

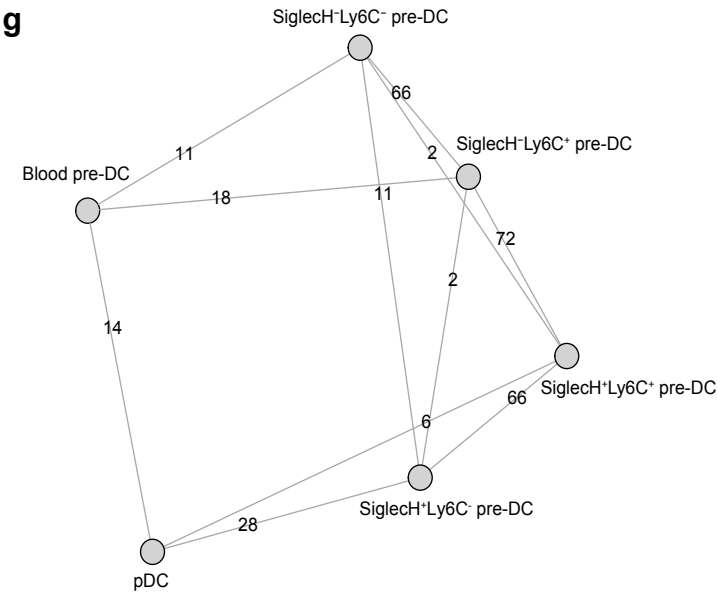
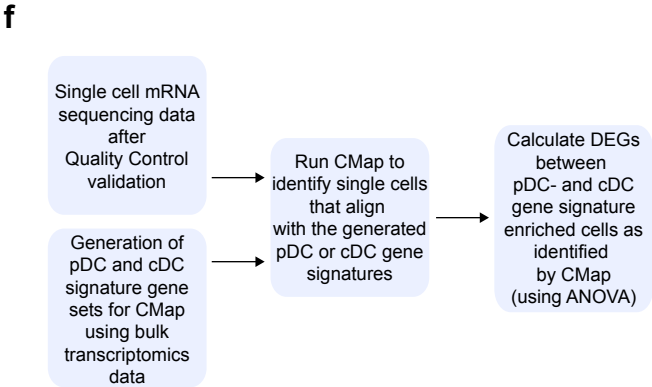
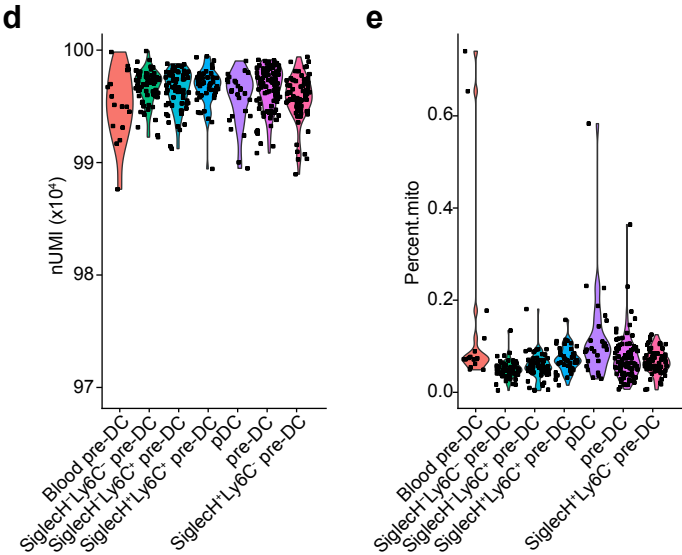
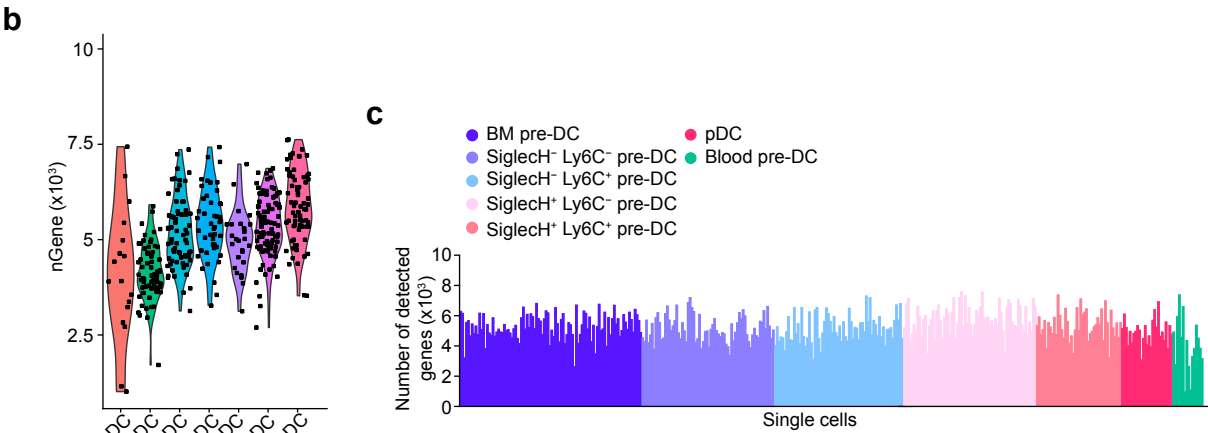
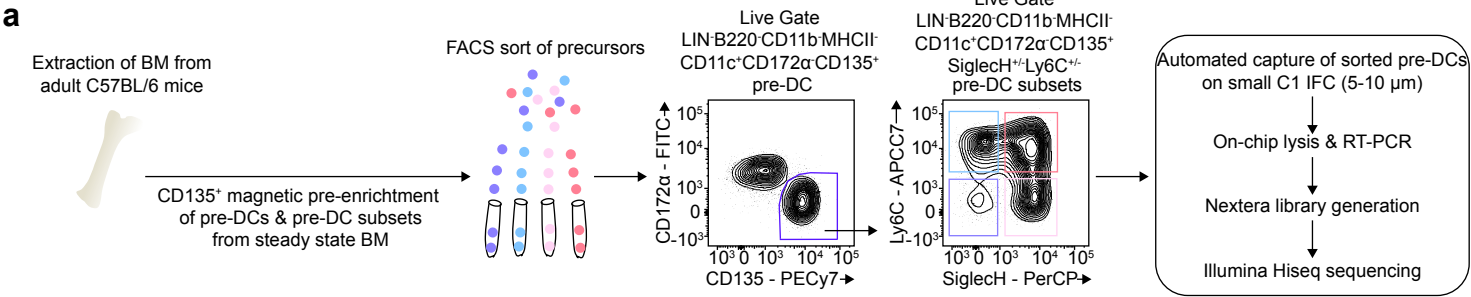
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Plasmacytoid dendritic cells develop from Ly6D⁺ lymphoid progenitors distinct from the myeloid lineage

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Supplementary Figure 1

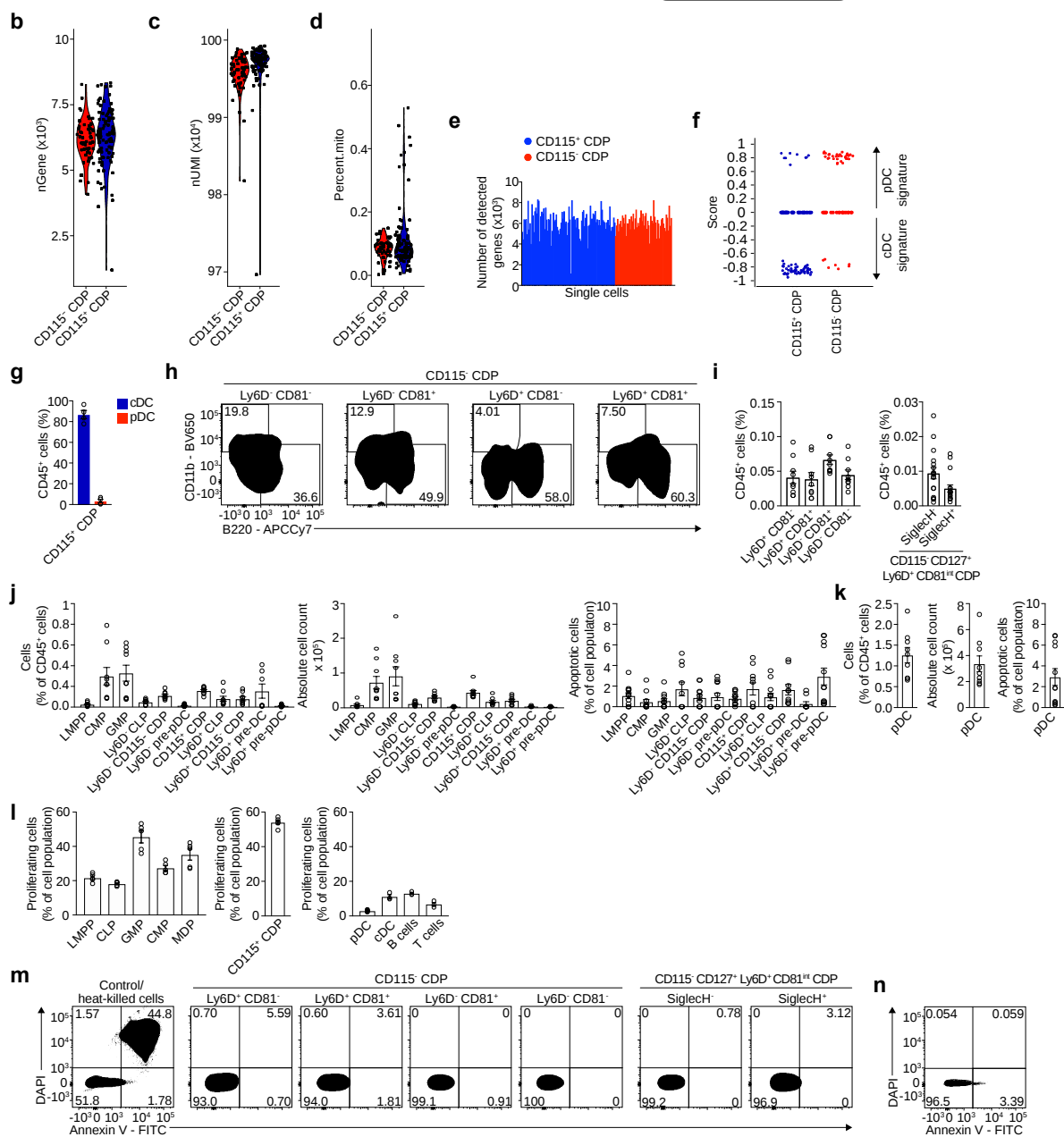
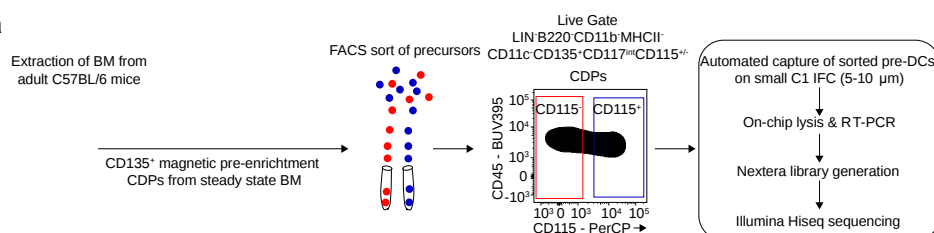


