

Supplementary Materials

Table S1. Mean microarray expression levels of top significantly higher expressed genes in iMPCs compared to MSCs.

Gene Name	Accession Number	Mean iMPC	Mean MSC	Fold Difference
<i>LOC646723</i>	XR_017241.1	3092	149	20.8
<i>MMP1</i>	NM_002421.2	2185	117	18.7
<i>TUBB2B</i>	NM_178012.3	2135	138	15.5
<i>SPP1</i>	NM_000582.2	1002	99	10.1
<i>PTPRF</i>	NM_002840.3	2068	206	10.1
<i>CD24</i>	NM_013230.2	854	90	9.4
<i>RGS4</i>	NM_005613.3	3671	393	9.3
<i>KRT8</i>	NM_002273.2	821	90	9.1
<i>TFAP2C</i>	NM_003222.3	737	84	8.8
<i>TMSB15A</i>	NM_021992.2	2096	245	8.6
<i>PRAGMIN</i>	NM_001080826.1	2068	252	8.2
<i>ZIC2</i>	NM_007129.2	696	87	8.0
<i>ITGA2</i>	NM_002203.3	1209	162	7.5
<i>COL4A5</i>	NM_000495.3	607	87	7.0
<i>LOC644743</i>	XR_016703.1	628	90	7.0
<i>FLJ40504</i>	NM_173624.1	657	95	6.9
<i>SLC2A1</i>	NM_006516.1	1647	242	6.8
<i>SHISA2</i>	NM_001007538.1	755	112	6.8
<i>F2RL1</i>	NM_005242.3	870	140	6.2
<i>MSX1</i>	NM_002448.3	3015	511	5.9
<i>CSRP2</i>	NM_001321.1	1105	192	5.8
<i>ANKRD1</i>	NM_014391.2	593	105	5.7
<i>C5orf46</i>	NM_206966.2	571	101	5.6
<i>NTSR1</i>	NM_002531.2	521	93	5.6
<i>ODZ3</i>	NM_001080477.1	669	122	5.5
<i>CLDN1</i>	NM_021101.3	470	86	5.5
<i>COL13A1</i>	NM_080805.2	1639	308	5.3
<i>SLC7A5</i>	NM_003486.5	1469	285	5.2
<i>FBLN2</i>	NM_001004019.1	904	177	5.1
<i>DKFZp761P0423</i>	XM_291277.4	695	136	5.1
<i>CPE</i>	NM_001873.1	420	84	5.0
<i>EDN1</i>	NM_001955.2	491	100	4.9
<i>DPPA4</i>	NM_018189.3	391	80	4.9
<i>AGPAT9</i>	NM_032717.3	812	168	4.9
<i>SPINT2</i>	NM_021102.2	444	92	4.8
<i>OXTR</i>	NM_000916.3	690	149	4.6
<i>DSG2</i>	NM_001943.2	393	86	4.6

<i>NOX4</i>	NM_016931.2	391	88	4.4
<i>KRT18P13</i>	XM_001726959.1	394	90	4.4
<i>FABP5L2</i>	XM_001134012.2	1595	364	4.4
<i>BEXL1</i>	XM_936467.2	801	184	4.4
<i>CDCA7</i>	NM_031942.4	741	173	4.3
<i>CDK6</i>	NM_001259.5	1167	276	4.2
<i>MAMDC2</i>	NM_153267.3	387	92	4.2
<i>NFE2L3</i>	NM_004289.5	403	96	4.2
<i>FABP5</i>	NM_001444.1	740	180	4.1
<i>IGFBP5</i>	NM_000599.2	9595	2341	4.1
<i>PCDHB2</i>	NM_018936.2	483	121	4.0
<i>EEF1A2</i>	NM_001958.2	346	87	4.0
<i>IL11</i>	NM_000641.2	523	134	3.9
<i>AURKB</i>	NM_004217.2	685	178	3.9
<i>BCAT1</i>	NM_005504.4	1757	456	3.9
<i>BEX4</i>	NM_001080425.1	483	128	3.8
<i>NCAPG</i>	NM_022346.3	1073	289	3.7
<i>VIL2</i>	NM_003379.3	2890	778	3.7
<i>DENND2A</i>	NM_015689.2	458	124	3.7
<i>LOC642956</i>	XM_938166.3	597	164	3.6
<i>CDC20</i>	NM_001255.2	4054	1119	3.6
<i>LOC100216001</i>	NR_024475.1	322	89	3.6
<i>CCDC99</i>	NM_017785.3	738	207	3.6
<i>MGC39900</i>	NM_194324.1	822	232	3.5
<i>UHRF1</i>	NM_013282.3	1210	344	3.5
<i>SEMA3A</i>	NM_006080.2	526	151	3.5
<i>BCAR3</i>	NM_003567.2	1051	303	3.5
<i>TUFT1</i>	NM_020127.1	478	139	3.5
<i>EZR</i>	NM_003379.4	4597	1339	3.4
<i>CCNA2</i>	NM_001237.2	802	234	3.4
<i>UCHL1</i>	NM_004181.3	4259	1250	3.4
<i>MARCKSL1</i>	NM_023009.4	1917	565	3.4
<i>SFRP1</i>	NM_003012.3	4122	1215	3.4
<i>PFKFB3</i>	NM_004566.2	896	264	3.4
<i>UBE2C</i>	NM_181800.1	1118	332	3.4
<i>RPL29</i>	NM_000992.2	1067	318	3.4
<i>HBEGF</i>	NM_001945.1	601	179	3.4
<i>MLLT11</i>	NM_006818.3	3126	933	3.4
<i>AHNAK2</i>	NM_138420.2	484	145	3.3
<i>LYPD1</i>	NM_144586.5	1004	303	3.3
<i>C11orf41</i>	NM_012194.1	422	127	3.3
<i>PSAT1</i>	NM_021154.3	346	107	3.2

