

Supplementary materials

Recognition of Granulocyte-Macrophage Colony-Stimulating Factor by Specific S100 Proteins

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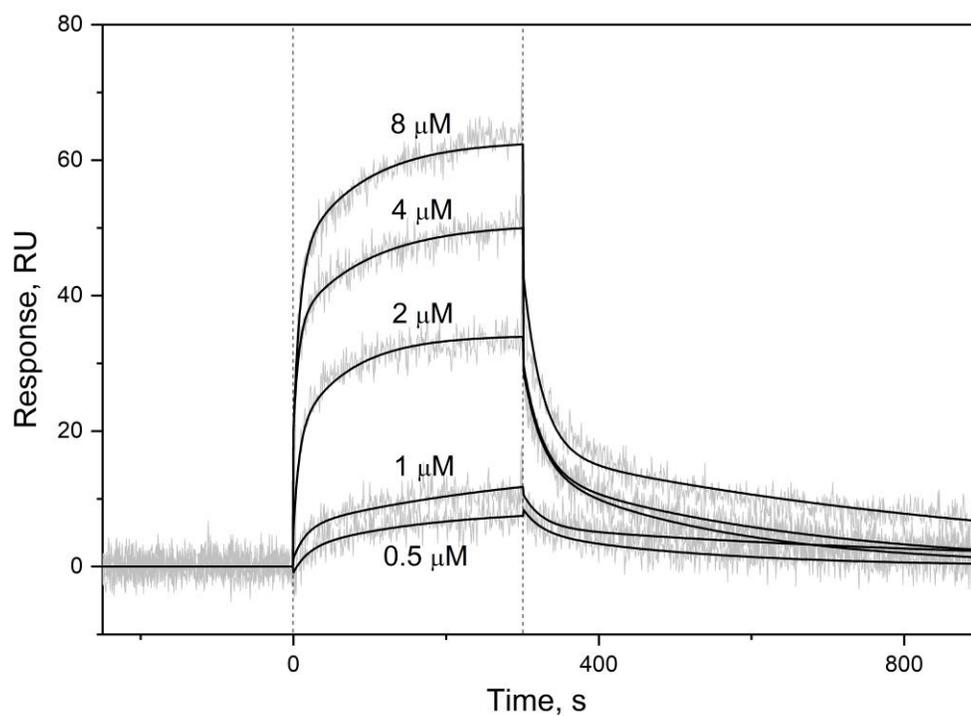


Figure S1. SPR spectroscopy data on kinetics of association/dissociation of the complexes of S100P F89A with GM-CSF immobilized on the sensor surface by amine coupling under calcium excess (1 mM CaCl₂) at 25°C. The association phase is marked by the vertical dotted lines. Analyte concentration is indicated for each sensogram. The experimental curves (*grey*) are described by the heterogeneous ligand model (1) (*black*; see Table 1).

Table S1. List of the human diseases associated with GM-CSF and S100A4 protein, according to DisGeNET database (<http://www.disgenet.org>). PubMed identifiers of the references confirming the protein-disease associations are indicated.

<i>Nº</i>	<i>Disease</i>	<i>GM-CSF</i>	<i>S100A4</i>
1	Adenocarcinoma	31233203, 11211145, 7635448	7889533, 16367903, 11786397, 16685438, 9759649, 17032501, 12239456, 9815629, 7845688, 24215488, 11029520, 22761930, 12887505, 17032501, 12239456, 11786397, 16685438, 10601379, 11106237
2	Acute lymphocytic leukemia	12912966, 8499641, 7535143, 29596541, 29338593, 8600166, 19129484, 17205058, 10942373, 30626253, 28535084	8547074, 8637233, 8683987, 7630190, 7630199, 7994022, 8631023
3	Adenocarcinoma of colon	23634280	10091942, 10389988
4	Adenocarcinoma of pancreas	12545248	8613012, 7726912
5	Adenocarcinoma of prostate	23740935	17219414
6	Adult acute lymphocytic leukemia	17205058, 30626253, 12912966, 7535143, 8499641, 29596541, 19129484, 28535084	8637233, 7994022
7	Adult glioblastoma	28459367, 24391839, 9189765, 1315829, 30564626, 30235708, 28411277, 31548426	28807938
8	Adult lymphoma	30619796, 2331674, 9162223, 31088767, 10502821	7536040
9	Adult medulloblastoma	30771762	12517790, 17579622
10	Adult soft tissue sarcoma	24374597	9563903
11	Amyotrophic lateral sclerosis	30867270, 30741620, 1721001, 28334553, 27741429, 8550440, 28293476, 30210445, 9212830, 28185258, 29331073, 8416596, 30116940, 30397248, 0405855, 29527688, 20544912	31623154
12	Anaplastic carcinoma	11605069	15579771
13	Anaplastic thyroid carcinoma	8958788, 1728417	16265347, 27802204, 30196299
14	Anophthalmia and pulmonary hypoplasia	24942756, 30922919, 30232221	30348604, 31611961, 22718861
15	Asthma	1401075, 9087947, 7742019, 8417755, 21605124, 17362254, 8998072, 1885766, 9525446, 20709516, 8835120, 20802406, 17225724, 10903212, 15826950	30569582
16	Astrocytoma	1377084, 8903854	7849711, 7805033, 9291941, 25854377
17	Bladder neoplasm	16397056, 31385407, 9231915, 27486853, 29243219, 28205361	11839590, 12532418, 9221807, 26508026, 29218245, 10022125
18	Brain neoplasms	31491754, 15818382, 8297651, 29086194	7794250, 17223348
19	Breast carcinoma	28754674, 29230663, 31635541, 16927019, 26621531, 31581558, 14767486, 11325840, 30018709, 29151836, 10078967, 12731089, 20529245, 29906422, 29867922, 26173622, 14999770, 17159986, 2646321, 15205327, 12748184, 21997231, 11891846, 7514449	23162804, 9751936, 12756252, 15608682, 27098123, 11875708, 8824556, 22740693, 9570150, 29733962, 21195708, 19055112, 23543443, 26285644, 30450809, 28058579, 11839590, 25205038, 31709177, 15956747, 14632631, 7923151, 27927689, 12517790, 25311085, 7547249, 26125737, 31667000
20	Carcinogenesis	18565574, 19737647, 27184426, 24366884, 30338860	8012957, 30221056, 24969174, 24732359, 8060323, 12239456, 12168821, 7547249, 26274343, 18783790, 22292654, 16990429,

			7889533, 29934328, 9205080, 9439683, 21153848, 11495043, 9006095
21	Carcinoma	27581603, 7635448, 11605069, 15613691, 9446667, 20053669, 7679411, 14969845	7744694, 9070336, 19194111, 10619963, 8635161, 10738249, 9881667, 9072554, 10766393, 9815578, 27862098, 11786397, 19365673, 9759649, 9815629, 11875708
22	Carcinoma breast stage IV	20877352, 16958969, 19805669, 22032690, 28754674	31667000, 14632631
23	Carcinoma of bladder	3121558, 31385407, 29243219, 16397056, 9231915, 27486853, 28205361	10022125, 11839590, 9221807, 26508026, 29218245
24	Carcinoma of larynx	11323095	24969174, 24867514, 24174222, 25491625
25	Carcinoma of lung	17342342, 1988125, 8978294, 27998891, 12708493, 27486763, 11129324, 17596594, 9044861, 16820947	30885944, 9624535, 31634900, 9066685, 24732359, 27127879
26	Carcinoma, basal cell	8450029	29741811
27	Carcinoma, ovarian epithelial	19177198, 19389515, 9815777, 22228506	19194111
28	Central nervous system neoplasms	28526811, 29624145	7794250
29	Central neuroblastoma	30629318, 16682723, 1377084	11431772, 28687621, 15852272
30	Cerebral vasospasm	27128592, 31585427	12186470
31	Childhood acute lymphoblastic leukemia	12912966, 17205058, 29596541, 28535084, 8499641, 7535143, 19129484, 30626253	8637233, 7727766, 10360377, 7994022, 9399648, 9166859, 9372085
32	Childhood astrocytoma	1377084, 8903854	25854377, 7849711
33	Childhood glioblastoma	30564626, 1315829, 24391839, 30235708, 31548426, 9189765, 28459367, 28411277	28807938
34	Childhood leukemia	16547503, 28039843, 12200676, 9185524, 9714520, 8978284, 10880262, 2331674, 22223820, 10942373, 12850480, 30944098, 9657759, 19717467, 8499641, 9345060, 14562045	18452107, 7994022
35	Childhood lymphoma	30619796, 31088767, 10502821, 2331674, 9162223	7536040
36	Childhood medulloblastoma	30771762	12517790, 17579622
37	Childhood neuroblastoma	16682723, 1377084, 30629318	15852272, 11431772, 28687621
38	Childhood osteosarcoma	2162848	7607566, 9751936, 22292654, 24217649, 24706307, 29303365, 10493528, 20507646, 20855150, 20957651, 21360024, 8968106
39	Chronic myeloproliferative disorder	10678181, 28576879, 24469048, 29774106	29946821
40	Chronic obstructive airway disease	18353856, 30296713, 17681858, 17681858, 20801891, 31320451, 27516147, 31207576	26483185
41	Colitis	31687401, 24503766	30221056, 28935867
42	Colon carcinoma	28811578, 8526901, 30892086, 17589921	20515499, 21795396, 21685359, 11875708, 17101323, 30111999, 29932233, 21289293, 21403839
43	Colonic neoplasms	23108143	21685359
44	Colorectal carcinoma	29456737, 10738251, 28534709, 12855617, 29423057, 15289873, 28223815, 23657083, 24737547	20191297, 24936148, 27750112, 16097057, 28775774, 25252758, 21354054, 30221056, 21218086, 8831691, 31581665, 21837681, 29544454, 28209128, 23783026, 31045759, 27053631, 29383839, 28423501, 19513503
45	Colorectal neoplasms	28530155, 23108143, 15289873	16097057

