**Supplementary Table 1.**

**Proteins significantly altered in aged fibroblasts.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Gene names** | **Uniprot Protein IDs** | **Protein Descriptions** | **Fold change inold (L) compared to young (h)** |
| SYCP1 | B7ZLS9;Q15431;Q9H2G7 | Synaptonemal complex protein 1 | 21.83 |
| AOC1, ABP1 | C9J690;P19801-2;D3DX01;P19801;D3DX03 | Amine oxidase | 8.45 |
| DSG1 | Q02413 | Desmoglein-1 | 8.28 |
| DSC1 | Q08554;Q9HB00 | Desmocollin-1 | 7.55 |
| FBLN1 | P23142;P23142-3;F8W7M9;Q8NBH6 | Fibulin-1 | 7.37 |
| ADA | P00813;F5GWI4;F5GXW0;F5GYD4 | Adenosine deaminase | 6.53 |
| PRKDC | P78527;P78527-2;E7EUY0;B4DL41 | DNA-dependent protein kinase catalytic subunit | 5.13 |
| KPRP | Q5T749 | Keratinocyte proline-rich protein | 5.03 |
| TNXB | P22105;E7EPZ9;E7EPQ1;E7EU03;E7EWZ8 | Tenascin-X | 5.02 |
| IGFBP2 | P18065;C9JMY1;Q59FF1;H7C1H0 | Insulin-like growth factor-binding protein 2 | 4.78 |
| CXCL1;CXCL2;CXCL3 | P09341;P19875;P19876 | Growth-regulated alpha protein | 4.59 |
| PSG4 | Q00888;Q6P520;Q00888-2;B3KQL2;E7EX79 | Pregnancy-specific beta-1-glycoprotein 4 | 4.27 |
| DSP | P15924;D7RX09;P15924-2;B4E2A0;H7BYR0 | Desmoplakin | 4.01 |
| RARRES2 | Q99969;C9J8S2 | Retinoic acid receptor responder protein 2 | 3.99 |
| WISP2 | O76076;Q6PEG3 | WNT1-inducible-signaling pathway protein 2 | 3.85 |
| PI16 | Q6UXB8;B2R701;Q6UXB8-2;B4E1P4;B4DXZ3 | Peptidase inhibitor 16 | 3.73 |
| MYH10 | F8VTL3;P35580-3;F8W6L6;P35580-2;B2RWP9 | Myosin-10 | 3.56 |
| DPP4 | P27487;F8WE17;F8WBB6;H7C1N5 | Dipeptidyl peptidase 4 | 3.14 |
| CSTA | P01040;C9J0E4 | Cystatin-A | 3.09 |
| CLU | P10909-5;P10909;E7ETA7;H0YC35;B4DW11 | Clusterin | 3.04 |
| COL15A1 | P39059;B3KTP7;F5H1A4 | Collagen alpha-1(XV) chain | 3.03 |
| CDC42 | B4E1U9;B4DMH5;B7ZAY4;E7ETU3;P60953 | cDNA FLJ54776, highly similar to Cell division control protein 42 homolog | 3.01 |
| ADH1A;ADH1B | P00325;P07327;F5HB16;A8MYN5;B4E2R9 | Alcohol dehydrogenase 1 | 2.62 |
| AGT | P01019;Q53GY3;Q53YY1;Q86U78;B4E1B3 | Angiotensinogen | 2.53 |
| BASP1 | P80723;P80723-2 | Brain acid soluble protein 1 | 2.44 |
| YBX3 | P16989;P16989-2;P16989-3;Q96GD7;Q59EB5 | DNA-binding protein A | 2.43 |
| PDLIM5 | Q96HC4;D6RB78;Q96HC4-4;B7Z8X5;E9PBF5 | PDZ and LIM domain protein 5 | 2.39 |
| S100A10 | D3DV26;P60903;Q6FGE5 | S100 calcium binding protein A10 (Annexin II ligand, calpactin I, light polypeptide (P11)) | 2.39 |
| LAMB2 | P55268;Q15483;Q8N9Q8;E7EMH6 | Laminin subunit beta-2 | 2.39 |
| GAA | P10253 | Lysosomal alpha-glucosidase | 2.39 |
| FAP | Q12884;B4DLR2;B2RD89;C9J131;H0YG61 | Seprase | 2.36 |
| ASAH1 | D3DSQ1;A8K0B6;Q53H01;B3KUZ6;Q96AS2 | N-acylsphingosine amidohydrolase (Acid ceramidase) 1 | 2.34 |