Supplementary Figure 1

Workflow and Quality Control of sorted single pre-DCs and pre-DC subsets

a Experimental approach for analysis of gene expression in single pre-DCs and pre-DC subsets (as identified by expression of SiglecH and Ly6C) using the Fluidigm C1 autoprep system. **b** Violin plot and **c** bar plot for number of genes detected in each single cell. Violin plots for nUMI **d** and percentage of mitochondrial genes **e** in the sorted single cell populations. **f** Workflow for CMap analysis of pDC- and cDC-primed single cells using transcriptomic signatures derived from conventional transcriptome analysis combined with CMap analysis. **g** CMap analysis of BM pDCs, BM pre-DCs, and BM pre-DC subsets before trimming. **a-g** Data are representative for one experiment with 96 single BM pre-DCs, 16 single blood pre-DCs 70 single SiglecH⁻Ly6C⁻, 68 single SiglecH⁻Ly6C⁺, 70 single SiglecH⁺Ly6C⁻, and 45 single SiglecH⁺Ly6C⁺ pre-DCs and 26 single pDCs.

a

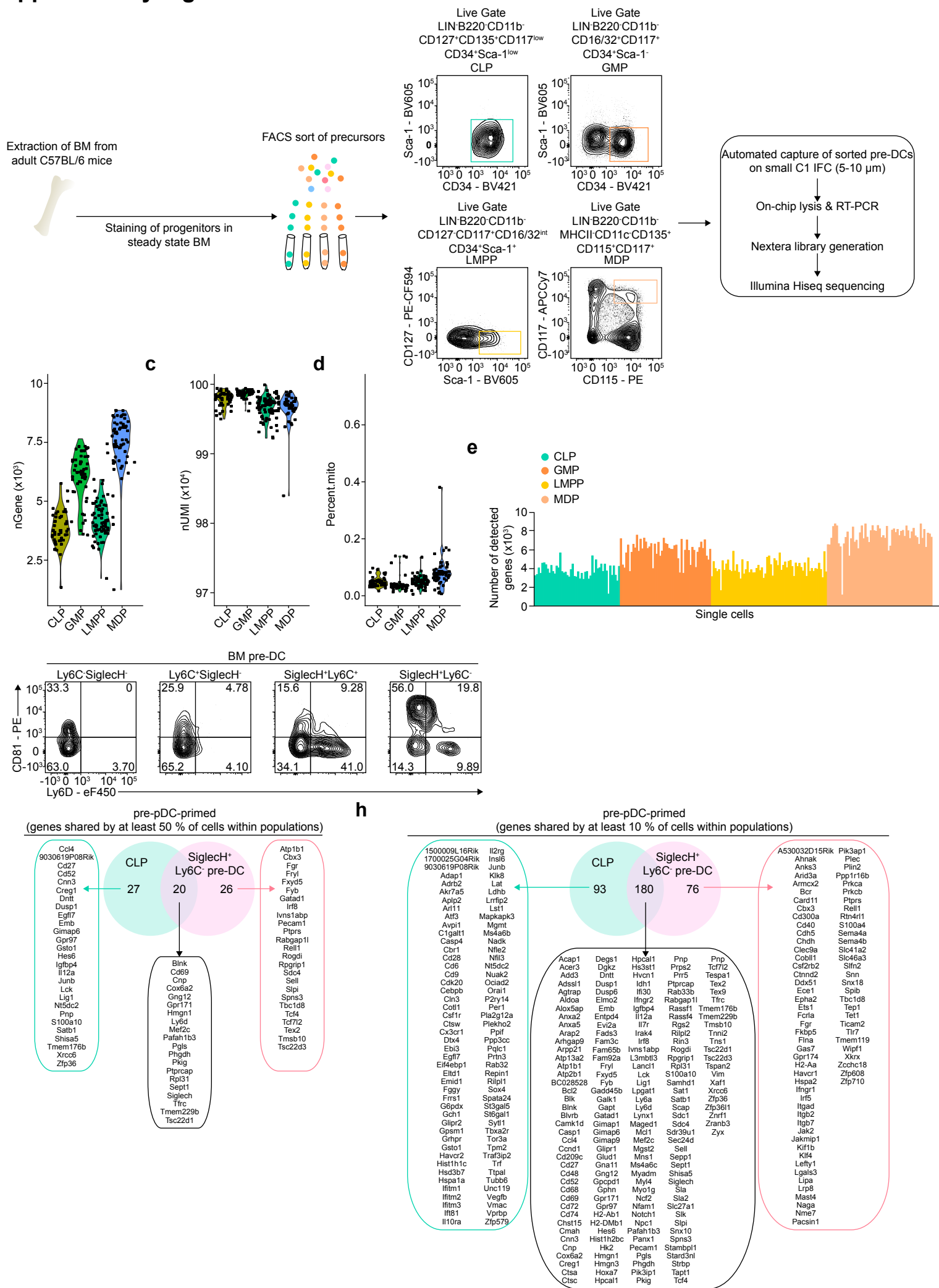


Supplementary Figure 2

Workflow and Quality Control for sorted single CDP populations

a Experimental approach for analysis of gene expression in single CD115⁻ CDPs and single CD115⁺ CDPs using the Fluidigm C1 autoprep system. Violin plots for **b** number of genes detected in each single cell, **c** nUMI and **d** and percentage of mitochondrial genes in the sorted single cell populations. **e** Bar plot of number of expressed genes in individual sorted single cells. **f** CMap analysis of enrichment of pDC-signature genes versus cDC-signature genes in CD115⁻ CDPs and CD115⁺ CDPs. **a-f** Data are representative for one experiment with 96 single BM CD115⁺ CDPs and 58 single CD115⁻ CDPs. **g** Quantification of the cDC and pDC progeny of cultured CD115⁺ CDPs on day 7 of culture with rh-Flt3L. **h** Flow cytometry analysis of the progeny of sorted, cultured Ly6D⁺CD81⁻, Ly6D⁺CD81⁺, Ly6D⁻CD81⁺, and Ly6D⁻CD81⁻ CD115⁻ CDPs on day 7 of in vitro stimulation with rh-Flt3L. **g,h** Data are representative for three experiments with one replicate per culture condition. **i** Percentage of Ly6D⁺CD81⁻, Ly6D⁺CD81⁺, Ly6D⁻CD81⁺, and Ly6D⁻CD81⁻ CD115⁻ CDPs and SiglecH⁺ pre-pDCs in the BM. **j** Percentage, absolute numbers and percentage of apoptotic BM LMPP, CMP, GMP, Ly6D⁻ CLP, Ly6D⁻CD115⁻ CLP, Ly6D⁻ pre-pDC, CD115⁺ CDP, Ly6D⁺CD115⁻ CDP, Ly6D⁺ pre-pDC and Ly6D⁺ pre-cDC. **k** Percentage, absolute numbers and percentage of apoptotic BM pDCs. **l** Percentage of proliferating cells among analyzed cell populations. **m** Flow cytometry analysis of percentage of Annexin V vs. DAPI stained cells among the indicated cell populations. **n** Flow cytometry analysis of percentage of Annexin V vs. DAPI stained BM pDCs. **h-n** Mean $\pm$ s.e.m. Data are representative for three independent experiments with three mice each.

a

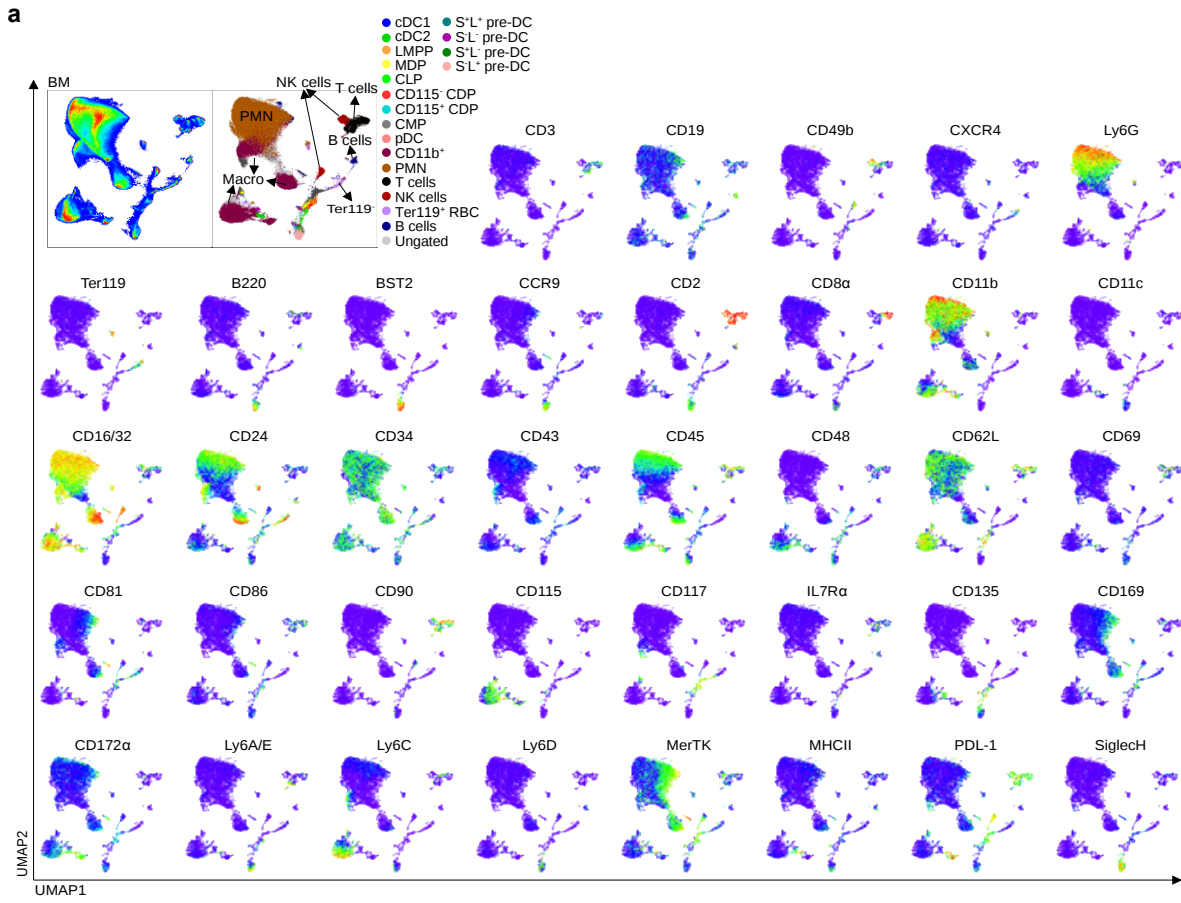


Supplementary Figure 3

Workflow and Quality Control for sorted single BM progenitors

a Experimental approach for analysis of gene expression in single CLPs, GMPs, LMPPs, and MDPs using the Fluidigm C1 autoprep system. Violin plots for **b** number of genes detected in each single cell, **c** nUMI and **d** and percentage of mitochondrial genes in the sorted single cell populations. **e** Bar plot of number of expressed genes in individual sorted single cells. Data are representative for one experiment with 63 single LMPPs, 51 single GMPs, 48 single CLPs, 59 single MDPs. **f** Flow cytometry analysis of surface molecule expression of CD81 and Ly6D on Ly6C⁻SiglecH⁻ pre-DCs, Ly6C⁺SiglecH⁻ pre-DCs, SiglecH⁺Ly6C⁺ pre-DCs, and SiglecH⁺Ly6C⁻ pre-DCs. Data are representative of three independent experiments with three mice. **g** Venn diagram comparison of pre-pDC primed DEGs shared between CLPs and SiglecH⁺Ly6C⁻ pre-DCs for **g** least 50 % or **h** 10% of cells per population. **g,h** Data are representative for one experiment with 48 single CLPs, and 70 single SiglecH⁺Ly6C⁻ pre-DCs.

