**STAR\* METHODS**

**KEY RESOURCES TABLE**

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| REAGENT or RESOURCE | SOURCE | IDENTIFIER |
| Antibodies |  |  |
| Anti-mouse CD3e Monoclonal Antibody (Armenian Hamster, clone 145-2C11), PE conjugated | BD Biosciences | Cat#553064 |
| Anti-mouse CD11b Monoclonal Antibody (Rat, clone M1/70), BUV563 conjugated | BD Biosciences | Cat#741242 |
| Anti-mouse CD11b Monoclonal Antibody (Rat, clone M1/70), FITC conjugated | BD Biosciences | Cat#557396 |
| Anti-mouse CD11b Monoclonal Antibody (Rat, clone M1/70), PE-Cy7 conjugated | BD Biosciences | Cat#552850 |
| Anti-mouse CD11c Monoclonal Antibody (Hamster, clone HL3), BV786 conjugated | BD Biosciences | Cat#563735 |
| Anti-mouse CD16/32 (Mouse BD Fc Block™) Monoclonal Antibody (Rat, clone 2.4G2), unconjugated | BD Biosciences | Cat#553142 |
| Anti-mouse CD19 Monoclonal Antibody (Rat, clone 1D3), PE conjugated | BD Biosciences | Cat#553786 |
| Anti-mouse CD31 Monoclonal Antibody (Rat, clone 390), APC conjugated | Thermo Fisher | Cat#17-0311-82 |
| Anti-mouse CD38 Monoclonal Antibody (, clone ), conjugated |  | Cat# |
| Anti-mouse CD45.1 Monoclonal Antibody (Mouse, clone A20), BUV395 conjugated | BD Biosciences | Cat#565212 |
| Anti-mouse CD45.2 Monoclonal Antibody (Mouse, clone 104), BUV395 conjugated | BD Biosciences | Cat#564616 |
| Anti-mouse CD45.2 Monoclonal Antibody (Mouse, clone 104), FITC conjugated | BD Biosciences | Cat#561874 |
| Anti-mouse CD45.2 Monoclonal Antibody (Mouse, clone 104), PE-Cy7 conjugated | BD Biosciences | Cat#560696 |
| Anti-mouse CD45.2 Monoclonal Antibody (Mouse, clone 104), PerCP-Cy5.5 conjugated | BD Biosciences | Cat#552950 |
| Anti-mouse CD45.2 Monoclonal Antibody (Mouse, clone 104), V500 conjugated | BD Biosciences | Cat#562129 |
| Anti-mouse CD64 Monoclonal Antibody (Mouse, clone X54-5/7.1), BV421 conjugated | Biolegend | Cat#139309 |
| Anti-mouse CD86 Monoclonal Antibody (, clone ), conjugated |  | Cat# |
| Anti-mouse CD115 (CSF1R) Monoclonal Antibody (Rat, clone AFS98), APC conjugated |  | Cat# |
| Anti-mouse CD115 (CSF1R) Monoclonal Antibody (Rat, clone AFS98), PerCP-Cy5.5 conjugated | Biolegend | Cat#135526 |
| Anti-mouse CD170 (SiglecF) Monoclonal Antibody (Rat, clone E50-2440), PE conjugated | BD Biosciences | Cat#552126 |
| Anti-mouse CD172a (SIRPa) Monoclonal Antibody (Rat, clone P84), APC conjugated | Biolegend | Cat#144013 |
| Anti-mouse CD206 (MMR) Monoclonal Antibody (Rat, clone C068C2), AF647 conjugated | Biolegend | Cat#141712 |
| Anti-mouse cMaf Monoclonal Antibody (Mouse, clone sym0F1), PE conjugated | Thermo Fisher | Cat#12-9855-42 |
| Anti-mouse F4/80 Monoclonal Antibody (Rat, BM8), BV650 conjugated |  | Cat# |
| Anti-mouse F4/80 Monoclonal Antibody (Rat, BM8), FITC conjugated |  | Cat# |
| Anti-mouse F4/80 Monoclonal Antibody (Rat, BM8), PE conjugated | Sony Biotechnology | Cat#1215550 |
| Anti-mouse FcεRIα (MAR-1) Monoclonal Antibody (Armenian Hamster, MAR-1), PE-Cy7 conjugated | Biolegend | Cat#134317 |
| Anti-mouse I-A/I-E (MHC-II) Monoclonal Antibody (Rat, M5/114.15.2), PerCP-Cy5.5 | Sony Biotechnology | Cat#1138125 |
| K |  |  |
| Anti-mouse Ly6C Monoclonal Antibody (Rat, AL-21), PE-CF594 conjugated | BD Biosciences | Cat#562728 |