<i>CENPF</i>	NM_016343.3	838	260	3.2
<i>LYN</i>	NM_002350.1	315	98	3.2
<i>CPVL</i>	NM_031311.3	257	80	3.2
<i>AFF3</i>	NM_001025108.1	253	80	3.2
<i>ZNF185</i>	NM_007150.2	468	149	3.2
<i>LIN28B</i>	NM_001004317.2	251	81	3.1
<i>VAT1L</i>	NM_020927.1	303	99	3.1
<i>C14orf78</i>	XM_001132404.1	429	139	3.1
<i>STMN1</i>	NM_203399.1	491	160	3.1
<i>LMNB2</i>	NM_032737.2	1792	585	3.1
<i>CCNB2</i>	NM_004701.2	1561	511	3.1
<i>SOX11</i>	NM_003108.3	394	129	3.1
<i>CDH2</i>	NM_001792.2	3189	1046	3.1
<i>SLC38A1</i>	NM_030674.3	247	82	3.0
<i>SPC24</i>	NM_182513.1	937	312	3.0
<i>NUAK1</i>	NM_014840.2	510	171	3.0
<i>DNAJC9</i>	NM_015190.3	1727	579	3.0
<i>FRMD4A</i>	NM_018027.3	1044	350	3.0
<i>LOC731049</i>	XM_001129232.1	2080	700	3.0
<i>LOC647954</i>	XR_018676.1	263	89	3.0

Table S2. Mean microarray expression levels of top significantly lower expressed genes in iMPCs compared to MSCs.

Gene Name	Accession Number	Mean iMPC	Mean MSC	Fold
<i>C10orf116</i>	NM_006829.2	85	3654	-42.8
<i>PENK</i>	NM_006211.2	86	3578	-41.8
<i>DCN</i>	NM_001920.3	91	2168	-23.9
<i>IL6</i>	NM_000600.1	88	1791	-20.4
<i>AKR1C3</i>	NM_003739.4	168	3383	-20.1
<i>CSRP1</i>	NM_004078.1	97	1914	-19.7
<i>VCAM1</i>	NM_080682.1	90	1748	-19.4
<i>RASD1</i>	NM_016084.3	116	2075	-17.8
<i>CD74</i>	NM_001025159.1	85	1493	-17.5
<i>ALPL</i>	NM_000478.3	101	1676	-16.5
<i>MEG3</i>	NR_002766.1	90	1394	-15.6
<i>EBF3</i>	NM_001005463.1	96	1466	-15.2
<i>TMEM119</i>	NM_181724.1	80	1213	-15.2
<i>ENPP2</i>	NM_001040092.1	98	1473	-15.0
<i>LAMA4</i>	NM_002290.2	135	1914	-14.1
<i>FMO3</i>	NM_001002294.1	83	1126	-13.6
<i>COX7A1</i>	NM_001864.2	83	1040	-12.6
<i>EPSTI1</i>	NM_033255.2	104	1304	-12.6
<i>IRX3</i>	NM_024336.1	353	4187	-11.9
<i>RAC2</i>	NM_002872.3	152	1795	-11.9
<i>CTHRC1</i>	NM_138455.2	158	1865	-11.8
<i>ALDH1A3</i>	NM_000693.2	89	1027	-11.6
<i>LOC730415</i>	XM_001124749.2	88	983	-11.2
<i>CRYAB</i>	NM_001885.1	93	1037	-11.1
<i>LBP</i>	NM_004139.2	81	884	-11.0
<i>TNFRSF14</i>	NM_003820.2	94	1024	-10.9
<i>AKR1C4</i>	NM_001818.2	97	1051	-10.9
<i>LUM</i>	NM_002345.3	106	1131	-10.6
<i>COL6A3</i>	NM_004369.2	642	6729	-10.5
<i>PDGFRA</i>	NM_006206.3	266	2782	-10.5
<i>CEBPD</i>	NM_005195.3	142	1484	-10.4
<i>ACTA2</i>	NM_001613.1	603	6254	-10.4
<i>EPDR1</i>	NM_017549.3	223	2302	-10.3
<i>ABI3BP</i>	NM_015429.2	96	975	-10.1
<i>HCP5</i>	NM_006674.2	88	886	-10.0
<i>SLC1A3</i>	NM_004172.3	99	993	-10.0
<i>CCL2</i>	NM_002982.3	239	2326	-9.8
<i>PPAP2B</i>	NM_003713.3	264	2493	-9.5

