,8463	2155	3272	629	4561	298	323	1200					0,07	1,08	0,07
P27482	CAL13_HUMAN	Calmodulin like protein 3 Calmodulin related protein NB 1 CaM like protein CLP Homo sapiens	16879	4,0964	1061	500		124	125		77					1,06	0,00	0,00
P24844	MLRN_HUMAN	Myosin regulatory light chain 2 smooth muscle isoform Myosin RLC Myosin regulatory light chain 9	19814	4,591	1403			129			6					0,00		0,00
P10316	IAG9_HUMAN	HLA class I histocompatibility antigen A 69 alpha chain Antigen A 69 Aw 69 A 28	40951	6,4497	7681	6911		138	192	3						1,39	0,00	0,00
P30486	I84B_HUMAN	HLA class I histocompatibility antigen B 48 alpha chain precursor MHC class I antigen B 48 Bw 48	40337	5,5919	5086	4942		206	216	20						1,05	0,00	0,00
P31949	S10AB_HUMAN	Protein S100 A11 S100 calcium binding protein A11 Protein S100C Calgizarin MLN 70 Homo sa	11732	7,0206	2483	325		240	124	75						0,52	0,00	0,00
B48741	HSF77_HUMAN	Heat shock 70 kDa protein 7 Heat shock 70 kDa protein 8 Fragment Homo sapiens Human	26889	7,3592	1345	856		242	187		26					0,77	0,00	0,00
O43169	CVB58_HUMAN	Cytochrome b5 type B precursor Cytochrome b5 outer mitochondrial membrane isoform Homo sapiens	16321	4,6871	1860	241		260	311	31						1,20	0,00	0,00
P09493	TPM1_HUMAN	Tropomyosin 1 alpha chain Alpha tropomyosin Homo sapiens Human	32688	4,489	401	216		265	369		81					1,39	0,00	0,00
O00161	SNP23_HUMAN	Synaptosomal associated protein 23 SNAP 23 Vesicle membrane fusion protein SNAP 23 Homo sapiens	23339	4,6963	881	454		284	427	48	276					1,50	0,00	0,00
Q15286	RAB35_HUMAN	Ras related protein Rab 35 Rab 1C GTP binding protein RAB Homo sapiens Human	23030	8,3928	1811	2796		289	911		57					3,15	0,00	0,00
Q02543	RL18A_HUMAN	G05 ribosomal protein L18a Homo sapiens Human	20748	11,1048	1545	315		301	347		48					1,15	0,00	0,00
P62330	ARF6_HUMAN	ADP ribosylation factor 6 Homo sapiens Human	20069	9,2919	899	848		320	460		47					1,39	0,00	0,00
O60762	OPM1_HUMAN	Dolichyl phosphate mannosyltransferase EC 2.4.1.83 Dolichyl phosphate mannosyl synthase Dolichyl	29615	9,8502	108	725		331	460		120					1,39	0,00	0,00
P13073	COX41_HUMAN	Cytochrome c oxidase subunit 4 isoform 1 mitochondrial precursor EC 1.9.3.1 Cytochrome c oxidase	19564	9,9142	865			341			126					0,00		0,00
P61803	DAD1_HUMAN	Dolichyl diphosphooligosaccharide protein glycosyltransferase subunit DAD1 EC 2.4.1.119 Oligosac	12488	6,917	2794	1214		351	489		121					1,39	0,00	0,00
P68371	TB2C2_HUMAN	Tubulin beta 2C chain Tubulin beta 2 chain Homo sapiens Human	49799	4,602	863	389		359	927		107					2,58	0,00	0,00
P16520	GB83_HUMAN	Guanine nucleotide binding protein G1 G 5 G T subunit beta 3 Transducin beta chain 3 Homo sa	37196	5,2665	366	283		394	329		146					0,83	0,00	0,00
P10301	RRAS_HUMAN	Ras related protein R A precursor p23 Homo sapiens Human	23465	6,5081	824	564		409	340		99					0,83	0,00	0,00
Q9H3N1	TXND1_HUMAN	Thioredoxin domain containing protein 1 precursor Transmembrane Trx related protein Thioredoxin r	31770	4,7208	893	496		443	634		21	167				1,43	0,00	0,00
P08758	ANKA5_HUMAN	Annexin A5 Annexin V Lipocortin V Endonexin II Calphobindin I CBP1 Placental anticoagula	35914	4,732	637			482			35					0,00		0,00
P43307	SSRA_HUMAN	Translocin associated protein subunit alpha precursor TRAP alpha Alpha Signal sequence receptor subunit	32215	4,1724	676	303		498	728		18					1,46	0,00	0,00
P61158	ARF3_HUMAN	Actin like protein 3 Actin related protein 3 Homo sapiens Human	47341	5,5104	786	139		508	513		80					1,01	0,00	0,00
Q02878	RL6_HUMAN	G05 ribosomal protein L6 TAX responsive enhancer element binding protein 107 TAXREB107 Neoplasm	32707	11,024	700			511								0,00		0,00
P26373	RL13_HUMAN	G05 ribosomal protein L13 Breast basic conserved protein 1 Homo sapiens Human	24246	12,0586	1767			517			66					0,00		0,00
O15173	PGCR2_HUMAN	Membrane associated progesterone receptor component 2 Progesterone membrane binding protein Siero	22803	4,5414	1344	281		526	517		44	97				0,98	0,00	0,00
P29992	GNL11_HUMAN	Guanine nucleotide binding protein subunit alpha 11 G alpha 11 Guanine nucleotide binding protein	42096	5,3677	503	261		532	581		163	67				1,09	0,00	0,00
Q96BM9	ABL8A_HUMAN	ADP ribosylation factor like protein BA ADP ribosylation factor like protein 10B Novel small G pr	21402	7,829	1061	625		561	240		86	55				0,43	0,00	0,00
Q15738	NS0HL_HUMAN	Sterol 4 alpha carboxylate 3 dehydrogenase decarboxylating EC 1.1.1.70 H105e3 protein Homo s	41873	8,0825	490	224		561	717		65	12				1,28	0,00	0,00
O14828	SCAM3_HUMAN	Secretory carrier associated membrane protein 3 Secretory carrier membrane protein 3 Homo sapi	38294	7,5685	504	742		623	1131		42	245				1,82	0,00	0,00
P11233	RALA_HUMAN	Ras related protein Ral A precursor Homo sapiens Human	23551	6,9847	2270	1882		657	694		148	156				1,06	0,00	0,00
P18124	RL7_HUMAN	G05 ribosomal protein L7 Homo sapiens Human	29207	11,0649	1053			660			164					0,00		0,00
P51571	SSRD_HUMAN	Translocin associated protein subunit delta precursor TRAP delta Signal sequence receptor subunit	18986	5,722	1485	1163		669	945		153	241				1,41	0,00	0,00
Q9P0L0	VAPA_HUMAN	Vesicle associated membrane protein associated protein A VAMP A VAMP A VAP A	27875	8,9002	491	715		685	779		115					1,14	0,00	0,00
Q8TC79	HML3_HUMAN	Minor histocompatibility antigen H13 EC 3.4.9.9 Signal peptide peptidase Presenilin like prote	41461	5,9846	1345	225		687	540		120	53				0,79	0,00	0,00
P12191	CSRP1_HUMAN	Cystine and glycine rich protein 1 Cysteine rich protein 1 CRP1 CRP Homo sapiens Human	20553	8,5529	1332			706			187					0,00		0,00
P37802	TAGL2_HUMAN	Transgelin 2 SM22 alpha homologue Homo sapiens Human	22377	8,4485	327	1033		737	427		31	182				0,58	0,00	0,00
P51572	BAP21_HUMAN	B cell receptor associated protein 31 BCR associated protein Bap31 p38 Bap31 Protein COM 6C6	27974	8,9064	469			744			288					0,00		0,00
Q01628	IFM3_HUMAN	Interferon induced transmembrane protein 3 Interferon inducible protein 1 B0 Homo sapiens Human	14622	6,5874	4881	1148		763	646		90	60				0,85	0,00	0,00
P09543	CN37_HUMAN	2 3 cyclic nucleotide 3 phosphodiesterase EC 3.1.4.37 CNP CNase Homo sapiens Human	47548	9,3611	378	625		763	1090		118	205				1,43	0,00	0,00
Q10705	K1C23_HUMAN	Keratin type I cytoskeletal 23 Cytokeratin 23 CK 23 Keratin 23 K23 Homo sapiens Human	81013	6,0815	511			785			454					0,00		0,00
P20340	RAB6A_HUMAN	Ras related protein Rab 6A Rab 6 Homo sapiens Human	23577	5,2256	1976	1553		805	733		288	159				0,91	0,00	0,00
Q9NV17	ATD3A_HUMAN	ATPase family AAA domain containing protein 3A Homo sapiens Human	71324	9,286	265			807			187					0,00		0,00
P39023	RL3_HUMAN	G05 ribosomal protein L3 HIV 1 TAR RNA binding protein B TARBP B Homo sapiens Human	46079	10,6181	1075	151		845	547		75					0,65	0,00	0,00
P15586	GNS_HUMAN	N acetylglucosamine 6 sulfatase precursor EC 3.1.6.14 G6S Glucosamine 6 sulfatase Homo sapie	62042	8,257	287	250		894	793		165	142				0,89	0,00	0,00
Q6N212	PIRF_HUMAN	Polymerase I and transcript release factor Homo sapiens Human	43449	5,339	471	182		954	3590		289					3,76	0,00	0,00
P04075	ALDOA_HUMAN	Fructose biphosphate aldolase A EC 4.1.2.13 Muscle type aldolase Lung cancer antigen NY LU 1	39395	8,0645	1155	252		997	1077		177					1,08	0,00	0,00
P36578	RL4_HUMAN	G05 ribosomal protein L4 L1 Homo sapiens Human	47667	11,495	1100	350		1003	1402		487					1,40	0,00	0,00
P04626	ERB82_HUMAN	Receptor tyrosine protein kinase erbB 2 precursor EC 2.7.10.1 p185erbB2 C erbB 2 NEU proto on	137821	5,5023	50	30		1083	3215		336					2,97	0,00	0,00
P04083	ANKA1_HUMAN	Annexin A1 Annexin I Lipocortin I Calpain II Chromobindin p35 Phospholipase A2 Inhibi	38689	6,6359	3155	411		1146	636		125					0,55	0,00	0,00
O95782	AP2A1_HUMAN	AP 2 complex subunit alpha 1 Adapter related protein complex 2 alpha 1 subunit Alpha adaptin A	107486	6,6502	175			1200			190					0,00		0,00
P42892	ECE1_HUMAN	Endothelin converting enzyme 1 EC 3.4.24.71 ECE 1 Homo sapiens Human	87108	5,5091	392	339		1313	2752		261	580				2,10	0,00	0,00
P07437	TB85_HUMAN	Tubulin beta chain Tubulin beta 5 chain Homo sapiens Human	49638	4,5903	1381	158		1342	884		22					0,66	0,00	0,00
Q8IV08	PLD3_HUMAN	Phospholipase D3 EC 3.1.4.4 PLD 3 Choline phosphatase 3 Phosphatidylcholine hydrolyzing phosp	54670	6,0071	498	400		1358	1790		251	283				1,32	0,00	0,00
Q13885	TB2A2_HUMAN	Tubulin beta 2A chain Homo sapiens Human	49874	4,5903	1604	177		1406	945		215					0,67	0,00	0,00
P13667	P0A4T_HUMAN	Protein disulfide isomerase A4 precursor EC 5.3.4.1 Protein Efp 72 Efp72 Homo sapiens Human	72887	4,7677	499	479		1535	1681		338	241				1,09	0,00	0,00
Q15303	ERB84_HUMAN	Receptor tyrosine protein kinase erbB 4 precursor EC 2.7.10.1 p180erbB4 Tyrosine kinase type ce	146712	5,9447	50			1908			1360					0,00		0,00
P08962	CD63_HUMAN	CD63 antigen Melanoma associated antigen ME491 Ocular melanoma associated antigen OMA811 Gran	25619	7,7239	2966	2294		1507	1439		397	113				0,74	0,00	0,00
O43795	MYO1B_HUMAN	Myosin B Myosin I alpha MM1 alpha MM1a MYH 1C Homo sapiens Human	131901	9,6751	177	234		1981	4193		101	2679				2,12	0,00	0,00
Q8NFJ5	RAI3_HUMAN	Retinoic acid induced protein 3 G protein coupled receptor family C group 5 member A Retinoic ac	40224	8,144	1389	1705		2007	1928		183	90				0,96	0,00	0,00
P26006	ITA3_HUMAN	Integrin alpha 3 precursor Galactose protein B3 GAPB3 VLA 3 alpha chain FRP 2 CD49c antigen	118622	6,596	419	310		2059	4519		696	1805				2,19	0,00	0,00
O60716	CTNID1_HUMAN	Catenin delta 1 p120 catenin p120 ctn Cadherin associated Src substrate CAG p120 cas H	308103	5,7969	1018	334		2639	2534		33	299				0,96	0,00	0,00
Q9V490	TUN1_HUMAN	Talin 1 Homo sapiens Human	269596	5,6873	248	121		4828	6524		854	1532				1,35	0,00	0,00
Q12774	ARHG5_HUMAN	Rho guanine nucleotide exchange factor 5 Guanine nucleotide regulatory protein T1M Oncogene TIM	60018	7,5516	320			5054			399					0,00		0,00
P33527	MRP1_HUMAN	Multidrug resistance associated protein 1 ATP binding cassette sub family C member 1 Leukotriene	171450	6,6945	221			5927			3175					0,00		0,00
P30613	KPYR_HUMAN	Pyruvate kinase isozymes R1 EC 2.7.1.40 R type L type pyruvate kinase Red cell liver pyruvate	61791	7,6335	278	73		6144	6067		2966					0,99	0,00	0,00
RAND00M9877	RAND00M9877	Random Sequence 9877	36185	5,0228	125	112		7698	20834			4982				2,71	0,00	0,00
P68133	ACT5_HUMAN	Actin alpha skeletal muscle Alpha actin 1 Homo sapiens Human	42023	5,0709	14647	11439		17511	3521		99	292				0,20	0,00	0,00
P63261	ACTG_HUMAN	Actin cytoplasmic 2 Gamma actin Homo sapiens Human	41765	5,1594	34887	29566		81549	30933		9300					1,12	0,00	0,00

