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Supporting Information

DOI: 10.1002/cbic.200800796

Supporting Information

for

Off-Target Decoding of a Multitarget Kinase Inhibitor by Chemical Proteomics

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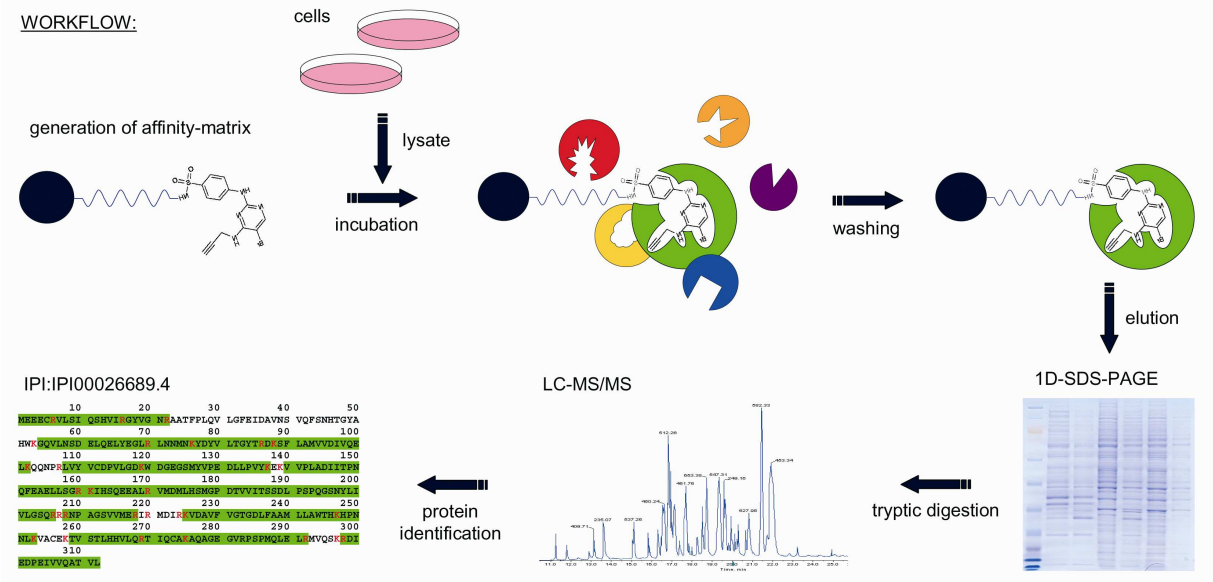

Figure S1. Protein/ compound interaction profiling by Chemical Proteomics. Linkable compound analogs provided with a suitable linker are synthesized and covalently immobilized to a solid support. It has to be made sure that the linker does not interfere with the activity of the compound. The resulting compound affinity matrix is employed for affinity capturing of interacting protein targets from cell or tissue lysate. After extensive washing, bound proteins are eluted specifically using free compound (often, compound solubility is limited) or nonspecifically by denaturation (or sequentially by applying both) and subsequently analyzed by 1D SDS-PAGE, LC-MS/MS and bioinformatical data processing. Nonspecifically bound proteins can be identified in parallel experiments where a control matrix (e.g. an immobilized inactive compound analog or blocked sepharose) is used for pull-down experiments.

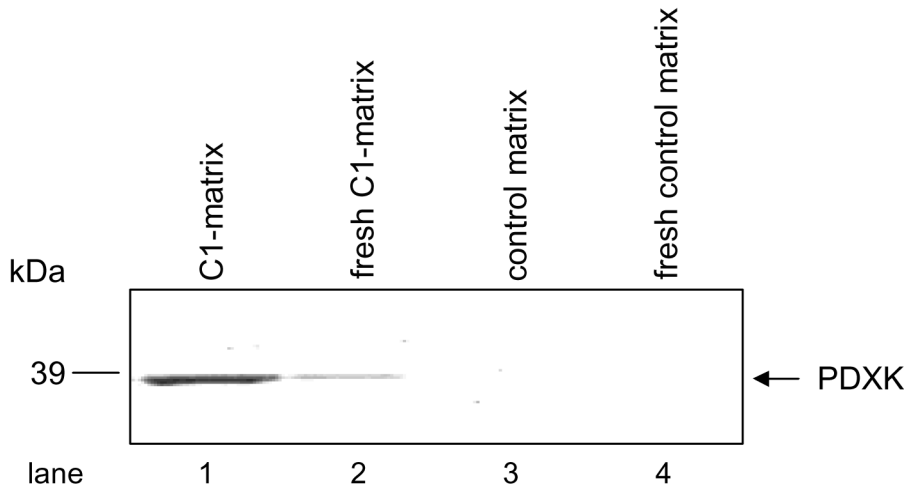

Figure S2. A serial affinity chromatography approach confirmed a specific binding of PDXK to C1-matrix. C1-matrix was incubated with HeLa extract. Subsequently, the flow-through was mixed with fresh C1-matrix. Western blot analysis showed that PDXK was essentially captured by the first matrix, indicating a specific binding to the affinity matrix.

