Table S1. CCC inference results based on expression thresholding (Thresholding), expression product (Product), cell expression (Cell), and CellDialog.

Function	Cell type	"outgoing" LRIs	"incoming" LRIs	Evidence
Thresholding	CAFs	6	9	Refs. (1; 2)
	Macrophages	4	5	Refs. (3)
	Endothelial cells	7	0	Refs. (4; 5)
	NK cells	2	1	
	B cells	0	0	
	T cells	0	0	
Product	CAFs	B2M_HLA-F, APP_RPSA, HLA-A_APLP2	VIM_LRP1, SERPINE2_LRP1, HLA-A_LRP1	Refs. (1; 2; 6)
	Macrophages	B2M_HLA-F, HLA-A_APLP2, C1QB_C1QBP	CALM2_ITGB2, GRN_ITGB2, LGALS1_PTPRC	Refs. (3; 6)
	Endothelial cells	APP_RPSA, B2M_HLA-F, HLA-A_APLP2	B2M_HLA-F, HLA-A_APLP2, CALM2_AQP1	Refs. (4; 5; 6)
	NK cells	B2M_HLA-F, HLA-A_APLP2, PSAP_SORT1	B2M_CD247, LGALS1_PTPRC, B2M_HLA-F	
	T cells	B2M_HLA-F, HLA-A_APLP2, CALM2_ITGA3	LGALS1_PTPRC, B2M_IL2RG, B2M_HLA-F	
	B cells	B2M_HLA-F, HLA-A_APLP2, PSAP_SORT1	LGALS1_PTPRC, HMGB1_CXCR4, CALM2_SELL	
Cell	CAFs	PSAP_SORT1, APP_RPSA, THBS2_CD47	VIM_LRP1, PSAP_LRP1, HSP90B1_LRP1	Refs. (1; 2)
	Macrophages	PSAP_SORT1, HLA-A_APLP2, GRN_SORT1	LGALS1_PTPRC, CALM2_ITGB2, HSP90B1_ITGB2	Refs. (3; 6)
	Endothelial cells	APP_RPSA, APP_ERBB3, PSAP_SORT1	HLA-A_APLP2, B2M_HLA-F, GRN_TNFRSF1A	Refs. (4; 5; 6)
	NK cells	HLA-A_APLP2, B2M_HLA-F, PSAP_SORT1	LGALS1_PTPRC, B2M_CD247, B2M_HLA-F	
	T cells	HLA-A_APLP2, B2M_HLA-F, PRND_RPSA	LGALS1_PTPRC, B2M_CD3G, HLA-A_CD3G	
	B cells	HLA-A_APLP2, B2M_HLA-F, HLA-C_LRP1	LGALS1_PTPRC, HMGB1_CXCR4, B2M_HLA-F	
CellDialog	CAFs	B2M_HLA-F, APP_RPSA, HLA-A_APLP2	VIM_LRP1, SERPINE2_LRP1, PSAP_LRP1	Refs. (6; 7; 8)
	Macrophages	B2M_HLA-F, HLA-A_APLP2, PSAP_SORT1	CALM2_ITGB2, LGALS1_PTPRC, GRN_ITGB2	Refs. (6; 3; 9)
	Endothelial cells	APP_RPSA, B2M_HLA-F, APP_ERBB3	B2M_HLA-F, HLA-A_APLP2, GRN_TNFRSF1A	Refs. (6; 10)
	NK cells	B2M_HLA-F, HLA-A_APLP2, PSAP_SORT1	LGALS1_PTPRC, B2M_CD247, B2M_HLA-F	
	T cells	B2M_HLA-F, HLA-A_APLP2, HLA-C_LRP1	LGALS1_PTPRC, B2M_IL2RG, B2M_HLA-F	
	B cells	B2M_HLA-F, HLA-A_APLP2, HLA-C_LRP1	LGALS1_PTPRC, HMGB1_CXCR4, CALM2_SELL	

Note: The expression thresholding method can only characterize whether two cell types are communicating or non-communicating and fails to compute their communication score due to its nature. Thus, we counted the number of LRIs that mediate CCCs for it.

References

1. M. Shelton, C. Anene, J. Nsengimana, W. Roberts, J. Newton-Bishop, and J. Boyne, "The role of caf derived exosomal micrornas in the tumour microenvironment of melanoma," *Biochimica et Biophysica Acta (BBA)-Reviews on Cancer*, vol. 1875, no. 1, p. 188456, 2021.
2. C. Capparelli, S. Rosenbaum, A. C. Berger, and A. E. Aplin, "Fibroblast-derived neuregulin 1 promotes compensatory erbb3 receptor signaling in mutant braf melanoma," *Journal of Biological Chemistry*, vol. 290, no. 40, pp. 24267–24277, 2015.
3. M. Roh-Johnson, A. N. Shah, J. A. Stonick, K. R. Poudel, J. Kargl, G. H. Yang, J. di Martino, R. E. Hernandez, C. E. Gast, L. R. Zarour, *et al.*, "Macrophage-dependent cytoplasmic transfer during melanoma invasion in vivo," *Developmental cell*, vol. 43, no. 5, pp. 549–562, 2017.
4. A. Ito, F. Katoh, T. R. Kataoka, M. Okada, N. Tsubota, H. Asada, K. Yoshikawa, S. Maeda, Y. Kitamura, H. Yamasaki, *et al.*, "A role for heterologous gap junctions between melanoma and endothelial cells in metastasis," *The Journal of clinical investigation*, vol. 105, no. 9, pp. 1189–1197, 2000.
5. J. D. Howard, W. F. Moriarty, J. Park, K. Riedy, I. P. Panova, C. H. Chung, K.-Y. Suh, A. Levchenko, and R. M. Alani, "Notch signaling mediates melanoma–endothelial cell communication and melanoma cell migration," *Pigment cell & melanoma research*, vol. 26, no. 5, pp. 697–707, 2013.
6. A. Tuli, M. Sharma, X. Wang, L. C. Simone, H. L. Capek, S. Cate, W. H. Hildebrand, N. Naslavsky, S. Caplan, and J. C. Solheim, "Amyloid precursor-like protein 2 association with hla class i molecules," *Cancer immunology, immunotherapy*, vol. 58, pp. 1419–1431, 2009.
7. I. Tirosh, B. Izar, S. M. Prakadan, M. H. Wadsworth, D. Treacy, J. J. Trombetta, A. Rotem, C. Rodman, C. Lian, G. Murphy, *et al.*, "Dissecting the multicellular ecosystem of metastatic melanoma by single-cell rna-seq," *Science*, vol. 352, no. 6282, pp. 189–196, 2016.
8. N. P. Jobe, D. Rösel, B. Dvořánková, O. Kodet, L. Lacina, R. Mateu, K. Smetana, and J. Brábek, "Simultaneous blocking of il-6 and il-8 is sufficient to fully inhibit caf-induced human melanoma cell invasiveness," *Histochemistry and cell biology*, vol. 146, no. 2, pp. 205–217, 2016.
9. F. Pucci, C. Garris, C. P. Lai, A. Newton, C. Pfirschke, C. Engblom, D. Alvarez, M. Sprachman, C. Evavold, A. Magnuson, *et al.*, "Scs macrophages suppress melanoma by restricting tumor-derived vesicle–b cell interactions," *Science*, vol. 352, no. 6282, pp. 242–246, 2016.
10. J. Villanueva and M. Herlyn, "Melanoma and the tumor microenvironment," *Current oncology reports*, vol. 10, pp. 439–446, 2008.