| COX5B | P10606;Q6FHM4;Q6FHJ9 | COX5B protein | 2.32 |
| COA6 | Q5JTJ3-2;Q5JTJ3;B4DM08 | Cytochrome c oxidase assembly factor 6 homolog | 2.31 |
| APLP2 | Q06481;H7BXI4;Q06481-3;Q06481-2;Q06481-4 | Amyloid-like protein 2 | 2.29 |
| PCNP | Q8WW12;Q53GF3;Q8WW12-2; | PEST proteolytic signal-containing nuclear protein | 2.24 |
| KHDRBS1 | B2R7B5;Q07666;B4DDX2;E7ET98;B4E043 | KH domain-containing, RNA-binding, signal transduction-associated protein 1 | 2.21 |
| PCBP2 | Q15366;Q61990;G1S7I4;Q15366-4;B4DXP5 | Poly(rC)-binding protein 2 | 2.12 |
| TCEAL3;TCEAL5;TCEAL6 | Q969E4;Q5H9L2;Q6IPX3;F5H6U1;Q6IPX3-2 | Transcription elongation factor A protein-like 3 | 2.12 |
| FUS | Q13344;P35637;Q8TBR3;A8K4H1;P35637-2 | RNA-binding protein FUS | 2.09 |
| IGF2R | P11717;Q59EZ3;Q13660;Q13661 | Cation-independent mannose-6-phosphate receptor | 2.05 |
| SFRP2 | Q96HF1 | Secreted frizzled-related protein 2 | 2.04 |
| MARCKS | P29966;Q6NVI1 | Myristoylated alanine-rich C-kinase substrate | 2.04 |
| HDLBP | B2R5V9;Q00341;B4DTQ2;E7EM71;H0Y394 | Vigilin | 2.02 |
| FBLN1 | B4DUV1;B1AHL2;P23142-4;B1AHM9;B1AHM7 | cDNA FLJ53207, highly similar to Homo sapiens fibulin 1 (FBLN1) | 2.01 |
| DHX9 | Q08211;F5GXA5;Q6PJK6;Q58F26;B3KU66 | ATP-dependent RNA helicase A | 2.01 |
| ACLY | P53396;P53396-2;B4E3P0 | ATP-citrate synthase | -1.70 |
| BTD | A6NHF2;B4DLJ9;P43251;B7Z7C9;C9JSN9 | Biotinidase | -1.71 |
| GPC4;GPC6 | Q9Y625;B4E2M1;O75487;Q86SV6;F5H5T3 | Glypican-6 | -1.74 |
| MFAP2 | P55001;P55001-2;P55001-3 | Microfibrillar-associated protein 2 | -1.76 |
| VPS26A | O75436;F5H4L7;A8MZ56;B4DLT1;A8K3C1 | Vacuolar protein sorting-associated protein 26A | -1.77 |
| DDAH2 | O95865;H0Y7N1 | N(g),N(g)-dimethylarginine dimethylaminohydrolase 2 | -1.77 |
| GDI2 | B4DLV7;E7EU23;P50395;P50395-2;Q5SX87 | Rab GDP dissociation inhibitor beta | -1.78 |
| PLAUR | Q03405;Q03405-3;Q03405-2 | Urokinase plasminogen activator surface receptor | -1.78 |
| ANXA2;ANXA2P2 | P07355;H0YN42;A6NMY6;H0YMU9;H0YM50 | Annexin A2 | -1.79 |
| DKK1;DKK2 | O94907;Q9UBU2;D6RCC2 | Dickkopf-related protein 1 | -1.80 |
| RGMB | Q6NW40 | RGM domain family member B | -1.82 |
| CPPED1 | Q9BRF8;Q9BRF8-2;B3KSL3;B4DQ68 | Calcineurin-like phosphoesterase domain-containing protein 1 | -1.82 |
| PLOD2 | O00469;B4DHG3;E7ETU9;B3KWS3 | Procollagen-lysine,2-oxoglutarate 5-dioxygenase 2 | -1.85 |
| ENPP1, DKFZp686P13218 | P22413;B2RBY8;E9PE72;Q7Z3P5 | Ectonucleotide pyrophosphatase/phosphodiesterase family member 1 | -1.85 |
| COL4A1;COL4A5 | P02462;P02462-2;F8WEC9;Q59F15;A7MBN3 | Collagen alpha-1(IV) chain | -1.87 |
| PCOLCE | Q15113;A4D2D2 | Procollagen C-endopeptidase enhancer 1 | -1.89 |