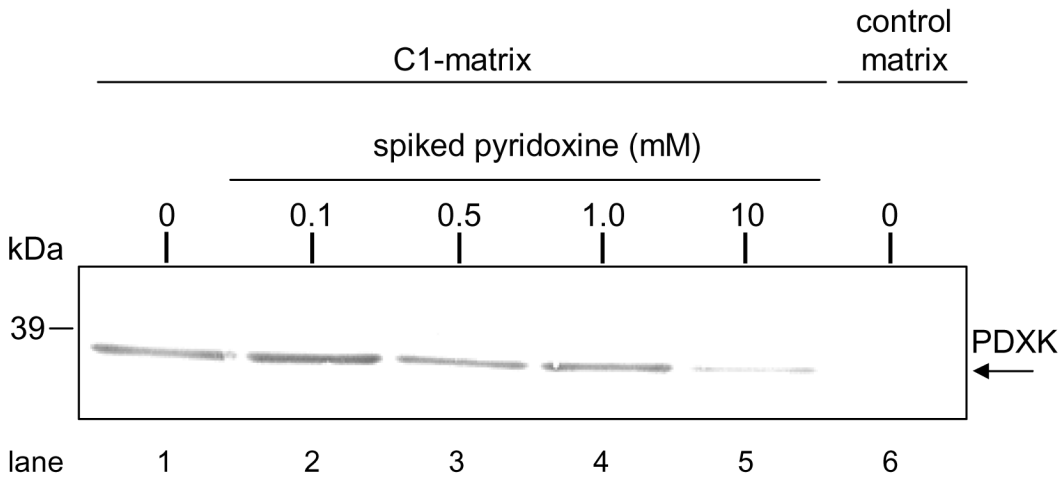

Figure S3. Spiked pyridoxine prevented PDXK from binding to C1-matrix. Cell extracts were spiked with several concentrations of the PDXK substrate pyridoxine. Immunodetection revealed that PDXK binding to C1-matrix was nearly completely prevented in the presence of 10 mM spiked pyridoxine, confirming the binding of PDXK to the C1-matrix via the pyridoxal binding site.