Supplementary Figure 4

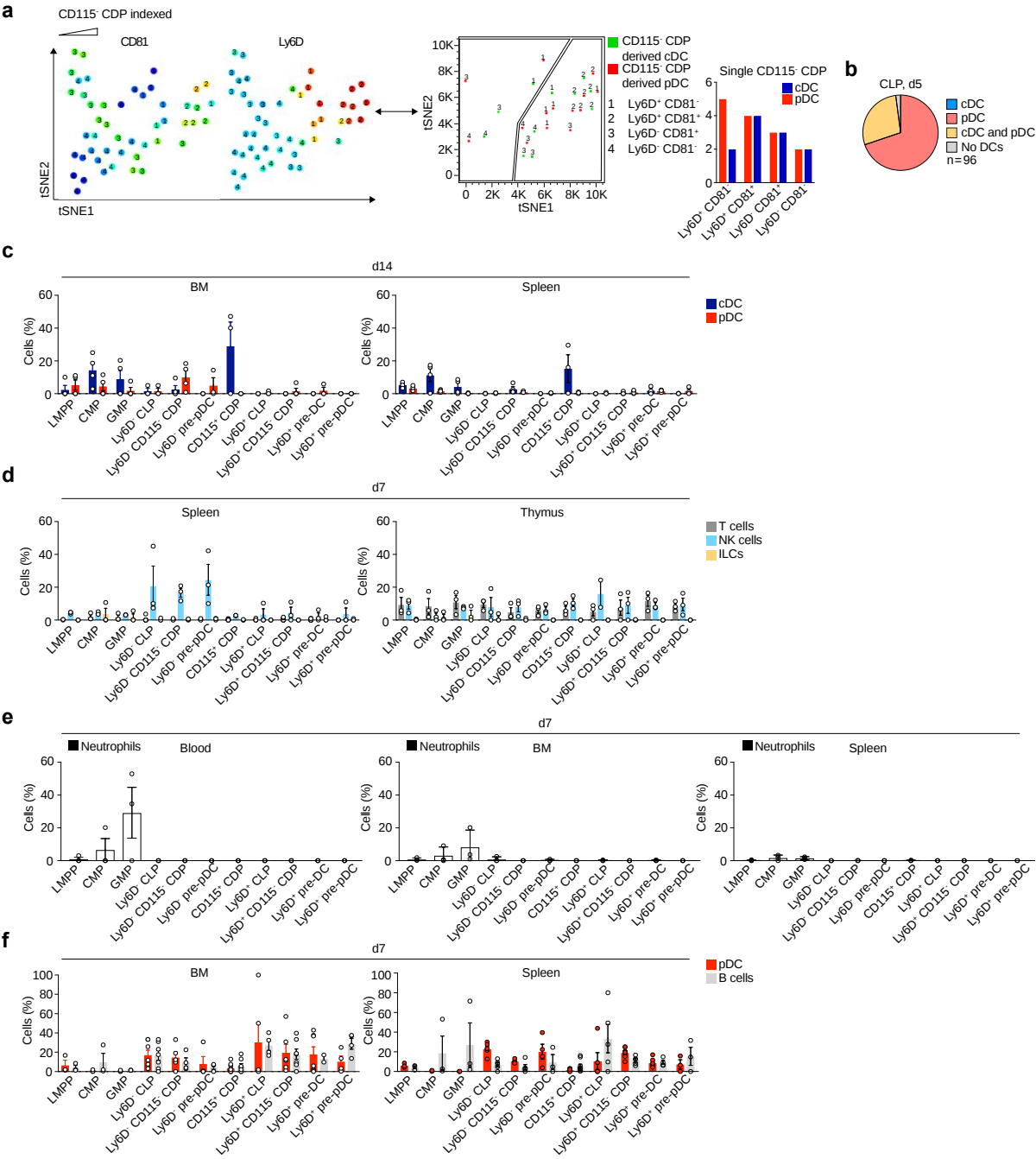


Supplementary Figure 4

UMAP analysis of the murine BM compartment

a UMAP analysis of CyTOF data of murine BM cells. Major cell populations as indicated in the UMAP plot (and by the key on the right margin) and relative expression of selected markers among the total BM cell compartment. Data are representative for one experiment with 5 mice.

Supplementary Figure 5

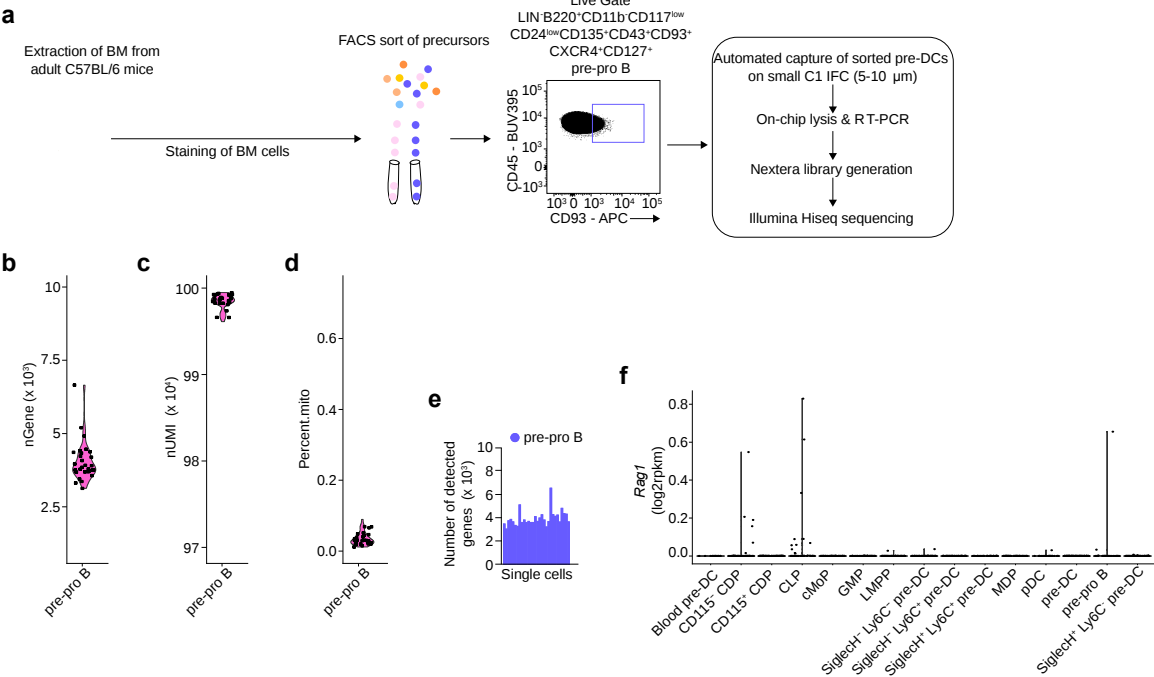


Supplementary Figure 5

Progeny of CLPs on day 5

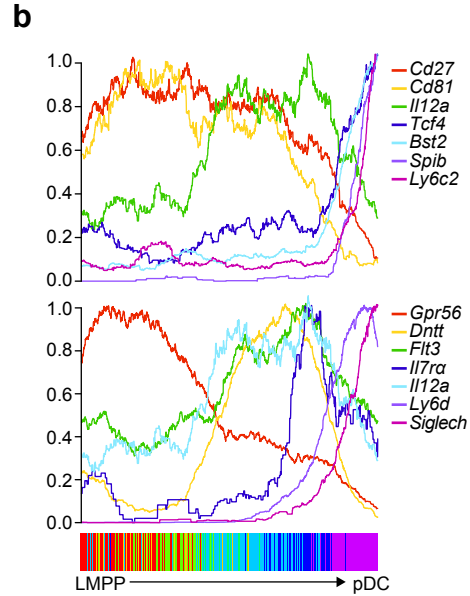
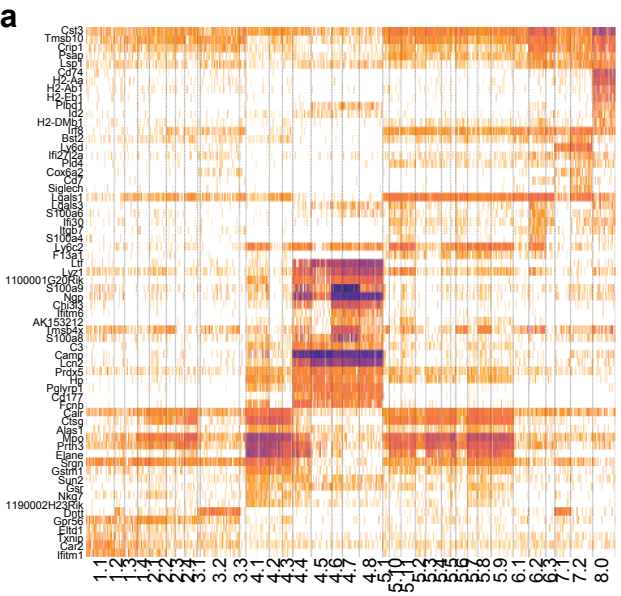
a tSNE analyses (as in Fig. 5) for progeny of index-sorted single CD115⁻ CDPs showing their expression levels of CD81 and Ly6D and analyses of pDC vs. cDC offspring for index-sorted single Ly6D⁺CD81⁻ (identified with “1”) or Ly6D⁺CD81⁺ (identified with “2”) or Ly6D⁻CD81⁺ (identified with “3”) or Ly6D⁻CD81⁻ (identified with “4”) CD115⁻ CDPs. Data are representative for one experiment with 48 single cells per sorted CDP population. **b** Progeny of index-sorted single CLPs on day 5 of co-culture with OP9 stromal feeder cells in complete medium supplemented with rh-Flt3L (pDC progeny = red; cDC progeny = blue; bipotent progeny = yellow; no progeny = grey). Data are representative for one experiment with 96 single CLPs. **c** Percentage of pDC or cDC progeny from transferred sorted CD45.2⁺ BM progenitors in BM and spleen on day 14 post transfer, **d** percentage of T cell- NK cell- and ILC progeny from transferred sorted CD45.2⁺ BM progenitors in spleen and thymus on day 7 post transfer, **e** percentage of neutrophil progeny from transferred sorted CD45.2⁺ BM progenitors in blood, BM and spleen on day 7 post transfer and **f** percentage of pDC and B cell progeny from transferred sorted CD45.2⁺ BM progenitors in BM and spleen on day 7 post transfer. **c-f** Mean ± s.e.m. Data are representative of six experiments with one mouse per group for day 7, for three experiments with one mouse per group for day 3, and for three experiments with one mouse per group for day 14.

