**Table S1.** List of sperm proteins in positive control group.

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| --- | --- | --- | --- | --- |
| **Bil.** | **No. ID Protein** | **Nama Protein** | **Berat Molekul [kDa]** | |
| 1 | B0K020 | CDGSH iron-sulfur domain-containing protein 1 | | 12.089 |
| 2 | B1H228 | Coiled-coil domain-containing protein 114 | | 78.122 |
| 3 | O35774 | A-kinase anchor protein 4 | | 93.434 |
| 4 | P01835 | Ig kappa chain C region, B allele | | 11.594 |
| 5 | P01946 | Hemoglobin subunit alpha-1/2 | | 15.319 |
| 6 | P02091 | Hemoglobin subunit beta-1 | | 15.969 |
| 7 | P02091 | Hemoglobin subunit beta-1 | | 15.929 |
| 8 | P02650 | Apolipoprotein E | | 35.731 |
| 9 | P02680 | Fibrinogen gamma chain | | 50.6 |
| 10 | P02770 | Serum albumin | | 68.686 |
| 11 | P04636 | Malate dehydrogenase | | 35.661 |
| 12 | P04764 | Alpha-enolase | | 47.098 |
| 13 | P04797 | Glyceraldehyde-3-phosphate dehydrogenase | | 35.805 |
| 14 | P04905 | Glutathione S-transferase Mu 1 | | 25.897 |
| 15 | P05708 | Hexokinase-1 | | 102.342 |
| 16 | P05712 | Ras-related protein Rab-2A | | 23.521 |
| 17 | P06761 | 78 kDa glucose-regulated protein | | 72.302 |
| 18 | P06911 | Epididymal-specific lipocalin-5 | | 20.656 |
| 19 | P09606 | Glutamine synthetase | | 42.24 |
| 20 | P10715 | Cytochrome c, testis-specific | | 11.735 |
| 21 | P10719 | ATP synthase subunit beta | | 56.318 |
| 22 | P10860 | Glutamate dehydrogenase 1 | | 61.377 |
| 23 | P10888 | Cytochrome c oxidase subunit 4 isoform 1 | | 19.502 |
| 24 | P11884 | Aldehyde dehydrogenase | | 56.453 |
| 25 | P12020 | Cysteine-rich secretory protein 1 | | 27.829 |
| 26 | P12346 | Serotransferrin | | 76.346 |
| 27 | P13086 | Succinate--CoA ligase [ADP/GDP-forming] subunit alpha | | 36.125 |
| 28 | P15999 | ATP synthase subunit alpha | | 59.717 |
| 29 | P18163 | Long-chain-fatty-acid--CoA ligase 1 | | 78.128 |
| 30 | P19629 | L-lactate dehydrogenase C chain | | 35.664 |
| 31 | P20788 | Cytochrome b-c1 complex subunit Rieske | | 29.427 |
| 32 | P21263 | Nestin | | 208.672 |
| 33 | P27274 | CD59 glycoprotein | | 13.781 |
| 34 | P31044 | Phosphatidylethanolamine-binding protein 1 | | 20.788 |
| 35 | P32551 | Cytochrome b-c1 complex subunit 2 | | 48.366 |
| 36 | P35439 | Glutamate receptor ionotropic, NMDA 1 | | 105.442 |
| 37 | P51647 | Retinal dehydrogenase 1 | | 54.424 |
| 38 | P51886 | Lumican | | 38.255 |
| 39 | P55054 | Fatty acid-binding protein 9 | | 15.08 |
| 40 | P60711 | Actin, cytoplasmic 1 | | 41.71 |
| 41 | P61206 | ADP-ribosylation factor 3 | | 20.588 |
| 42 | P62804 | Histone H4 | | 11.36 |
| 43 | P62982 | Ubiquitin-40S ribosomal protein S27a | | 17.939 |
| 44 | P63039 | 60 kDa heat shock protein | | 60.917 |
| 45 | P81155 | Voltage-dependent anion-selective channel protein 2 | | 31.726 |