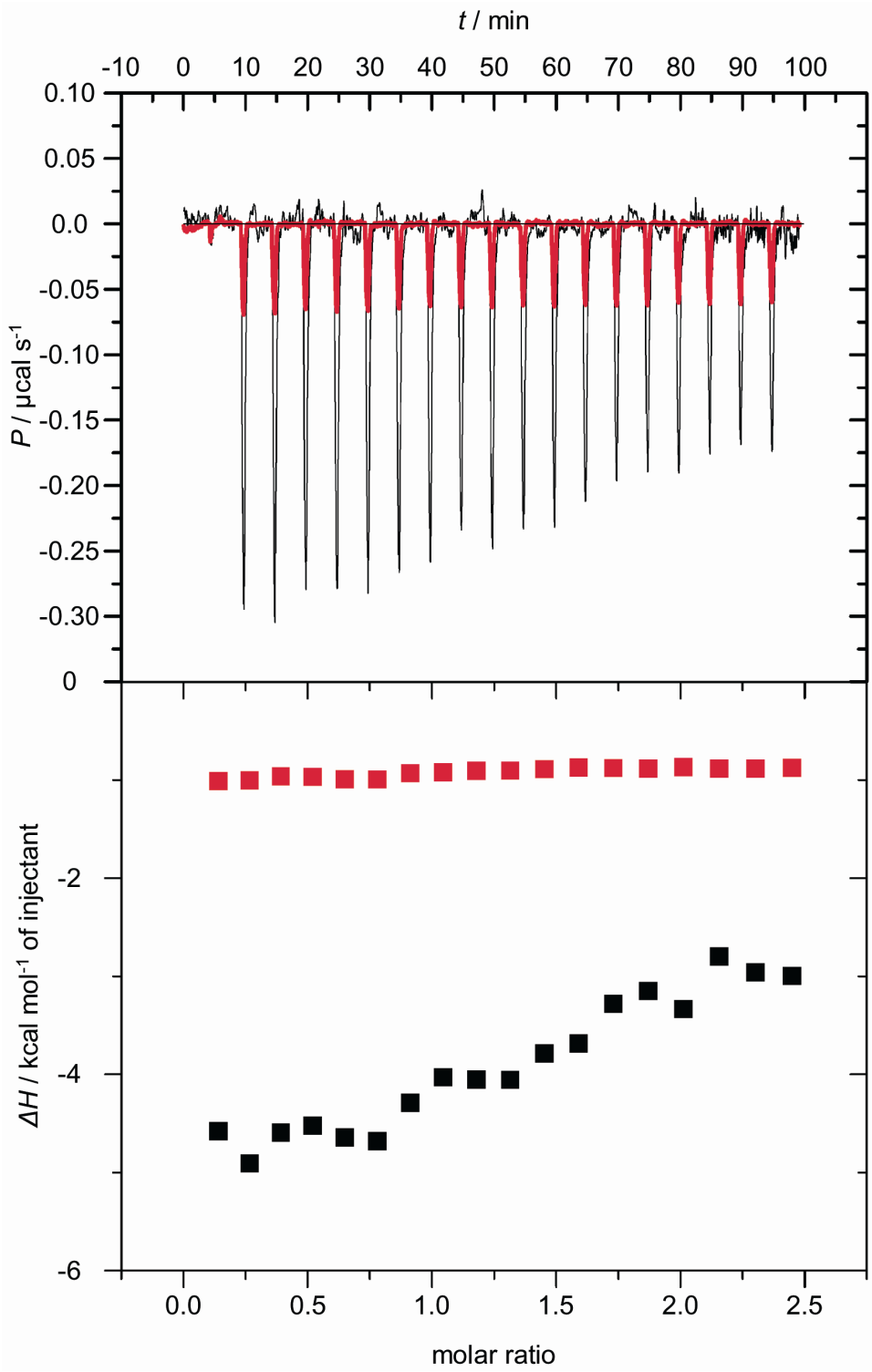

Figure S4. Isothermal titration calorimetry (ITC) curve of the titration of PDXK with C1-SL. Low binding heats, indicated by a linear ITC curve, prevented determination of the exact K_D but data suggested a K_D value > 10 µM, confirming the results from the PDXK activity assays.

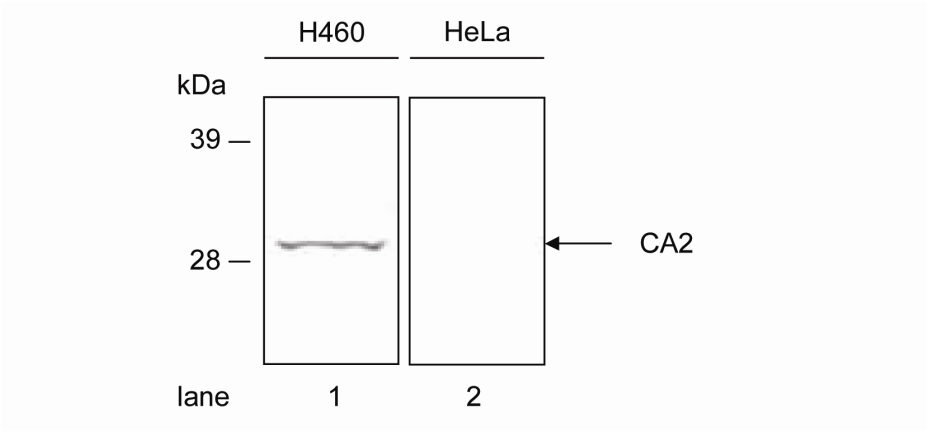

Figure S5. CA2 expression, which is lacking in HeLa cells, has been demonstrated for H460 cells by immunoblotting.