Supplementary Figure 6

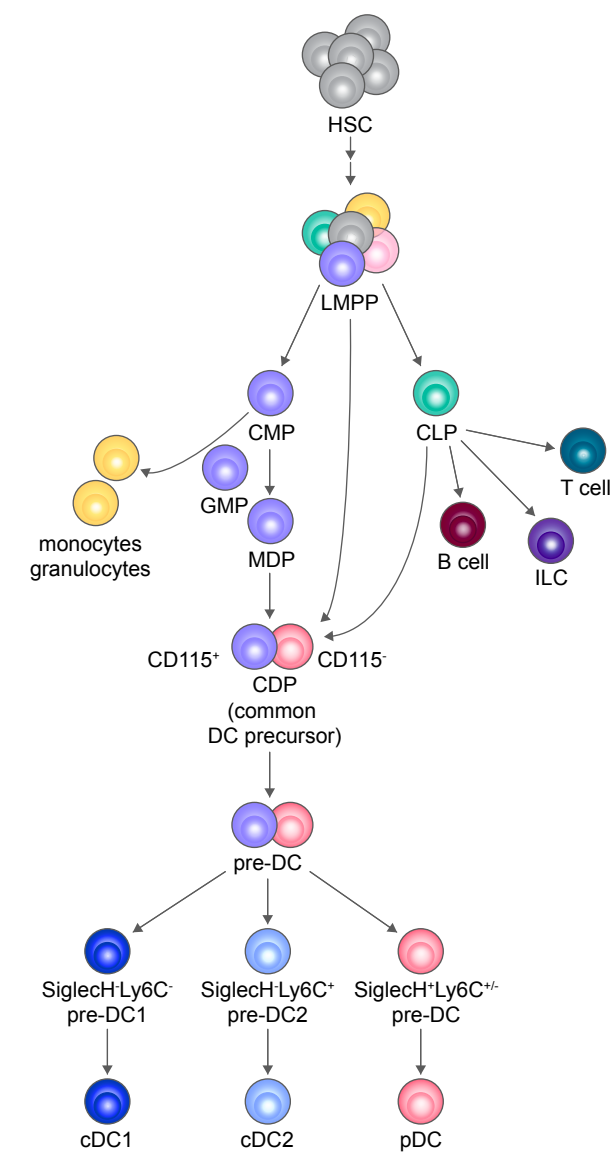


Supplementary Figure 6
Workflow and Quality Control of sorted single pre-pro B cells
a Experimental approach for analysis of gene expression in single pre-pro B cells using the Fluidigm C1 autoprep system. Violin plots for b number of genes detected in each single cell, c nUMI and d and percentage of mitochondrial genes in the sorted single cell populations. e Bar plot of number of expressed genes in individual sorted single cells. f Expression of <i>Rag1</i> in single BM progenitor cells. Data are representative for one experiment with 26 single pre-pro B cells.

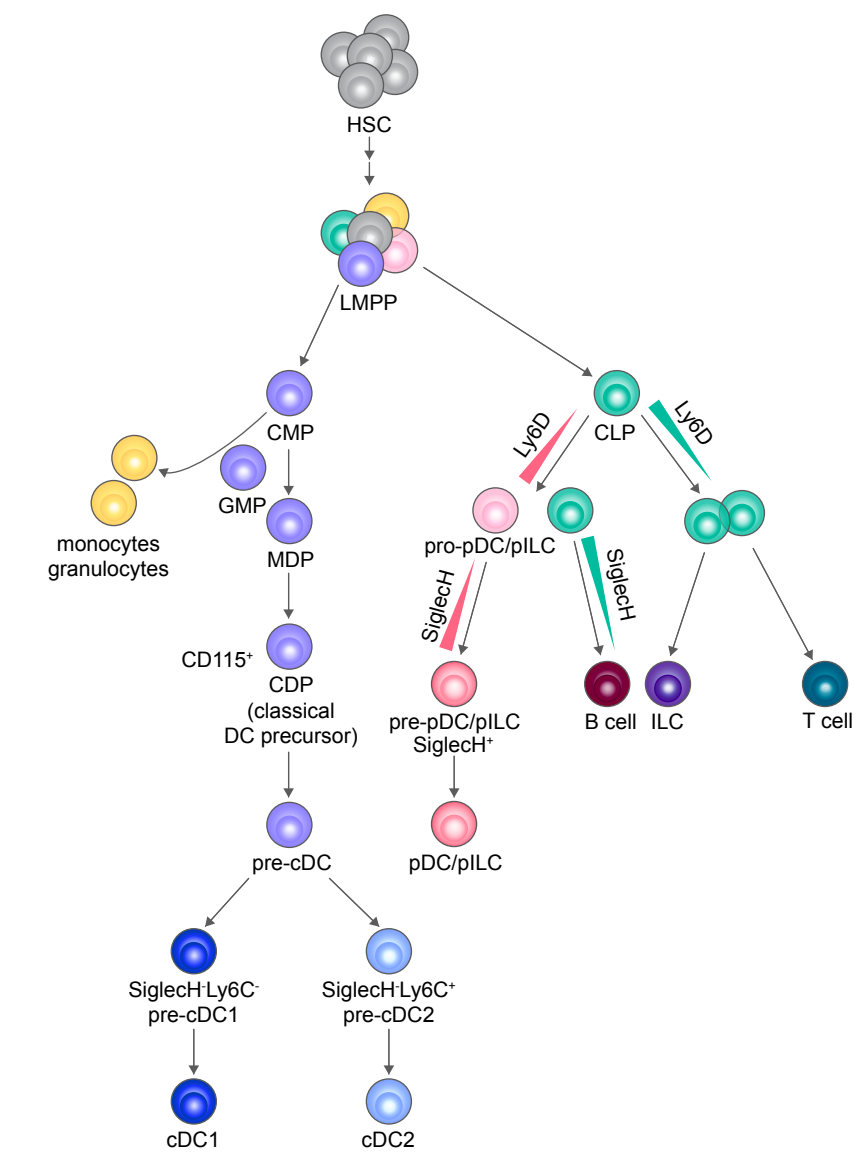
Supplementary Figure 7



c Current Concept



d Updated Concept



Supplementary Figure 7
pDC ontogeny revised
a A heatmap of the top differentially expressed genes from the reference map of 8,395 bone marrow myeloid progenitor cells. b Expression of important lineage markers along the differentiation axis from LMPPs to pDCs. Color-bar indicate cluster association as in Fig. 7e. Data are representative of one experiment with 8,395 bone marrow myeloid progenitors and 63 single LMPPs, 51 single GMPs, 48 single CLPs, 59 single MDPs, 96 single CD115⁺ CDPs, 58 single CD115⁻ CDPs, 96 single BM pre-DCs, 16 single blood pre-DCs 70 single SiglecH⁻Ly6C⁻, 68 single SiglecH⁻Ly6C⁺, 70 single SiglecH⁺Ly6C⁻, and 45 single SiglecH⁺Ly6C⁺ pre-DCs and 26 single pDCs. c,d Schematic trees of pDC (pILC) differentiation depicting the c current model and d a model highlighting the findings of our study.

Supplementary Table 1. Number of genes detected in individual cells

Cell identifier	Number of expressed genes	Cell type
RMB3880	3321	BM CLP
RMB3881	3434	BM CLP
RMB3882	4139	BM CLP
RMB3883	3555	BM CLP
RMB3884	4649	BM CLP
RMB3885	4692	BM CLP
RMB3886	4481	BM CLP
RMB3887	4037	BM CLP
RMB3888	3585	BM CLP
RMB3889	4404	BM CLP
RMB3890	3758	BM CLP
RMB3891	3495	BM CLP
RMB3892	4335	BM CLP
RMB3893	4135	BM CLP
RMB3894	5755	BM CLP
RMB3895	3747	BM CLP
RMB3896	3595	BM CLP
RMB3897	3676	BM CLP
RMB3898	3332	BM CLP
RMB3899	3177	BM CLP
RMB3900	3963	BM CLP
RMB3901	4556	BM CLP
RMB3902	3231	BM CLP
RMB3903	3175	BM CLP
RMB3904	3726	BM CLP
RMB3905	2967	BM CLP
RMB3906	3573	BM CLP
RMB3907	2924	BM CLP
RMB3908	3683	BM CLP
RMB3909	3754	BM CLP

RMB3910	2949	BM CLP
RMB3911	3277	BM CLP
RMB3912	5439	BM CLP
RMB3913	3599	BM CLP
RMB3914	5001	BM CLP
RMB3915	4054	BM CLP
RMB3916	4146	BM CLP
RMB3917	4556	BM CLP
RMB3918	3770	BM CLP
RMB3919	4549	BM CLP
RMB3920	3815	BM CLP
RMB3921	1344	BM CLP
RMB3922	4364	BM CLP
RMB3923	3348	BM CLP
RMB3924	4351	BM CLP
RMB3925	3362	BM CLP
RMB3926	2740	BM CLP
RMB3927	4309	BM CLP
RMB3928	3566	BM pre-pro B
RMB3929	3128	BM pre-pro B
RMB3930	3844	BM pre-pro B
RMB3931	3961	BM pre-pro B
RMB3932	3751	BM pre-pro B
RMB3933	3448	BM pre-pro B
RMB3934	3364	BM pre-pro B
RMB3935	5201	BM pre-pro B
RMB3936	3698	BM pre-pro B
RMB3937	3916	BM pre-pro B
RMB3938	3684	BM pre-pro B
RMB3939	3785	BM pre-pro B
RMB3940	3692	BM pre-pro B
RMB3941	3701	BM pre-pro B
RMB3942	4194	BM pre-pro B

RMB3943	3794	BM pre-pro B
RMB3944	4079	BM pre-pro B
RMB3945	4357	BM pre-pro B
RMB3946	3904	BM pre-pro B
RMB3947	3313	BM pre-pro B
RMB3948	3768	BM pre-pro B
RMB3949	6652	BM pre-pro B
RMB3950	4377	BM pre-pro B
RMB3951	4227	BM pre-pro B
RMB3952	4331	BM pre-pro B
RMB3953	3741	BM pre-pro B
RMB3954	4916	BM pre-pro B
RMB3955	4466	BM pre-pro B
RMB3956	4414	BM pre-pro B
RMB3957	3756	BM pre-pro B
RMB3958	7269	BM GMP
RMB3959	4452	BM GMP
RMB3960	4130	BM GMP
RMB3961	5742	BM GMP
RMB3962	6590	BM GMP
RMB3963	3751	BM GMP
RMB3964	5816	BM GMP
RMB3965	6678	BM GMP
RMB3966	6282	BM GMP
RMB3967	7648	BM GMP
RMB3968	5917	BM GMP
RMB3969	7225	BM GMP
RMB3970	6181	BM GMP
RMB3971	7330	BM GMP
RMB3972	6913	BM GMP
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RMB3974	6384	BM GMP
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RMB3982	7322	BM GMP
RMB3983	6753	BM GMP
RMB3984	6667	BM GMP
RMB3985	6240	BM GMP
RMB3986	6130	BM GMP
RMB3987	6117	BM GMP
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RMB4002	6315	BM GMP
RMB4003	6903	BM GMP
RMB4004	6231	BM GMP
RMB4005	7142	BM GMP
RMB4006	5409	BM GMP
RMB4007	4987	BM GMP
RMB4008	6146	BM GMP

RMS180	4983	blood pre-DC
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RMS176	5999	blood pre-DC
RMS173	7436	blood pre-DC
RMS172	4635	blood pre-DC
RMS171	6666	blood pre-DC
RMS170	1014	blood pre-DC
RMS169	4420	blood pre-DC
RMS168	2714	blood pre-DC
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RMS166	3369	blood pre-DC
RMS164	3904	blood pre-DC
RMS163	5439	blood pre-DC
RMS162	4568	blood pre-DC
RMS161	3913	blood pre-DC
RMS160	3230	blood pre-DC
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RMD165	6424	BM CD115+ CDP
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RMD162	4975	BM CD115+ CDP
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RMD320	7323	BM MDP
RMD319	8567	BM MDP
RMD318	8854	BM MDP
RMD317	8635	BM MDP
RMD316	6726	BM MDP
RMD315	6399	BM MDP
RMD314	1249	BM MDP
RMD313	6715	BM MDP
RMD312	7409	BM MDP
RMD311	7989	BM MDP
RMD310	5410	BM MDP
RMD309	7272	BM MDP
RMD308	8515	BM MDP
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RMD297	8669	BM MDP
RMD296	8135	BM MDP
RMD295	8065	BM MDP