| Anti-mouse Ly6G Monoclonal Antibody (Rat, 1A8), APC conjugated | BD Biosciences | Cat#560599 |
| Anti-mouse Ly6G Monoclonal Antibody (Rat, 1A8), FITC conjugated | BD Biosciences | Cat#551461 |
| Anti-mouse Ly6G Monoclonal Antibody (Rat, 1A8), PE conjugated | BD Biosciences | Cat#560601 |
| Anti-mouse Ly6G Monoclonal Antibody (Rat, 1A8), PE-Cy7 conjugated | BD Biosciences | Cat#551559 |
| Anti-mouse MafB Recombinant Monoclonal Antibody (Rabbit, BLR046F), unconjugated | Bethyl Laboratories Inc. | Cat#A700-046 |
| Anti-mouse MerTK Monoclonal Antibody (Rat, DS5MMER), PE-Cy7 conjugated | Thermo Fisher | Cat#50-112-3384 |
| Anti-mouse XCR-1 Monoclonal Antibody (Mouse, ZET), APC-Cy7 conjugated | Biolegend | Cat#148223 |
| Cre Recombinase (D7L7L) XP® Rabbit mAb | Cell Signaling Technology | Cat#15036 |
| Purified Rat Anti-Mouse CD16/CD32 (Mouse BD Fc Block™) | BD Biosciences | Cat# 553142 |
| FITC Mouse Anti-Ki-67 | BD Biosciences | Cat# 556026 |
| TotalSeq™-A0305 anti-mouse Hashtag 5 Antibody | BioLegend | Cat#155809 |
| TotalSeq™-A0306 anti-mouse Hashtag 6 Antibody | BioLegend | Cat#155811 |
| TotalSeq™-A0307 anti-mouse Hashtag 7 Antibody | BioLegend | Cat# 155813 |
| TotalSeq™-A0308 anti-mouse Hashtag 8 Antibody | BioLegend | Cat# 155815 |
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| Chemicals, Peptides and Recombinant Proteins | | |
| Diphtheria Toxin | List Biological Labs | Cat#150 |
| CSF1R inhibitor PLX>>> |  |  |
| Collagenase I | Roche |  |
| DNase I | Sigma | Cat# 11284932001 |
| Trizol | ThermoFisher | Cat# 10296010 |
| LIVE/DEAD™ Fixable Near-IR Dead Cell Stain Kit, for 633 or 635 nm excitation | Invitrogen | Cat# L34976 |
| Chromium Next GEM Single Cell 3' GEM, Library & Gel Bead Kit v3.1 | 10X Genomics | Cat#1000128 |
| Chromium Next GEM Chip G Single Cell Kit | 10X Genomics | Cat#1000120 |
| Single Index Kit T Set A | 10X Genomics | Cat#1000213 |
| ketamine |  |  |
| xylazine |  |  |
| Click-iT™ Plus EdU Alexa Fluor™ 488 Flow Cytometry Assay Kit | ThermoFisher | Cat#10632 |
| FBS | ThermoFisher | Cat#10270098 |
| EDTA |  |  |
| DTT |  |  |
| KAPA Express Extract | Merck | Cat# KK7100 |
| PCR buffer(genotyping) |  |  |
| dNTP | ThermoFisher | Cat# N8080260 |
| GoTaq G2 Hot Start Taq Polymerase | Promega | Cat#M7401 |
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| Deposited data | | |
| Single-cell RNAseq raw and analyzed data | This paper | GEO: GSE193891, GSE193894, GSE193896 |
| Bulk-RNAseq raw and analysis data | This paper | GEO: GSE194020 |
| Microarray data |  |  |
| Classical Monocytes MHCII+ in blood | ImmGen | GEO: GSM605868, GSM605870, GSM605871 |
| Classical Monocytes MHCII- in bone marrow | ImmGen | GEO: GSM854329, GSM854330, GSM854331 |
| Classical Monocytes MHCII- in blood | ImmGen | GEO: GSM605872, GSM605873, GSM605874 |
| Nonclassical Monocytes, MHCII+ | ImmGen | GEO: GSM605878, GSM605879 |
| Nonclassical Monocytes in bone marrow | ImmGen | GEO: GSM854332, GSM854333, GSM854334 |
| Nonclassical Monocytes in blood | ImmGen | GEO: GSM605884, GSM605885 |
| Nonclassical Monocytes, MHCII int | ImmGen | GEO: GSM605886, GSM605887, GSM605888, GSM605889, GSM605890 |
| Lung CD11b+ CD24- macrophage | ImmGen | GEO: GSM854271, GSM854272 |
| Small Intestinal Lamina Propria CD11c-hi CD103- CD11b+ MF | ImmGen | GEO: GSM854262, GSM854263, GSM854264, GSM854265, GSM854266, GSM854267, GSM854268 |