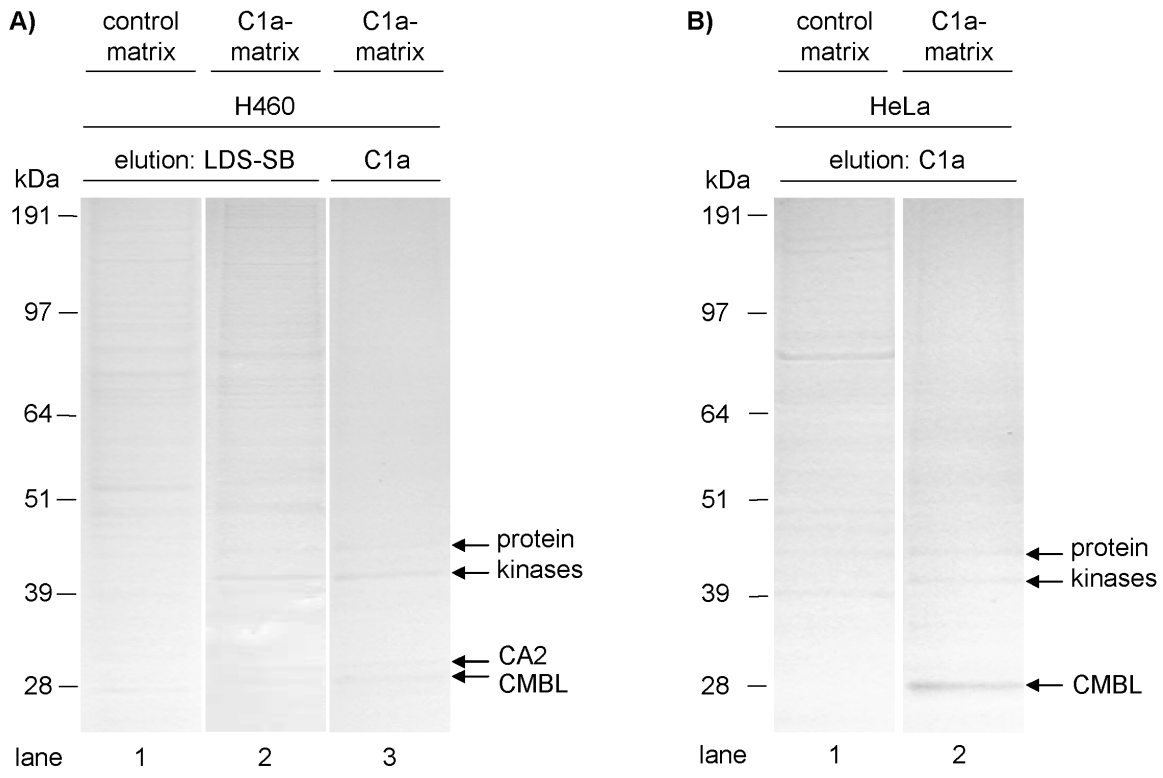

Figure S6. A) Carbonic anhydrase 2 (CA2) capturing by C1a-matrix was found by LC-MS/MS analysis**.** H460 cell extracts were loaded on C1a-matrix and control matrix, respectively. Beads were extensively washed, bound proteins were non-specifically as well as specifically eluted by LDS-SB and a saturated solution of C1a in low-salt washing buffer, respectively, precipitated and loaded on SDS-PAGE. LC-MS/MS analysis of Coomassie-stained gels revealed capturing of CA2 from H460 lysate by compound matrix. Moreover, one further off-

target specifically binding to the sulfonamide moiety, was identified: Carboxymethylenebutenolidase homolog (CMBL). In addtition, some protein kinases (AURKA, CDK1, MAPK9), which also captured by using the C1-matrix, were identified. B) HeLa cell extracts were loaded on C1a-matrix and control matrix, respectively. Subsequent to washing, the beads were specifically eluted using a saturated solution of C1a in low-salt washing buffer.

LC-MS/MS analysis of the most intensive Coomassie-stained bands revealed capturing of CMBL which was also found by using H460 lysate. Furthermore, some protein kinases (AURKA, CDK1, MAPK9) were found.

Table S1. Proteins identified by Chemical Proteomics using C1-matrix.

Gene Product[a]	Gene[a]
protein kinases	
AMP-activated protein kinase alpha 2 catalytic subunit [*Homo sapiens*]	PRKAA2 [*Homo sapiens*]
AP2 associated kinase 1 [*Homo sapiens*]	AAK1 [*Homo sapiens*]
aurora kinase A [*Homo sapiens*];serine/threonine protein kinase 6 [*Homo sapiens*]	AURKA [*Homo sapiens*
calcium/calmodulin-dependent protein kinase II delta isoform 3 [*Homo sapiens*]	CAMK2D [*Homo sapiens*]
calcium/calmodulin-dependent protein kinase II gamma isoform 6 [*Homo sapiens*]	CAMK2G [*Homo sapiens*]
CDC42-binding protein kinase beta [*Homo sapiens*]	CDC42BPB [*Homo sapiens*]
cell division cycle 2 protein isoform 1 [*Homo sapiens*]	CDK1 [*Homo sapiens*]
CHK1 checkpoint homolog [*Homo sapiens*]	CHEK1 [*Homo sapiens*]
conserved helix-loop-helix ubiquitous kinase [*Homo sapiens*]	CHUK [*Homo sapiens*]
cyclin-dependent kinase 2 isoform 1 [*Homo sapiens*]	CDK2 [*Homo sapiens*]
cyclin-dependent kinase 5 [*Homo sapiens*]	CDK5 [*Homo sapiens*]
cyclin-dependent kinase 7 [*Homo sapiens*]	CDK7 [*Homo sapiens*]
cyclin-dependent kinase 9 [*Homo sapiens*]	CDK9 [*Homo sapiens*]
fer (fps/fes related) tyrosine kinase (phosphoprotein NCP94) [*Homo sapiens*]	FER [*Homo sapiens*]
microtubule associated serine/threonine kinase-like [*Homo sapiens*]	MASTL [*Homo sapiens*]
mitogen-activated protein kinase 1 [*Homo sapiens*]	MAPK1 [*Homo sapiens*]
mitogen-activated protein kinase 3 isoform 2 [*Homo sapiens*]	MAPK3 [*Homo sapiens*]
mitogen-activated protein kinase 8 isoform 2 [*Homo sapiens*]	MAPK8 [*Homo sapiens*]
mitogen-activated protein kinase 9 isoform 1 [*Homo sapiens*]	MAPK9 [*Homo sapiens*]