RMD294	8676	BM MDP
RMD293	8328	BM MDP
RMD292	7383	BM MDP
RMD291	7602	BM MDP
RMD290	7312	BM MDP
RMD289	8592	BM MDP
RMD288	5959	BM MDP
RMD287	6486	BM MDP
RMD286	8182	BM MDP
RMD285	8325	BM MDP
RMD284	7940	BM MDP
RMD283	8271	BM MDP
RMD282	7604	BM MDP
RMD281	8060	BM MDP
RMD280	8158	BM MDP
RMD279	7510	BM MDP
RMD278	8627	BM MDP
RMD277	8112	BM MDP
RMD276	7289	BM MDP
RMD275	8002	BM MDP
RMD274	8379	BM MDP
RMD273	7560	BM MDP
RMD272	7387	BM MDP
RMD271	6661	BM MDP
RMD270	8847	BM MDP
RMD269	7305	BM MDP
RMD268	8264	BM MDP
RMD267	6352	BM MDP
RMD266	7875	BM MDP
RMD265	7767	BM MDP
RMD264	7440	BM MDP
RMS454	5215	BM pDC
RMS453	6174	BM pDC

RMS450	5290	BM pDC
RMD500	4068	BM pDC
RMD499	5025	BM pDC
RMD497	4265	BM pDC
RMD496	4894	BM pDC
RMD492	5030	BM pDC
RMD491	5414	BM pDC
RMD486	5112	BM pDC
RMD484	3133	BM pDC
RMD482	4550	BM pDC
RMD481	5424	BM pDC
RMD477	4136	BM pDC
RMD476	4728	BM pDC
RMD475	4021	BM pDC
RMD471	5759	BM pDC
RMD470	6462	BM pDC
RMD468	5308	BM pDC
RMD462	6990	BM pDC
RMD461	4698	BM pDC
RMD459	4982	BM pDC
RMD458	4418	BM pDC
RMD453	5649	BM pDC
RMD452	3866	BM pDC
RMD451	5411	BM pDC
RMD445	4850	BM pDC
RMD263	6353	BM pre-DC
RMD262	6221	BM pre-DC
RMD261	3269	BM pre-DC
RMD260	5619	BM pre-DC
RMD259	5741	BM pre-DC
RMD258	4722	BM pre-DC
RMD257	5510	BM pre-DC
RMD256	4872	BM pre-DC

RMD255	5380	BM pre-DC
RMD254	4813	BM pre-DC
RMD253	6232	BM pre-DC
RMD252	5158	BM pre-DC
RMD251	6214	BM pre-DC
RMD250	3885	BM pre-DC
RMD249	5481	BM pre-DC
RMD248	4913	BM pre-DC
RMD247	4773	BM pre-DC
RMD246	5917	BM pre-DC
RMD245	4704	BM pre-DC
RMD244	4979	BM pre-DC
RMD243	5168	BM pre-DC
RMD242	4991	BM pre-DC
RMD241	4954	BM pre-DC
RMD240	5489	BM pre-DC
RMD239	5081	BM pre-DC
RMD238	5142	BM pre-DC
RMD237	4910	BM pre-DC
RMD236	4586	BM pre-DC
RMD235	5197	BM pre-DC
RMD234	5433	BM pre-DC
RMD233	4566	BM pre-DC
RMD232	4228	BM pre-DC
RMD231	5920	BM pre-DC
RMD230	6633	BM pre-DC
RMD229	5175	BM pre-DC
RMD228	6155	BM pre-DC
RMD227	5287	BM pre-DC
RMD226	6189	BM pre-DC
RMD225	6004	BM pre-DC
RMD224	5214	BM pre-DC
RMD223	6878	BM pre-DC

RMD222	5880	BM pre-DC
RMD221	5701	BM pre-DC
RMD220	4825	BM pre-DC
RMD219	5848	BM pre-DC
RMD218	6383	BM pre-DC
RMD217	6244	BM pre-DC
RMD216	4095	BM pre-DC
RMD215	5103	BM pre-DC
RMD214	4690	BM pre-DC
RMD213	6597	BM pre-DC
RMD212	5537	BM pre-DC
RMD211	4317	BM pre-DC
RMD210	5820	BM pre-DC
RMD209	6210	BM pre-DC
RMD208	4221	BM pre-DC
RMD207	4815	BM pre-DC
RMD206	5608	BM pre-DC
RMD205	5454	BM pre-DC
RMD204	4821	BM pre-DC
RMD203	2705	BM pre-DC
RMD202	6764	BM pre-DC
RMD201	4234	BM pre-DC
RMD200	4827	BM pre-DC
RMD199	5456	BM pre-DC
RMD198	6370	BM pre-DC
RMD197	6217	BM pre-DC
RMD196	5177	BM pre-DC
RMD195	5968	BM pre-DC
RMD194	4342	BM pre-DC
RMD193	5432	BM pre-DC
RMD192	3526	BM pre-DC
RMD191	5348	BM pre-DC
RMD190	6825	BM pre-DC

RMD189	5086	BM pre-DC
RMD188	5180	BM pre-DC
RMD187	6287	BM pre-DC
RMD186	4037	BM pre-DC
RMD185	5937	BM pre-DC
RMD184	4785	BM pre-DC
RMD183	5880	BM pre-DC
RMD182	6751	BM pre-DC
RMD181	5510	BM pre-DC
RMD180	5861	BM pre-DC
RMD179	4702	BM pre-DC
RMD178	5087	BM pre-DC
RMD177	6128	BM pre-DC
RMD176	5637	BM pre-DC
RMD175	5163	BM pre-DC
RMD174	6295	BM pre-DC
RMD173	5813	BM pre-DC
RMD172	4973	BM pre-DC
RMD171	6491	BM pre-DC
RMD170	6119	BM pre-DC
RMD169	5740	BM pre-DC
RMD168	4954	BM pre-DC
RHM632	3205	BM LMPP
RHM633	4820	BM LMPP
RHM634	4069	BM LMPP
RHM635	3756	BM LMPP
RHM636	3965	BM LMPP
RHM637	1724	BM LMPP
RHM638	4913	BM LMPP
RHM639	3902	BM LMPP
RHM640	4573	BM LMPP
RHM641	4987	BM LMPP
RHM642	3904	BM LMPP

RHM643	3756	BM LMPP
RHM644	5924	BM LMPP
RHM645	3804	BM LMPP
RHM646	4487	BM LMPP
RHM647	3660	BM LMPP
RHM648	2965	BM LMPP
RHM649	5009	BM LMPP
RHM650	3487	BM LMPP
RHM651	3951	BM LMPP
RHM652	4818	BM LMPP
RHM653	3648	BM LMPP
RHM654	3945	BM LMPP
RHM655	3612	BM LMPP
RHM656	3632	BM LMPP
RHM657	4097	BM LMPP
RHM658	4428	BM LMPP
RHM659	3857	BM LMPP
RHM660	4164	BM LMPP
RHM661	3026	BM LMPP
RHM662	3514	BM LMPP
RHM663	5288	BM LMPP
RHM664	5430	BM LMPP
RHM665	4487	BM LMPP
RHM666	3274	BM LMPP
RHM667	5131	BM LMPP
RHM668	4910	BM LMPP
RHM669	4393	BM LMPP
RHM670	5743	BM LMPP
RHM671	3900	BM LMPP
RHM672	4418	BM LMPP
RHM673	4775	BM LMPP
RHM674	4170	BM LMPP
RHM675	4843	BM LMPP

RHM676	4948	BM LMPP
RHM677	4292	BM LMPP
RHM678	3249	BM LMPP
RHM679	4665	BM LMPP
RHM680	4284	BM LMPP
RHM681	4639	BM LMPP
RHM682	4198	BM LMPP
RHM683	3801	BM LMPP
RHM684	4680	BM LMPP
RHM685	3243	BM LMPP
RHM686	5211	BM LMPP
RHM687	3778	BM LMPP
RHM688	4089	BM LMPP
RHM689	3777	BM LMPP
RHM690	4071	BM LMPP
RHM691	3998	BM LMPP
RHM692	4649	BM LMPP
RHM693	3979	BM LMPP
RHM694	3096	BM LMPP
RHM695	5884	BM LMPP
RHM696	3727	BM LMPP
RMB961	5427	BM SiglecH+Ly6C+ pre-DC
RMB960	5977	BM SiglecH+Ly6C+ pre-DC
RMB959	4789	BM SiglecH+Ly6C+ pre-DC
RMB958	5149	BM SiglecH+Ly6C+ pre-DC
RMB957	5755	BM SiglecH+Ly6C+ pre-DC
RMB956	3883	BM SiglecH+Ly6C+ pre-DC
RMB954	5611	BM SiglecH+Ly6C+ pre-DC
RMB953	5301	BM SiglecH+Ly6C+ pre-DC
RMB952	4881	BM SiglecH+Ly6C+ pre-DC
RMB951	5957	BM SiglecH+Ly6C+ pre-DC
RMB950	4816	BM SiglecH+Ly6C+ pre-DC
RMB949	7437	BM SiglecH+Ly6C+ pre-DC

RMB947	6085	BM SiglecH+Ly6C+ pre-DC
RMB946	5136	BM SiglecH+Ly6C+ pre-DC
RMB944	4575	BM SiglecH+Ly6C+ pre-DC
RMB942	6555	BM SiglecH+Ly6C+ pre-DC
RMB941	5690	BM SiglecH+Ly6C+ pre-DC
RMB939	4247	BM SiglecH+Ly6C+ pre-DC
RMB938	4726	BM SiglecH+Ly6C+ pre-DC
RMB936	3561	BM SiglecH+Ly6C+ pre-DC
RMB935	5110	BM SiglecH+Ly6C+ pre-DC
RMB934	6596	BM SiglecH+Ly6C+ pre-DC
RMB933	5061	BM SiglecH+Ly6C+ pre-DC
RMB932	7175	BM SiglecH+Ly6C+ pre-DC
RMB931	6159	BM SiglecH+Ly6C+ pre-DC
RMB930	6299	BM SiglecH+Ly6C+ pre-DC
RMB929	6515	BM SiglecH+Ly6C+ pre-DC
RMB928	4371	BM SiglecH+Ly6C+ pre-DC
RMB927	4885	BM SiglecH+Ly6C+ pre-DC
RMB926	5027	BM SiglecH+Ly6C+ pre-DC
RMB925	5337	BM SiglecH+Ly6C+ pre-DC
RMB924	5473	BM SiglecH+Ly6C+ pre-DC
RMB923	5945	BM SiglecH+Ly6C+ pre-DC
RMB922	5499	BM SiglecH+Ly6C+ pre-DC
RMB921	6506	BM SiglecH+Ly6C+ pre-DC
RMB920	4421	BM SiglecH+Ly6C+ pre-DC
RMB919	7048	BM SiglecH+Ly6C+ pre-DC
RMB918	5603	BM SiglecH+Ly6C+ pre-DC
RMB917	3280	BM SiglecH+Ly6C+ pre-DC
RMB916	6418	BM SiglecH+Ly6C+ pre-DC
RMB915	5244	BM SiglecH+Ly6C+ pre-DC
RMB914	4665	BM SiglecH+Ly6C+ pre-DC
RMB913	5575	BM SiglecH+Ly6C+ pre-DC
RMB912	4595	BM SiglecH+Ly6C+ pre-DC
RMB911	5631	BM SiglecH+Ly6C+ pre-DC