| Bone marrow macrophages | ImmGen | GEO: GSM854317, GSM854318, GSM854319 |
| Spleen Red Pulp macrophages | ImmGen | GEO: GSM605853, GSM605854, GSM605855 |
| Peritoneal macrophage steady state | ImmGen | GEO: GSM854294, GSM854295, GSM854296 |
| Peritoneal cavity macrophages steady state | ImmGen | GEO: GSM605850, GSM605851, GSM605852 |
| Medullary macrophages from skin draining lymph nodes | ImmGen | GEO: GSM854322, GSM854323 |
| Central nervous system microglia | ImmGen | GEO: GSM854326, GSM854327, GSM854328 |
| CD103+ migratory DC, Mediastinal LN CD103+ DC | ImmGen | GEO: GSM854243, GSM854244, GSM854245 |
| CD11b+ migratory DC, Mediastinal LN CD11b+ DC | ImmGen | GEO: GSM854255, GSM854256, GSM854257 |
| Lung CD103+ dendritic cells | ImmGen | GEO: GSM538231, GSM538232, GSM538233, GSM854241, GSM854242 |
| Lung MHCII+ CD11c+ CD103- CD11b+ CD24+ dendritic cells | ImmGen | GEO: GSM854269, GSM854270 |
| Lung IMs, Ly6C+ monocytes and alveolar macrophages | (Sabatel et al., 2017) | EMBL-EBI: E-MTAB-5012 |
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| Software and algorithms | | |
| Flowjo v10.8.1 | BD | https://www.flowjo.com/ |
| Prism 9 | GraphPad Software | https://www.graphpad.com/scientific-software/prism/ |
| Adobe Illustrator 2022 | Adobe |  |
| R | The R Foundation | https://www.r-project.org/ |
| Bioconductor | (Huber et al., 2015) | https://www.bioconductor.org/ |
| Cell Ranger | 10x Genomics |  |
| DESeq2 | (Love et al., 2014) |  |
| Seurat | (Hao et al., 2020) | https://satijalab.org/seurat/ |
| SingleR | (Aran et al., 2019) | https://github.com/dviraran/SingleR |
| clusterProfiler | (Wu et al., 2021) | https://github.com/YuLab-SMU/clusterProfiler |
| velocyto | (la Manno et al., 2018) | http://velocyto.org/ |
| scVelo | (Bergen et al., 2020) | https://scvelo.readthedocs.io/ |
| SCENIC | (Aibar et al., 2017) | https://scenic.aertslab.org/ |
| Monocle3 | (Trapnell et al., 2014) | https://cole-trapnell-lab.github.io/monocle3/ |
| TradeSeq | (van den Berge et al.) | https://github.com/statOmics/tradeSeq |
| ComplexHeatmap | (Gu et al., 2016) | https://jokergoo.github.io/ComplexHeatmap-reference/book/ |
| VISION | (DeTomaso et al., 2019) | https://github.com/YosefLab/VISION |
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| Experimental models: Organisms/strains: | | | |
| Mouse: *Tmem119-Cre* | This paper | N/A |
| Mouse: *Cx3cr1-LSL-DTR* | (Diehl et al., 2013) | JAX 025629 |
| Mouse: CD45.1+ C57BL6 |  | JAX 002014 |
| Mouse: Mafbfl/fl | (Yu et al., 2013) | N/A |
| Mouse: cMaffl/fl | (Wende et al., 2012) | N/A |
| Mouse: *Ms4a3-Cre* | (Liu et al., 2019) | N/A or Florent Ginhoux’s lab |
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| Oligonucleotides | | |
| *Tmem119-Cre* genotyping primer 1: 5’- TCCGTAACCTGGATAGTGAAACAG -3’ | This paper | Synthesized by Integrated DNA Technologies |
| *Tmem119-Cre* genotyping primer 2: 5’- ATATGTCCTTCCGAGTGAGAGAC -3’ | This paper | Synthesized by Integrated DNA Technologies |
| *Tmem119-Cre* genotyping primer 3: 5’- ACCGAGGACAGAAATGAATAAGATG -3’ | This paper | Synthesized by Integrated DNA Technologies |
| *Tmem119-Cre* genotyping primer 4: 5’- AGGGAACGAGGATGGGTAGTAG -3’ | This paper | Synthesized by Integrated DNA Technologies |