MS 2, Hela

Accession	Entry	Description	mW (Da)	pI (pH)	MW kDa			MW ppm			SD ppm			NI → 4h			NI → 7h		
					NI	4h	7h	NI	4h	7h	NI	4h	7h	NI	4h	7h	NI	4h	7h
P03101.2	VLL_HPV16	HPV16 Major capsid protein L1	59435	7,95				1412	2652		2054	3582		510	593				
Q29718	I882_HUMAN	HLA class I histocompatibility antigen B 82 alpha chain precursor MHC class I antigen B 82 Homo	40096	5,59				4589	3017		833	3130		377	20				
P12926	CD9_HUMAN	CD9 antigen p24 Leukocyte antigen M1C3 Motility related protein MRP1 Tetraspanin 29 Tpa	25398	6,90				1718	1435		968	2658		51	2127				

P16435	NCPH_HUMAN	NADPH cytochrome P450 reductase EC 1.6.2.4 CPR_P50R Homo sapiens Human	76641	5,24	438		254	848		1056	75		364	0,00		1,25
P00338	LDHA_HUMAN	L lactate dehydrogenase A chain EC 1.1.1.27 LDH A LDH muscle subunit LDH M Proliferation in	36665	8,37	3468	2579	3984	971	819	1200	49	284	259	0,84	1,47	1,24
O75955	FLOT1_HUMAN	Fliotilin 1 Homo sapiens Human	47325	7,30	1018	920	907	918	1085	1131	142	299	134	1,18	1,04	1,23
P61224	RAP1B_HUMAN	Ras related protein Rap 1b precursor GTP binding protein smg p21B Homo sapiens Human	20811	5,46	11413	11395	10679	1790	2236	2204	375	595	421	1,25	0,99	1,23
P21796	VDAC1_HUMAN	Voltage dependent anion selective channel protein 1 VDAC1 Outer mitochondrial membrane	30753	8,87	1660	1619	1033	1230	1301	1514	126	144	337	1,06	1,16	1,23
Q10471	GAL2_HUMAN	Galactose 1-4-epimerase EC 4.2.1.41 Protein UDP acetylglucosaminyltransferase 2 EC 4.2.1.41	64691	8,32	838	722	530	1648	1511	2025	405	171	391	0,92	1,34	1,23
P10620	MGST1_HUMAN	Microsomal glutathione S transferase 1 EC 2.5.1.18 Microsomal GST1 Microsomal GST1 Homo sa	17587	9,64	2867	2829	2812	880	995	1077	67	141	268	1,13	1,08	1,22
P06756	ITAH_HUMAN	Integrin alpha V precursor Vitronectin receptor subunit alpha CD51 antigen Contains Integrin a	115964	5,31	1903	2144	1167	5275	5638	6407	1057	912	2915	1,07	1,14	1,21
P04083	ANXA1_HUMAN	Annexin A1 Annexin I Lipocortin I Calpain II Chromobindin p35 Phospholipase A2 inhibi	38689	6,64	359	895	419	447	466	542	199	39	136	1,04	1,16	1,21
O43707	ACTN4_HUMAN	Alpha actinin 4 Non muscle alpha actinin 4 F actin cross linking protein Homo sapiens Human	104788	5,12	8023	6676	5304	8054	8430	9732	926	1030	2249	1,05	1,15	1,21
P23284	PP1B_HUMAN	Peptidyl prolyl cis trans isomerase B precursor EC 5.2.1.8 PP1ase Rotamase Cyclophilin B S	22728	9,76	5762	5763	5919	2287	2045	2726	351	152	501	0,89	1,33	1,19
P35221	CTNNA1_HUMAN	Catenin alpha 1 Cadherin associated protein Alpha catenin NY REN 13 antigen Homo sapiens	100008	5,88	5462	4655	2596	4976	5530	5832	621	1122	2010	1,11	1,07	1,19
P05388	RLA0_HUMAN	60S acidic ribosomal protein P0 L10C Homo sapiens Human	34251	5,60	2363	1141	1633	886	944	1656	189	303	102	1,06	1,12	1,19
P00174	TPS_HUMAN	Triosephosphate isomerase EC 5.3.1.11 TIM Triose phosphate isomerase Homo sapiens Human	26652	6,50	1644	477	791	489	422	583	99	62	108	0,86	1,38	1,19
Q14697	GANAB_HUMAN	Neutral alpha glucosidase A8 precursor EC 3.2.1.84 Glucosidase II subunit alpha Homo sapiens	106806	5,69	898	836	595	3577	4077	4259	664	439	694	1,14	1,04	1,19
P06060	MYL6_HUMAN	Myosin light polypeptide 6 Smooth muscle and nonmuscle myosin light chain alkali 6 Myosin light c	16919	4,36	4008	4641	2851	652	626	776	122	131	170	0,96	1,24	1,19
Q94H44	GAPR1_HUMAN	Golgi associated plant pathogenesis related protein 1 Golgi associated PR 1 protein GAPR 1 Glo	17207	9,76	2598	3002	2586	271	331	322	80	107	57	1,22	0,97	1,19
P63096	GNAI1_HUMAN	Guanine nucleotide binding protein G1 alpha 1 precursor Adenylylate cyclase inhibiting G alpha prote	40335	5,59	3397	3596	2440	640	675	759	159	88	96	1,05	1,12	1,19
R08729	KCZT_HUMAN	Keratin type II cytoskeletal 7 Cyokeratin 7 CK 7 Keratin 7 K7 Sarcolectin Homo sapiens	51386	5,31	1159	759	968	913	666	1072	124	252	192	0,73	1,61	1,17
P15582	BG1H_HUMAN	Transforming growth factor beta induced protein ig h3 precursor Beta ig h3 Kerato epithelin RGD	74634	7,52	589	448	293	1028	1121	1202	164	299	273	1,09	1,07	1,17
P02645	MPR0_HUMAN	Cation dependent mannose 6-phosphate receptor precursor CD Man 6 P receptor CD MPR 46 kDa manno	30973	5,47	1483	765	1114	606	577	705	30	63	0,95	1,22	1,16	
Q15084	PD46_HUMAN	Protein disulfide isomerase A6 precursor EC 5.3.4.1 Protein disulfide isomerase P5 Thioeredoxin	48091	4,76	3895	3076	2125	2266	2153	2623	142	188	721	0,95	1,22	1,16
P20336	RAB3A_HUMAN	Ras related protein Rab 3A Homo sapiens Human	24968	4,66	2758		2573	127			147	30		0,00		1,16
P11021	GRP78_HUMAN	78 kDa glucose regulated protein precursor GRP78 Heat shock 70 kDa protein 5 Immunoglobulin he	72288	4,87	13528	11065	10402	10512	10145	12140	1532	923	2497	0,97	1,20	1,15
R48509	CD151_HUMAN	CD151 antigen Platelet endothelial tetraspan antigen 3 PETA 3 GP27 Membrane glycoprotein SFA	28276	7,30	764	889	799	1159	1239	1335	499	160	422	1,07	1,08	1,15
Q96AC1	PNCL1_HUMAN	Plectstrin homology domain containing family C member 1 Kindlin 2 Mitogen inducible gene 2 protei	77810	6,25	1085	1058	464	2089	2523	2400	690	319	1268	1,21	0,95	1,15
P14625	ENPL_HUMAN	Endoplasmic precursor Heat shock protein 90 kDa beta member 2 94 kDa glucose regulated protei	92411	4,56	5588	4239	3942	6610	5784	7575	1027	833	1332	0,87	1,31	1,15
P15328	FOLR1_HUMAN	Folate receptor precursor FR alpha beta receptor 1 Folate receptor adult Adult folat	27979	7,86	5401	5046	3677	4488	4994	5126	316	282	904	1,11	1,03	1,14
Q08043	ACTN3_HUMAN	Alpha actinin 3 Alpha actinin skeletal muscle isoform 3 F actin cross linking protein Homo sp	103229	5,25	781	913	978	1082	1087	1235	1204	712	763	1,00	1,14	1,14
Q12797	ASPH_HUMAN	Asparaginyl beta hydrolase EC 1.14.11.16 Aspartate beta hydrolase ASP beta hydroy	63809	4,73	565	314	368	1485	2089	1695	193	1218	174	1,41	0,81	1,14
Q52526	TCF_HUMAN	T complex protein 1 subunit zeta 2 TCP 1 zeta 2 CCT zeta 2 TCP 1 zeta like CCT zeta like Te	57728	6,65	110	192	176	550	450	625	467	108	36	0,82	1,39	1,14
P55580	MYH10_HUMAN	Myosin 10 Myosin heavy chain 10 Myosin heavy chain nonmuscle IIB Nonmuscle myosin heavy chain	228796	5,27	260	186	304	3644	2374	4134	2268	800	1097	0,65	1,74	1,13
P14923	PLA2_HUMAN	Junction plakoglobin Desmoplakin 3 Desmoplakin III Homo sapiens Human	81577	5,92	5576	5785	3100	5303	5551	6007	964	366	814	1,05	1,08	1,13