RMB866	4089	BM Ly6C+SiglecH- pre-DC
RMB865	5331	BM Ly6C+SiglecH- pre-DC
RMB864	4347	BM Ly6C+SiglecH- pre-DC
RMB863	4656	BM Ly6C+SiglecH- pre-DC
RMB862	4586	BM Ly6C+SiglecH- pre-DC
RMB861	3735	BM Ly6C+SiglecH- pre-DC
RMB860	5002	BM Ly6C+SiglecH- pre-DC
RMB858	6008	BM Ly6C+SiglecH- pre-DC
RMB856	4470	BM Ly6C+SiglecH- pre-DC
RMB855	4420	BM Ly6C+SiglecH- pre-DC
RMB854	6604	BM Ly6C+SiglecH- pre-DC
RMB853	4898	BM Ly6C+SiglecH- pre-DC
RMB852	5538	BM Ly6C+SiglecH- pre-DC
RMB851	4205	BM Ly6C+SiglecH- pre-DC
RMB850	6607	BM Ly6C+SiglecH- pre-DC
RMB848	4695	BM Ly6C+SiglecH- pre-DC
RMB847	4047	BM Ly6C+SiglecH- pre-DC
RMB846	4601	BM Ly6C+SiglecH- pre-DC
RMB845	6311	BM Ly6C+SiglecH- pre-DC
RMB844	4282	BM Ly6C+SiglecH- pre-DC
RMB842	3140	BM Ly6C+SiglecH- pre-DC
RMB841	6435	BM Ly6C+SiglecH- pre-DC
RMB840	6596	BM Ly6C+SiglecH- pre-DC
RMB838	4546	BM Ly6C+SiglecH- pre-DC
RMB837	3619	BM Ly6C+SiglecH- pre-DC
RMB835	4916	BM Ly6C+SiglecH- pre-DC
RMB834	5689	BM Ly6C+SiglecH- pre-DC
RMB833	6567	BM Ly6C+SiglecH- pre-DC
RMB831	6216	BM Ly6C+SiglecH- pre-DC
RMB830	5667	BM Ly6C+SiglecH- pre-DC
RMB829	4924	BM Ly6C+SiglecH- pre-DC
RMB828	6008	BM Ly6C+SiglecH- pre-DC
RMB823	4930	BM Ly6C+SiglecH- pre-DC

RMB822	4696	BM Ly6C+SiglecH- pre-DC
RMB819	5383	BM Ly6C+SiglecH- pre-DC
RMB818	4368	BM Ly6C+SiglecH- pre-DC
RMB817	5666	BM Ly6C+SiglecH- pre-DC
RMB816	4681	BM Ly6C+SiglecH- pre-DC
RMB815	4389	BM Ly6C+SiglecH- pre-DC
RMB814	6551	BM Ly6C+SiglecH- pre-DC
RMB812	5682	BM Ly6C+SiglecH- pre-DC
RMB811	4514	BM Ly6C+SiglecH- pre-DC
RMB809	5298	BM Ly6C+SiglecH- pre-DC
RMB807	5238	BM Ly6C+SiglecH- pre-DC
RMB806	4452	BM Ly6C+SiglecH- pre-DC
RMB804	5591	BM Ly6C+SiglecH- pre-DC
RMB802	5612	BM Ly6C+SiglecH- pre-DC
RMB801	5022	BM Ly6C+SiglecH- pre-DC
RMB800	7372	BM Ly6C+SiglecH- pre-DC
RMB799	5644	BM Ly6C+SiglecH- pre-DC
RMB797	7252	BM Ly6C+SiglecH- pre-DC
RMB794	4786	BM Ly6C+SiglecH- pre-DC
RMB791	5750	BM Ly6C+SiglecH- pre-DC
RMB790	5455	BM Ly6C+SiglecH- pre-DC
RMB789	4737	BM Ly6C+SiglecH- pre-DC
RMB788	6015	BM Ly6C+SiglecH- pre-DC
RMB787	4682	BM Ly6C+SiglecH- pre-DC
RMB785	5318	BM Ly6C+SiglecH- pre-DC
RMB784	4059	BM Ly6C+SiglecH- pre-DC
RMB782	5132	BM Ly6C+SiglecH- pre-DC
RMB781	5178	BM Ly6C+SiglecH- pre-DC
RMB778	5265	BM Ly6C+SiglecH- pre-DC
RMB777	4572	BM Ly6C+SiglecH- pre-DC
RMB776	5755	BM Ly6C+SiglecH- pre-DC
RMB775	6768	BM Ly6C+SiglecH- pre-DC
RMB774	5780	BM Ly6C+SiglecH- pre-DC

RMB773	6870	BM Ly6C+SiglecH- pre-DC
RMB772	4551	BM Ly6C+SiglecH- pre-DC
RMB963	4617	BM Ly6C-SiglecH- pre-DC
RMB998	4374	BM Ly6C-SiglecH- pre-DC
RMB997	5772	BM Ly6C-SiglecH- pre-DC
RMB996	4270	BM Ly6C-SiglecH- pre-DC
RMB995	4781	BM Ly6C-SiglecH- pre-DC
RMB994	5555	BM Ly6C-SiglecH- pre-DC
RMB993	3843	BM Ly6C-SiglecH- pre-DC
RMB992	5927	BM Ly6C-SiglecH- pre-DC
RMB991	6262	BM Ly6C-SiglecH- pre-DC
RMB990	5616	BM Ly6C-SiglecH- pre-DC
RMB988	4484	BM Ly6C-SiglecH- pre-DC
RMB987	4582	BM Ly6C-SiglecH- pre-DC
RMB986	6214	BM Ly6C-SiglecH- pre-DC
RMB985	6708	BM Ly6C-SiglecH- pre-DC
RMB984	5774	BM Ly6C-SiglecH- pre-DC
RMB983	5087	BM Ly6C-SiglecH- pre-DC
RMB982	5379	BM Ly6C-SiglecH- pre-DC
RMB980	5734	BM Ly6C-SiglecH- pre-DC
RMB979	6760	BM Ly6C-SiglecH- pre-DC
RMB978	4920	BM Ly6C-SiglecH- pre-DC
RMB977	4530	BM Ly6C-SiglecH- pre-DC
RMB976	5594	BM Ly6C-SiglecH- pre-DC
RMB975	5054	BM Ly6C-SiglecH- pre-DC
RMB971	4319	BM Ly6C-SiglecH- pre-DC
RMB968	6926	BM Ly6C-SiglecH- pre-DC
RMB967	7273	BM Ly6C-SiglecH- pre-DC
RMB965	6603	BM Ly6C-SiglecH- pre-DC
RMB964	6342	BM Ly6C-SiglecH- pre-DC
RMB1058	4310	BM Ly6C-SiglecH- pre-DC
RMB1057	4532	BM Ly6C-SiglecH- pre-DC
RMB1056	6150	BM Ly6C-SiglecH- pre-DC

RMB1055	3902	BM Ly6C-SiglecH- pre-DC
RMB1054	4358	BM Ly6C-SiglecH- pre-DC
RMB1053	5009	BM Ly6C-SiglecH- pre-DC
RMB1052	5051	BM Ly6C-SiglecH- pre-DC
RMB1051	3979	BM Ly6C-SiglecH- pre-DC
RMB1047	5159	BM Ly6C-SiglecH- pre-DC
RMB1046	5490	BM Ly6C-SiglecH- pre-DC
RMB1045	5876	BM Ly6C-SiglecH- pre-DC
RMB1044	5085	BM Ly6C-SiglecH- pre-DC
RMB1043	4847	BM Ly6C-SiglecH- pre-DC
RMB1040	4687	BM Ly6C-SiglecH- pre-DC
RMB1038	4951	BM Ly6C-SiglecH- pre-DC
RMB1037	4864	BM Ly6C-SiglecH- pre-DC
RMB1036	4177	BM Ly6C-SiglecH- pre-DC
RMB1032	4015	BM Ly6C-SiglecH- pre-DC
RMB1031	3448	BM Ly6C-SiglecH- pre-DC
RMB1030	5518	BM Ly6C-SiglecH- pre-DC
RMB1029	4388	BM Ly6C-SiglecH- pre-DC
RMB1028	4974	BM Ly6C-SiglecH- pre-DC
RMB1025	5584	BM Ly6C-SiglecH- pre-DC
RMB1023	6271	BM Ly6C-SiglecH- pre-DC
RMB1021	5856	BM Ly6C-SiglecH- pre-DC
RMB1020	6459	BM Ly6C-SiglecH- pre-DC
RMB1019	6053	BM Ly6C-SiglecH- pre-DC
RMB1018	4802	BM Ly6C-SiglecH- pre-DC
RMB1017	4365	BM Ly6C-SiglecH- pre-DC
RMB1016	3946	BM Ly6C-SiglecH- pre-DC
RMB1014	4787	BM Ly6C-SiglecH- pre-DC
RMB1013	5226	BM Ly6C-SiglecH- pre-DC
RMB1012	4738	BM Ly6C-SiglecH- pre-DC
RMB1011	4600	BM Ly6C-SiglecH- pre-DC
RMB1009	5697	BM Ly6C-SiglecH- pre-DC
RMB1008	5618	BM Ly6C-SiglecH- pre-DC

RMB1006	6392	BM Ly6C-SiglecH- pre-DC
RMB1005	5186	BM Ly6C-SiglecH- pre-DC
RMB1004	6676	BM Ly6C-SiglecH- pre-DC
RMB1003	5373	BM Ly6C-SiglecH- pre-DC
RMB1002	4568	BM Ly6C-SiglecH- pre-DC
RMB1001	5127	BM Ly6C-SiglecH- pre-DC
RMB867	5275	BM SiglecH+Ly6C- pre-DC
RMB868	6857	BM SiglecH+Ly6C- pre-DC
RMB999	7195	BM SiglecH+Ly6C- pre-DC
RMB989	4379	BM SiglecH+Ly6C- pre-DC
RMB981	4860	BM SiglecH+Ly6C- pre-DC
RMB974	5497	BM SiglecH+Ly6C- pre-DC
RMB973	4859	BM SiglecH+Ly6C- pre-DC
RMB972	6688	BM SiglecH+Ly6C- pre-DC
RMB970	5989	BM SiglecH+Ly6C- pre-DC
RMB969	4737	BM SiglecH+Ly6C- pre-DC
RMB966	5811	BM SiglecH+Ly6C- pre-DC
RMB962	6090	BM SiglecH+Ly6C- pre-DC
RMB955	3554	BM SiglecH+Ly6C- pre-DC
RMB948	5398	BM SiglecH+Ly6C- pre-DC
RMB945	5803	BM SiglecH+Ly6C- pre-DC
RMB943	6384	BM SiglecH+Ly6C- pre-DC
RMB940	4365	BM SiglecH+Ly6C- pre-DC
RMB937	6389	BM SiglecH+Ly6C- pre-DC
RMB910	6777	BM SiglecH+Ly6C- pre-DC
RMB909	5716	BM SiglecH+Ly6C- pre-DC
RMB908	4570	BM SiglecH+Ly6C- pre-DC
RMB907	5964	BM SiglecH+Ly6C- pre-DC
RMB906	6514	BM SiglecH+Ly6C- pre-DC
RMB905	6228	BM SiglecH+Ly6C- pre-DC
RMB904	4783	BM SiglecH+Ly6C- pre-DC
RMB903	6306	BM SiglecH+Ly6C- pre-DC
RMB902	7234	BM SiglecH+Ly6C- pre-DC