46	Conventional (clear cell) renal cell carcinoma	11691814, 15705910, 31233203, 18957055, 12225344, 29734839, 9012452, 9108457, 15451464	22613408, 19365673
47	Crohn disease	29434451, 21381154, 19094116, 27377463, 30124884, 19230854, 25653427, 29251350, 21973321, 29216019, 17106921, 12840672, 24503766, 30213581	20489045
48	Degenerative polyarthritis	8049356, 1915559, 8853228, 29622035, 15593185	17105852, 17328050, 16948116, 16948116
49	Diabetes mellitus, non-insulin-dependent	30775988, 22149626	29453465
50	Endometrial carcinoma	31274231, 30816518, 8605095	24756855, 17673926, 29901152, 10071231, 19506550
51	Endometriosis	21481374, 22365076	22147918
52	Eosinophilia	17225724, 8602991, 27926989, 9802369, 9876226, 1560199, 31697804, 30454904, 9525446, 8613693, 8353811, 30691714, 1885766, 8335853	30569582
53	Eosinophilic disorder	31697804, 30691714, 9525446, 30454904, 27926989, 9876226, 8613693, 9802369, 8335853, 8602991, 8353811, 1885766, 1560199	30569582
54	Esophageal carcinoma	28461757, 9458356	8012957, 21889495, 22408350, 22912541, 7970734
55	Esophageal neoplasms	28461757	22408350, 22912541, 21889495, 7970734
56	Fever	28438967, 29540199, 30064991, 23352035, 31485723, 29856136, 31685000	9468217, 17497677
57	Glioblastoma	28459367, 16718522, 9189765, 30564626, 30683885, 1701653, 1315829, 24391839, 31485019, 28115578, 31548426, 30235708, 28411277, 29053069	9217972, 7987821, 19074870, 28807938, 8526910, 7805033, 9284834, 25854377, 17223348
58	Glioblastoma multiforme	1315829, 31485019, 29053069, 9189765, 28411277, 24391839, 28459367, 30235708, 28115578, 30683885, 31548426, 30564626	19074870, 28807938, 9217972
59	Glioma	10930096, 10910140, 31186691, 25677907, 11950413, 7648444, 1377084, 24030977, 24408016	7898625, 25854377, 28807938, 7478535
60	Head and neck carcinoma	27486853, 10840163	21169409, 27793047
61	Hematologic neoplasms	9675065, 14667270	8628020, 9086436
62	Hepatitis B	8406350, 31549887, 12121506	28688902, 20026004
63	Hepatitis B, chronic	11596095, 8406350	28688902
64	Hypertensive disease	28137972, 26994043, 28081975, 31209176, 30611152, 24446489, 30611134, 31370029	30116202, 30031694, 16002749
65	Idiopathic pulmonary fibrosis	19117745, 30570135	28530639, 31597225, 30127784
66	Inflammatory bowel diseases	21557945, 19230854, 24366884, 30124884, 11745698, 1370662, 29216019, 21953855	30221056, 28935867
67	Leukemia	2331674, 9266938, 8499641, 12850480, 10942373, 12200676, 8978284, 3498522, 9243295, 27569996, 15459750, 9345060, 16547503, 9657759, 19717467, 3491836, 9714520, 19036083, 10969805, 14562045, 10880262, 22223820, 30944098, 28039843, 15927668	7882348, 7994022, 8603008, 7632963, 18452107, 9402846
68	Leukemia, myelocytic, acute	9657759, 3491836, 1995312, 30125602, 31090655, 19148132, 25802083, 31115604, 9675065, 10435081, 2999978, 8182935, 9292531, 9168435, 7522290, 1434798, 3044458, 3484837, 2453374,	9402846, 31611628, 30466095

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69	Liver carcinoma	26021873, 20679198, 14969845, 12833133, 12508355, 11295284, 30205709, 28166197, 11916239	27544906, 9893670, 9185756, 24065232, 30897344, 17051636, 11776078, 9049204, 23483190
70	Lung neoplasms	25034886, 16211258, 12926133	12859967, 29449540
71	Lymphoma	30619796, 9162223, 31088767, 2331674, 10502821	7882348, 7536040
72	Malignant head and neck neoplasm	10840163, 27486853	21169409, 27793047
73	Malignant neoplasm of breast	7514449, 31581558, 29906422, 11891846, 21997231, 14999770, 2646321, 29230663, 14767486, 11325840, 12748184, 26173622, 16927019, 28754674, 26621531, 10078967, 31635541, 29151836, 29867922, 30018709, 15205327, 17159986	10738249, 11839590, 14632631, 9570150, 23967281, 26285644, 27098123, 15956747, 27927689, 23543443, 30450809, 28058579, 31667000, 12517790, 19055112, 22740693, 11875708, 23162804, 15608682, 8824556, 12756252, 21195708, 7547249, 25311085, 29733962, 31709177, 26125737
74	Malignant neoplasm of colon and/or rectum	24737547, 28534709, 29456737	23783026, 21354054, 28775774, 16097057, 19513503, 21218086, 31045759, 25252758, 31581665, 21837681, 27750112
75	Malignant neoplasm of endometrium	31274231, 8605095, 30816518	19506550, 29901152
76	Malignant neoplasm of esophagus	28461757	22912541, 22408350, 21889495, 7970734
77	Malignant neoplasm of larynx	11323095	24174222, 24969174, 24867514
78	Malignant neoplasm of lung	7679411, 11129324, 16820947, 27998891, 27486763, 1988125, 17596594, 17342342, 8978294, 9044861, 12708493	9066685, 24732359, 31634900, 11414196, 7591275, 30885944, 27127879
79	Malignant neoplasm of ovary	22228506, 19389515	9495360, 19194111
80	Malignant neoplasm of pancreas	30814617, 22698406, 30232221, 27184426	25677816, 29578167, 23026527, 25072505, 7845688, 19799859, 12874021, 23085231, 17786304, 18350635, 24732359, 19653048
81	Malignant neoplasm of prostate	12746848, 15963916, 7927924, 16831072, 16962494, 10537292, 15704001, 10950151, 28797844, 15598439, 28241742, 9446667, 18303206, 17707059	17219414, 7559077, 28341124, 9006095, 27566074, 30041429, 16990429
82	Malignant neoplasm of stomach	28274999, 28943964	21618249, 11106237, 19945782, 30410586, 8957063, 26497012, 18032479, 25511023, 19820999, 25310523, 12887505, 29342841
83	Malignant neoplasm of urinary bladder	16397056, 9231915, 31385407, 27486853, 28205361, 29243219	8635161, 9221807, 26508026, 11839590, 10022125, 29218245
84	Malignant neoplasms	15705910, 10502821, 28582842, 16962494, 20381405, 31581558, 12048160, 25584002, 30075184, 308840, 29963274, 12225344, 10950151, 28320147, 18957055, 9192768, 9815891, 31233203, 1825026, 29048610, 16912178, 23526884, 8149602, 26803055, 31834830, 21540457, 9168436, 23108143, 27039846, 29075565, 28240048, 19890352,	21195708, 29069865, 31634900, 30868407, 27098123, 9920410, 12239456, 7478535, 18784356, 24039846, 21911392, 16297707, 27793047, 20070253, 18651563, 28807938, 30045697, 20515499, 12445462, 31474194, 14981901, 9703888, 19703228, 28530639, 26497012, 24065232, 16171553, 30885944, 12799648, 9407351, 19653048, 9231912,

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85	Malignant tumor of colon	30892086, 17589921, 28811578	21403839, 17101323, 30111999, 21685359, 21795396, 21685359, 20515499, 21289293, 29932233
86	Mammary neoplasms	19805669, 11325840, 28282575, 29867922, 20127358, 12748184	7889533, 17550972, 10738249, 12439718, 17550972, 30450809, 15856021, 16489073, 9888465, 14632631
87	Medulloblastoma	30771762	12517790, 12517790, 17579622, 17579622
88	Melanoma	9816095, 11676397, 11061616, 10078967, 28589085, 8921947, 26803055, 18593361, 4973616, 9336741, 25821063, 10505851, 30450100, 31143509, 1620131, 16718522, 12396624, 5034886, 28536308, 25286079, 9915919, 16713660, 11950413, 9143914, 29414294, 7847808, 10930096, 31171039	8653684, 24613382, 9516223, 29179997, 9036865, 7561170, 9703888, 7882274, 9291441, 26928771, 29679610, 9620301, 7624155, 14559981
89	Myocardial infarction	21326109, 17640962, 8978634, 18832728	30283351, 30818997, 31289275, 28721450
90	Nasopharyngeal carcinoma	18999931, 28732079	26292668, 7862458
91	Neoplasm metastasis	31524146, 30504718, 8497184, 28484077, 29959142, 9177198, 30235708, 29536224, 5077564, 25048347, 29368214, 0811863, 31635541, 28811578, 0840163, 17159986, 9044861, 30771762, 28745079, 27184426, 0505851, 10224095	10493528, 23085231, 16685438, 24732359, 21712367, 28244731, 30410586, 19365673, 9405067, 12517790, 9696040, 17786304, 29741811, 16685438, 7478563, 20507646, 30221056, 24215488, 21360024, 1329089, 20367639, 9468217, 12239456, 24037664, 21195708, 30885944, 15608682, 15900299, 16990429, 16265347, 15579771, 14981901, 18783790, 19820999, 20177948, 18784356, 11431772, 21354054, 12439718, 20980350, 27802204, 12887505, 19828600, 20957651, 9291441, 25311085, 10091942, 21911392, 31467231, 7898625, 28058579, 27098123, 20191297, 22408350, 24706305, 25217321, 21352421, 22381352, 31709177, 16265347, 19799859, 14632631, 29901152, 23832737, 29251175, 23580256, 24065232, 26057862, 30927479, 7607566, 27927689, 24798676, 19917604, 17051636, 8968106, 21636539, 11223831, 10952782, 19703228, 31474194, 26487698, 26292668, 16077966, 23483190, 29449540, 10625627, 22292654, 22200787, 10389988, 20855150, 29544454, 23026527, 17101323, 9815629, 23771538, 25310523, 7794250, 21603862, 9703888, 30745574, 22613408, 24936148, 18781956, 16297707, 19513503, 15852272, 22878175, 26118552, 29789685, 29932233, 18360353, 12168821, 21685359, 8824556, 25205038, 12581898, 29733962, 21795396, 16865243, 19055112, 29069865, 25171474, 9920410, 10738249, 26741489, 7536040, 21837681, 30710284, 11786397, 31775027, 10737717, 28615627, 12792907, 28423501, 25854377, 29303514, 21403839, 11839590, 18350635, 12756252,