Q96AG4	LRCS9_HUMAN	Leucine rich repeat containing protein 59 Homo sapiens Human	34908	10,03	1656	1678	1034	1363	1744	378	205	644	0,89	1,28	1,13	
Q13162	PRDX4_HUMAN	Peroxiredoxin 4 EC 1.11.1.15 Prx N Thioeredoxin peroxidase A0372 Thioeredoxin dependent peroxi	30520	5,83	845	987	831	465	470	525	216	91	345	1,01	1,12	1,13
P62820	RAB1A_HUMAN	Ras related protein Rab 1A YPT1 related protein Homo sapiens Human	22663	5,85	6036	5396	5476	796	701	897	364	208	579	0,88	1,28	1,13
Q15738	NSDHL_HUMAN	Sterol 4 alpha carboxylate 4 dehydrogenase decarboxylating EC 1.1.1.170 H105e3 protein Homo s	41873	8,08	694	296	251	607	444	683	108	173	87	0,73	1,54	1,13
P35222	CTNBL1_HUMAN	Catenin beta 1 Beta catenin Homo sapiens Human	85442	5,45	1343	1594	952	2450	2717	2727	293	275	595	1,11	1,00	1,11
P54709	AT1B1_HUMAN	Sodium potassium transporting ATPase subunit beta 3 Sodium potassium dependent ATPase beta 3 subun	11492	8,44	2107	1695	1656	1499	1408	1662	250	453	276	0,94	1,18	1,11
P21281	VATB2_HUMAN	Vacuolar ATP synthase subunit B brain isoform EC 3.6.3.14 V ATPase B2 subunit Vacuolar proc	56664	5,45	452	364	538	1212	1248	1335	265	367	263	1,03	1,07	1,10
O15427	MTA2_HUMAN	Monocarboxylate transporter 4 MCT4 MCT3 Solute carrier family 16 member 3 Homo sapiens Hu	49436	7,89	1981	2047	1366	3167	4678	3471	1101	780	625	1,48	0,74	1,10
Q9UB86	GBG12_HUMAN	Guanine nucleotide binding protein G1 G 5 G O gamma 12 subunit precursor Homo sapiens Human	8001	9,48	24291	22943	20148	1089	1258	1193	116	190	167	1,16	0,95	1,10
P51149	RAB7A_HUMAN	Ras related protein Rab 7a Homo sapiens Human	23474	6,57	18248	16074	14014	2392	2373	2615	342	206	362	0,99	1,10	1,09
P02786	TIR1_HUMAN	Transferrin receptor protein 1 TIR1 TR TIR TrfR CD71 antigen T9 p90 Homo sapiens Hu	84818	6,16	5926	5871	3721	8658	9227	9415	624	996	780	1,07	1,02	1,09
P48960	CD97_HUMAN	CD97 antigen precursor Leukocyte antigen CD97 Homo sapiens Human	19309	6,47	1464	1307	646	3073	3320	3317	378	531	494	1,08	1,00	1,08
P26038	MOES_HUMAN	Moesin Membrane organizing extension spike protein Homo sapiens Human	67777	6,01	5291	6179	2959	7549	9799	8095	1036	2105	2832	1,30	0,83	1,07
Q15758	AAAT_HUMAN	Neutral amino acid transporter B 0 A10 O Solute carrier family 1 member 5 Sodium dependent ne	55652	5,17	8012	7708	5385	8561	8025	9091	2375	2239	2746	0,94	1,13	1,06
P61106	RAB14_HUMAN	Ras related protein Rab 14 Homo sapiens Human	23881	5,80	10077	8097	7870	1630	1560	1702	188	237	387	0,96	1,09	1,04
P68104	EF1A1_HUMAN	Elongation factor 1 alpha 1 EF 1 alpha 1 Elongation factor 1 A1 eEF1A1 Elongation factor Tu	50109	9,34	2699	2704	2554	3995	4041	4162	313	259	646	1,01	1,03	1,04
R08174	DAF_HUMAN	Complement decay accelerating factor precursor CD55 antigen Homo sapiens Human	41373	7,46	2029	2857	1387	3481	3963	3626	788	331	882	1,14	0,92	1,04
P61026	RAB10_HUMAN	Ras related protein Rab 10 Homo sapiens Human	22526	8,57	6420	6451	5734	1022	1249	1061	249	154	265	1,22	0,85	1,04
P23528	COF1_HUMAN	Cofilin 1 Cofilin non muscle isoform 18 kDa phosphoprotein p18 Homo sapiens Human	18490	8,22	9299	8628	6332	1103	963	1141	275	138	146	0,87	1,19	1,03
P07099	HYEP_HUMAN	Epoxide hydrolase 1 EC 3.3.2.9 Microsomal epoxide hydrolase Epoxide hydratase Homo sapiens	52914	6,84	2715	1137	1314	1752	1394	1812	503	210	750	0,80	1,30	1,03
P49368	TCPE_HUMAN	T complex protein 1 subunit gamma TCP 1 gamma CCT gamma HTRG5 Homo sapiens Human	60495	6,06	1109	1998	1152	2383	2727	2452	451	289	482	1,14	0,90	1,03
P32004	L1CAM_HUMAN	Neural cell adhesion molecule L1 precursor N CAM L1 CD171 antigen Homo sapiens Human	139915	5,79	1732	1519	857	8635	8688	8659	1375	1193	1652	1,01	1,02	1,03
P53985	MO11_HUMAN	Monocarboxylate transporter 1 MCT1 Solute carrier family 16 member 1 Homo sapiens Human	53922	8,72	2108	2139	2131	2310	2347	2356	299	506	762	1,02	1,00	1,02
Q03135	CAVI_HUMAN	Caveolin 1 Homo sapiens Human	20458	5,59	5315	3193	3308	893	731	907	129	84	175	0,82	1,24	1,02
P68363	TBAK_HUMAN	Tubulin alpha ubiquitous chain Alpha tubulin ubiquitous Tubulin K alpha 1 Homo sapiens Human	50119	4,76	4035	3039	3458	1872	1317	1894	481	725	1173	0,70	1,44	1,01
P09972	ALDOC_HUMAN	Fructose biphosphate aldolase C EC 4.2.1.13 Brain type aldolase Homo sapiens Human	39431	6,43	1700	1908	810	648	443	655	546	201	61	0,68	1,48	1,01
P01111	RASN_HUMAN	GNTPase RNas precursor Transforming protein N Ras Homo sapiens Human	21215	4,82	2029	3349	1167	727	598	729	161	303	143	0,82	1,22	1,00
Q14126	D5G2_HUMAN	Desmoglein 2 precursor HDGC Homo sapiens Human	122308	4,98	1401	1285	714	6593	5456	6604	1845	784	1657	0,83	1,21	1,00
P01891	I1A8_HUMAN	HLA class I histocompatibility antigen A68 alpha chain precursor MHC class I antigen A 68 Aw 68	40883	6,23	11643	10571	8130	3912	3819	3911	2355	895	433	0,98	1,02	1,00
Q9NZM1	MYOF_HUMAN	Myofiber Fer 1 like protein 1 Homo sapiens Human	234558	5,76	2181	1915	1103	11929	11516	11904	548	1054	1454	0,97	1,03	1,00
P05556	TIR1_HUMAN	Transferrin precursor Fibronectin receptor subunit beta Integrin VLA 4 subunit beta CD29 an	88406	5,14	5600	5074	3103	9666	10923	9640	1482	423	1461	1,13	0,88	1,00
Q51WF2	GNAI1_HUMAN	Guanine nucleotide binding protein G s subunit alpha isoform XLas Adenylylate cyclase stimulating G	110955	4,72	1083		666	3506		3479	522		187	0,00	0,99	
P60709	ACTB_HUMAN	Actin cytoplasmic 1 Beta actin Homo sapiens Human	41709	5,14	22293	21044	20769	98283	84050	97172	15243	7868	7689	0,86	1,16	0,99
P27105	STOM_HUMAN	Erythrocyte band 3 integral membrane protein Stomatol Protein 72b Homo sapiens Human	31710	7,99	21214	26185	15110	6690	7582	6569	543	687	574	1,13	0,87	0,98
P62873	GBB1_HUMAN	Guanine nucleotide binding protein G1 G 5 G T subunit beta 1 Transducin beta chain 1 Homo sa	37353	5,54	8508	9128	6690	3034	2968	2966	350	275	445	0,98	1,00	0,98
P48643	TCPE_HUMAN	T complex protein 1 subunit epsilon TCP 1 epsilon CCT epsilon Homo sapiens Human	59632	5,30	832	1012	441	1638	1333	1599	461	262	151	0,81	1,20	0,98
P16070	CD44_HUMAN	CD44 antigen precursor Phagocyte glycoprotein 1 PGP 1 HUTCH1 Extracellular matrix receptor	81503	4,98	3607	3652	1959	12367	12129	12054	1070	2393	1866	0,98	0,	