<i>VAMP5</i>	NM_006634.2	200	1839	-9.2
<i>APOE</i>	NM_000041.2	120	1054	-8.8
<i>KRTAP1-5</i>	NM_031957.1	89	773	-8.7
<i>ANPEP</i>	NM_001150.1	146	1268	-8.7
<i>LY96</i>	NM_015364.2	130	1121	-8.6
<i>PLAC9</i>	NM_001012973.1	94	810	-8.6
<i>FAP</i>	NM_004460.2	105	889	-8.5
<i>COL6A1</i>	NM_001848.2	770	6490	-8.4
<i>RARRES3</i>	NM_004585.3	80	668	-8.3
<i>RCN3</i>	NM_020650.2	164	1348	-8.2
<i>PDE7B</i>	NM_018945.3	168	1361	-8.1
<i>DLX5</i>	NM_005221.5	79	633	-8.0
<i>DHRS3</i>	NM_004753.4	109	873	-8.0
<i>KCTD12</i>	NM_138444.2	91	717	-7.9
<i>CA12</i>	NM_001218.3	272	2108	-7.8
<i>PTGES</i>	NM_004878.3	148	1137	-7.7
<i>LRRC32</i>	NM_005512.1	131	993	-7.6
<i>C7orf10</i>	NM_024728.1	213	1588	-7.5
<i>CTSK</i>	NM_000396.2	116	858	-7.4
<i>HMOX1</i>	NM_002133.1	137	986	-7.2
<i>XYLT1</i>	NM_022166.3	86	608	-7.1
<i>TIMP3</i>	NM_000362.4	213	1505	-7.1
<i>SULF1</i>	NM_015170.1	140	969	-6.9
<i>ENG</i>	NM_000118.1	266	1824	-6.9
<i>KIAA1644</i>	XM_936510.2	88	602	-6.9
<i>IFI27</i>	NM_005532.3	84	571	-6.8
<i>NFIX</i>	NM_002501.2	274	1840	-6.7
<i>FOXC1</i>	NM_001453.1	615	4114	-6.7
<i>TGFBR3</i>	NM_003243.2	133	886	-6.7
<i>IFI44L</i>	NM_006820.1	96	634	-6.6
<i>NNMT</i>	NM_006169.2	366	2403	-6.6
<i>OLFML3</i>	NM_020190.2	154	999	-6.5
<i>LTBR</i>	NM_002342.1	90	571	-6.3
<i>GAS6</i>	NM_000820.1	364	2283	-6.3
<i>ADAMTS1</i>	NM_006988.3	294	1838	-6.3
<i>PCOLCE</i>	NM_002593.2	542	3379	-6.2
<i>ADCY4</i>	NM_139247.2	91	565	-6.2
<i>IGFBP4</i>	NM_001552.2	1063	6557	-6.2
<i>RDH5</i>	NM_002905.2	121	739	-6.1
<i>C1S</i>	NM_201442.1	86	527	-6.1
<i>UBA7</i>	NM_003335.2	89	541	-6.1
<i>FLJ10916</i>	NM_018271.2	84	511	-6.1