mitogen-activated protein kinase kinase 1 [*Homo sapiens*]	MAP2K1 [*Homo sapiens*]
mitogen-activated protein kinase kinase 2 [*Homo sapiens*]	MAP2K2 [*Homo sapiens*]
mitogen-activated protein kinase kinase kinase 11 [*Homo sapiens*]	MAP3K11 [*Homo sapiens*]
MLK-related kinase isoform 1 [*Homo sapiens*]	ZAK [*Homo sapiens*]
p21-activated kinase 4 isoform 1 [*Homo sapiens*]	PAK4 [*Homo sapiens*]
PCTAIRE protein kinase 1 [*Homo sapiens*]	PCTK1 [*Homo sapiens*]
PCTAIRE protein kinase 2 [*Homo sapiens*]	PCTK2 [*Homo sapiens*]
protein kinase D2 [*Homo sapiens*]	PRKD2 [*Homo sapiens*]
protein kinase D3 [*Homo sapiens*]	PRKD3 [*Homo sapiens*]
protein kinase N2 [*Homo sapiens*]	PKN2 [*Homo sapiens*]
receptor (TNFRSF)-interacting serine-threonine kinase 1 [*Homo sapiens*]	RIPK1 [*Homo sapiens*]
receptor-interacting serine-threonine kinase 2 [*Homo sapiens*]	RIPK2 [*Homo sapiens*]
serine/threonine kinase 10 [*Homo sapiens*]	STK10 [*Homo sapiens*]
serine/threonine kinase 17a (apoptosis-inducing) [*Homo sapiens*]	STK17A [*Homo sapiens*]
serine/threonine kinase 17b (apoptosis-inducing) [*Homo sapiens*]	STK17B [*Homo sapiens*]
serine/threonine kinase 2 [*Homo sapiens*]	SLK [*Homo sapiens*]
serine/threonine kinase 3 (STE20 homolog, yeast) [*Homo sapiens*]	STK3 [*Homo sapiens*]
serine/threonine kinase 4 [*Homo sapiens*]	STK4 [*Homo sapiens*]
unc-51-like kinase 3 (C. elegans) [*Homo sapiens*]	ULK3 [*Homo sapiens*]
viral oncogene yes-1 homolog 1 [*Homo sapiens*]	YES1 [*Homo sapiens*]
non-protein kinases	
fructosamine-3-kinase-related protein [*Homo sapiens*]	FN3KRP [*Homo sapiens*]
pyridoxal kinase [*Homo sapiens*]	PDXK [*Homo sapiens*]
non-catalytical subunits of protein kinases	
AMP-activated protein kinase beta 2 non-catalytic subunit [*Homo sapiens*]	PRKAB2 [*Homo sapiens*]
oxidoreductases	
acyl-Coenzyme A dehydrogenase family, member 10 [*Homo sapiens*]	ACAD10 [*Homo sapiens*]
acyl-Coenzyme A dehydrogenase family, member 11 [*Homo sapiens*]; putative acyl-CoA dehydrogenase [*Homo sapiens*]	ACAD11 [*Homo sapiens*]
apoptosis-inducing factor (AIF)-like mitchondrion-associated inducer of death [*Homo sapiens*]	AMID [*Homo sapiens*]
biliverdin reductase B (flavin reductase (NADPH)) [*Homo sapiens*]	BLVRB [*Homo sapiens*]
NAD synthetase 1 [*Homo sapiens*]	NADSYN1 [*Homo sapiens*]
NAD(P)H dehydrogenase, quinone 2 [*Homo sapiens*]	NQO2 [*Homo sapiens*]
thioredoxin peroxidase [*Homo sapiens*]	PRDX4 [*Homo sapiens*]

presumedly associated proteins	
cyclin A [*Homo sapiens*]	CCNA2 [*Homo sapiens*]
cyclin B1 [*Homo sapiens*]	CCNB1 [*Homo sapiens*]
cyclin B2 [*Homo sapiens*]	CCNB2 [*Homo sapiens*]
cyclin T1 [*Homo sapiens*]	CCNT1 [*Homo sapiens*]
FGF intracellular binding protein isoform a [*Homo sapiens*]	FIBP [*Homo sapiens*]
LIM and senescent cell antigen-like domains 1 [*Homo sapiens*]	LIMS1 [*Homo sapiens*]
parvin, alpha [*Homo sapiens*]	PARVA [*Homo sapiens*]
ATP-binding proteins	
ATP citrate lyase isoform 1 [*Homo sapiens*]	ACLY [*Homo sapiens*]
small GTP-binding proteins	
ADP-ribosylation factor-like 1 [*Homo sapiens*]	ARL1 [*Homo sapiens*]
cell division cycle 42 isoform 1 [*Homo sapiens*]	CDC42 [*Homo sapiens*]
keratins and proteins which were also identified in control experiments using blocked sepharose as affinity matrix	
acyl-Coenzyme A dehydrogenase, very long chain isoform 1 precursor [*Homo sapiens*]	ACADVL [*Homo sapiens*]
aldolase A [*Homo sapiens*]	ALDOA [*Homo sapiens*]
ATP synthase, H+ transporting, mitochondrial F0 complex, subunit d isoform b [*Homo sapiens*]	ATP5H [*Homo sapiens*]
ATP synthase, H+ transporting, mitochondrial F1 complex, alpha subunit precursor [*Homo sapiens*]	ATP5A1 [*Homo sapiens*]
ATP synthase, H+ transporting, mitochondrial F1 complex, beta subunit precursor [*Homo sapiens*]	ATP5B [*Homo sapiens*]
basic leucine zipper and W2 domains 1 [*Homo sapiens*]	BZW1 [*Homo sapiens*]
basic leucine zipper and W2 domains 1 [*Homo sapiens*]	LOC151579 [*Homo sapiens*]
beta actin [*Homo sapiens*]	ACTB [*Homo sapiens*]
calnexin precursor [*Homo sapiens*]	CANX [*Homo sapiens*]
carbamoyl-phosphate synthetase 1, mitochondrial [*Homo sapiens*]	CPS1 [*Homo sapiens*]
carbamoylphosphate synthetase 2/aspartate transcarbamylase/dihydroorotase [*Homo sapiens*]	CAD [*Homo sapiens*]
chaperonin containing TCP1, subunit 2 [*Homo sapiens*]	CCT2 [*Homo sapiens*]
chaperonin containing TCP1, subunit 4 (delta) [*Homo sapiens*]	CCT4 [*Homo sapiens*]
chaperonin containing TCP1, subunit 6A isoform b [*Homo sapiens*]	CCT6A [*Homo sapiens*]
chaperonin containing TCP1, subunit 7 isoform b [*Homo sapiens*]	CCT7 [*Homo sapiens*]
clathrin heavy chain 1 [*Homo sapiens*]	CLTC [*Homo sapiens*]
cytochrome b5 reductase isoform 1 [*Homo sapiens*]	CYB5R3 [*Homo sapiens*]
dynein, cytoplasmic 1, heavy chain 1 [*Homo sapiens*]	DNCH1 [*Homo sapiens*]