Q43175	SERA_HUMAN	D 3-phosphoglycerate dehydrogenase EC 1.1.1.95 3 PGDH Homo sapiens Human	56614	6,28	3165	2957	1836	2457	2363	2009	259	141	518	0,96	0,85	0,82
P80723	BASP_HUMAN	Brain acid soluble protein 1 BASP1 precursor Neuronal axonal membrane protein NAP 22 22 kDa neuro	22680	4,42	77045	79310	57688	15942	17985	12988	2807	6674	4066	1,13	0,72	0,81
Q9Y466	TIN2_HUMAN	Talin 2 Homo sapiens Human	271382	5,27	65	84	74	10235	23132	7998	6439	34351	1001	2,26	0,35	0,78
P20020	AT2B1_HUMAN	Plasma membrane calcium transporting ATPase 1 EC 3.6.3.8 PMCA1 Plasma membrane calcium pump iso	138667	5,64	1108	1012	500	3860	3686	2942	1293	1143	1310	0,95	0,80	0,76
P09471	GNAO1_HUMAN	Guanine nucleotide binding protein G o subunit alpha 1 Homo sapiens Human	40024	5,19	1641	1407	1232	605	305	442	782	117	51	0,50	1,45	0,73
P84095	RHOQ_HUMAN	Rho related GTP binding protein RHOQ precursor Homo sapiens Human	21294	8,08	4447	3410	1893	430	362	312	188	31	79	0,84	0,86	0,73
P51148	RAB5C_HUMAN	Ras related protein Rab 5C RAB5L L1880 Homo sapiens Human	23467	8,58	2083	2500	1321	841	692	608	171	102	193	0,82	0,88	0,72
P50993	AT1A2_HUMAN	Sodium potassium transporting ATPase alpha 2 chain precursor EC 3.6.3.9 Sodium pump 2 Na K	1121953	5,32	3697	3747	2064	1539	1570	1099	723	915	322	1,02	0,70	0,71
P63000	RAC1_HUMAN	Ras related C3 botulinum toxin substrate 1 precursor p21 Rac1 Ras like protein TC25 Cell migrat	21436	8,57	4583	4597	2905	1383	1697	960	313	209	448	1,23	0,57	0,69
P43121	MUC18_HUMAN	Cell surface glycoprotein MUC18 precursor Melanoma associated antigen MUC18 Melanoma cell adhesio	71562	5,45	1783	2174	787	3459	3404	2244	335	172	473	0,98	0,66	0,65
Q13443	ADAM9_HUMAN	ADAM 9 precursor EC 3.4.24 A disintegrin and metalloprotease domain 9 Metalloprotease disin	90497	7,31	376	251	219	1562	1148	913	956	313	147	0,74	0,79	0,58
P11717	MPR1_HUMAN	Cation independent mannose 6-phosphate receptor precursor Cl Man 6 P receptor Cl MPR MPR Ins	274087	5,52	449	360	229	15211	9059	8553	9219	3669	3301	0,60	0,94	0,56
P34931	HSTO1_HUMAN	Heat shock 70 kDa protein 1L Heat shock 70 kDa protein 1 like Heat shock 70 kDa protein 1 Homo H	70321	5,65	2499	2956	2501	1599	957	752	2344	602	380	0,60	0,78	0,47
P68032	ACTC_HUMAN	Actin alpha cardiac muscle 1 Alpha cardiac actin Homo sapiens Human	41991	5,07	14827	12508	11885	6633	23189	2536	767	13881	82	3,50	0,11	0,38
P35609	ACTN2_HUMAN	Alpha actinin 2 Alpha actinin skeletal muscle isoform 2 F actin cross linking protein Homo sap	103788	5,15	1062	665	973	3786	1759	1391	3219	618	1198	0,46	0,79	0,37
Q6QNY1	BLIS2_HUMAN	Biogenesis of lysosome related organelles complex 1 subunit 2 BLOC subunit 2 Centrosome associate	15951	4,58	803	561	652	2313	2343	601	1546	1790	594	1,01	0,26	0,26
Q9DA02	RAB39_HUMAN	Ras related protein Rab 39 Homo sapiens Human	24606	7,85	2591	1748	2411	748	247	186	952	136	133	0,33	0,75	0,25
P54764	EPHA4_HUMAN	Ephrin type A receptor 4 precursor EC 2.7.10 1 Tyrosine protein kinase receptor SEK Receptor pr	109788	6,17	164	231		512	2099		267	1350		4,03	0,00	0,00
P04264	K2C1_HUMAN	Keratin type II cytoskeletal 1 Cytokeratin 1 CK 1 Keratin 1 K1 67 kDa cytokeratin Hair a	65977	8,27	2483	5794		2536	8878		412	542		3,50	0,00	0,00
P35527	K1C9_HUMAN	Keratin type I cytoskeletal 9 Cytokeratin 9 CK 9 Keratin 9 K9 Homo sapiens Human	62091	5,01	920	3425		1254	4262		162	429		3,40	0,00	0,00
P30613	KPVR_HUMAN	Pyruvate kinase isozymes R1 EC 2.7.1.40 R type L type pyruvate kinase Red cell liver pyruvate	61791	7,63	471	259		195	654		47	495		3,36	0,00	0,00
P08134	RHOQ_HUMAN	Rho related GTP binding protein RhoC precursor H9 Homo sapiens Human	21992	6,19	4145	5082		163	476		56	380		2,92	0,00	0,00
P35908	K221_HUMAN	Keratin type II cytoskeletal 2 epidermal Cytokeratin 2e K2e CK 2e Keratin 2 Homo sapiens	65825	8,05	330	1429		531	1552		275	213		2,92	0,00	0,00
P31947	I43I5_HUMAN	I4.3.3 protein sigma Stratifin Epithelial cell marker protein 1 Homo sapiens Human	27756	4,48	665	632		78	215		12	142		2,76	0,00	0,00
Q13509	TBB3_HUMAN	Tubulin beta 3 chain Tubulin beta 3 Homo sapiens Human	50400	4,64	1067	1187		309	679		111	867		2,20	0,00	0,00
P29323	EPHB2_HUMAN	Ephrin type B receptor 2 precursor EC 2.7.10 1 Tyrosine protein kinase receptor EPH 3 DRT Rec	117416	6,11	155	120		446	966		72	472		2,17	0,00	0,00
Q12907	LMAN2_HUMAN	Vesicular integral membrane protein VIP36 precursor GP36b glycoprotein Lectin mannose binding 2	40209	6,49	341	279		9652	17786		13188	3081		1,84	0,00	0,00
Q04088	ACLS4_HUMAN	Long chain fatty acid CoA ligase 4 EC 6.2.1.3 Long chain acyl CoA synthetase 4 LACS 4 Homo	79136	8,37	248	277		521	872		20	379		1,67	0,00	0,00
P60953	CD24_HUMAN	Cell division control protein 42 homolog precursor G25K GTP binding protein Homo sapiens Human	21296	5,67	1827	1453		177	274		5	42		1,55	0,00	0,00
P02794	FRH1_HUMAN	Ferritin heavy chain EC 1.16.3.1 Ferritin H subunit Proliferation inducing gene 15 protein H	21212	5,19	1274	1196		341	526		114	162		1,54	0,00	0,00
Q6EMK4	VASN_HUMAN	Vasorin precursor Protein Slt like 2 Homo sapiens Human	71667	7,09	462	610		1189	1775		36	1006		1,49	0,00	0,00
Q8TC79	HMA13_HUMAN	Minor histocompatibility antigen H13 EC 3.4.99 Signal peptidase Presenilin like prote	41461	5,98	282	430		290	428		131	47		1,48	0,00	0,00
P10909	CIUS_HUMAN	Clusterin precursor Complement associated protein SP 40 40 Complement cytolytic inhibitor C1	52461	5,84	898	656		896	1209		437	94		1,35	0,00	0,00
P14314	GLI2B_HUMAN	Glucosidase 2 subunit beta precursor Glucosidase II subunit beta Protein kinase C substrate 60 I	59387	4,13	808	905		1334	1718		525	359		1,29	0,00	0,00
P04259	K2C6B_HUMAN	Keratin type II cytoskeletal 6B Cytokeratin 6B CK 6B K6b keratin Homo sapiens Human	59962	8,05	82	517		630	802		188	328		1,27	0,00	0,00
P55283	CADH4_HUMAN	Cadherin 4 precursor Retinal cadherin R CAD Homo sapiens Human	100217	4,46	165	133		610	770		241	451		1,26	0,00	0,00
Q93084	AT2A3_HUMAN	Sarcoplasmic endoplasmic reticulum calcium ATPase 3 EC 3.6.3.8 Calcium pump 3 SERCA3 SR Ca 2	113904	5,26	173	167		1039	1285		452	716		1,24	0,00	0,00
