

Supplementary Materials

AXIN1 in Plasma or Serum Is a Potential New Biomarker for Endometriosis

Table S1. Inflammation-related proteins measured by Proximity Extension Assay.

| Protein | Abbreviation |
|--|---------------------|
| Interleukin-8 | IL-8 |
| Vascular endothelial growth factor A | VEGF-A |
| Brain-derived neurotrophic factor | BDNF |
| Monocyte chemotactic protein 3 | MCP-3 |
| Glial cell line-derived neurotrophic factor | hGDNF |
| CUB domain-containing protein 1 | CDCP1 |
| Natural killer cell receptor 2B4 | CD244 |
| Interleukin-7 | IL-7 |
| Osteoprotegerin | OPG |
| Latency-associated peptide transforming growth factor beta 1 | LAP TGF-beta-1 |
| Urokinase-type plasminogen activator | uPA |
| Interleukin-6 | IL-6 |
| Interleukin-17C | IL-17C |
| Monocyte chemotactic protein 1 | MCP-1 |
| Interleukin-17A | IL-17A |
| C-X-C motif chemokine 11 | CXCL11 |
| Axin-1 | AXIN1 |
| TNF-related apoptosis-inducing ligand | TRAIL |
| Interleukin-20 receptor subunit alpha | IL-20RA |
| C-X-C motif chemokine 9 | CXCL9 |
| Cystatin D | CST5 |
| Interleukin-2 receptor subunit beta | IL-2RB |
| Interleukin-1 alpha | IL-1 alpha |
| Oncostatin-M | OSM |
| Interleukin-2 | IL-2 |
| C-X-C motif chemokine 1 | CXCL1 |
| Thymic stromal lymphopoietin | TSLP |
| C-C motif chemokine 4 | CCL4 |
| T cell surface glycoprotein CD6 isoform | CD6 |
| Stem cell factor | SCF |
| Interleukin-18 | IL-18 |
| Signaling lymphocytic activation molecule | SLAMF1 |
| Transforming growth factor alpha | TGF-alpha |
| Monocyte chemotactic protein 4 | MCP-4 |
| Eotaxin-1 | CCL11 |
| Tumor necrosis factor ligand superfamily member 14 | TNFSF14 |
| Fibroblast growth factor 23 | FGF-23 |
| Interleukin-10 receptor subunit alpha | IL-10RA |

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|---|-------------|
| Fibroblast growth factor 5 | FGF-5 |
| Matrix metalloproteinase-1 | MMP-1 |
| Leukemia inhibitory factor receptor | LIF-R |
| Fibroblast growth factor 21 | FGF-21 |
| C-C motif chemokine 19 | CCL19 |
| Interleukin-15 receptor subunit alpha | IL-15RA |
| Interleukin-10 receptor subunit beta | IL-10RB |
| Interleukin-22 receptor subunit alpha-1 | IL-22 RA1 |
| Interleukin-18 receptor 1 | IL-18R1 |
| Programmed cell death 1 ligand 1 | PD-L1 |
| Beta-nerve growth factor | Beta-NGF |
| C-X-C motif chemokine 5 | CXCL5 |
| TNF-related activation-induced cytokine | TRANCE |
| Hepatocyte growth factor | HGF |
| Interleukin-12 subunit beta | IL-12B |
| Interleukin-24 | IL-24 |
| Interleukin-13 | IL-13 |
| Artemin | ARTN |
| Matrix metalloproteinase-10 | MMP-10 |
| Interleukin-10 | IL-10 |
| Tumor necrosis factor | TNF |
| C-C motif chemokine 23 | CCL23 |
| T-cell surface glycoprotein CD5 | CD5 |
| Macrophage inflammatory protein 1-alpha | MIP-1 alpha |
| Fms-related tyrosine kinase 3 ligand | Flt3L |
| C-X-C motif chemokine 6 | CXCL6 |
| C-X-C motif chemokine 10 | CXCL10 |
| Eukaryotic translation initiation factor 4E-binding protein 1 | 4E-BP1 |
| Interleukin-20 | IL-20 |
| SIR2-like protein 2 | SIRT2 |
| C-C motif chemokine 28 | CCL28 |
| Delta and Notch-like epidermal growth factor-related receptor | DNER |
| Protein S100-A12 | EN-RAGE |
| CD40L receptor | CD40 |
| Interleukin-33 | IL-33 |
| Interferon gamma | IFN-gamma |
| Fibroblast growth factor 19 | FGF-19 |
| Interleukin-4 | IL-4 |
| Leukemia inhibitory factor | LIF |
| Neurturin | NRTN |
| Monocyte chemotactic protein 2 | MCP-2 |
| Caspase 8 | CASP-8 |
| C-C motif chemokine 25 | CCL25 |
| Fractalkine | CX3CL1 |
| Tumor necrosis factor receptor superfamily member 9 | TNFRSF9 |