dynein, cytoplasmic 1, heavy chain 1 [*Homo sapiens*];dynein, cytoplasmic, heavy polypeptide 1 [*Homo sapiens*]	DYNC1H1 [*Homo sapiens*]
eukaryotic translation initiation factor 2, subunit 3 gamma, 52kDa [*Homo sapiens*]	EIF2S3 [*Homo sapiens*]
exportin 1 [*Homo sapiens*]	XPO1 [*Homo sapiens*]
GCN1 general control of amino-acid synthesis 1-like 1 [*Homo sapiens*]	GCN1L1 [*Homo sapiens*]
heat shock 60kDa protein 1 (chaperonin) [*Homo sapiens*]	SPG13 [*Homo sapiens*]
heat shock 60kDa protein 1 (chaperonin) [*Homo sapiens*];chaperonin [*Homo sapiens*]	HSPD1 [*Homo sapiens*]
heat shock 70kDa protein 5 (glucose-regulated protein, 78kDa) [*Homo sapiens*]	HSPA5 [*Homo sapiens*]
heat shock 70kDa protein 8 isoform 1 [*Homo sapiens*]	HSPA8 [*Homo sapiens*]
heat shock protein 90kDa alpha (cytosolic), class B member 1 [*Homo sapiens*]	HSPCB [*Homo sapiens*]
heat shock protein 90kDa alpha (cytosolic), class B member 1 [*Homo sapiens*] ;heat shock 90kDa protein 1, beta [*Homo sapiens*]	HSP90AB1 [*Homo sapiens*]
heat shock protein 90kDa beta (Grp94), member 1 [*Homo sapiens*];tumor rejection antigen (gp96) 1 [*Homo sapiens*]	HSP90B1 [*Homo sapiens*]
heme oxygenase (decyclizing) 2 [*Homo sapiens*]	HMOX2 [*Homo sapiens*]
hydroxyacyl dehydrogenase, subunit A [*Homo sapiens*]	HADHA [*Homo sapiens*]
importin 7 [*Homo sapiens*]	IPO7 [*Homo sapiens*]
IQ motif containing GTPase activating protein 1 [*Homo sapiens*]	IQGAP1 [*Homo sapiens*]
karyopherin beta 1 [*Homo sapiens*]	KPNB1 [*Homo sapiens*]
keratin 1 [*Homo sapiens*]	KRT1 [*Homo sapiens*]
keratin 10 [*Homo sapiens*]	KRT10 [*Homo sapiens*]
keratin 9 [*Homo sapiens*]	KRT9 [*Homo sapiens*]
lactate dehydrogenase A [*Homo sapiens*]	LDHA [*Homo sapiens*]
leucine rich repeat containing 59 [*Homo sapiens*];hypothetical protein LOC55379 [*Homo sapiens*]	LRRC59 [*Homo sapiens*]
leucine-rich PPR motif-containing protein [*Homo sapiens*]	LRPPRC [*Homo sapiens*]
mannose 6 phosphate receptor binding protein 1 [*Homo sapiens*]	M6PRBP1 [*Homo sapiens*]
Na+/K+ -ATPase alpha 1 subunit isoform a proprotein [*Homo sapiens*]	ATP1A1 [*Homo sapiens*]
phospholipase A2, group IVA [*Homo sapiens*]	PLA2G4A [*Homo sapiens*]
prohibitin 2 [*Homo sapiens*]	PHB2 [*Homo sapiens*]
prohibitin 2 [*Homo sapiens*]	REA [*Homo sapiens*]
RAB1A, member RAS oncogene family [*Homo sapiens*]	RAB1A [*Homo sapiens*]
RAB1B, member RAS oncogene family [*Homo sapiens*]	RAB1B [*Homo sapiens*]
RAB7, member RAS oncogene family [*Homo sapiens*]	RAB7 [*Homo sapiens*]