Q9P782	FRP9_HUMAN	Prostaglandin F2 receptor negative regulator precursor Prostaglandin F2 alpha receptor regulatory p	98494	6,15	359	403		2079	2502		693	638		1,20	0,00	0,00
P08863	CD63_HUMAN	CD63 antigen Melanoma associated antigen MEA91 Ocular melanoma associated antigen OMAB31 Gran	25619	7,72	3648	3573		2017	2414		104	745		1,20	0,00	0,00
P17813	EGLN_HUMAN	Endoglin precursor CD105 antigen Homo sapiens Human	70539	6,14	512	1136		1438	1698		544	469		1,18	0,00	0,00
Q12628	IFM3_HUMAN	Interferon induced transmembrane protein 3 Interferon inducible protein 1 BU Homo sapiens Human	14622	6,59	2995	3523		878	1027		90	192		1,17	0,00	0,00
P02769	ALBU_BOVIN	Serum albumin precursor Allergen Bos d 6 BSA	69248	5,76	280	327		780	884		105	260		1,13	0,00	0,00
Q43657	TSN6_HUMAN	Tetraspanin 6 Tspan 6 Transmembrane 4 superfamily member 6 T245 protein Tetraspanin TM4 D A	27545	8,06	1581	1195		428	476		19	15		1,11	0,00	0,00
Q15658	FSCN1_HUMAN	Fascin Singed like protein 55 kDa actin bundling protein p55 Homo sapiens Human	54496	6,88	612	546		1011	1111		307	213		1,10	0,00	0,00
Q529R3	CD276_HUMAN	CD276 antigen precursor Costimulatory molecule B7 homolog 3 B7 H3 dIg B7 H3 Homo sapiens	57199	4,58	704	601		1263	1365		249	190		1,08	0,00	0,00
Q43491	E4112_HUMAN	Band 4.1 like protein 2 Generally expressed protein 4.1 4.1G Homo sapiens Human	112519	5,18	309	447		1776	1917		546	118		1,08	0,00	0,00
P33527	MRP1_HUMAN	Multidrug resistance associated protein 1 ATP binding cassette sub family C member 1 Leukotriene	171450	6,69	288	246		2595	2778		345	597		1,07	0,00	0,00
P09543	CN37_HUMAN	2 3 cyclic nucleotide 3 phosphodiesterase EC 3.1.4.37 CNPase Homo sapiens Human	47548	9,36	698	825		1106	1165		87	226		1,05	0,00	0,00
P49006	MRP_HUMAN	MARCKS related like protein 1 Macrophage myristoylated alanine rich C kinase subat	19517	4,45	920	1143		255	268		99	47		1,05	0,00	0,00
Q9NP58	ABC6B_HUMAN	Mitochondrial ATP binding cassette sub family B member 6 Mitochondrial ABC transporter 3 MB-AC1	59826	8,50	320	428		1570	1646		203	152		1,05	0,00	0,00
Q05682	CDMI_HUMAN	Caldesmon CDM1 Homo sapiens Human	93194	5,45	347	324		1332	1373		231	316		1,03	0,00	0,00
Q14651	PLS1_HUMAN	Plastin 1 Igelatin Intestine specific plastin Homo sapiens Human	70208	5,17	248	105		707	723		244	568		1,02	0,00	0,00
Q8NFJ5	RAI3_HUMAN	Retinoic acid induced protein 3 G protein coupled receptor family C group 5 member A Retinoic aci	40224	8,14	1849	1456		2284	2286		915	361		1,00	0,00	0,00
Q07020	RL18_HUMAN	60S ribosomal protein L18 Homo sapiens Human	21621	12,13	858	1409		416	416		65	17		1,00	0,00	0,00
Q04222	ICD3_HUMAN	HLA class I histocompatibility antigen Cw 3 alpha chain precursor MHC class I antigen Cw 3 Homo	40835	5,94	7642	8388		332	327		112	262		0,98	0,00	0,00
Q9K5V8	CLUB_HUMAN	CLUB domain containing protein 1 precursor Transmembrane and associated with src kinases Membrane	92815	7,99	549	581		1637	1603		81	868		0,98	0,00	0,00
Q9V2C5	MARP1_HUMAN	Mitogen activated protein binding protein interacting protein Late endosomal lysosomal Mpl interact	13498	5,11	2242	2381		273	266		57	58		0,98	0,00	0,00
P16615	AT2A2_HUMAN	Sarcoplasmic endoplasmic reticulum calcium ATPase 2 EC 3.6.3.8 Calcium pump 2 SERCA2 SR Ca 2	114682	5,05	678	488		2790	2688		691	582		0,96	0,00	0,00
P42892	ECE1_HUMAN	Endothelin converting enzyme 1 EC 3.4.24.71 ECE 1 Homo sapiens Human	87108	5,51	474	475		2773	2639		2600	698		0,95	0,00	0,00
P07339	CTD1_HUMAN	Cathepsin D precursor EC 3.4.23.5 Contains Cathepsin D light chain Cathepsin D heavy chain H	44523	6,09	916	987		1080	1022		140	191		0,95	0,00	0,00
P63092	GNA52_HUMAN	Guanine nucleotide binding protein G s subunit alpha isoforms short Adenylyl cyclase stimulating	45635	5,47	4277	2672		1600	1494		98	89		0,93	0,00	0,00
P32119	PROX2_HUMAN	Peroxidase 2 EC 1.11.1.15 Thiooxidase dependent peroxide reductase	21878	5,57	860	868		196	178		108	95		0,91	0,00	0,00
P78310	CKAR_HUMAN	Coxsackievirus and adenovirus receptor precursor Coxsackievirus B adenovirus receptor hCAR CVB3	40004	7,43	1103	730		452	408		77	14		0,90	0,00	0,00
P17693	HLA-G_HUMAN	HLA class I histocompatibility antigen alpha chain G precursor HLA G antigen Homo sapiens Huma	38199	5,34	1358	816		524	461		430	336		0,88	0,00	0,00
P63261	ACTG_HUMAN	Actin cytoplasmic 2 Gamma actin Homo sapiens Human	41765	5,16	26593	34741		97662	83520		18471	12398		0,86	0,00	0,00
P96578	RLA_HUMAN	60S ribosomal protein L4 L1 Homo sapiens Human	47667	11,50	283	270		772	637		257	229		0,83	0,00	0,00
P37802	TAGL2_HUMAN	Transgelin 2 SM22 alpha homolog Homo sapiens Human	22377	8,45	1288	764		457	344		90	33		0,75	0,00	0,00
P29317	EPHA2_HUMAN	Ephrin type A receptor 2 precursor EC 2.7.10 1 Tyrosine protein kinase receptor ECK Epithelial	108184	5,74	551	426		2350	1752		1145	554		0,75	0,00	0,00
Q43852	CALU_HUMAN	Calumenin precursor Crocalbin IEF SSP 9302 Homo sapiens Human	37083	4,28	1888	1764		78	1272		938			0,74	0,00	0,00
P54753	EPHB3_HUMAN	Ephrin type B receptor 3 precursor EC 2.7.10 1 Tyrosine protein kinase receptor HEK 2 Homo sap	110259	5,89	167	89		736	539		460	302		0,73	0,00	0,00
P00387	NCBSR_HUMAN	NADH cytochrome b5 reductase EC 1.6.2.2 B5R Diaphorase 1 Cytochrome b5 reductase 3 Contains	34212	7,39	621	458		1058	758		480	117		0,72	0,00	0,00
P61158	ARP3_HUMAN	Actin like protein 3 Actin related protein 3 Homo sapiens Human	47341	5,51	648	542		863	607		361	241		0,70	0,00	0,00
Q14983	AT2A1_HUMAN	Sarcoplasmic endoplasmic reticulum calcium ATPase 1 EC 3.6.3.8 Calcium pump 1 SERCA1 SR Ca 2	110181	4,88	196	126		574	404		182	125		0,70	0,00	0,00
P48552	NRP1_HUMAN	Nuclear receptor interacting protein 1 Nuclear factor RI140 Receptor interacting protein 140	128683	8,14	85	27		1183	825		943	7		0,70	0,00	0,00
P61604	CH10_HUMAN	10 kDa heat shock protein mitochondrial Hsp10 10 kDa chaperonin CPN10 Early pregnancy fact	10924	9,47	1673	1038		227	150		37	30		0,66	0,00	0,00
Q																