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92	Neoplasms	10597195, 23108143, 8240048, 11023201, 16820947, 6397056, 25714011, 11325840, 9108457, 28598276, 28732079, 9959142, 9192768, 18495536, 29569742, 7691144, 28336378, 10466632, 12396624, 22988839, 3352035, 22266191, 18473731, 0811863, 15340764, 8820364, 9568072, 16971804, 21854753, 2748184, 25034886, 9989489, 25538258, 10078967, 9815891, 9625251, 29900557, 31477437, 1544306, 22349830, 28951871, 1059598, 15818382, 12788649, 8089377, 30747725, 16019851, 4715418, 9414129, 30611134, 8607020, 11708879, 28497184, 8957055, 30265190, 23811319, 5381801, 9734660, 30205709, 17096339, 9189765, 21327637, 10449617, 11735339, 29867922, 0538109, 10233685, 3539201, 30519342, 17822323, 11983866, 9143914, 14667270, 9652792, 16001161, 15027115, 17487349, 1064334, 9721877, 7679411, 8137291, 14970281, 12225344, 2579310, 31273954, 14634087, 2698406, 28643761, 28572167, 3634280, 28530155, 1701653, 28623761, 21159637, 29177676, 9218594, 11368443, 9741424, 10866317, 8864754, 28694526, 22200506, 16525479, 25900822, 1297382, 16912178, 18999931, 1122109, 15899826, 31467912, 2698407, 7734955, 11916239, 11571536, 18452266, 26803055, 2932654, 9764578, 19805669, 28176947, 19517218, 29434585, 0504718, 14730331, 0235708, 10797297, 8418381, 9808567, 20147862, 16713660, 9455809, 28797844, 9816095, 16450393, 27389055, 21208907, 15451464, 9435154, 15963916, 31186691, 4324073, 30922919, 11836673, 0892086, 1315829, 15705910, 10679114, 2162848, 29882703, 28166197, 19008459, 29669721, 9226179, 24737547, 31548293, 8826937, 17620425, 22186789, 0004280, 17965776, 21626603, 1376705, 28409732, 1968360, 8485707, 10536177, 8704254, 27184426, 21424118, 26049545, 3119535, 31620131, 11691814	15985168, 10619963, 7994022, 25310523, 9345058, 17504119, 17101323, 8526910, 14598884, 11485924, 19703228, 7970734, 27802204, 30745574, 7547249, 25854377, 8012957, 17223348, 28807938, 8635161, 8652807, 9291941, 10640976, 9712735, 20019188, 7862458, 9205080, 9171999, 7794250, 7791990, 19726060, 9221807, 7805033, 10063314, 19799859, 7744694, 15161057, 7849711, 7630199, 7544647, 9616165, 28423501, 23771538, 8276262, 21837681, 28832662, 28687621, 29741811, 18705642, 30111999, 10601379, 18350635, 7742529, 24469032, 10210535, 21603862, 24706307, 14632631, 29212855, 23783026, 29449540, 21354054, 7647309, 31844158, 22200787, 24613382, 29400663, 7478563, 8957499, 9372085, 8589032, 7700630, 25880590, 21619050, 9664128, 10373639, 24969174, 7632963, 8613012, 9439683, 7889533, 28808805, 11518467, 7882274, 11875708, 10469971, 28244731, 19365673, 11106237, 20332215, 26125737, 30868407, 24706305, 7582239, 10738249, 20957651, 24217649, 9443399, 25677816, 9324291, 21924240, 8690521, 9516223, 10854145, 11191353, 9698532, 9808321, 9231912, 25171474, 19194111, 21911392, 9570150, 7595755, 30196299, 8547074, 9066685, 16990429, 8986966, 27750112, 30097176, 9139866, 16097057, 8603008, 26274343, 7845688, 7867008, 31611961, 28058579, 24732359, 30221056, 17673926, 23832737, 9006095, 9554401, 9591556, 7833915, 9495360, 17032501, 9402846, 22613408
93	Neuroblastoma	30629318, 16682723, 1377084	11431772, 15852272, 28687621
94	Non-small cell lung carcinoma	25919140, 14667270, 4970281, 17599645, 16410826, 2926133, 15963916, 31797203, 2162848	24215488, 28197929, 22761930, 8060323, 27127879, 18620780
95	Osteoporosis	30142160, 18463784	31814858
96	Osteosarcoma of bone	2162848, 31015342	9751936, 21360024, 10493528, 7607566, 22292654, 24706307, 20507646, 20855150, 29303365, 20957651, 8968106, 24217649
97	Pancreatic carcinoma	30814617, 27184426, 22698406, 9568072, 30232221, 9652792	19653048, 18350635, 24732359, 10210535, 23026527, 29578167, 11786397, 23085231, 25072505, 25677816, 31526392, 19799859, 17786304

98	Pancreatic ductal adenocarcinoma	25691328, 30922919	7660250, 30570546, 31611961
99	Peritoneal dissemination	23422727	12887505, 11106237
100	Precursor cell lymphoblastic leukemia lymphoma	8600166, 29338593, 10942373, 7535143	7630190, 8683987, 8631023
101	Precursor T-cell lymphoblastic leukemia-lymphoma	16611416, 10340398	8630377, 9345058, 8547074, 9446664
102	Primary malignant neoplasm	31233203, 23108143, 0092001, 29596541, 21630267, 4366884, 16962494, 16912178, 7734153, 21540457, 10502821, 9890352, 28686055, 30013322, 8957055, 29963274, 28240048, 2988839, 10537292, 12225344, 6803055, 11211145, 10840163, 9075565, 28582842, 19459853, 2048160, 10950151, 9741424, 23526884, 31581558, 25584002, 0075184, 8149602, 28320147, 29048610, 30232221, 20381405, 308840, 15705910	12799648, 27793047, 21911392, 20515499, 9407351, 18781956, 30710284, 27278086, 29556233, 31634900, 27098123, 28935867, 19011242, 16297707, 28807938, 20070253, 12445462, 19703228, 30868407, 29069865, 8968106, 25171474, 10952782, 16171553, 28921916, 9231912, 28247948, 30045697, 31445888, 31623154, 27127879, 19653048, 20019188, 7478535, 9920410, 9703888, 21169409, 24798676, 12239456, 18651563, 30885944, 28530639, 24039846, 21195708, 19917604, 26497012, 17105852
103	Primary malignant neoplasm of lung	27998891, 1988125, 16820947, 12708493, 27486763, 8978294, 17342342, 11129324, 9044861, 17596594	24732359, 27127879, 9066685, 31634900, 30885944
104	Prostate carcinoma	16831072, 9446667, 15598439, 17707059, 28797844, 5963916, 10950151, 16962494, 7927924, 12746848, 15704001, 8303206, 28241742, 10537292	9006095, 27566074, 17219414, 7559077, 30041429, 28341124, 16990429
105	Psoriasis	30207587, 19890352, 8777803, 29899748, 7744320, 29676778	21712367, 30710284
106	Pulmonary fibrosis	9881949, 9881949, 17894541	15618458, 29940125, 29910813, 30127784
107	Refractory anemias	1676079	19828600
108	Renal cell carcinoma	29734839, 9012452, 11691814, 18957055, 12225344, 9108457, 15451464, 31233203, 5705910, 16709811	19365673
109	Retinoblastoma	16397056	8652807, 10732752, 9620022, 15161057
110	Rheumatoid arthritis	28898718, 28213566, 0358109, 22446963, 2504878, 8049356, 31037071, 29254845, 5803788, 21613310, 16778989, 8144129, 29069507, 2026869, 16859503, 15535838, 29563337, 2571844, 17892600, 28369741, 0804924, 16519794, 11426018, 91117172, 28941039, 1915559, 25652333, 10470256, 17062647, 0999929, 22385242, 18513326, 7101062, 8019788, 8853228, 29431121, 15593185, 1320571, 28777803	17328050, 31037071, 17328050, 17105852, 30710284, 19828600
111	Sarcoma	24374597, 11605069, 2171188, 9143914	9582521, 9563903
112	Secondary malignant neoplasm of bone	17159986	28615627, 31667000
113	Secondary malignant neoplasm of lung	31025405, 24632622	30980596, 19365673, 23832737, 21360024
114	Secondary neoplasm	29368214, 28497184, 10224095, 28811578, 10505851	22292654, 19820999, 19365673, 16265347, 21352421, 29800090, 11839590, 23483190, 7536040, 11875708, 25311085, 8824556, 8276262, 8968106, 22381352, 19194111, 29449540, 22878175, 19055112, 9696040, 23162804, 17101323, 11223831, 25205038, 29901152, 27750112
115	Skin lesion	29149388, 20392292	19703228

116	Solid neoplasm	24374597, 18670453, 20484030, 24565030, 31258629, 3119535, 21630267	19194111, 9402846, 9171998, 24037664
117	Squamous cell carcinoma	16912178, 16912178, 10408389, 9815891, 11023201, 6982994	27294692, 18705642, 10737717, 14981901, 8001221, 24969174, 10389982, 7845688, 25171474, 16297707, 8986966, 12168821, 22761930, 29934328, 28197929, 11854066, 10766393
118	Squamous cell carcinoma of the head and neck	9721877, 16912178, 10840163, 23634280, 10416612	24037664, 12101111, 27793047, 12581898, 31159419, 8705996, 24798676
119	Stomach carcinoma	28943964, 28274999	11106237, 18032479, 12887505, 19820999, 25310523, 29342841, 30410586, 25511023, 19945782, 8957063, 26497012
120	Systemic scleroderma	22324944, 15801021	30710284, 29720235
121	T-cell lymphoma	8485042	10477703
122	Thyroid carcinoma	26037280, 17022149	9808321, 23771538, 15579771, 25744544, 31467231, 20332215
123	Tumor angiogenesis	28166197, 10224095	23929008, 30450809
124	Tumor cell invasion	9500466, 10840163, 16820947, 12748184, 16912178, 0863401, 29150269, 23634280	22458600, 30893511, 19513503, 25171474, 17105852, 22200787, 28247948, 27922683, 29400663, 25310523, 27802204, 23543443, 29679610, 12532418, 27098123, 30885944, 16367903, 29218245, 27348205, 29383839, 20019188, 19799859, 23162804, 30710284, 26744878, 9815629, 20957651, 28209128, 30970087, 30152542, 23783026, 21837681, 10952782, 24932473, 25677816, 17101323, 16265347, 16297707, 17051636, 30868407, 27127879, 26928771, 21195708, 25217321, 22613408, 18784356, 11431772, 19820999, 25854377, 15852272, 24065232, 22878175, 23771538, 24867514, 30196299, 27862098, 23483190, 24706305, 26292668, 10389988, 24217649, 9703888, 22408350, 12887505, 24037664, 27927689, 21603862, 16990429, 28423501, 20070253, 20367639, 23026527, 29282275, 19506550, 22116816, 21795396
125	Tumor progression	8819123, 17342342, 23634280, 28754674, 11583982, 9667176, 31776206, 10597195, 16820947	18651563, 25677816, 31467231, 29204268, 15900299, 16367903, 22262311, 31474194, 18781956, 29069865, 27750112, 12445462, 21360024, 9570150, 20019188, 29497991, 11278647, 8824556, 9221807, 24378831, 7794250, 30111999, 24469032, 27278086, 20177948, 21837681, 26928771, 29578167, 16265347, 29789685, 30927479, 15579771
126	Uterine fibroids	10566662	16571622
127	Vascular diseases	21159637, 28550897	16002749

Table S2. List of the human diseases associated with GM-CSF and S100A4 protein, according to Open Targets Platform database (<https://www.opentargets.org>), and corresponding association scores (<https://docs.targetvalidation.org/getting-started/scoring>). The diseases for which all association scores exceed 0.1 are highlighted in yellow.

<i>Nº</i>	<i>Disease</i>	<i>GM-CSF</i>	<i>S100A4</i>
1	acute hepatic failure	0.004	0.015
2	acute kidney failure	0.018	0.004
3	acute lymphoblastic leukemia	0.032	0.008
4	acute myeloid leukemia	0.073	0.091
5	acute myocardial infarction	0.083	0.040
6	acute promyelocytic leukemia	0.020	0.010
7	acute respiratory distress syndrome	0.041	0.001
8	adenocarcinoma	0.015	0.024
9	adenoma	0.018	0.014
10	AIDS dementia	0.004	0.011
11	allergic asthma	0.013	0.011
12	allergic disease	0.011	0.018
13	allergic rhinitis	0.018	0.003
14	Alzheimer disease	0.057	0.355
15	amyotrophic lateral sclerosis	0.005	0.087
16	aneurysm	0.011	0.005
17	ankylosing spondylitis	0.077	0.004
18	anxiety	0.008	0.004
19	aortic aneurysm	0.049	0.001
20	arteriosclerosis	0.010	0.001
21	arthritis	0.096	0.016
22	asthma	0.116	0.031
23	astrocytoma	0.017	0.006
24	atherosclerosis	0.052	0.005
25	atopic eczema	0.025	0.005
26	atrial fibrillation	0.022	0.082
27	autoimmune disease	0.030	0.012
28	axial length measurement	0.011	0.083
29	benign prostatic hyperplasia	0.003	0.013
30	bladder transitional cell carcinoma	0.008	0.006
31	bladder tumor	0.001	0.001
32	Bloom syndrome	0.034	0.012
33	bone disease	0.004	0.004
34	bone metastasis	0.004	0.010
35	brain aneurysm	0.037	0.002
36	brain injury	0.008	0.004
37	breast adenocarcinoma	0.002	0.009
38	breast cancer	0.051	0.078
39	breast carcinoma	0.015	0.050
40	breast ductal carcinoma in situ	0.002	0.005
41	calf circumference measurement	0.004	0.057
42	cancer	0.110	0.101
43	carcinoma	0.021	0.078
44	carcinoma Lewis lung	0.020	0.010
45	cardiomyopathy	0.003	0.002
46	cerebrovascular disorder	0.001	0.004
47	cervical carcinoma	0.012	0.003
48	cholangiocarcinoma	0.019	0.023
49	chondrosarcoma	0.001	0.045
50	chronic hepatitis B virus infection	0.009	0.023
51	chronic kidney disease	0.088	0.041
52	chronic lymphocytic leukemia	0.035	0.034
53	chronic myelogenous leukemia	0.041	0.002
54	chronic myeloproliferative disorder	0.012	0.008
55	chronic obstructive pulmonary disease	0.083	0.089