RAN binding protein 5 [*Homo sapiens*]	RANBP5 [*Homo sapiens*]
ras-related GTP-binding protein RAB10 [*Homo sapiens*]	RAB10 [*Homo sapiens*]
ribophorin I precursor [*Homo sapiens*]	RPN1 [*Homo sapiens*]
ribosomal protein S19 [*Homo sapiens*]	RPS19 [*Homo sapiens*]
ribosomal protein S3 [*Homo sapiens*]	RPS3 [*Homo sapiens*]
ribosomal protein S4, X-linked [*Homo sapiens*];ribosomal protein S4, X-linked X isoform [*Homo sapiens*]	RPS4X [*Homo sapiens*]
RuvB-like 2 [*Homo sapiens*]	RUVBL2 [*Homo sapiens*]
splicing factor 3b, subunit 1 isoform 2 [*Homo sapiens*]	SF3B1 [*Homo sapiens*]
transferrin receptor [*Homo sapiens*]	TFRC [*Homo sapiens*]
tubulin, beta polypeptide [*Homo sapiens*]	TUBB [*Homo sapiens*]
tyrosine 3/tryptophan 5 -monooxygenase activation protein, epsilon polypeptide [*Homo sapiens*]	YWHAE [*Homo sapiens*]
despite not being identified in control experiments, these proteins are supposed to predominantly represent high aboundant background	
archain [*Homo sapiens*]	ARCN1 [*Homo sapiens*]
ATP synthase, H+ transporting, mitochondrial F0 complex, subunit B1 precursor [*Homo sapiens*]	ATP5F1 [*Homo sapiens*]
CD9 antigen [*Homo sapiens*]	CD9 [*Homo sapiens*]
coatomer protein complex, subunit beta 1 [*Homo sapiens*]	COPB1 [*Homo sapiens*]
COPB [*Homo sapiens*]	COPB [*Homo sapiens*]
cullin-associated and neddylation-dissociated 1 [*Homo sapiens*];TIP120 protein [*Homo sapiens*]	CAND1 [*Homo sapiens*]
cytochrome P450, family 51 [*Homo sapiens*]	CYP51A1 [*Homo sapiens*]
exportin 5 [*Homo sapiens*]	XPO5 [*Homo sapiens*]
heat shock 70kDa protein 9B precursor [*Homo sapiens*]	HSPA9B [*Homo sapiens*]
hypothetical protein LOC134147 [*Homo sapiens*]	LOC134147 [*Homo sapiens*]
hypothetical protein LOC9847 [*Homo sapiens*]	KIAA0528 [*Homo sapiens*]
importin 9 [*Homo sapiens*]	IPO9 [*Homo sapiens*]
interferon-induced transmembrane protein 3 (1-8U) [*Homo sapiens*]	IFITM3 [*Homo sapiens*]
lymphocyte antigen 6 complex G5B [*Homo sapiens*]	LY6G5B [*Homo sapiens*]
proteasome 26S non-ATPase subunit 2 [*Homo sapiens*]	PSMD2 [*Homo sapiens*]
RAB2, member RAS oncogene family [*Homo sapiens*]	RAB2 [*Homo sapiens*]
ras suppressor protein 1 isoform 1 [*Homo sapiens*]	RSU1 [*Homo sapiens*]
ribosomal protein L35a [*Homo sapiens*]	RPL35A [*Homo sapiens*]
ribosomal protein P2 [*Homo sapiens*]	RPLP2 [*Homo sapiens*]
ribosomal protein S13 [*Homo sapiens*]	RPS13 [*Homo sapiens*]
ribosomal protein S6 kinase, 90kDa, polypeptide 1 isoform b [*Homo sapiens*]	RPS6KA1 [*Homo sapiens*]

SAR1a gene homolog 1 [*Homo sapiens*]	SAR1A [*Homo sapiens*]
signal recognition particle receptor, beta subunit [*Homo sapiens*]	SRPRB [*Homo sapiens*]
stratifin [*Homo sapiens*]	SFN [*Homo sapiens*]
TATA binding protein interacting protein 49 kDa [*Homo sapiens*]	RUVBL1 [*Homo sapiens*]
transmembrane protein 109 [*Homo sapiens*]	TMEM109 [*Homo sapiens*]
tubulin, alpha, ubiquitous [*Homo sapiens*]	K-ALPHA-1 [*Homo sapiens*]
tyrosine 3/tryptophan 5 -monooxygenase activation protein, theta polypeptide [*Homo sapiens*]	YWHAQ [*Homo sapiens*]
tyrosine 3/tryptophan 5 -monooxygenase activation protein, zeta polypeptide [*Homo sapiens*]	YWHAZ [*Homo sapiens*]
tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, beta polypeptide [*Homo sapiens*]	YWHAB [*Homo sapiens*]
tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, gamma polypeptide [*Homo sapiens*]	YWHAG [*Homo sapiens*]

[a] Entrez Gene nomenclature

Table S2. Proteins identified by Chemical Proteomics using C1a-matrix and H460 protein extracts.