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|---|--------|
| Neurotrophin-3 | NT-3 |
| Tumor necrosis factor (Ligand) superfamily, member 12 | TWEAK |
| C-C motif chemokine 20 | CCL20 |
| Sulfotransferase 1A1 | ST1A1 |
| STAM-binding protein | STAMPB |
| Interleukin-5 | IL-5 |
| Adenosine Deaminase | ADA |
| TNF-beta | TNFB |
| Macrophage colony-stimulating factor 1 | CSF-1 |

Table S2. Excluded proteins in Proximity Extension Assay.

| Protein | Abbreviation | Reason for Exclusion |
|---|---------------------|-----------------------------|
| Artemin | ARTN | >20% of values below LOD |
| Brain-derived neurotrophic factor | BDNF | >20% of values below LOD |
| Interferon gamma | IFN- γ | >20% of values below LOD |
| Interleukin-1 alpha | IL-1 alpha | >20% of values below LOD |
| Interleukin-2 | IL-2 | >20% of values below LOD |
| Interleukin-2 receptor subunit beta | IL-2RB | >20% of values below LOD |
| Interleukin-4 | IL-4 | >20% of values below LOD |
| Interleukin-5 | IL-5 | >20% of values below LOD |
| Interleukin-8 | IL-8 | Technical difficulties |
| Interleukin-10 receptor subunit | IL-10RA | |
| Interleukin-13 | IL-13 | >20% of values below LOD |
| Interleukin-17A | IL-17A | >20% of values below LOD |
| Interleukin-17C | IL-17C | >20% of values below LOD |
| Interleukin-20 | IL-20 | >20% of values below LOD |
| Interleukin-20 receptor subunit alpha | IL-20 RA | >20% of values below LOD |
| Interleukin-22 receptor subunit alpha-1 | IL-22 RA1 | >20% of values below LOD |
| Interleukin-24 | IL-24 | >20% of values below LOD |
| Interleukin-33 | IL-33 | >20% of values below LOD |
| Leukemia inhibitory factor | LIF | >20% of values below LOD |
| Monocyte chemotactic protein 3 | MCP-3 | >20% of values below LOD |
| Neurtuin | NRTN | >20% of values below LOD |
| Thymic stromal lymphopoietin | TSLP | >20% of values below LOD |
| Tumor necrosis factor | TNF | >20% of values below LOD |

Table S3. Principal component analysis of inflammation-related proteins.

| Protein | Factor 1 | Factor 2 | Factor 3 | Factor 4 |
|----------------|-----------------|-----------------|-----------------|-----------------|
| AXIN1 | 0.239 | 0.886 | 0.002 | 0.159 |
| SIRT2 | 0.349 | 0.869 | 0.067 | 0.181 |
| STAMBP | 0.375 | 0.863 | 0.059 | 0.107 |
| ST1A1 | 0.215 | 0.821 | 0.009 | 0.173 |
| CASP8 | 0.462 | 0.594 | 0.380 | 0.158 |
| IL-7 | 0.493 | 0.563 | 0.282 | -0.291 |
| CXCL1 | 0.468 | 0.449 | 0.043 | -0.500 |
| CXCL5 | 0.617 | 0.434 | -0.023 | -0.409 |
| CXCL6 | 0.637 | 0.431 | 0.055 | -0.323 |
| CD40 | 0.804 | 0.422 | -0.113 | 0.051 |
| TNFSF14 | 0.660 | 0.411 | 0.287 | 0.072 |
| E4BP1 | 0.783 | 0.392 | 0.109 | -0.067 |
| NT3 | 0.268 | 0.390 | -0.148 | 0.345 |
| TGFbeta1 | 0.863 | 0.322 | -0.013 | -0.132 |
| ENRANGE | 0.091 | 0.269 | -0.026 | 0.080 |
| CD244 | 0.827 | 0.258 | -0.149 | 0.159 |
| CXCL11 | 0.692 | 0.240 | 0.297 | -0.236 |
| ADA | 0.721 | 0.217 | -0.051 | 0.054 |
| PDL1 | 0.674 | 0.093 | 0.130 | 0.303 |
| MCP2 | 0.791 | 0.044 | -0.051 | -0.176 |
| IL-18 | 0.750 | 0.033 | 0.100 | 0.082 |
| OSM | 0.359 | 0.031 | 0.123 | 0.036 |
| MCP4 | 0.617 | 0.030 | 0.393 | -0.385 |
| TNFB | 0.522 | 0.022 | -0.100 | 0.240 |
| MMP1 | 0.651 | 0.020 | 0.156 | -0.324 |
| β -NGF | 0.296 | 0.019 | 0.148 | 0.174 |
| TRANCE | 0.440 | 0.012 | -0.157 | 0.121 |
| VEGFA | 0.898 | -0.003 | -0.096 | -0.178 |
| FGF23 | 0.537 | -0.005 | 0.121 | 0.118 |
| CSF1 | 0.881 | -0.008 | -0.313 | 0.075 |
| DNER | 0.846 | -0.020 | -0.365 | -0.033 |
| GDNF | 0.435 | -0.027 | 0.180 | 0.097 |
| SCF | 0.764 | -0.043 | -0.4112 | -0.042 |
| CCL23 | 0.839 | -0.051 | -0.285 | 0.000 |
| TWEAK | 0.862 | -0.057 | -0.368 | -0.100 |
| CCL19 | 0.717 | -0.070 | -0.003 | 0.115 |
| IL-18RI | 0.817 | -0.072 | -0.111 | 0.160 |
| IL-6 | 0.466 | -0.082 | 0.351 | 0.108 |
| uPA | 0.883 | -0.087 | -0.313 | -0.094 |
| IL-10RB | 0.865 | -0.091 | -0.186 | 0.215 |