56	chronic rhinosinusitis	0.005	0.007
57	chronic rhinosinusitis with nasal polyps	0.006	0.040
58	Chédiak-Higashi syndrome	0.005	0.003
59	cirrhosis of liver	0.019	0.016
60	colitis	0.068	0.080
61	colon adenocarcinoma	0.015	0.015
62	colon adenoma	0.004	0.001
63	colon carcinoma	0.073	0.053
64	colonic neoplasm	0.007	0.023
65	colorectal adenocarcinoma	0.047	0.017
66	colorectal carcinoma	0.094	0.086
67	colorectal neoplasm	0.010	0.012
68	congenital heart disease	0.002	0.004
69	coronary artery disease	0.023	0.008
70	corpuscular hemoglobin content	0.005	0.003
71	COVID-19	0.317	0.051
72	Crohn's disease	0.112	0.011
73	cryopyrin-associated periodic syndrome	0.024	0.025
74	cutaneous melanoma	0.019	0.013
75	cyst	0.006	0.004
76	cystic fibrosis	0.084	0.005
77	decreased liver function	0.011	0.002
78	dermatomyositis	0.004	0.023
79	diabetes mellitus	0.082	0.014
80	diabetic nephropathy	0.004	0.006
81	dilated cardiomyopathy	0.001	0.020
82	dysplasia	0.001	0.004
83	eczema	0.003	0.004
84	Ehlers-Danlos syndrome, musculocontractural type	0.005	0.014
85	emphysema	0.045	0.021
86	endometrial carcinoma	0.018	0.012
87	endometriosis	0.028	0.004
88	endothelial dysfunction	0.014	0.002
89	eosinophilia	0.023	0.002
90	epidermodysplasia verruciformis	0.004	0.051
91	esophageal carcinoma	0.010	0.010
92	esophageal squamous cell carcinoma	0.008	0.038
93	Ewing sarcoma	0.008	0.050
94	experimental autoimmune encephalomyelitis	0.108	0.051
95	fetal growth restriction	0.002	0.002
96	fibrosis	0.003	0.011
97	focal segmental glomerulosclerosis	0.011	0.022
98	Friedreich ataxia	0.007	0.008
99	gastric adenocarcinoma	0.008	0.009
100	gastric carcinoma	0.017	0.028
101	gastrointestinal stromal tumor	0.004	0.073
102	genetic disorder	0.121	0.173
103	glaucoma	0.012	0.002
104	glioblastoma	0.056	0.056
105	glioblastoma multiforme	0.306	0.091
106	glomerulonephritis	0.014	0.005
107	glycogen storage disease VI	0.006	0.001
108	gonorrhea	0.032	0.032
109	granular cell tumor	0.017	0.002
110	head and neck squamous cell carcinoma	0.025	0.054
111	heart disease	0.035	0.010
112	heart failure	0.014	0.004
113	Helicobacter pylori infectious disease	0.062	0.001
114	hepatic fibrosis	0.047	0.016
115	hepatitis	0.018	0.012

116	hepatitis B virus infection	0.027	0.012
117	hepatitis, alcoholic	0.002	0.007
118	hepatocellular carcinoma	0.302	0.101
119	hidradenitis suppurativa	0.010	0.036
120	Hodgkins lymphoma	0.018	0.002
121	Huntington disease	0.023	0.004
122	hyperglycemia	0.004	0.005
123	hypersensitivity pneumonitis	0.005	0.007
124	hypertriglyceridemia	0.006	0.001
125	hypertrophic cardiomyopathy	0.005	0.033
126	hypopharyngeal squamous cell carcinoma	0.007	0.007
127	idiopathic pulmonary arterial hypertension	0.035	0.014
128	idiopathic pulmonary fibrosis	0.005	0.012
129	IGA glomerulonephritis	0.007	0.024
130	immature platelet fraction	0.008	0.088
131	in situ carcinoma	0.079	0.002
132	infect	0.105	0.052
133	infection	0.105	0.052
134	infertility	0.017	0.002
135	inflammation	0.016	0.003
136	inflammatory bowel disease	0.046	0.009
137	injury	0.005	0.006
138	insulin resistance	0.036	0.075
139	interstitial lung disease	0.029	0.014
140	intestinal neoplasm	0.001	0.003
141	intrahepatic cholangiocarcinoma	0.028	0.022
142	invasive breast carcinoma	0.002	0.008
143	invasive breast ductal carcinoma	0.001	0.016
144	invasive carcinoma	0.002	0.006
145	ischemic cardiomyopathy	0.001	0.002
146	juvenile idiopathic arthritis	0.031	0.013
147	kidney neoplasm	0.008	0.001
148	laryngeal squamous cell carcinoma	0.026	0.011
149	leiomyoma	0.004	0.021
150	leukocytosis	0.021	0.001
151	Lewy body dementia	0.007	0.001
152	lip and oral cavity carcinoma	0.002	0.001
153	liver and intrahepatic bile duct neoplasm	0.022	0.027
154	lung adenocarcinoma	0.008	0.035
155	lung cancer	0.002	0.046
156	lung carcinoma	0.013	0.025
157	lung disease	0.008	0.018
158	lupus erythematosus	0.003	0.004
159	lupus nephritis	0.002	0.005
160	lymph node metastatic carcinoma	0.006	0.023
161	malignant glioma	0.012	0.007
162	malignant mesothelioma	0.014	0.007
163	medulloblastoma	0.001	0.044
164	melanoma	0.116	0.048
165	Melnick-Needles syndrome	0.004	0.002
166	mental deterioration	0.002	0.001
167	metastasis	0.005	0.001
168	metastatic carcinoma	0.011	0.001
169	metastatic colorectal cancer	0.020	0.002
170	metastatic malignant neoplasm	0.019	0.006
171	metastatic melanoma	0.042	0.002
172	metastatic neoplasm	0.040	0.014
173	metastatic prostate cancer	0.009	0.007
174	microphthalmia with limb anomalies	0.016	0.011
175	Miyoshi myopathy	0.022	0.051

176	Mobius syndrome	0.006	0.004
177	monocyte count	0.026	0.025
178	mucocutaneous lymph node syndrome	0.065	0.027
179	mucous membrane pemphigoid	0.016	0.027
180	multiple sclerosis	0.042	0.355
181	Mycobacterium infection	0.009	0.001
182	myelodysplastic syndrome	0.052	0.001
183	myeloid leukemia	0.025	0.001
184	myeloid sarcoma	0.107	0.022
185	myeloproliferative disorder	0.013	0.008
186	myocardial infarction	0.029	0.007
187	nasal cavity polyp	0.057	0.009
188	neoplasm	0.129	0.119
189	neoplasm of esophagus	0.003	0.002
190	nephrosclerosis	0.004	0.003
191	nervous system disease	0.009	0.011
192	neuroblastoma	0.082	0.024
193	neurodegenerative disease	0.288	0.354
194	Niemann-Pick disease type C	0.033	0.005
195	non-alcoholic fatty liver disease	0.004	0.060
196	non-alcoholic steatohepatitis	0.022	0.006
197	non-small cell lung carcinoma	0.032	0.104
198	nonpapillary renal cell carcinoma	0.029	0.014
199	obesity	0.016	0.083
200	open-angle glaucoma	0.010	0.002
201	oral squamous cell carcinoma	0.044	0.032
202	osteoarthritis	0.081	0.004
203	osteoporosis	0.006	0.057
204	osteosarcoma	0.021	0.044
205	otitis media	0.015	0.071
206	ovarian carcinoma	0.017	0.028
207	ovarian neoplasm	0.007	0.001
208	pachyonychia congenita	0.006	0.095
209	Pallister-Hall syndrome	0.021	0.038
210	pancreatic adenocarcinoma	0.013	0.005
211	pancreatic carcinoma	0.006	0.013
212	pancreatic ductal adenocarcinoma	0.029	0.067
213	pancreatic neoplasm	0.018	0.081
214	pancreatitis	0.013	0.006
215	papillary thyroid carcinoma	0.010	0.068
216	Parkinson disease	0.013	0.354
217	patent ductus arteriosus	0.037	0.004
218	pemphigus foliaceus	0.003	0.034
219	periodontitis	0.059	0.002
220	peripheral arterial disease	0.023	0.004
221	peripheral nerve injury	0.001	0.007
222	peritonitis	0.010	0.005
223	pleural effusion	0.012	0.001
224	polycystic ovary syndrome	0.004	0.018
225	portal hypertension	0.003	0.001
226	primary biliary cirrhosis	0.005	0.009
227	primary progressive multiple sclerosis	0.006	0.004
228	primitive neuroectodermal tumor	0.009	0.007
229	proliferative diabetic retinopathy	0.004	0.078
230	prostate adenocarcinoma	0.004	0.011
231	prostate carcinoma	0.022	0.113
232	prostatitis	0.004	0.003
233	psoriasis	0.082	0.025
234	psoriatic arthritis	0.080	0.001
235	pterygium	0.001	0.030

236	pulmonary arterial hypertension	0.035	0.060
237	pulmonary fibrosis	0.034	0.089
238	pulmonary hypertension	0.021	0.019
239	pulse pressure measurement	0.033	0.141
240	rapidly progressive glomerulonephritis	0.013	0.006
241	reading	0.004	0.007
242	relapsing-remitting multiple sclerosis	0.010	0.004
243	renal carcinoma	0.009	0.014
244	renal cell adenocarcinoma	0.013	0.001
245	renal cell carcinoma	0.043	0.042
246	renal fibrosis	0.017	0.070
247	reticulum cell sarcoma	0.002	0.054
248	retinoblastoma	0.004	0.031
249	rheumatic heart disease	0.007	0.011
250	rheumatoid arthritis	0.414	0.074
251	sarcoidosis	0.100	0.004
252	schizophrenia	0.005	0.004
253	silicosis	0.008	0.072
254	sinusitis	0.003	0.003
255	skin basal cell carcinoma	0.006	0.054
256	skin neoplasm	0.004	0.009
257	small cell lung carcinoma	0.082	0.007
258	soft tissue sarcoma	0.011	0.015
259	spinal cord injury	0.046	0.006
260	squamous cell carcinoma	0.015	0.013
261	squamous cell lung carcinoma	0.014	0.021
262	stomach neoplasm	0.001	0.009
263	synovial sarcoma	0.001	0.046
264	systemic lupus erythematosus	0.030	0.018
265	systemic scleroderma	0.045	0.029
266	telomere syndrome	0.004	0.004
267	Thrombocytopenia	0.025	0.007
268	thyroid carcinoma	0.009	0.033
269	thyroid gland undifferentiated (anaplastic) carcinoma	0.012	0.019
270	thyroid nodule	0.002	0.003
271	transitional cell carcinoma of kidney	0.002	0.006
272	Treacher-Collins syndrome	0.004	0.003
273	triple-A syndrome	0.077	0.014
274	triple-negative breast cancer	0.028	0.094
275	tuberculosis	0.022	0.006
276	type 2 diabetes mellitus	0.011	0.004
277	type II hypersensitivity reaction disease	0.013	0.002
278	ulcer disease	0.011	0.002
279	ulcerative colitis	0.055	0.019
280	ulnar-mammary syndrome	0.014	0.001
281	undifferentiated pleomorphic sarcoma	0.001	0.034
282	urinary bladder carcinoma	0.057	0.019
283	urothelial carcinoma	0.013	0.017
284	uterine cancer	0.003	0.001
285	uveitis	0.007	0.004
286	vascular disease	0.005	0.001
287	viral disease	0.019	0.005
288	vitamin D deficiency	0.006	0.004
289	vitiligo	0.027	0.004
290	Wilms tumor	0.001	0.009
291	Zika virus infectious disease	0.002	0.074

Table S3. List of the human diseases associated with GM-CSF and S100A6 protein, according to DisGeNET database (<http://www.disgenet.org>). PubMed identifiers of the references confirming the protein-disease associations are indicated.