P27482	CALL3_HUMAN	Calmodulin like protein 3 Calmodulin related protein NB 1 CaM like protein CLP Homo sapiens	16870	4,10	349			389			72			0,00	0,00
PS1809	SYBL1_HUMAN	Synaptobrevin like protein 1 Tetanus insensitive VAMP Ti VAMP Ti VAMP VAMP7 Homo sapiens Hu	24918	8,73	415			394			64			0,00	0,00
O95297	MPZL1_HUMAN	Myelin protein zero like protein 1 precursor Protein zero related Homo sapiens Human	29064	8,98	669			399			135			0,00	0,00
P63027	VAMP2_HUMAN	Vesicle associated membrane protein 2 VAMP 2 Synaptobrevin 2 Homo sapiens Human	12640	8,70	7376			417			188			0,00	0,00
P13726	TF_HUMAN	Tissue factor precursor TF Coagulation factor III Thromboplastin CD142 antigen Homo sapien	33046	6,87	685			418			185			0,00	0,00
Q8NDQ6	ZN540_HUMAN	Zinc finger protein 540 Homo sapiens Human	77044	9,81	18			435			83			0,00	0,00
Q9HC07	TM165_HUMAN	Transmembrane protein 165 Transmembrane protein TPABL Transmembrane protein PT27 Homo sapiens	34883	6,62	491			440			36			0,00	0,00
P15291	B4G1T1_HUMAN	Beta 1 4 galactosyltransferase 1 EC 2 4 1 Beta 1 4 GalTase 1 Beta4Gal T1 b4Gal T1 UDP gal	43892	8,71	491			468			57			0,00	0,00
P21291	CSRP1_HUMAN	Cystine and glycine rich protein 1 Cystine rich protein 1 CRP1 CRP Homo sapiens Human	20553	8,55	1952			484			84			0,00	0,00
P62424	RL7A_HUMAN	G05 ribosomal protein L7a Surfeit locus protein 3 PLA X polypeptide Homo sapiens Human	29977	11,06	969			495			135			0,00	0,00
O75396	SEC22B_HUMAN	Vesicle trafficking protein SEC22b SEC22 vesicle trafficking protein homolog B SEC22 vesicle traf	24724	8,73	2400			529			31			0,00	0,00
Q09160	1A80_HUMAN	HLA class I histocompatibility antigen A 80 alpha chain precursor MHC class I antigen A 80 Aw 80	40766	5,86	5519			546			392			0,00	0,00
PS1571	SSRO_HUMAN	Translocin associated protein subunit delta precursor TRAP delta Signal sequence receptor subunit	18986	5,72	2041			575			108			0,00	0,00
PS4760	EPHB4_HUMAN	Ephrin type B receptor 4 precursor EC 2 7 10 1 Tyrosine protein kinase receptor HTK Homo sapie	108204	6,47	136			616			250			0,00	0,00
P60763	RAC3_HUMAN	Ras related C3 botulinum toxin substrate 3 precursor p23 Rac3 Homo sapiens Human	21365	8,16	3883			625			578			0,00	0,00
Q90597	MYADM_HUMAN	Myeloid associated differentiation marker SB135 Homo sapiens Human	35250	8,06	585			693			206			0,00	0,00
P30464	1B15_HUMAN	HLA class I histocompatibility antigen B 15 alpha chain precursor MHC class I antigen B 15 Homo	40362	5,86	4836			732			540			0,00	0,00
Q8TAC5	ZN420_HUMAN	Zinc finger protein 420 Homo sapiens Human	80194	8,55	67			735			866			0,00	0,00
P07686	HEX3T_HUMAN	Beta hexosaminidase beta chain precursor EC 3 2 1 52 N acetyl beta glucosaminidase Beta N acety	36371	6,30	282			872			259			0,00	0,00
P35052	GPC1_HUMAN	Glypican 1 precursor Homo sapiens Human	61611	7,01	458			913			376			0,00	0,00
PS5290	CAD13_HUMAN	Cadherin 13 precursor Truncated cadherin T cadherin T cad Heart cadherin H cadherin P105	78238	4,61	202			961			72			0,00	0,00
Q92542	NICA_HUMAN	Nicastrin precursor Homo sapiens Human	78361	5,58	232			1055			154			0,00	0,00
Q14344	GNAL3_HUMAN	Guanine nucleotide binding protein alpha 13 subunit G alpha 13 Homo sapiens Human	44021	8,00	283			1302			35			0,00	0,00
P01892	1A02_HUMAN	HLA class I histocompatibility antigen A 2 alpha chain precursor MHC class I antigen A 2 Homo s	40896	6,54	12662			1574			200			0,00	0,00
P30504	1C04_HUMAN	HLA class I histocompatibility antigen Cw 4 alpha chain precursor MHC class I antigen Cw 4 Homo	40969	6,01	10388			1592			481			0,00	0,00
O43795	MYO1B_HUMAN	Myosin 1b Myosin I alpha MM1 alpha MM1a MYH 1c Homo sapiens Human	131901	9,68	395			1880			363			0,00	0,00
Q9RRT1	LAP2_HUMAN	Protein LAP2 ErbB2 interacting protein ErbB1 Densin 180 like protein Homo sapiens Human	158199	5,17	185			1937			351			0,00	0,00
P03989	1A07_HUMAN	HLA class I histocompatibility antigen B 27 alpha chain precursor MHC class I antigen B 27 Homo	40403	5,44	4055			2163			985			0,00	0,00
P16144	ITB4_HUMAN	Integrin beta 4 precursor GP150 CD104 antigen Homo sapiens Human	202021	5,67	222			3444			134			0,00	0,00
P13647	KC53_HUMAN	Keratin type II cytoskeletal 5 Cytokeratin 5 CK 5 Keratin 5 K5 58 kDa cytokeratin Homo	62339	7,79		92			485		41			0,00	0,00
Q9H4G0	E41L1_HUMAN	Band 4 1 like protein 1 Neuronal protein 41 4 1N Homo sapiens Human	98442	5,29		261			1414		277			0,00	0,00
Q9UBC5	MYO1a_HUMAN	Myosin Ia Brush border myosin I BBM1 BBMI Myosin I heavy chain MIHC Homo sapiens Human	118325	9,57		110			928		128			0,00	0,00
P13645	K1C10_HUMAN	Keratin type I cytoskeletal 10 Cytokeratin 10 CK 10 Keratin 10 K10 Homo sapiens Human	59482	4,95		1385			2259		883			0,00	0,00
Q980E3	TBA6_HUMAN	Tubulin alpha 6 chain Alpha tubulin 6 Homo sapiens Human	49863	4,79		2689			1278		1016			0,00	0,00
P10321	1C07_HUMAN	HLA class I histocompatibility antigen Cw 7 alpha chain precursor MHC class I antigen Cw 7 Homo	40622	5,63		8725			439		168			0,00	0,00
O95573	KCSL3_HUMAN	Long chain fatty acid CoA ligase 3 EC 6 2 1 3 Long chain acyl CoA synthetase 3 LACS 3 Homo	80368	8,37		406			801		194			0,00	0,00
P30498	1B78_HUMAN	HLA class I histocompatibility antigen B 78 alpha chain precursor MHC class I antigen B 78 Homo	40453	5,80		4969			2772		633			0,00	0,00
PS6199	ITA1_HUMAN	Integrin alpha 1 precursor Laminin and collagen receptor VLA 1 CD49a antigen Homo sapiens H	130764	5,86		227			2367		30			0,00	0,00
Q14493	CLD4_HUMAN	Claudin 4 Clostridium perfringens enterotoxin receptor CPE receptor CPE R Williams Beuren syn	12062	8,01		795			203		56			0,00	0,00
Q9UIG6	LCAP_HUMAN	Leucyl cystinyl aminopeptidase EC 3 4 11 3 Cystinyl aminopeptidase Oxytocinase OTase Insuf	117274	5,39		275			1370		80			0,00	0,00
Q108722	CD47_HUMAN	Leukocyte surface antigen CD47 precursor Integrin associated protein IAP Antigenic surface dele	35190	6,98		356			676		15			0,00	0,00
P30481	1B44_HUMAN	HLA class I histocompatibility antigen B 44 alpha chain precursor MHC class I antigen B 44 Bw 44	40456	5,62		2147			414		426			0,00	0,00
Q9P6M5	ZN1T1_HUMAN	Zinc transporter 1 Znt 1 Solute carrier family 30 member 1 Homo sapiens Human	55292	6,01		342			1010		189			0,00	0,00
P19013	K2C4_HUMAN	Keratin type II cytoskeletal 4 Cytokeratin 4 CK 4 Keratin 4 K4 Homo sapiens Human	57249	6,22		389			507		384			0,00	0,00
P27701	CD82_HUMAN	CD82 antigen Inducible membrane protein R2 C33 antigen uA4 Metastasis suppressor Kangai 1 S	29605	4,96		461			506		135			0,00	0,00
P61073	CXCR4_HUMAN	C X C chemokine receptor type 4 CXCR4 CXCR 4 Stromal cell derived factor 1 receptor SDF 1 re	39719	8,17		567			726		92			0,00	0,00
P41440	S19A1_HUMAN	Folate transporter 1 Solute carrier family 19 member 1 Placental folate transporter FOLT Redu	64827	9,02		446			692		254			0,00	0,00
Q9UM01	VLA1_HUMAN	V L amino acid transporter 1 y L type amino acid transporter 1 y LAT 1 Y LAT1 Monocyte amin	55954	5,12		23			312		94			0,00	0,00
Q86Y56	RAB43_HUMAN	Ras related protein Rab 43 Ras related protein Rab 41 Homo sapiens Human	23324	5,30		2275			230		72			0,00	0,00
O60762	DPM1_HUMAN	Dolichol phosphate mannosyltransferase EC 2 4 1 83 Dolichol phosphate mannose synthase Dolichyl	29615	9,86		279			448		17			0,00	0,00
P10301	BRAS_HUMAN	Ras related protein R Ras precursor p23 Homo sapiens Human	23465	6,51		1177			467		246			0,00	0,00
P01116	BAK1_HUMAN	GTPase K/Ras precursor K Ras 2 Ki/Ras c K Ras c Ki/Ras Homo sapiens Human	21642	6,37		2194			625		50			0,00	0,00
Q9H7P6	F125B_HUMAN	Protein FAM125B Homo sapiens Human	35596	8,16		290			574		210			0,00	0,00
PS4762	EPHB1_HUMAN	Ephrin type B receptor 1 precursor EC 2 7 10 1 Tyrosine protein kinase receptor EPH 2 NET HEK	109814	5,98		113			470		257			0,00	0,00
P10314	1A32_HUMAN	HLA class I histocompatibility antigen A 32 alpha chain precursor MHC class I antigen A 32 Homo	41022	6,01		7574			456		441			0,00	0,00
Q9NUM4	T106B_HUMAN	Transmembrane protein 106B Homo sapiens Human	31107	6,59		616			377		199			0,00	0,00
Q9UBR2	CAT2_HUMAN	Cathepsin 2 precursor EC 3 4 22 Cathepsin X Cathepsin P Homo sapiens Human	33846	6,74		445			364		51			0,00	0,00
Q9Y3L5	RAP2C_HUMAN	Ras related protein Rap 2c precursor Homo sapiens Human	20731	4,67		650			156		75			0,00	0,00
Q9H3N1	TXND1_HUMAN	Thioredoxin domain containing protein 1 precursor Transmembrane Trx related protein Thioredoxin r	31770	4,72		1149			354		46			0,00	0,00
P07951	TPM2_HUMAN	Tropomyosin beta chain Tropomyosin 2 Beta tropomyosin Homo sapiens Human	32830	4,46		632			353		55			0,00	0,00
Q9NRW1	RAB6B_HUMAN	Ras related protein Rab 6B Homo sapiens Human	23446	5,22		646			345		258			0,00	0,00
P08758	ANXA5_HUMAN	Annexin A5 Annexin V Lipocortin V Endonexin II Calphobindin I CBP I Placental anticoagula	35914	4,73		443			288		99			0,00	0,00
PS9998	ARPC4_HUMAN	Actin related protein 2 3 complex subunit 4 ARP2 3 complex 20 kDa subunit p20 ARC Homo sapiens	19654	8,78		639			283		37			0,00	0,00
P10114	RBP2A_HUMAN	Ras related protein Rap 2a precursor RBP 30 Homo sapiens Human	20602	4,53		369			136		89			0,00	0,00
Q9Y780	MSAP_HUMAN	MIR interacting saposin like protein precursor Transmembrane protein 4 Putative secreted protein	20639	4,62		343			247		209			0,00	0,00
Q9Y281	COF2_HUMAN	Cofilin 2 Cofilin muscle isoform Homo sapiens Human	18724	8,16		849			117		28			0,00	0,00
P18464	1B51_HUMAN	HLA class I histocompatibility antigen B 51 alpha chain precursor MHC class I antigen B 51 Homo	40541	5,94		5300			163		80			0,00	0,00
Q13112	1B73_HUMAN	HLA class I histocompatibility antigen B 73 alpha chain precursor MHC class I antigen B 73 Homo	40409	5,80		5446			118		18			0,00	0,00