RMB901	4525	BM SiglecH+Ly6C- pre-DC
RMB900	5526	BM SiglecH+Ly6C- pre-DC
RMB899	7271	BM SiglecH+Ly6C- pre-DC
RMB898	7634	BM SiglecH+Ly6C- pre-DC
RMB897	5348	BM SiglecH+Ly6C- pre-DC
RMB896	7377	BM SiglecH+Ly6C- pre-DC
RMB895	5520	BM SiglecH+Ly6C- pre-DC
RMB894	6592	BM SiglecH+Ly6C- pre-DC
RMB893	5459	BM SiglecH+Ly6C- pre-DC
RMB892	4712	BM SiglecH+Ly6C- pre-DC
RMB891	5499	BM SiglecH+Ly6C- pre-DC
RMB890	6420	BM SiglecH+Ly6C- pre-DC
RMB889	6181	BM SiglecH+Ly6C- pre-DC
RMB888	6648	BM SiglecH+Ly6C- pre-DC
RMB887	7619	BM SiglecH+Ly6C- pre-DC
RMB886	5930	BM SiglecH+Ly6C- pre-DC
RMB885	5892	BM SiglecH+Ly6C- pre-DC
RMB884	5980	BM SiglecH+Ly6C- pre-DC
RMB883	5352	BM SiglecH+Ly6C- pre-DC
RMB882	5734	BM SiglecH+Ly6C- pre-DC
RMB881	5366	BM SiglecH+Ly6C- pre-DC
RMB880	5883	BM SiglecH+Ly6C- pre-DC
RMB879	5504	BM SiglecH+Ly6C- pre-DC
RMB878	7219	BM SiglecH+Ly6C- pre-DC
RMB877	6240	BM SiglecH+Ly6C- pre-DC
RMB876	5006	BM SiglecH+Ly6C- pre-DC
RMB875	3538	BM SiglecH+Ly6C- pre-DC
RMB874	6572	BM SiglecH+Ly6C- pre-DC
RMB873	7118	BM SiglecH+Ly6C- pre-DC
RMB872	6842	BM SiglecH+Ly6C- pre-DC
RMB871	5627	BM SiglecH+Ly6C- pre-DC
RMB870	5394	BM SiglecH+Ly6C- pre-DC
RMB869	5354	BM SiglecH+Ly6C- pre-DC

RMB1034	7162	BM SiglecH+Ly6C- pre-DC
RMB1033	6734	BM SiglecH+Ly6C- pre-DC
RMB1027	5458	BM SiglecH+Ly6C- pre-DC
RMB1026	4972	BM SiglecH+Ly6C- pre-DC
RMB1024	6659	BM SiglecH+Ly6C- pre-DC
RMB1022	4635	BM SiglecH+Ly6C- pre-DC
RMB1015	5635	BM SiglecH+Ly6C- pre-DC
RMB1010	5007	BM SiglecH+Ly6C- pre-DC
RMB1007	7201	BM SiglecH+Ly6C- pre-DC
RMB1000	6691	BM SiglecH+Ly6C- pre-DC
RMS232	4438	BM cMoP
RMS327	8706	BM cMoP
RMS324	8237	BM cMoP
RMS322	8561	BM cMoP
RMS320	8070	BM cMoP
RMS319	6964	BM cMoP
RMS317	8097	BM cMoP
RMS316	7892	BM cMoP
RMS315	6028	BM cMoP
RMS314	8078	BM cMoP
RMS313	5753	BM cMoP
RMS311	7160	BM cMoP
RMS310	7895	BM cMoP
RMS308	7529	BM cMoP
RMS306	8143	BM cMoP
RMS305	6268	BM cMoP
RMS304	7572	BM cMoP
RMS303	5805	BM cMoP
RMS301	7819	BM cMoP
RMS300	7524	BM cMoP
RMS299	7554	BM cMoP
RMS298	6671	BM cMoP
RMS294	8216	BM cMoP

RMS293	8505	BM cMoP
RMS292	8859	BM cMoP
RMS290	6225	BM cMoP
RMS289	5960	BM cMoP
RMS288	7243	BM cMoP
RMS287	8632	BM cMoP
RMS286	9029	BM cMoP
RMS285	9935	BM cMoP
RMS283	8697	BM cMoP
RMS281	9034	BM cMoP
RMS280	8955	BM cMoP
RMS279	4827	BM cMoP
RMS277	8918	BM cMoP
RMS274	8142	BM cMoP
RMS273	7471	BM cMoP
RMS272	7691	BM cMoP
RMS270	8176	BM cMoP
RMS269	8068	BM cMoP
RMS265	8299	BM cMoP
RMS264	7668	BM cMoP
RMS262	7077	BM cMoP
RMS261	8153	BM cMoP
RMS259	6562	BM cMoP
RMS258	7379	BM cMoP
RMS257	8234	BM cMoP
RMS254	8702	BM cMoP
RMS252	8541	BM cMoP
RMS251	7976	BM cMoP
RMS250	7312	BM cMoP
RMS249	6517	BM cMoP
RMS247	5744	BM cMoP
RMS246	6831	BM cMoP
RMS245	8299	BM cMoP

RMS243	7444	BM cMoP
RMS242	6182	BM cMoP
RMS240	7927	BM cMoP
RMS239	6838	BM cMoP
RMS238	5928	BM cMoP
RMS237	8650	BM cMoP
RMS236	8463	BM cMoP
RMS235	7532	BM cMoP
RMS234	7429	BM cMoP
RMS233	7487	BM cMoP

Supplementary Table 2. pDC and cDC gene signatures used for cMap

pDC signature genes	cDC signature genes
Ak8	1700025G04Rik
1700024P16Rik	2810417H13Rik
2210020M01Rik	4930506M07Rik
2610018G03Rik	5033414K04Rik
4930572J05Rik	Adam23
A130050O07Rik	Adam8
Abca5	Aim1
Ablim1	Anpep
Angptl7	Anxa1
Ap1m2	Arhgap26
Arhgap24	Arrb1
Asph	Asap1
Blnk	Asb2
Cacna1d	Atf3
Card6	Atp8b4
Cdc14b	Batf3
Cdh1	Bcl2a1a
Clec4g	Bcl2a1b
Cmah	Bcl2a1c
Dnajc13	Bcl2a1d
Duxbl	Bub1
Ear14	Bub1b
Efcab4b	Fam190a
Erbb3	Ccna2
Eya1	Ccnb2
Fads3	Ccrl2
Fam169b	Cd80
Fggy	Cd81
Figf	Cd83
Gcom1	Cd86

Gimap1	Cd9
Gimap9	Cdca7
Gm10790	Cep55
Gm10838	Chn2
Gm12253	Cxcl16
Gm14207	Asap2
EG624367	Dlgap5
Gpr174	Dna2
Gria3	Dock5
Grm8	Dock7
Hs3st1	E2f8
Hsd11b1	Ear2
Igf1r	Egr1
Ikzf2	Eps8
Ikzf3	Errfi1
Il17rb	Fam38a
Itsn1	Fgl2
Klk1	Gatm
Klk1b21	Gm11545
Klra17	Gm6377
Ldhb	Gpr124
Lynx1	Gpr82
Maged1	Grk5
Mcart6	Havcr2
Mctp2	Hk2
Mgst2	HnrpII
Obscn	Id2
Olfr164	Ifitm2
Olfr165	Igsf6
Olfr166	Il1b
P2ry12	Kif11
Pacsin1	Kif23
Paqr5	Klri1

Pdzd4	Lfng
Peli2	Lpcat2
Pkig	Lpcat4
Plod2	Lrrc25
Pnck	Lrrk2
Ppm1e	Ly75
Ppm1l	Lyz1
Prkca	Mctp1
Prrg4	Melk
Rpgrip1	Mki67
Scrn1	Mllt4
Sit1	Myc
Slc39a14	Nav1
Slco4a1	Ncapg
Srl	Nck2
St3gal6	Neurl3
Tmem163	Nlrp1b
Upb1	Nlrp1c
Wfs1	Nostrin
Xkrx	Nr4a3
Ysk4	Nuf2
Zc3h12b	Pak1
Zcchc24	Parp12
Zfp521	Pglyrp1
Zfp658	Pole
	Prkar2a
	Pstpip2
	Ptpn22
	Pvrl1
	Rab11fip1
	Rab31
	Rab32
	Ralb

	Rasgef1b
	Rasgrp3
	Rnf144b
	Rnf150
	Rrm2
	Rtn1
	Sash1
	Sgk1
	Slamf8
	Spint1
	Spire1
	Spred1
	St3gal5
	Sulf2
	Tgfb1
	Tlr11
	Tlr13
	Tnfrsf21
	Top2a
	Tpx2
	Tspan33
	Ttc39b
	Tubb6
	Wdfy3
	Zbtb46
	Zfp366

Supplementary Table 3. pre-pDC and pre-cDC gene signatures used for cMap

pre-pDC signature genes	pre-cDC signature genes
Blk	Tgfb1
Fcrla	Ifitm3
Ly6d	Emilin2
Il7r	Lyz1
St6gal1	Ifitm6
Ets1	Ccl9
Hs3st1	F13a1
Cox6a2	Cd40
Pacsin1	Lyz2
Hvcn1	Cd209a
Cdh5	Ifitm2
Il12a	Abca9
Tmem119	Nfe2
Cd72	NA
Jakmip1	Xdh
NA	Cyp4f18
Arpp21	Fn1
Sdc4	Dusp3
Zcchc18	Ifitm1
Siglech	Anxa3
Xkrx	Pid1
Snn	Sult1a1
Chdh	Sulf2
Lynx1	Cd300lg
Slco4a1	Mtus1
2010001M09Rik	Sgk1
Dntt	Zbtb32
Il17rb	Snx21
Tlr7	Stx11

Ephb2	Pygl
Gm5796	Clec7a
Sema7a	Pik3r6
Spns3	Nhs12
P2ry13	Nccrp1
Maged1	Olfm1
Tbxa2r	1810033B17Rik
4930572J05Rik	Slamf8
Havcr1	Nupr1
Lrp8	Clec4b1
AF067063	Glpr2
Entpd4	Galnt9
Hmgcs2	Tmem51
Gm12253	Ralb
Lck	Adam15
Atp1b1	Ltb4r1
Capn5	Fcgrt
Gimap6	Daglb
Cd27	Il13ra1
Tm4sf4	Mefv
Sox4	Clec4a3
Itgad	Dok3
Havcr2	Nrbp2
Prkca	AI607873
Mgst2	Clec4a1
Rilpl1	Tspan17
Tapt1	Gpr183
Blnk	Gm4788
Arhgap24	Elmo2
Otud7b	Rin2
Fads3	Tbxas1
Slpi	Bhlhe40
Myl4	Rtn1

Tex2	Map3k6
Bhlha15	Dgkg
Egfr	Fosl2
Tpm2	App
Cobll1	Aif1
Bcl2	Sema4a
Mtap7	Pros1
Maml2	P2ry6
Vegfc	Irf4
Slc27a1	Gpr114
Arap2	Anxa1
Adam11	Rasgrp4
Epha2	Hpgd
Dmwd	Eif4ebp1
Klk1	Klf4
Ly6a	Lst1
Tspan2	6430548M08Rik
Emid1	Hk3
P2ry14	Tmem25
Ppm1e	Tnfaip2
Cdh1	Apobr
Slc2	Ly6c1
Tespa1	Hfe
Gimap1	Ckb
Tfrc	Tspan33
Gpr97	Csf2ra
Sema4b	Tppp3
Rpgrip1	Ngfr
Slc35d3	Mar-01
Ldhb	Dram1
Vprbp	Tns4
Prr5	Pak1
Cmah	Hnrpll