<i>IFI44</i>	NM_006417.3	114	687	-6.0
<i>CAT</i>	NM_001752.2	85	510	-6.0
<i>TXNIP</i>	NM_006472.2	606	3627	-6.0
<i>COL16A1</i>	NM_001856.3	164	978	-6.0
<i>MGC87042</i>	XM_001128032.1	322	1898	5.9
<i>ARHGEF3</i>	NM_019555.1	200	1173	5.9
<i>LXN</i>	NM_020169.2	504	2922	5.8
<i>LOC730743</i>	XM_001127014.1	85	490	5.8
<i>TMEM173</i>	NM_198282.1	109	625	5.7
<i>GPX7</i>	NM_015696.3	124	712	5.7
<i>PNPO</i>	NM_018129.2	177	1012	5.7
<i>CRISPLD2</i>	NM_031476.2	192	1084	5.7
<i>CD248</i>	NM_020404.2	611	3430	5.6
<i>DBC1</i>	NM_014618.2	84	468	5.5
<i>FAM20A</i>	NM_017565.2	86	472	5.5
<i>IFI30</i>	NM_006332.3	88	486	5.5
<i>VASN</i>	NM_138440.2	460	2516	5.5
<i>PRRX2</i>	NM_016307.3	442	2415	5.5
<i>EBF1</i>	NM_024007.2	104	547	5.2

Table S3. Mean microarray expression levels of typical endodermal markers in expanded iMPCs and MSCs.

Gene Symbol	iMPC	MSC	Fold Difference
<i>AFP</i>	122	b	1.4
<i>CLDN8</i>	b	b	1.0
<i>CLIC6</i>	b	b	1.0
<i>CXCR4</i>	b	b	1.0
<i>FOXA1</i>	b	b	1.0
<i>FOXA2</i>	b	b	1.0
<i>GATA1</i>	b	b	1.0
<i>SOX17</i>	b	b	1.0
<i>SOX7</i>	b	b	1.0
<i>ST14</i>	b	b	1.0
<i>TMPRSS2</i>	b	b	1.0
<i>TMPRSS4</i>	b	b	1.0

b – below detection level

Table S4. Mean microarray expression levels of typical ectodermal markers in expanded iMPCs and MSCs.

Gene Symbol	iMPC	MSC	Fold Difference
<i>TUBB3</i>	3843	3097	1.2
<i>FABP7</i>	b	b	1.0
<i>FOXD3</i>	b	b	1.0
<i>GBX2</i>	b	b	1.0
<i>GFAP</i>	b	b	1.0
<i>HES5</i>	b	b	1.0
<i>MAP2</i>	b	b	1.0
<i>NEUROG2</i>	b	b	1.0
<i>OTX2</i>	b	b	1.0
<i>PAX6</i>	b	b	1.0
<i>PROM1</i>	b	b	1.0

b – below detection level

Table S5. Mean microarray expression levels of genes classified to the integrin signaling pathway according to the PANTHER algorithm.

Gene Symbol	iMPC	MSC	Fold Difference
<i>LAMA4</i>	135	1914	-14.1
<i>RAC2</i>	152	1795	-11.9
<i>COL6A3</i>	642	6729	-10.5
<i>ACTA2</i>	603	6254	-10.4
<i>COL6A1</i>	770	6490	-8.4
<i>COL16A1</i>	164	978	-6.0
<i>COL6A2</i>	186	969	-5.2
<i>COL8A1</i>	929	3854	-4.2
<i>MAPK3</i>	365	1385	-3.8
<i>ITGBL1</i>	b	264	-2.8
<i>LAMB2</i>	317	794	-2.5
<i>ITGB5</i>	805	1961	-2.4
<i>LAMA3</i>	b	196	-2.3
<i>MAPK13</i>	170	341	-2.0
<i>ACTB</i>	11110	8272	1.3
<i>BCAR1</i>	265	175	1.5
<i>RAC3</i>	148	b	1.6
<i>ITGA6</i>	164	b	2.0
<i>RHOD</i>	137	276	2.0
<i>PTK2</i>	1326	527	2.5
<i>COL13A1</i>	1639	308	5.3
<i>COL4A5</i>	607	b	7.0

b – below detection level

Table S6. Primers used for qPCR.

Gene	Forward (5'→3')	Reverse (5'→3')	Annealing Temp.
<i>RPL13</i>	CATTTCGGCAATTTCTACAG	CAGGCAACGCATGAGGAAT	58°C
<i>HPRT</i>	AAGGGTGTTTATTCCTCATGGA	CCTCCCATCTCCTTCATCAC	58°C
<i>CPSF6</i>	AAGATTGCCTTCATGGAATTGAG	TCGTGATCTACTATGGTCCCTCTCT	58°C
<i>COL6A3</i>	CACAACAAAGCCTGTAACCACC	CTGTTATCTCAAACACCTGGAC	58°C
<i>DCN</i>	TCCCAACTTAGCCAAATTATTC	ACACAACCTCTGCTAGACCTG	58°C
<i>LAMA4</i>	GCCAAGAAGTGTGCAGTGTG	AGCTTATGGTTGGGCAGTCC	60°C
<i>LUM</i>	ATGCCACACCACAAGATCCC	ACCACCAATCAATGCCAGGA	58°C