Figure S1: Quantitative Mass spectrometry detected enrichment of cellular proteins in endosomal fractions after HPV16 PsV incubation. The quantitative analysis of host-cell proteins of two individual LC-MS experiments is shown. Experiments were performed using HeLa cells. Three independent preparations at different timepoints (non-infected, 4h, 7h post infection) were analysed in five technical replicates in each experiment. Parts per million (ppm) values are calculated at the protein level. The amount of each protein is determined using the 3 "best ionizing" peptides, which are then compared to the total protein in the sample. The protein level values of the technical replicates (MW ppm) are highlighted in yellow; the data for HPV16 major capsid protein L1 are highlighted in red; for p62/sequestosome-1 in green and for Rab5a in gray.

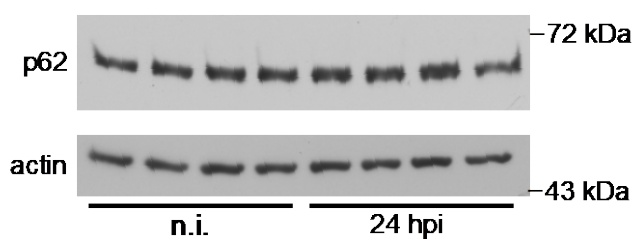


Figure S2. Representative p62 levels after HPV16 PsVs addition. HeLa cells were incubated with HPV16 PsVs for 24 hours (24 hpi) or left untreated (not infected, n.i.). P62 levels were analyzed by Western blotting using p62-specific mAb. β -actin was used as loading control.