Gene Product[a]	Gene[a]
protein identified exclusively by using C1a-matrix	
carbonic anhydrase II [*Homo sapiens*]	CA2 [*Homo sapiens*]
epoxide hydrolase 1, microsomal (xenobiotic) [*Homo sapiens*]	EPHX1 [*Homo sapiens*]
myoferlin isoform a [*Homo sapiens*]	FER1L3 [*Homo sapiens*]
protein disulfide isomerase family A, member 3 [*Homo sapiens*]	GRP58 [*Homo sapiens*]
hypothetical protein LOC134147 [*Homo sapiens*] (carboxymethylenebutenolidase homolog (Pseudomonas))	LOC134147 [*Homo sapiens*] (CMBL)
protein disulfide isomerase-associated 3 precursor [*Homo sapiens*]	PDIA3 [*Homo sapiens*]
Tu translation elongation factor, mitochondrial [*Homo sapiens*]	TUFM [*Homo sapiens*]
ubiquitin carboxyl-terminal esterase L1 (ubiquitin thiolesterase) [*Homo sapiens*]	UCHL1 [*Homo sapiens*]
protein which were also identified by using C1-matrix and HeLa protein extract	
aurora kinase A [*Homo sapiens*]; serine/threonine protein kinase 6 [*Homo sapiens*]	AURKA [*Homo sapiens*]
cell division cycle 2 protein isoform 1 [*Homo sapiens*]	CDK1 [*Homo sapiens*]
lymphocyte antigen 6 complex G5B [*Homo sapiens*]	LY6G5B [*Homo sapiens*]
mitogen-activated protein kinase 9 isoform 1 [*Homo sapiens*]	MAPK9 [*Homo sapiens*]

keratins and proteins which were also identified in control experiments using blocked sepharose as affinity matrix	
beta actin [*Homo sapiens*]	ACTB [*Homo sapiens*]
aldo-keto reductase family 1, member B10 [*Homo sapiens*]	AKR1B10 [*Homo sapiens*]
aldolase A [*Homo sapiens*]	ALDOA [*Homo sapiens*]
annexin A2 isoform 2 [*Homo sapiens*]	ANXA2 [*Homo sapiens*]
ATP synthase, H+ transporting, mitochondrial F1 complex, beta subunit precursor [*Homo sapiens*]	ATP5B [*Homo sapiens*]
eukaryotic translation elongation factor 1 alpha 1 [*Homo sapiens*]	EEF1A1 [*Homo sapiens*]
enolase 1 [*Homo sapiens*]	ENO1 [*Homo sapiens*]
glyceraldehyde-3-phosphate dehydrogenase [*Homo sapiens*]	GAPD [*Homo sapiens*]
heat shock protein 90 kDa alpha (cytosolic), class A member 1 [*Homo sapiens*];heat shock protein 90 kDa alpha (cytosolic), class A member 1 isoform 1 [*Homo sapiens*]	HSP90AA1 [*Homo sapiens*]
heat shock 70kDa protein 8 isoform 1 [*Homo sapiens*]	HSPA8 [*Homo sapiens*]
heat shock 60kDa protein 1 (chaperonin) [*Homo sapiens*];chaperonin [*Homo sapiens*]	HSPD1 [*Homo sapiens*]
keratin 1 [*Homo sapiens*]	KRT1 [*Homo sapiens*]
keratin 10 [*Homo sapiens*]	KRT10 [*Homo sapiens*]
keratin 16 [*Homo sapiens*]	KRT16 [*Homo sapiens*]
keratin 19 [*Homo sapiens*]	KRT19 [*Homo sapiens*]
keratin 2a [*Homo sapiens*]	KRT2A [*Homo sapiens*]
keratin 8 [*Homo sapiens*]	KRT8 [*Homo sapiens*]
keratin 9 [*Homo sapiens*]	KRT9 [*Homo sapiens*]
keratin 8 [*Homo sapiens*]	LOC149501 [*Homo sapiens*]
basic leucine zipper and W2 domains 1 [*Homo sapiens*]	LOC151579 [*Homo sapiens*]
ribosomal protein L3 isoform a [*Homo sapiens*]	RPL3 [*Homo sapiens*]
ribophorin I precursor [*Homo sapiens*]	RPN1 [*Homo sapiens*]
heat shock 60kDa protein 1 (chaperonin) [*Homo sapiens*]	SPG13 [*Homo sapiens*]
transketolase [*Homo sapiens*]	TKT [*Homo sapiens*]
tubulin, beta polypeptide [*Homo sapiens*]	TUBB [*Homo sapiens*]

[a] Entrez Gene nomenclature