<i>Nº</i>	<i>Disease</i>	<i>GM-CSF</i>	<i>S100A6</i>
1	Acute lymphocytic leukemia	12912966, 8499641, 7535143, 29596541, 29338593, 8600166, 19129484, 17205058, 10942373, 30626253, 28535084	28646023, 22025528
2	Acute myocardial infarction	29078142	28174168
3	Adenocarcinoma	31233203, 11211145, 7635448	12239456, 12239456, 10952782
4	Adenocarcinoma of prostate	23740935	15280928
5	Adult medulloblastoma	30771762	17579622, 17579622
6	Alzheimer's disease	30089620, 30844363, 30045733, 20592257, 28213293, 31026486, 28887373, 31437430, 27738910, 19617638, 30282352, 29935415, 31831030, 30770953, 27778163, 27784219, 31345148, 31068482, 31694701, 31847891, 31433986, 30847359, 30207231, 31104024, 28752420, 29604263, 31795039, 31104027, 29282337, 30909212, 31694431, 28710906, 28527210, 30741681, 30051512, 31810489, 31737952, 29558986, 29425372, 29562517, 28441967, 31432418, 30614807, 29039020, 29245058, 28149943, 30947755, 31371645, 28482211, 27858709, 30569013, 31139684, 30605056, 31286708, 31350262, 30976648, 30967340, 30340200, 28196768, 30509028, 29017593, 31815692, 31121601, 30486870, 31464088, 31382178, 29562534, 29071500, 29859129, 27693189, 28701919, 28453487, 28375076, 29505610, 29439331, 31209176, 29940161, 29914031, 31135048, 28344552, 28269771, 30902090, 30911600, 31440579, 31029057, 30186154, 30555890, 31660655, 30372684, 27916386, 29232251, 31150957, 30390679, 29892221, 31521199, 31166546, 28604243, 30614806, 30282368, 30440090, 29527163, 30172624, 30231896, 31570539, 29307736, 29558979, 29468177, 31834365, 31194969, 29951493, 31779670, 29881343, 29956088, 31463927, 27515698, 28628634, 27716663, 28124618, 30447377, 30958346, 29501462, 28320113, 28426958, 28179036, 30372682, 28394917, 29171991, 29541381, 30155553, 30337152, 29758941, 30909232, 28709448, 30055655, 30037601, 29713273, 31414383, 30720873, 29261520, 30149288, 28317649, 28191798, 29499171, 31306137, 29331877, 28329084, 28721928, 30061810, 30145588, 29444966, 28382304, 29573847, 30611311, 27662296, 30485582, 29318973, 29096697, 28441961, 30569014, 30610252, 30847669, 28649597, 28440221, 29321235, 30878539, 31682234, 29415470, 30794315, 29060940, 28861336, 29544527, 30922415, 30023169, 30903419, 31828981, 28413821, 30217936, 31380776, 30524269, 30353860, 28239349, 30278247, 27444968, 29560372, 31104015, 25737095, 29214153, 30791922, 31388720, 29467305, 31547024, 30724072, 29937097, 30606734, 30244311, 28800330, 31424398, 29179578, 31179518, 31129184, 29054536, 31293044, 28071698, 29154278, 29241555, 29346009, 30630955	31440382, 15590066
7	Amyloidosis	29898969, 31118310, 29324921, 29386280, 28800330, 29523644, 29558986, 29171991, 30605056, 31388720, 30037601, 31201430, 28497179, 29017912, 29966201, 30746564, 31491594, 31688040, 31771069, 30253800, 29049480, 30365556, 28453487, 30927601, 31699324, 30055655, 28413821, 27903811, 30348495, 30901713,	31440382

		30509028, 30735665, 30747416, 31759396, 29467305, 29282337, 30248592	
8	Amyotrophic lateral sclerosis	30867270, 30741620, 31721001, 28334553, 27741429, 28550440, 28293476, 30210445, 29212830, 28185258, 29331073, 28416596, 30116940, 30397248, 30405855, 29527688, 20544912	11108968, 12152788, 15590066
9	Anophthalmia and pulmonary hypoplasia	24942756, 30922919, 30232221	25799022, 31257501
10	B-cell lymphomas	8469286, 9081710, 29693141	28123545
11	Bladder neoplasm	16397056, 31385407, 9231915, 27486853, 29243219, 28205361	26508026
12	Breast carcinoma	28754674, 29230663, 31635541, 16927019, 26621531, 31581558, 14767486, 11325840, 30018709, 29151836, 10078967, 12731089, 20529245, 29906422, 29867922, 26173622, 14999770, 17159986, 2646321, 15205327, 12748184, 21997231, 11891846, 7514449	11267940, 25363551, 25454514, 28051137, 21459801, 22997041, 2448309, 11477119, 23029355, 9716033, 10517668, 23485561, 31809870, 26474308
13	Carcinogenesis	18565574, 19737647, 27184426, 24366884, 30338860	25917868, 12239456, 15280928, 22295074, 28343163, 25760073, 22560296, 19891957, 20629554, 17970874, 25120023, 16340196, 20581057, 24281831
14	Carcinoma of bladder	3121558, 31385407, 29243219, 16397056, 9231915, 27486853, 28205361	26508026
15	Carcinoma of lung	17342342, 1988125, 8978294, 27998891, 12708493, 27486763, 11129324, 17596594, 9044861, 16820947	18620780, 31497188
16	Carcinoma, ovarian epithelial	19177198, 19389515, 9815777, 22228506	19888321
17	Central neuroblastoma	30629318, 16682723, 1377084	1998963, 7576953, 19216736
18	Childhood neuroblastoma	16682723, 1377084, 30629318	1998963, 7576953, 19216736
19	Colon carcinoma	28811578, 8526901, 30892086, 17589921	29534068
20	Conventional (clear cell) renal cell carcinoma	11691814, 15705910, 31233203, 18957055, 12225344, 29734839, 9012452, 9108457, 15451464	25120023, 25760073
21	Coronary arteriosclerosis	17003932	28174168
22	Endometrial carcinoma	31274231, 30816518, 8605095	12770752, 16999816, 14519645, 21036726
23	Endometriosis	21481374, 22365076	26044826, 28075439, 29544367, 30078406, 28412861
24	Epithelial ovarian cancer	19177198, 9815777	19888321
25	Glioblastoma	28459367, 16718522, 9189765, 30564626, 30683885, 1701653, 1315829, 24391839, 31485019, 28115578, 31548426, 30235708, 28411277, 29053069	19074870
26	Glioblastoma multiforme	1315829, 31485019, 29053069, 9189765, 28411277, 24391839, 28459367, 30235708, 28115578, 30683885, 31548426, 30564626	19074870
27	Hepatitis B	8406350, 31549887, 12121506	20026004
28	Hypertensive disease	28137972, 26994043, 28081975, 31209176, 30611152, 24446489, 30611134, 31370029	9100575, 15761540, 11595502, 9931115
29	Liver carcinoma	26021873, 20679198, 14969845, 12833133, 12508355, 11295284, 30205709, 28166197, 11916239	24281831, 19048101
30	Liver regeneration disorder	30613001	12859951
31	Lung neoplasms	25034886, 16211258, 12926133	12859967
32	Malignant neoplasm of breast	7514449, 31581558, 29906422, 11891846, 21997231, 14999770, 2646321, 29230663, 14767486, 11325840, 12748184, 26173622, 16927019, 28754674, 26621531, 10078967, 31635541, 29151836, 29867922, 30018709, 15205327, 17159986	25454514, 11267940, 21459801, 23029355, 28051137, 22997041, 10517668, 25363551, 2448309, 26474308, 25917868, 31809870, 23485561

33	Malignant neoplasm of endometrium	31274231, 8605095, 30816518	21036726, 14519645
34	Malignant neoplasm of liver	17326190	24281831
35	Malignant neoplasm of lung	7679411, 11129324, 16820947, 27998891, 27486763, 1988125, 17596594, 17342342, 8978294, 9044861, 12708493	18620780, 31497188
36	Malignant neoplasm of ovary	22228506, 19389515	19888321
37	Malignant neoplasm of pancreas	30814617, 22698406, 30232221, 27184426	25799022
38	Malignant neoplasm of prostate	12746848, 15963916, 7927924, 16831072, 16962494, 10537292, 15704001, 10950151, 28797844, 15598439, 28241742, 9446667, 18303206, 17707059	12770752, 15280928, 16015609
39	Malignant neoplasm of stomach	28274999, 28943964	17970874, 20581057, 22681645, 24705642
40	Malignant neoplasm of urinary bladder	16397056, 9231915, 31385407, 27486853, 28205361, 29243219	26508026
41	Malignant neoplasms	15705910, 10502821, 28582842, 16962494, 20381405, 31581558, 12048160, 25584002, 30075184, 308840, 29963274, 12225344, 10950151, 28320147, 18957055, 9192768, 9815891, 31233203, 1825026, 29048610, 16912178, 23526884, 8149602, 26803055, 31834830, 21540457, 9168436, 23108143, 27039846, 29075565, 28240048, 19890352, 24366884, 11211145, 30232221, 9741424, 19459853, 10537292, 30013322, 28686055, 22988839, 29596541, 10840163, 10092001, 21630267, 27734153	28075439, 10952782, 25120023, 29544367, 29552203, 19888321, 28123545, 18714402, 17970874, 15280928, 24281831
42	Malignant tumor of colon	30892086, 17589921, 28811578	29534068
43	Mammary neoplasms	19805669, 11325840, 28282575, 29867922, 20127358, 12748184	25917868, 16168121, 21459801
44	Medulloblastoma	30771762	17579622, 17579622
45	Melanoma	9816095, 11676397, 11061616, 10078967, 28589085, 8921947, 26803055, 18593361, 24973616, 9336741, 25821063, 10505851, 30450100, 31143509, 31620131, 16718522, 12396624, 25034886, 28536308, 25286079, 19915919, 16713660, 11950413, 9143914, 29414294, 7847808, 10930096, 31171039	7654229, 9291441, 1737392, 28433799, 9925766, 8261423, 9716033
46	Meningioma	30717035, 29188303	15492810
47	Nasopharyngeal carcinoma	18999931, 28732079	27596819
48	Neoplasm metastasis	31524146, 30504718, 28497184, 28484077, 29959142, 19177198, 30235708, 29536224, 25077564, 25048347, 29368214, 10811863, 31635541, 28811578, 10840163, 17159986, 9044861, 30771762, 28745079, 27184426, 10505851, 10224095	7654229, 22681645, 25120023, 10952782, 12239456, 26252518, 16015609, 24705642, 18612712, 20581057, 23007696, 16157226, 24281831, 8261423, 9291441
49	Neoplasms	10597195, 23108143, 28240048, 11023201, 16820947, 16397056, 25714011, 11325840, 9108457, 28598276, 28732079, 29959142, 9192768, 18495536, 29569742, 7691144, 28336378, 10466632, 12396624, 22988839, 23352035, 22266191, 18473731, 10811863, 15340764, 8820364, 9568072, 16971804, 21854753, 12748184, 25034886, 9989489, 25538258, 10078967, 9815891, 9625251, 29900557, 31477437, 11544306, 22349830, 28951871, 31059598, 15818382, 12788649, 28089377, 30747725, 16019851, 14715418, 9414129, 30611134, 8607020, 11708879, 28497184, 18957055, 30265190, 23811319, 25381801, 9734660, 30205709, 17096339, 9189765, 21327637, 10449617, 11735339, 29867922, 30538109, 10233685, 3539201, 30519342, 17822323, 11983866, 9143914, 14667270, 9652792, 16001161, 15027115, 17487349, 31064334, 9721877, 7679411, 8137291, 14970281, 12225344, 12579310, 31273954, 14634087, 22698406, 28643761, 28572167, 23634280, 28530155, 1701653, 28623761, 21159637, 29177676, 9218594, 11368443, 9741424, 10866317, 8864754, 28694526, 22200506, 16525479, 25900822, 31297382, 16912178, 18999931, 11122109, 15899826,	12859951, 29435103, 25363551, 25760073, 28376177, 24281831, 19888321, 24705642, 31497188, 21036726, 22681645, 16464796, 7654229, 25120023, 24583627, 24217649, 18620780, 9291441, 11477119, 26252518, 29629840, 28075439, 28612211, 10517668