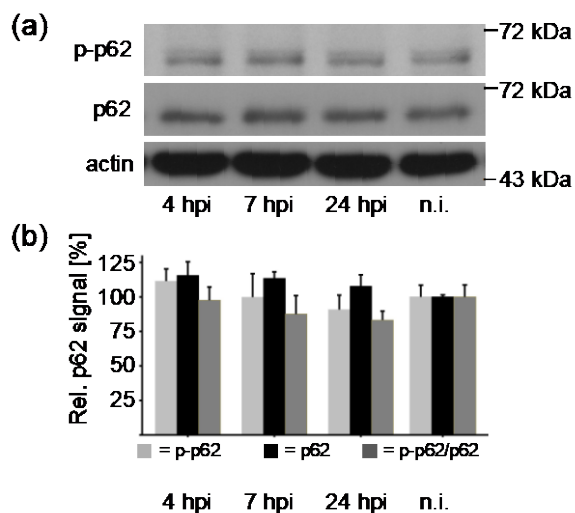


Figure S3. P62 phosphorylation is unaffected by HPV16 PsVs. (a) Western blotting showing p62 phosphorylation status of HeLa cells upon HPV16 PsVs addition. Cells were starved for 1 hour and subsequently exposed to PsVs for different time points. All samples were collected at the same time. For signal detection, the membrane was stained using p62-specific mAb (for total p62 protein detection) and phospho-p62-specific pAb (p-p62, for detection of phosphorylated p62 at Ser 349). β -actin was used as a loading control. (b) Quantification of the blots shown in (a) using ImageJ software. The amount of phosphorylated p62 protein is shown as a ratio of phosphorylated to total p62 form. The values are given as mean \pm SEM and the mean for not infected cells (n.i.) was set to 100%. Data (n =

4-9 out of three replicates) were analyzed for significant differences using unpaired *t*-test for total p62 ($p = 0.0176$, $p = 0.0017$ and $p = 0.1884$ for n.i. vs. 4 hpi, 7 hpi and 24 hpi, respectively), using unpaired *t*-test for phospho-p62 ($p = 0.4375$ and $p = 0.9878$ for n.i. vs. 4 hpi and 7 hpi, respectively) and Mann-Whitney test ($p = 0.3301$ for n.i. vs. 24 hpi), and using unpaired *t*-test for phospho-p62 per total p62 ($p = 0.8681$, $p = 0.4446$ and $p = 0.2509$ for n.i. vs. 4 hpi, 7 hpi and 24 hpi, respectively).

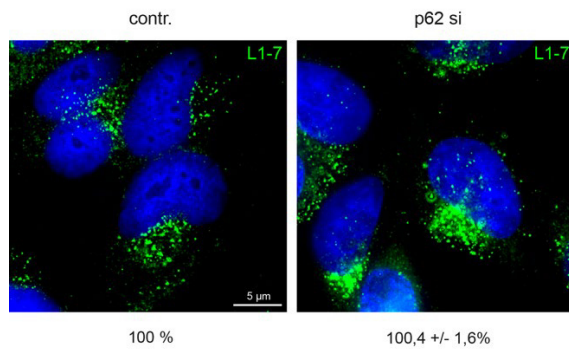
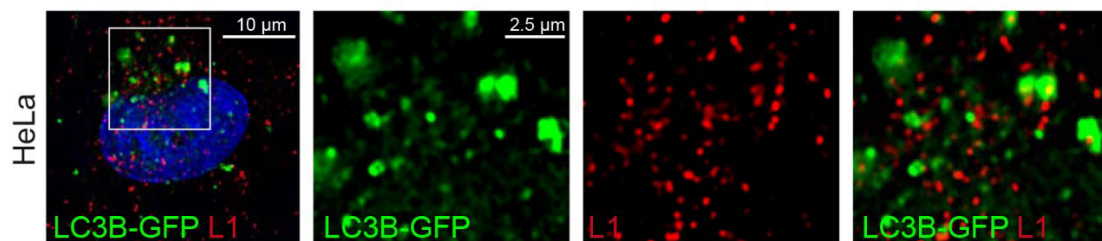


Figure S4. P62 knockdown has no effect on virus internalization. HeLa cells were transfected with control siRNA (contr.) or a p62 siRNA pool (p62 si) for 48 hours and infected with HPV16 PsVs for 7 hours. Cells were stained with L1-specific Ab (33L1-7) and nuclear stain solution (Hoechst 33342). Relative L1-7-positive pixels per DNA pixels were quantified using ImageJ software and the values are given as a mean \pm SEM. The mean for control siRNA-treated cells (contr.) was set to 100%.

(a)



(b)

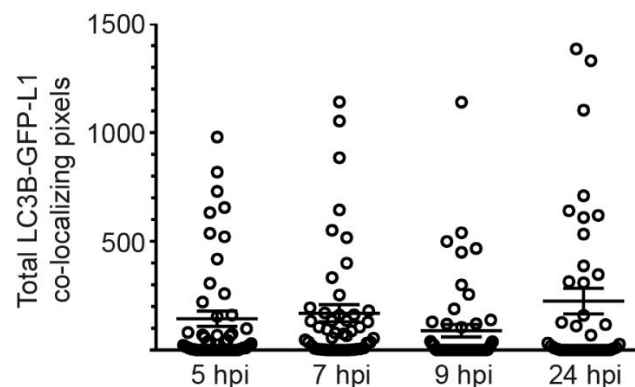


Figure S5. HPV16 major capsid protein L1 co-localizes stably over the time with autophagosome marker LC3B. **(a)** HeLa cells were transfected with LC3B-GFP expressing plasmid for 24 hours and infected with HPV16 PsVs for five, seven, nine or 24 hours (5h, 7h, 9h, or 24h). Cells were stained for HPV16 major capsid protein L1 by immunofluorescence using K75 antibody. **(a)** Representative pictures of LC3B-GFP and HPV16 L1 co-localization in HeLa (exposed to PsVs for 7 hours). LC3B-GFP is shown in green, L1 in red and nuclear DNA (stained by Hoechst) in blue. The box in the first panel outlines the following higher magnification images. **(b)** LC3B-GFP-L1 co-localization is not dependent on the duration of HPV16 infection in HeLa cells. Graphs show quantification of the total number of pixels representing LC3B-GFP-L1 co-localization after 5h, 7h, 9h, or 24 h of HPV16 PsVs. Data (n = 40 – 52 out of three replicates) are shown as scatter dot plot and the lines represent mean \pm SEM of the absolute numbers from three independent experiments. Significant differences were analyzed using ordinary one-way ANOVA ($p = 0.1252$).

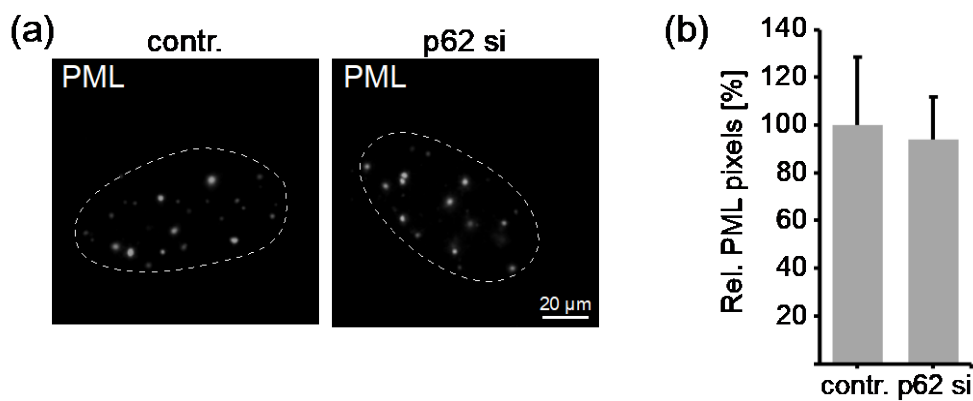


Figure S6. PML after p62 knockdown. **(a-b)** HeLa cells were transfected with control siRNA (contr.) or a p62 siRNA pool (p62 si) for 48 hours and infected with HPV16 PsVs for 24 hours. Cells were stained with PML-specific mAb and nuclear stain solution (Hoechst 33342). Representative pictures are shown in **(a)**. **(b)** Relative PML-positive pixels per DNA pixels were quantified using ImageJ software and are given as a mean \pm SEM. The mean for control siRNA-treated cells (contr.) was set to 100%. Data (n = 57-60 out of three replicates) were analyzed for significant differences using Mann-Whitney test: $p > 0.05$.