| | | | | |
|----------------|-------|--------|--------|--------|
| CST5 | 0.731 | -0.120 | -0.190 | -0.096 |
| IL12B | 0.642 | -0.120 | -0.026 | 0.389 |
| TRAIL | 0.887 | -0.126 | -0.239 | -0.041 |
| HGF | 0.895 | -0.133 | 0.008 | -0.077 |
| CCL4 | 0.758 | -0.136 | 0.134 | -0.040 |
| CD5 | 0.833 | -0.136 | -0.085 | 0.311 |
| CX3CL1 | 0.802 | -0.137 | -0.178 | 0.131 |
| CD6 | 0.727 | -0.139 | -0.079 | 0.191 |
| OPG | 0.873 | -0.160 | -0.229 | -0.090 |
| FGF19 | 0.475 | -0.164 | -0.341 | 0.016 |
| TGF- α | 0.761 | -0.165 | 0.052 | 0.158 |
| Flt3I | 0.829 | -0.177 | -0.144 | -0.057 |
| LIFR | 0.570 | -0.180 | 0.013 | 0.226 |
| CCL28 | 0.387 | -0.193 | 0.319 | -0.006 |
| MIP1- α | 0.562 | -0.196 | 0.418 | 0.127 |
| MMP-10 | 0.680 | -0.204 | -0.058 | -0.249 |
| SLAMF1 | 0.535 | -0.204 | 0.293 | 0.218 |
| FGF21 | 0.352 | -0.206 | 0.362 | 0.018 |
| CCL20 | 0.498 | -0.208 | 0.082 | 0.096 |
| FGF5 | 0.401 | -0.217 | 0.367 | 0.061 |
| IL-15RA | 0.509 | -0.218 | 0.433 | 0.363 |
| MCP-1 | 0.849 | -0.234 | -0.080 | -0.209 |
| CXCL10 | 0.678 | -0.266 | 0.121 | -0.061 |
| CCL25 | 0.707 | -0.279 | 0.026 | -0.196 |
| TNFRSF9 | 0.770 | -0.289 | 0.113 | 0.153 |
| IL-10 | 0.507 | -0.345 | 0.222 | 0.231 |
| CCL11 | 0.763 | -0.363 | 0.069 | -0.306 |
| CDCP1 | 0.483 | -0.369 | 0.443 | -0.144 |
| CXCL9 | 0.657 | -0.401 | 0.314 | -0.201 |

Table S4. Gastrointestinal symptoms in microscopic colitis and protein levels.

| Protein | Abdominal Pain | Diarrhea | Constipation | Bloating and Flatulence | Vomiting and Nausea |
|-------------|------------------------|-------------------------|--------------|-------------------------|------------------------|
| MCP3 | R = 0.329 P = 0.024 | R = 0.317 P = 0.032 | | | |
| CD6 | | | | | R = 0.308 P = 0.035 |
| CCL11 | | R = 0.360 P = 0.017 | | | |
| LIF-R | | R = -0.346 P = 0.019 | | | |
| IL-18R1 | R = 0.366 P = 0.011 | | | | R = 0.294 P = 0.045 |
| CXCL5 | | | | R = -0.318 P = 0.029 | |
| MIP-1 alpha | | | | | |
| CCL25 | R = 0.297 P = 0.042 | | | | |
| NT-3 | | R = -0.366 P = 0.012 | | | |
| CSF 1 | | | | | R = 0.308 P = 0.035 |

Spearman's correlation test. *p*-values < 0.1 were presented. *p*-values < 0.01 were considered statistically significant.