		31467912, 22698407, 7734955, 11916239, 11571536, 18452266, 26803055, 12932654, 9764578, 19805669, 28176947, 19517218, 29434585, 30504718, 14730331, 30235708, 10797297, 8418381, 9808567, 20147862, 16713660, 9455809, 28797844, 9816095, 16450393, 27389055, 21208907, 15451464, 29435154, 15963916, 31186691, 24324073, 30922919, 11836673, 30892086, 1315829, 15705910, 10679114, 2162848, 29882703, 28166197, 19008459, 29669721, 9226179, 24737547, 31548293, 8826937, 17620425, 22186789, 30004280, 17965776, 21626603, 31376705, 28409732, 1968360, 8485707, 10536177, 8704254, 27184426, 21424118, 26049545, 3119535, 31620131, 11691814	
50	Nervous system disorder	29059494, 28082233, 31464088, 29212830, 28991699	31850060
51	Neuroblastoma	30629318, 16682723, 1377084	1998963, 7576953, 19216736
52	Non-small cell lung carcinoma	25919140, 14667270, 14970281, 17599645, 16410826, 12926133, 15963916, 31797203, 2162848	18620780
53	Osteosarcoma	2162848	16157226, 16157226, 18612712
54	Osteosarcoma of bone	2162848, 31015342	16157226
55	Ovarian neoplasm	22228506, 19389515	19888321
56	Pancreatic carcinoma	30814617, 27184426, 22698406, 9568072, 30232221, 9652792	26044826, 25799022
57	Primary malignant neoplasm	31233203, 23108143, 10092001, 29596541, 21630267, 24366884, 16962494, 16912178, 27734153, 21540457, 10502821, 19890352, 28686055, 30013322, 18957055, 29963274, 28240048, 22988839, 10537292, 12225344, 26803055, 11211145, 10840163, 29075565, 28582842, 19459853, 12048160, 10950151, 9741424, 23526884, 31581558, 25584002, 30075184, 8149602, 28320147, 29048610, 30232221, 20381405, 308840, 15705910	19888321, 28123545, 29552203, 17970874, 15280928, 10952782, 18714402, 25120023
58	Primary malignant neoplasm of lung	27998891, 1988125, 16820947, 12708493, 27486763, 8978294, 17342342, 11129324, 9044861, 17596594	31497188, 18620780
59	Prostate carcinoma	16831072, 9446667, 15598439, 17707059, 28797844, 15963916, 10950151, 16962494, 7927924, 12746848, 15704001, 18303206, 28241742, 10537292	16015609, 15280928
60	Pulmonary fibrosis	9881949, 9881949, 17894541	30239835
61	Secondary neoplasm	29368214, 28497184, 10224095, 28811578, 10505851	25120023, 8261423, 23007696, 16015609, 26252518, 9291441
62	Squamous cell carcinoma	16912178, 16912178, 10408389, 9815891, 11023201, 6982994	17495951, 18201235, 29053662, 20596636, 18705642
63	Stomach carcinoma	28943964, 28274999	17970874, 22681645, 20581057, 24705642, 26044826
64	Systemic scleroderma	22324944, 15801021	30239835
65	Tuberculosis	28151863, 19450898, 29233902, 28225337, 29872095, 31660375, 29066547, 16412049, 30451103	19912616, 27882322, 11574597
66	Tumor cell invasion	9500466, 10840163, 16820947, 12748184, 16912178, 20863401, 29150269, 23634280	25799022, 25120023, 24705642, 10952782, 29544367, 29629840
67	Tumor progression	8819123, 17342342, 23634280, 28754674, 11583982, 29667176, 31776206, 10597195, 16820947	22681645, 8261423, 1737392

Table S4. List of the human diseases associated with GM-CSF and S100A6 protein, according to Open Targets Platform database (<https://www.opentargets.org>), and corresponding association scores (<https://docs.targetvalidation.org/getting-started/scoring>). The diseases for which all association scores exceed 0.1 are highlighted in yellow.

<i>Nº</i>	<i>Disease</i>	<i>GM-CSF</i>	<i>S100A6</i>
1	acrodermatitis enteropathica	0.002	0.017
2	acute coronary syndrome	0.009	0.009
3	acute hepatic failure	0.004	0.028
4	acute kidney failure	0.018	0.007
5	acute kidney injury	0.017	0.010
6	acute lymphoblastic leukemia	0.032	0.058
7	acute myeloid leukemia	0.073	0.005
8	acute myocardial infarction	0.083	0.008
9	acute pancreatitis	0.009	0.004
10	acute promyelocytic leukemia	0.020	0.001
11	adenocarcinoma	0.015	0.039
12	adenoma	0.018	0.024
13	adenomyosis	0.021	0.009
14	age-related macular degeneration	0.004	0.025
15	alkaline phosphatase measurement	0.014	0.008
16	allergic rhinitis	0.018	0.010
17	Alzheimer disease	0.057	0.020
18	amyloidosis	0.010	0.003
19	amyotrophic lateral sclerosis	0.005	0.020
20	anemia	0.017	0.004
21	angina unstable	0.001	0.004
22	anxiety	0.008	0.006
23	ascites	0.004	0.003
24	astrocytoma	0.017	0.006
25	atherosclerosis	0.052	0.004
26	atopic eczema	0.025	0.021
27	atrial fibrillation	0.022	0.009
28	attention deficit hyperactivity disorder	0.010	0.067
29	autism spectrum disorder - epilepsy - arthrogryposis syndrome	0.004	0.006
30	autoimmune polyendocrinopathy	0.002	0.003
31	axial length measurement	0.011	0.022
32	bacterial disease	0.013	0.002
33	bacterial urinary tract infection	0.006	0.001
34	Bartsocas-Papas syndrome	0.004	0.006
35	benign prostatic hyperplasia	0.003	0.008
36	brain injury	0.008	0.002
37	breast adenocarcinoma	0.002	0.001
38	breast cancer	0.051	0.059
39	breast carcinoma	0.015	0.006
40	breast ductal carcinoma in situ	0.002	0.031
41	bronchoalveolar adenocarcinoma	0.002	0.006
42	Burkitts lymphoma	0.002	0.004
43	calf circumference measurement	0.004	0.009
44	cancer	0.110	0.034
45	carcinoma	0.021	0.008
46	cardiomyopathy	0.003	0.003
47	cardiovascular disease	0.026	0.003
48	cerebral ischemia	0.004	0.001
49	cervical carcinoma	0.012	0.003
50	cholangiocarcinoma	0.019	0.081
51	cholestasis	0.004	0.001
52	cholesteatoma	0.004	0.012
53	chronic bronchitis	0.017	0.001
54	chronic kidney disease	0.088	0.019

55	chronic obstructive pulmonary disease	0.083	0.007
56	cirrhosis of liver	0.019	0.006
57	clostridium difficile infection	0.010	0.002
58	coccidioidomycosis	0.008	0.004
59	cognitive impairment	0.009	0.004
60	colon adenocarcinoma	0.015	0.004
61	colon adenoma	0.004	0.001
62	colon carcinoma	0.073	0.004
63	colorectal adenocarcinoma	0.047	0.027
64	colorectal adenoma	0.012	0.001
65	colorectal carcinoma	0.094	0.042
66	colorectal neoplasm	0.010	0.004
67	congenital heart disease	0.002	0.007
68	congestive heart failure	0.005	0.008
69	coronary artery disease	0.023	0.018
70	COVID-19	0.317	0.005
71	cutaneous fibrous histiocytoma	0.002	0.001
72	cutaneous melanoma	0.019	0.013
73	cyst	0.006	0.001
74	cystic fibrosis	0.084	0.002
75	cytomegalovirus infection	0.011	0.004
76	deletion syndrome	0.002	0.002
77	diabetes mellitus	0.082	0.012
78	diabetic nephropathy	0.004	0.002
79	Down syndrome	0.010	0.003
80	Dravet syndrome	0.019	0.004
81	dry age related macular degeneration	0.004	0.005
82	Duane retraction syndrome	0.012	0.002
83	Ehlers-Danlos syndrome, dermatosparaxis type	0.071	0.010
84	emphysema	0.045	0.007
85	endometrial carcinoma	0.018	0.013
86	endometriosis	0.028	0.038
87	endometrium adenocarcinoma	0.003	0.005
88	endothelial dysfunction	0.014	0.004
89	eosinophilic esophagitis	0.042	0.004
90	familial Mediterranean fever	0.038	0.003
91	fetal growth restriction	0.002	0.010
92	fibromyalgia	0.003	0.004
93	Friedreich ataxia	0.007	0.002
94	gallbladder carcinoma	0.007	0.004
95	ganglioneuroma	0.007	0.002
96	gastric adenocarcinoma	0.008	0.003
97	gastric carcinoma	0.017	0.013
98	gastroenteritis	0.012	0.002
99	generalized anxiety disorder	0.007	0.006
100	genetic disorder	0.121	0.118
101	genital neoplasm, female	0.001	0.004
102	glaucoma	0.012	0.004
103	glioblastoma	0.056	0.004
104	glioblastoma multiforme	0.306	0.015
105	glycogen storage disease VI	0.006	0.001
106	gonorrhea	0.032	0.039
107	graft versus host disease	0.058	0.003
108	granular cell tumor	0.017	0.002
109	hantavirus hemorrhagic fever with renal syndrome	0.005	0.003
110	head and neck squamous cell carcinoma	0.025	0.009
111	heart disease	0.035	0.001
112	heart failure	0.014	0.007
113	hemorrhage	0.021	0.001
114	hemorrhagic fever with renal syndrome	0.005	0.003