| 46 | Q00715 | Histone H2B type 1 | | 13.982 |
| 47 | Q06437 | Pyruvate dehydrogenase E1 component subunit alpha | | 43.365 |
| 48 | Q06647 | ATP synthase subunit O | | 23.383 |
| 49 | Q07647 | Solute carrier family 2 | | 53.546 |
| 50 | Q10758 | Keratin, type II cytoskeletal 8 | | 53.985 |
| 51 | Q2LCV6 | Equatorin | | 31.368 |
| 52 | Q3KR86 | MICOS complex subunit Mic60 (Fragment) | | 67.135 |
| 53 | Q4FZU2 | Keratin, type II cytoskeletal 6A | | 59.213 |
| 54 | Q4FZV3 | Axonemal dynein light intermediate polypeptide 1 | | 29.604 |
| 55 | Q4V7A4 | Fibrous sheath CABYR-binding protein | | 87.996 |
| 56 | Q5GRG2 | Carboxylesterase 5A | | 64.376 |
| 57 | Q5PQS0 | Pleckstrin homology domain-containing family M member 1 | | 117.434 |
| 58 | Q5RK28 | Normal mucosa of esophagus-specific gene 1 protein | | 9.592 |
| 59 | Q5XI62 | Protein MENT | | 37.617 |
| 60 | Q5XIJ9 | Succinyl-CoA:3-ketoacid coenzyme A transferase 2A | | 56.864 |
| 61 | Q62803 | Hyaluronidase PH-20 | | 58.375 |
| 62 | Q63279 | Keratin, type I cytoskeletal 19 | | 44.609 |
| 63 | Q64541 | Sodium/potassium-transporting ATPase subunit alpha-4 | | 113.932 |
| 64 | Q64542 | Plasma membrane calcium-transporting ATPase 4 | | 133.01 |
| 65 | Q66HD0 | Endoplasmin | | 92.713 |
| 66 | Q66HF1 | NADH-ubiquinone oxidoreductase 75 kDa subunit | | 79.362 |
| 67 | Q68FR8 | Tubulin alpha-3 chain | | 49.928 |
| 68 | Q6AXX6 | Redox-regulatory protein FAM213A | | 25.746 |
| 69 | Q6AY06 | Izumo sperm-egg fusion protein 1 | | 43.551 |
| 70 | Q6AY30 | Saccharopine dehydrogenase-like oxidoreductase | | 47.058 |
| 71 | Q6AYX5 | Outer dense fiber protein 2 | | 95.381 |
| 72 | Q6IFV1 | Keratin, type II cytoskeletal 5 | | 57.781 |
| 73 | Q6IFV1 | Keratin, type I cytoskeletal 14 | | 52.651 |
| 74 | Q6IFW6 | Keratin, type I cytoskeletal 10 | | 56.47 |
| 75 | Q6IG02 | Keratin, type II cytoskeletal 2 epidermal | | 69.085 |
| 76 | Q6IG05 | Keratin, type II cytoskeletal 75 | | 58.991 |
| 77 | Q6IMF3 | Keratin, type II cytoskeletal 1 | | 64.791 |
| 78 | Q6MGB5 | Estradiol 17-beta-dehydrogenase 8 | | 26.774 |
| 79 | Q6P6Q2 | Keratin, type II cytoskeletal 5 | | 61.788 |
| 80 | Q6P6R2 | Dihydrolipoyl dehydrogenase | | 54.004 |
| 81 | Q6P9T8 | Tubulin beta-4B chain | | 49.769 |
| 82 | Q704S8 | Carnitine O-acetyltransferase | | 70.755 |
| 83 | Q76K24 | Ankyrin repeat domain-containing protein 46 | | 25.165 |
| 84 | Q8K4V4 | Sorting nexin-27 | | 60.976 |
| 85 | Q8VHF5 | Citrate synthase | | 51.833 |
| 86 | Q8VI04 | Isoaspartyl peptidase/L-asparaginase | | 34.389 |
| 87 | Q91XR8 | Phospholipid hydroperoxide glutathione peroxidase | | 29.317 |
| 88 | Q9ER34 | Aconitate hydratase | | 85.38 |
| 89 | Q9R1Z0 | Voltage-dependent anion-selective channel protein 3 | | 30.778 |
| 90 | Q9Z1B2 | Glutathione S-transferase Mu 5 | | 26.611 |