| LOXL2 | Q9Y4K0;B4DDQ4;H0YAR1;E5RFY0;E5RHH3 | Lysyl oxidase homolog 2 | -1.93 |
| MMP10;MMP3 | P08254;H7C139;P09238;F5GYX7 | Stromelysin-1 | -1.99 |
| POSTN | Q15063-3;C0IMJ3 | Isoform 3 of Periostin | -1.99 |
| PRDX6 | P30041;A4UCS6;B4DUK1 | Peroxiredoxin-6 | -1.99 |
| SOD3 | B2R9V7;P08294 | Superoxide dismutase [Cu-Zn] | -2.01 |
| COTL1 | Q14019;H3BT58 | Coactosin-like protein | -2.08 |
| PFN2 | D3DNI3;D3DNI2;B4DNH1;G5E9Q6;P35080 | Profilin | -2.09 |
| PTGDS | H0Y5A1;P41222;F8W7I2;Q5SQ12 | Prostaglandin-H2 D-isomerase | -2.12 |
| SSC5D | A1L4H1;A1L4H1-2;F5GZN4 | Soluble scavenger receptor cysteine-rich domain-containing protein SSC5D | -2.17 |
| STC1 | B2R6I6;P52823;B4DN22;Q71UE5 | Stanniocalcin-1 | -2.17 |
| CTHRC1 | Q96CG8;G3V141;F8WAA6;Q96CG8-2;E5RK99 | Collagen triple helix repeat-containing protein 1 | -2.26 |
| SERPINF1 | P36955;I3L3M1;I3L4N7;I3L107;I3L4Z0 | Pigment epithelium-derived factor | -2.29 |
| DKK3 | Q9UBP4;F6SYF8;E7EUD0 | Dickkopf-related protein 3 | -2.32 |
| LGALS3BP | Q08380;B4DVE1;B4DDG4;B3KP88;B4DWA8 | Galectin-3-binding protein | -2.36 |
| MMP1 | P03956;Q53FK3;Q53G96;Q5TZP0;Q53G75 | Interstitial collagenase | -2.51 |
| COL6A3;DKFZp686K04147 | P12111;P12111-2;E7ENL6;E9PGQ9;B4E3U5 | Collagen alpha-3(VI) chain | -2.75 |
| FDPS | P14324;B3KMW3;Q14329 | Farnesyl pyrophosphate synthase | -2.78 |
| UCHL1 | P09936;D6R956;B2RD14;D6RE83;A6NLJ7 | Ubiquitin carboxyl-terminal hydrolase isozyme L1 | -2.81 |
| HMCN1 | Q96RW7;Q96RW7-2 | Hemicentin-1 | -2.83 |
| GAS6, DKFZp666G247 | Q14393;Q14393-2;Q14393-3;B3KRQ7;Q658L2 | Growth arrest-specific protein 6 | -2.95 |
| CPXM2 | B4E3Q2;Q8N436;B4E1X6;E7EUK5;H0YFY5 | Carboxypeptidase X (M14 family), member 2 | -3.07 |
| MDK | E9PLM6;P21741;E9PPJ5;Q2LEK4 | Midkine | -3.11 |
| PTN | P21246;C9JR52 | Pleiotrophin | -3.91 |
| SERPINB7, DKFZp686D06190 | A8K3Q8;A8K4B1;O75635;B4DUW8;F5GZC0 | cDNA FLJ75069, highly similar to Homo sapiens serpin peptidase inhibitor, clade B (ovalbumin), member 7 (SERPINB7), mRNA | -4.05 |
| AGRN | O00468;B3KMM7;E9PD05;H0Y5U1;Q15952 | Agrin | -4.56 |
| MFGE8 | Q08431;B3KTQ2;F5H7N9;B4E396;F5GZN3 | Lactadherin | -5.14 |
| FBN2 | P35556;D6RJI3;P35556-2;E9PHW4;Q8WYH1 | Fibrillin-2 | -5.61 |
| HAPLN1 | P10915;D6RBS1;D6RG04;D6RAK7;D6RFI7 | Hyaluronan and proteoglycan link protein 1 | -35.95 |

**Supplementary Table 2.**

**Quantification of CD4/ CD8 staining in melanoma patient samples.**

|  |
| --- |
| **Patient Samples** |
|  | Age (years) | p-value |
| <60 | >60 |  |
| CD4 | Intratumoral | 5/18 (27.8%) | 0/8 (0.0%) | 0.08 |
| Peritumoral | 13/18 (72.2%) | 8/8 (100.0%) | 0.097 |
| CD8 | Intratumoral | 12/18 (66.7%) | 4/4 (50.0%) | 0.420 |
| Peritumoral | 17/18 (94.4%) | 8/8 (100.0%) | 0.497 |