115	hepatitis	0.018	0.001
116	hepatitis B virus infection	0.027	0.002
117	hepatocellular carcinoma	0.302	0.050
118	human african trypanosomiasis	0.003	0.001
119	Huntington disease	0.023	0.007
120	hyperglycemia	0.004	0.010
121	hyperinsulinemic hypoglycemia, familial	0.039	0.001
122	hyperlipidemia	0.010	0.013
123	hypertension	0.031	0.018
124	hypertensive disorder	0.001	0.003
125	hypertriglyceridemia	0.006	0.001
126	hypertrophic cardiomyopathy	0.005	0.002
127	hypothyroidism	0.004	0.001
128	idiopathic pulmonary fibrosis	0.005	0.007
129	IGA glomerulonephritis	0.007	0.004
130	immature platelet fraction	0.008	0.004
131	infarction	0.008	0.001
132	infect	0.105	0.048
133	infection	0.105	0.048
134	infertility	0.017	0.013
135	inflammatory bowel disease	0.046	0.001
136	influenza	0.067	0.001
137	inherited lipid metabolism disorder	0.007	0.004
138	injury	0.005	0.001
139	insulin resistance	0.036	0.009
140	interstitial lung disease	0.029	0.005
141	interstitial nephritis	0.002	0.004
142	intrahepatic cholangiocarcinoma	0.028	0.034
143	invasive breast carcinoma	0.002	0.004
144	invasive breast ductal carcinoma	0.001	0.014
145	ischemic cardiomyopathy	0.001	0.004
146	keratitis	0.001	0.004
147	kidney disease	0.002	0.003
148	kidney neoplasm	0.008	0.002
149	leiomyoma	0.004	0.020
150	leiomyosarcoma	0.008	0.001
151	leprosy	0.013	0.033
152	leukocyte adhesion deficiency type II	0.007	0.003
153	lipoid nephrosis	0.010	0.002
154	lung adenocarcinoma	0.008	0.004
155	lung cancer	0.002	0.003
156	lung carcinoma	0.013	0.005
157	lupus erythematosus	0.003	0.002
158	lymph node metastatic carcinoma	0.006	0.016
159	malignant peripheral nerve sheath tumor	0.001	0.007
160	medulloblastoma	0.001	0.021
161	melanoma	0.116	0.024
162	mental deterioration	0.002	0.002
163	Merkel cell skin cancer	0.002	0.002
164	mesothelioma	0.013	0.001
165	metabolic syndrome	0.004	0.014
166	metastasis	0.005	0.007
167	metastatic carcinoma	0.011	0.004
168	metastatic malignant neoplasm	0.019	0.004
169	metastatic melanoma	0.042	0.001
170	metastatic neoplasm	0.040	0.002
171	microphthalmia with limb anomalies	0.016	0.019
172	microphthalmia, isolated, with coloboma	0.003	0.004
173	mitochondrial DNA depletion syndrome 4a	0.018	0.006
174	Miyoshi myopathy	0.022	0.066

175	monocyte count	0.026	0.021
176	monocytic leukemia	0.010	0.002
177	mucous membrane pemphigoid	0.016	0.008
178	multiple myeloma	0.035	0.002
179	multiple sclerosis	0.042	0.016
180	Mycobacterium infection	0.009	0.007
181	myeloid sarcoma	0.107	0.033
182	myocardial infarction	0.029	0.014
183	myocardial ischemia	0.029	0.013
184	neoplasm	0.129	0.104
185	nephropathy	0.004	0.001
186	nervous system disease	0.009	0.004
187	neuroblastoma	0.082	0.012
188	neurodegenerative disease	0.288	0.012
189	neuroendocrine neoplasm	0.003	0.003
190	non-alcoholic fatty liver disease	0.004	0.024
191	nonpapillary renal cell carcinoma	0.029	0.069
192	non-small cell lung carcinoma	0.032	0.033
193	obesity	0.016	0.006
194	obstructive sleep apnea	0.005	0.020
195	Ochoa syndrome	0.004	0.001
196	oculocutaneous albinism type 1	0.013	0.022
197	onchocerciasis	0.010	0.001
198	oral squamous cell carcinoma	0.044	0.015
199	osteoarthritis	0.081	0.047
200	osteosarcoma	0.021	0.083
201	ovarian carcinoma	0.017	0.018
202	pachyonychia congenita	0.006	0.079
203	Pallister-Hall syndrome	0.021	0.012
204	pancreatic adenocarcinoma	0.013	0.012
205	pancreatic carcinoma	0.006	0.028
206	pancreatic ductal adenocarcinoma	0.029	0.085
207	pancreatic neoplasm	0.018	0.006
208	pancreatitis	0.013	0.006
209	papillary thyroid carcinoma	0.010	0.024
210	paracoccidioidomycosis	0.006	0.001
211	parasitic infection	0.012	0.007
212	patent ductus arteriosus	0.037	0.017
213	pemphigus foliaceus	0.003	0.005
214	peri-implantitis	0.002	0.003
215	periodontitis	0.059	0.002
216	Plasmodium falciparum malaria	0.002	0.001
217	pleural effusion	0.012	0.005
218	polycystic ovary syndrome	0.004	0.013
219	portal hypertension	0.003	0.002
220	posterior leukoencephalopathy syndrome	0.001	0.004
221	Potocki-Lupski syndrome	0.006	0.048
222	preeclampsia	0.019	0.050
223	primary biliary cirrhosis	0.005	0.074
224	primitive neuroectodermal tumor	0.009	0.015
225	prostate adenocarcinoma	0.004	0.018
226	prostatitis	0.004	0.001
227	protein measurement	0.043	0.199
228	pterygium	0.001	0.035
229	pulmonary fibrosis	0.034	0.010
230	pulmonary hypertension	0.021	0.004
231	pulmonary tuberculosis	0.017	0.002
232	reading	0.004	0.013
233	relapsing-remitting multiple sclerosis	0.010	0.002
234	renal cell carcinoma	0.043	0.008

235	respiratory failure	0.012	0.005
236	respiratory system disease	0.012	0.002
237	respiratory tract infectious disorder	0.023	0.002
238	retinopathy of prematurity	0.015	0.002
239	rheumatoid arthritis	0.414	0.008
240	sarcoidosis	0.100	0.002
241	sarcoma	0.019	0.006
242	schistosomiasis	0.004	0.002
243	schizophrenia	0.005	0.067
244	senile plaques	0.002	0.003
245	sepsis	0.076	0.014
246	Sjogren syndrome	0.004	0.003
247	skin basal cell carcinoma	0.006	0.013
248	skin neoplasm	0.004	0.001
249	small cell lung carcinoma	0.082	0.003
250	spinal cord injury	0.046	0.001
251	squamous cell carcinoma	0.015	0.048
252	squamous cell lung carcinoma	0.014	0.010
253	stomach neoplasm	0.001	0.011
254	subarachnoid hemorrhage	0.001	0.003
255	systemic lupus erythematosus	0.030	0.008
256	systemic scleroderma	0.045	0.015
257	thalassemia	0.016	0.001
258	thymoma	0.013	0.001
259	thyroid carcinoma	0.009	0.017
260	thyroid nodule	0.002	0.003
261	toxoplasmosis	0.005	0.017
262	triple-A syndrome	0.077	0.002
263	triple-negative breast cancer	0.028	0.009
264	type 1 diabetes mellitus	0.010	0.021
265	type 2 diabetes mellitus	0.011	0.010
266	type II hypersensitivity reaction disease	0.013	0.001
267	ulcerative colitis	0.055	0.004
268	ulnar-mammary syndrome	0.014	0.001
269	undifferentiated pleomorphic sarcoma	0.001	0.003
270	urinary bladder carcinoma	0.057	0.010
271	urothelial carcinoma	0.013	0.009
272	uveal melanoma	0.002	0.001
273	vascular disease	0.005	0.003
274	vasculitis	0.018	0.002
275	viral disease	0.019	0.008
276	visceral leishmaniasis	0.012	0.002

Table S5. List of the human diseases associated with GM-CSF and S100P protein, according to DisGeNET database (<http://www.disgenet.org>). PubMed identifiers of the references confirming the protein-disease associations are indicated.

Nº	Disease	GM-CSF	S100P
1	Adenocarcinoma	31233203, 11211145, 7635448	15632002, 18575778, 18162774
2	Osteoporosis	30142160, 18463784	29750314
3	Ovarian neoplasm	22228506, 19389515	17539915
4	Nasopharyngeal carcinoma	18999931, 28732079	28693201

Table S6. List of the human diseases associated with GM-CSF and S100P protein, according to Open Targets Platform database (<https://www.opentargets.org>), and corresponding association scores (<https://docs.targetvalidation.org/getting-started/scoring>). The diseases for which all association scores exceed 0.1 are highlighted in yellow.

<i>Nº</i>	<i>Disease</i>	<i>GM-CSF</i>	<i>S100P</i>
1	acne	0.025	0.015
2	acute coronary syndrome	0.009	0.009
3	acute kidney failure	0.018	0.024
4	acute myeloid leukemia	0.073	0.010
5	acute respiratory distress syndrome	0.041	0.001
6	adenocarcinoma	0.015	0.017
7	adenoma	0.018	0.017
8	AIDS dementia	0.004	0.002
9	allergic disease	0.011	0.007
10	allergic rhinitis	0.018	0.004
11	ampulla of Vater carcinoma	0.010	0.003
12	ankylosing spondylitis	0.077	0.004
13	asthma	0.116	0.007
14	astrocytoma	0.017	0.002
15	atrial fibrillation	0.022	0.005
16	bacterial disease	0.013	0.001
17	bacteriemia	0.006	0.019
18	Barrett's esophagus	0.005	0.005
19	benign prostatic hyperplasia	0.003	0.002
20	bladder transitional cell carcinoma	0.008	0.009
21	breast cancer	0.051	0.085
22	breast carcinoma	0.015	0.035
23	breast ductal carcinoma in situ	0.002	0.009
24	calf circumference measurement	0.004	0.012
25	cancer	0.110	0.065
26	carcinoma	0.021	0.013
27	carpal tunnel syndrome	0.008	0.003
28	cervical carcinoma	0.012	0.025
29	cholangiocarcinoma	0.019	0.039
30	chondrosarcoma	0.001	0.001
31	chronic hepatitis	0.002	0.004
32	chronic kidney disease	0.088	0.031
33	chronic periodontitis	0.019	0.002
34	Chédiak-Higashi syndrome	0.005	0.005
35	cirrhosis of liver	0.019	0.004
36	colitis	0.068	0.008
37	colon adenocarcinoma	0.015	0.020
38	colon carcinoma	0.073	0.075
39	colonic neoplasm	0.007	0.009
40	colorectal adenocarcinoma	0.047	0.010
41	colorectal adenoma	0.012	0.003
42	colorectal cancer	0.002	0.014
43	colorectal carcinoma	0.094	0.076
44	colorectal neoplasm	0.010	0.001
45	corpuscular hemoglobin content	0.005	0.005
46	COVID-19	0.317	0.004
47	Crohn's disease	0.112	0.014
48	diabetes mellitus	0.082	0.003
49	diffuse large B-cell lymphoma	0.030	0.010
50	dysplasia	0.001	0.005
51	endometrial carcinoma	0.018	0.007
52	esophageal adenocarcinoma	0.005	0.007
53	esophageal carcinoma	0.010	0.001
54	esophageal squamous cell carcinoma	0.008	0.033

55	FEV/FEC ratio	0.053	0.028
56	gallbladder carcinoma	0.007	0.023
57	gastric adenocarcinoma	0.008	0.004
58	gastric carcinoma	0.017	0.002
59	gastrointestinal stromal tumor	0.004	0.003
60	genetic disorder	0.121	0.148
61	gestational diabetes	0.008	0.001
62	glioblastoma	0.056	0.058
63	glioblastoma multiforme	0.306	0.007
64	gonorrhea	0.032	0.039
65	head and neck squamous cell carcinoma	0.025	0.006
66	hepatocellular carcinoma	0.302	0.095
67	in situ carcinoma	0.079	0.001
68	infantile convulsions and choreoathetosis	0.032	0.011
69	infect	0.105	0.005
70	infection	0.105	0.005
71	inflammation	0.016	0.002
72	inflammatory bowel disease	0.046	0.005
73	interstitial lung disease	0.029	0.002
74	intrahepatic cholangiocarcinoma	0.028	0.051
75	invasive breast ductal carcinoma	0.001	0.017
76	invasive carcinoma	0.002	0.020
77	kidney neoplasm	0.008	0.005
78	lipoid nephrosis	0.010	0.009
79	lung adenocarcinoma	0.008	0.032
80	lung cancer	0.002	0.001
81	lung carcinoma	0.013	0.003
82	Lyme disease	0.011	0.006
83	lymph node metastatic carcinoma	0.006	0.007
84	malignant peripheral nerve sheath tumor	0.001	0.001
85	maternal uniparental disomy of chromosome 20	0.002	0.007
86	medulloblastoma	0.001	0.009
87	melanoma	0.116	0.018
88	Merkel cell skin cancer	0.002	0.001
89	metastatic carcinoma	0.011	0.002
90	metastatic melanoma	0.042	0.013
91	metastatic neoplasm	0.040	0.003
92	metastatic prostate cancer	0.009	0.008
93	microphthalmia with limb anomalies	0.016	0.004
94	mitochondrial DNA depletion syndrome 4a	0.018	0.001
95	mucocutaneous lymph node syndrome	0.065	0.002
96	myasthenia gravis	0.004	0.004
97	myeloid leukemia	0.025	0.007
98	myocardial infarction	0.029	0.014
99	neoplasm	0.129	0.107
100	neuroblastoma	0.082	0.003
101	neuroendocrine neoplasm	0.003	0.004
102	Niemann-Pick disease type C	0.033	0.049
103	non-small cell lung carcinoma	0.032	0.033
104	oral lichen planus	0.031	0.004
105	oral squamous cell carcinoma	0.044	0.014
106	osteoarthritis	0.081	0.005
107	osteoporosis	0.006	0.003
108	osteoporosis-pseudoglioma syndrome	0.012	0.009
109	osteosarcoma	0.021	0.019
110	ovarian carcinoma	0.017	0.004
111	pachyonychia congenita	0.006	0.052
112	pancreatic adenocarcinoma	0.013	0.037
113	pancreatic carcinoma	0.006	0.034
114	pancreatic ductal adenocarcinoma	0.029	0.071

115	pancreatic neoplasm	0.018	0.061
116	pancreatitis	0.013	0.008
117	papillary thyroid carcinoma	0.010	0.004
118	patent ductus arteriosus	0.037	0.022
119	periodontitis	0.059	0.003
120	pneumonia	0.266	0.001
121	posterior leukoencephalopathy syndrome	0.001	0.033
122	primitive neuroectodermal tumor	0.009	0.004
123	prostate adenocarcinoma	0.004	0.006
124	prostate carcinoma	0.022	0.002
125	prostatitis	0.004	0.004
126	psoriasis	0.082	0.019
127	psoriatic arthritis	0.080	0.001
128	reading	0.004	0.015
129	rectal carcinoma	0.002	0.002
130	relapsing-remitting multiple sclerosis	0.010	0.002
131	renal cell carcinoma	0.043	0.004
132	respiratory syncytial virus infection	0.008	0.005
133	rhabdomyosarcoma	0.002	0.001
134	rheumatoid arthritis	0.414	0.023
135	sarcoma	0.019	0.001
136	sepsis	0.076	0.040
137	septic shock	0.001	0.014
138	severe malarial anemia	0.073	0.007
139	Sezary's disease	0.013	0.002
140	small cell lung carcinoma	0.082	0.004
141	squamous cell carcinoma	0.015	0.002
142	stomach neoplasm	0.001	0.003
143	tarsal-carpal coalition syndrome	0.004	0.006
144	temporal lobe epilepsy	0.006	0.015
145	transitional cell carcinoma of kidney	0.002	0.039
146	triple-negative breast cancer	0.028	0.040
147	type 2 diabetes mellitus	0.011	0.034
148	ulcer disease	0.011	0.001
149	ulcerative colitis	0.055	0.046
150	urinary bladder carcinoma	0.057	0.005
151	urogenital neoplasm	0.002	0.002
152	urothelial carcinoma	0.013	0.019
153	viral disease	0.019	0.001
154	vulvar carcinoma	0.002	0.004
155	Wilson disease	0.011	0.003

Table S7. List of the human diseases associated with GM-CSF, S100A4, S100A6 and S100P, according to Open Targets Platform database (<https://www.opentargets.org>), and corresponding association scores (<https://docs.targetvalidation.org/getting-started/scoring>). The diseases for which all association scores exceed 0.1 are highlighted in yellow.

Nº	Disease	GM-CSF	S100A4	S100A6	S100P
1	acute kidney failure	0.018	0.004	0.007	0.024
2	acute myeloid leukemia	0.073	0.091	0.005	0.010
3	adenocarcinoma	0.015	0.024	0.039	0.017
4	adenoma	0.018	0.014	0.024	0.017
5	allergic rhinitis	0.018	0.003	0.010	0.004
6	astrocytoma	0.017	0.006	0.006	0.002
7	atrial fibrillation	0.022	0.082	0.009	0.005
8	benign prostatic hyperplasia	0.003	0.013	0.008	0.002
9	breast cancer	0.051	0.078	0.059	0.085
10	breast carcinoma	0.015	0.050	0.006	0.035
11	breast ductal carcinoma <i>in situ</i>	0.002	0.005	0.031	0.009
12	calf circumference measurement	0.004	0.057	0.009	0.012
13	cancer	0.110	0.101	0.034	0.065
14	carcinoma	0.021	0.078	0.008	0.013
15	cervical carcinoma	0.012	0.003	0.003	0.025
16	cholangiocarcinoma	0.019	0.023	0.081	0.039
17	chronic kidney disease	0.088	0.041	0.019	0.031
18	cirrhosis of liver	0.019	0.016	0.006	0.004
19	colon adenocarcinoma	0.015	0.015	0.004	0.020
20	colon carcinoma	0.073	0.053	0.004	0.075
21	colorectal adenocarcinoma	0.047	0.017	0.027	0.010
22	colorectal carcinoma	0.094	0.086	0.042	0.076
23	colorectal neoplasm	0.010	0.012	0.004	0.001
24	COVID-19	0.317	0.051	0.005	0.004
25	diabetes mellitus	0.082	0.014	0.012	0.003
26	endometrial carcinoma	0.018	0.012	0.013	0.007
27	gastric adenocarcinoma	0.008	0.009	0.003	0.004
28	gastric carcinoma	0.017	0.028	0.013	0.002
29	genetic disorder	0.121	0.173	0.118	0.148
30	glioblastoma	0.056	0.056	0.004	0.058
31	glioblastoma multiforme	0.306	0.091	0.015	0.007
32	gonorrhoea	0.032	0.032	0.039	0.039
33	head and neck squamous cell carcinoma	0.025	0.054	0.009	0.006
34	hepatocellular carcinoma	0.302	0.101	0.050	0.095
35	infect	0.105	0.052	0.048	0.005
36	infection	0.105	0.052	0.048	0.005
37	inflammatory bowel disease	0.046	0.009	0.001	0.005
38	interstitial lung disease	0.029	0.014	0.005	0.002
39	intrahepatic cholangiocarcinoma	0.028	0.022	0.034	0.051
40	invasive breast ductal carcinoma	0.001	0.016	0.014	0.017
41	kidney neoplasm	0.008	0.001	0.002	0.005
42	lung adenocarcinoma	0.008	0.035	0.004	0.032
43	lung cancer	0.002	0.046	0.003	0.001
44	lung carcinoma	0.013	0.025	0.005	0.003
45	lymph node metastatic carcinoma	0.006	0.023	0.016	0.007
46	medulloblastoma	0.001	0.044	0.021	0.009
47	melanoma	0.116	0.048	0.024	0.018
48	metastatic carcinoma	0.011	0.001	0.004	0.002
49	metastatic melanoma	0.042	0.002	0.001	0.013
50	metastatic neoplasm	0.040	0.014	0.002	0.003
51	microphthalmia with limb anomalies	0.016	0.011	0.019	0.004
52	myocardial infarction	0.029	0.007	0.014	0.014
53	neoplasm	0.129	0.119	0.104	0.107
54	neuroblastoma	0.082	0.024	0.012	0.003

55	non-small cell lung carcinoma	0.032	0.104	0.033	0.033
56	oral squamous cell carcinoma	0.044	0.032	0.015	0.014
57	osteoarthritis	0.081	0.004	0.047	0.005
58	osteosarcoma	0.021	0.044	0.083	0.003
59	ovarian carcinoma	0.017	0.028	0.018	0.004
60	pachyonychia congenita	0.006	0.095	0.079	0.052
61	pancreatic adenocarcinoma	0.013	0.005	0.012	0.037
62	pancreatic carcinoma	0.006	0.013	0.028	0.034
63	pancreatic ductal adenocarcinoma	0.029	0.067	0.085	0.071
64	pancreatic neoplasm	0.018	0.081	0.006	0.061
65	pancreatitis	0.013	0.006	0.006	0.008
66	papillary thyroid carcinoma	0.010	0.068	0.024	0.004
67	patent ductus arteriosus	0.037	0.004	0.017	0.022
68	periodontitis	0.059	0.002	0.002	0.003
69	primitive neuroectodermal tumor	0.009	0.007	0.015	0.004
70	prostate adenocarcinoma	0.004	0.011	0.018	0.006
71	prostatitis	0.004	0.003	0.001	0.004
72	reading	0.004	0.007	0.013	0.015
73	relapsing-remitting multiple sclerosis	0.010	0.004	0.002	0.002
74	renal cell carcinoma	0.043	0.042	0.008	0.004
75	rheumatoid arthritis	0.414	0.074	0.008	0.023
76	small cell lung carcinoma	0.082	0.007	0.003	0.004
77	squamous cell carcinoma	0.015	0.013	0.048	0.002
78	stomach neoplasm	0.001	0.009	0.011	0.003
79	triple-negative breast cancer	0.028	0.094	0.009	0.040
80	type 2 diabetes mellitus	0.011	0.004	0.010	0.034
81	ulcerative colitis	0.055	0.019	0.004	0.046
82	urinary bladder carcinoma	0.057	0.019	0.010	0.005
83	urothelial carcinoma	0.013	0.017	0.009	0.019
84	viral disease	0.019	0.005	0.008	0.001