Hspa2	Adora2b
Serpinh1	Rab32
Abcb4	Cdc42ep4
Gimap9	Cd209d
Padi1	Klk8
Chrnbl	4632428N05Rik
Tmem86a	Mt1
Tmem229b	Pqlc1
Ctsw	Gch1
Il18r1	Ptpro
Cd6	Tmem141
Ppp3cc	Lgals3
Gphn	Irak3
Cd28	Specc1
Tcf4	Zbtb46
Ddx51	G6pdx
Ldoc1l	Smpdl3b
Egln3	Cysltr1
Blvrb	Ppap2c
Chst3	Ifi30
Rasl11b	Nav1
Sytl1	Tdrd7
Adssl1	Dpep2
Zdhhc8	Lrrk2
Sell	St3gal5
Stambpl1	Asap1
Spib	Ccdc109b
Fam167a	Wls
Srpk3	Mllt4
Gatad1	Smpdl3a
Zfp521	Tlr1
Atp13a2	Pi16
Atp2a1	Tbc1d2

Armcx2	Cyp27a1
Chst15	Evi2a
Fam40b	Btla
Pnck	Kcnk6
Slc41a2	Ncf2
Mast4	Mapkapk3
Cd69	Mfsd7a
Cdk20	Arap3
Ppm1l	C3
4931428F04Rik	Hk2
Tet1	Emr1
Strbp	Ank
Pafah1b3	Samd9l
Ppp1r16b	Nfix
Myzap	Batf3
Gadd45b	Amz1
Ppnr	Epb4.1l3
AW555464	Shisa5
Pltp	Ciita
Pitpnm2	Aim1
Cadm1	Ccl6
Snai3	Csf1r
Gpr171	2310047M10Rik
Egfl7	Atg9b
Tmem121	Zc3h12d
Fyb	Nostrin
Evpl	Pfkfb4
A530032D15Rik	Fam49a
Ptprcap	Tubb6
Arid3a	Tiam1
Sdc1	Anxa5
Gm106	Plxnd1
Panx1	Mgst3

Faim3	Bcl6
Galk1	Ifit3
Zdhhc14	Dennd2c
Repin1	Cnr2
Gpsm1	Oas2
Akap12	Cd209e
Mras	Snx10
Csf2rb2	Cd52
Armxc4	Tnfsf14
1500009L16Rik	Abcc4
Klhdc5	Klf9
Lefty1	H2-Ab1
Prkcb	Phf11
Snx18	Slc34a1
Hsd11b1	Jhdm1d
Ift81	Itfg3
Rpl31	Ms4a6d
Ctsa	Slc31a2
Dcun1d4	Acot11
Gas7	Cx3cr1
Hoxa7	Ahnak
Eya1	Papss2
Bcr	Arhgap23
Srl	Mboat1
Hoxa5	S1pr2
Tcf7l2	Vim
Nfil3	Tnfrsf21
Hemgn	Slk
Rab6b	Hlcs
Timp2	Sat1
Magee2	Unc119
Cmya5	Tbc1d9
Etv5	Tlr2

Slc27a2	Trf
Timd2	Add3
Phxr4	Rarg
Ociad2	Soat1
Fads2	Arl11
Pecam1	Prkx
Sec24d	Gpr141
Apcdd1	Slamf7
Gapt	Il2rg
Zap70	Cd209c
Fam83f	Cd9
Fnbp1l	Crip2
Lag3	Rin3
Gng12	Arhgap26
Agtrap	Kank3
Fkbp5	Cotl1
2700046G09Rik	Plod3
Lzts2	Poll
Phf17	Naga
Rabgap1l	S100a4
Cnn3	Apbb1
Twsg1	Junb
Igf1r	Fcgr1
Cnp	Otof
1500011H22Rik	Stard8
Gm19346	Agpat4
Rpl3l	Tlr13
Hes6	Fam46a
Krba1	Cd33
Grhpr	Adrbk2
Ung	Stbd1
Anks3	Dgat2
Ppif	Heatr5a

Baiap3	Atp10d
Dgkz	Galnt10
Ahdc1	Nrap
Lpgat1	Tmem150b
Fam184a	Myo1g
Stx1a	Hmga2-ps1
Vegfa	Irf5
Cdk5r1	Rab31
Zfp36l1	Zfp710
Nt5dc2	H2-DMb1
Acap1	Gdpd3
Vegfb	Aldoa
Fam65b	Tmem238
Ivns1abp	Rab43
Sdr39u1	Ece1
Ccnd1	Darc
Tns1	Il6ra
Dnajb2	Ids
Ttpal	Pdlim7
Shisa2	H2-Eb1
Hmgn1	Arrb1
Tsc22d1	Oas1g
Lamc1	Cask
Ctnnd2	Cd74
Fgr	Casp1
Sipa1l1	LOC641240
Tshz3	Rras
L3mbtl3	Xaf1
A430084P05Rik	Ctsc
Satb1	Lrrfip2
Fggy	Prtn3
Kdm1b	Trerf1
Zfp523	Hsd3b7

Creld1	Orai1
Rel1	O3far1
Fmnl3	Nqo2
Usp2	Clec4g
Fam92a	Tmem106a
Rilpl2	Vwa5a
Ptprs	Arhgap9
Zfp579	Apom
Ap1m2	Naip2
Gpcpd1	Gamt
Xrcc6	Glud1
Gpr20	Ifi205
Tanc1	Inpp1
Gna11	Ppfibp2
Diras2	Cd14
Lancl1	Arrdc3
Hmgn3	Samhd1
Zranb3	Col23a1
Fam3c	Fam198b
Dyrk3	Anxa2
Mcoln2	Tmsb10
9030619P08Rik	Capn2
Tha1	1700025G04Rik
Robo3	Cln3
Ikbip	Gpc1
Notch1	Igsf6
Rhobtb2	Tsc22d3
H1fx	Frrs1
Rogdi	Creg1
Tle6	Fam129b
Znrf1	Ehbp1l1
Klk1b5	Clec9a
Traf3ip2	Gpr160

Npc1	Apobec1
Wfs1	Mical1
Mns1	Ifngr1
Faah	Cttnbp2nl
Pkig	Adrb2
Frmd7	Mical2
Prnp	Kif1b
Rab33b	Ifngr2
Fryl	Ms4a6b
Dusp6	Emb
Tmem9	Pdgfb
Tex9	Sepp1
Abi3	Ptpn12
Dab2ip	1700020L24Rik
Rtn4rl1	Stard3nl
Phgdh	Myadm
Spata24	Rap1gap2
Fam101a	Ugt1a7c
Ly6k	Hr
Plekhh1	Gsto1
Igfbp4	Aplp2
Vmac	Pnp
2310022B05Rik	BC028528
Itgb4	Syn1
Pik3ap1	Acer3
Zfp608	Mcl1
Gpr174	Fzd7
Elt1	Gadd45g
Rasgrf1	Sfpi1
Fbxl13	Avpi1
Mgmt	Sla
B3galnt1	Zyx
Klk1b26	5430435G22Rik

Pgls	Slfn2
Cbr1	Fam129a
Zfp658	Il15
Pla2g12a	Itpril2
Dtx4	Slc6a12
Insl6	Ticam2
Lat	Chn2
Card11	Sh3pxd2b
Rgs7bp	Wfdc18
8430410A17Rik	Jak2
C1galt1	Rab3d
A230050P20Rik	Parp12
Clec2d	Arrdc4
BC031353	Cd300a
Irf8	Akr7a5
St3gal6	Itgb2
Ccdc126	Aqp1
Ccr7	Plekho2
Sep-01	Fxyd5
Mef2c	Cyp4v3
Pik3ip1	Rassf1
Prps2	Pitpnm1
Scap	B4galnt4
Klhl30	Ccdc102a
Cxcr3	Slfn1
Lig1	Nadk
H2-Q8	Oasl2
2210020M01Rik	Ampd3
Tbc1d8	Flna
Cbx3	H2-Aa
Ccl4	Irak4
A130077B15Rik	Fkbp1b
9930111J21Rik1	Hpcal1

Rnf145
Itgb7
Pde1b
Sepx1
Ppp1r3d
Relb
Degs1
Nuak2
Adora3
Mvp
Hspa1b
Plcb2
Camkk2
Tnni2
Eps8
Fam38a
Adap1
Cldn1
Gramd3
Mrc1
Glpr1
Gm5506
Rab11fip5
Per1
Rassf4
Rgs2
Tnfsf9
Lipa
Lmna
Ehd4
Alox5
Neurl3
Fkbp9

Alox5ap
Tlr6
Ryr1
Ebi3
Plec
Il10ra
Aifm2
Ms4a8a
Trps1
Fgl2
8430427H17Rik
Mfsd7b
Pkn3
Slc46a3
Nfkb2
Cd97
Atp2b1
Lpcat4
Shroom1
Lilra6
Pea15a
Naip5
Cebpb
Nfam1
Wipf1
Plin2
Nme7
Cd68
Casp4
Igsf9
Lilrb4
Dapk1
P2ry1

	Idh1
	Plbd1
	Deptor
	Cd226
	Ptpn22
	Dusp1
	Zfp296
	Rhbdf1
	Fam132a
	Vwf
	Bach1
	Adap2
	Hist1h2bc
	Hspa1a
	Lcp2
	Hist1h1c
	Tor3a
	Marveld1
	Dnase1l1
	Bag3
	Tmem176b
	Zfp36
	Cd48
	4930506M07Rik
	Tep1
	Pion
	Rgs3
	Bzrap1
	Bmf
	Atf3
	Pmaip1
	Ms4a6c
	S100a10

S100a9
AF251705
Camk1d

Supplementary Table 4. Sorted cell populations

Cell population	Surface marker profile	As sorted for
LMPP	Lin ⁻ c-Kit ⁺ CD16/32 ^{int} CD34 ⁺ Sca-1 ⁺ CD127 ⁻	scRNA-seq/ adoptive transfer
CMP	Lin ⁻ c-Kit ⁺ CD16/32 ^{int} CD34 ⁺ Sca-1 ⁻ CD127 ⁻	scRNA-seq/ adoptive transfer
GMP	Lin ⁻ c-Kit ⁺ CD16/32 ^{hi} CD34 ⁺ Sca-1 ⁻	scRNA-seq/ adoptive transfer
CLP	Lin ⁻ c-Kit ^{lo} CD127 ⁺ CD34 ⁺ Sca-1 ^{lo} Flt3 ⁺ Thy-1 ⁻	scRNA-seq
MDP	Lin ⁻ CD11c ⁻ MHCII ⁻ Flt3 ⁺ c-Kit ⁺ CD115 ⁺	scRNA-seq
CD115 ⁺ CDP	Lin ⁻ CD11c ⁻ MHCII ⁻ Flt3 ⁺ c-Kit ^{int} CD115 ⁺	scRNA-seq/ clonal assay/ adoptive transfer
CD115 ⁻ CDP	Lin ⁻ CD11c ⁻ MHCII ⁻ Flt3 ⁺ c-Kit ^{int} CD115 ⁻	scRNA-seq/ clonal assay
pre-DC	Lin ⁻ CD11c ⁺ MHCII ⁻ Flt3 ⁺ CD172α ^{lo} SiglecH ^{+/-} Ly6C ^{+/-}	scRNA-seq
pre-pro B	Lin ⁻ Flt3 ⁺ B220 ⁺ CD43 ⁺ CD93 ⁺ CXCR4 ⁺ IL7R ⁺ CD117 ^{lo} CD24 ^{lo}	scRNA-seq
Ly6D ⁻ CLP	Lin ⁻ c-Kit ^{lo} CD127 ⁺ CD34 ⁺ Sca-1 ^{lo} Flt3 ⁺ Thy-1 ⁻ Ly6D ⁻	adoptive transfer
Ly6D ⁺ CLP	Lin ⁻ c-Kit ^{lo} CD127 ⁺ CD34 ⁺ Sca-1 ^{lo} Flt3 ⁺ Thy-1 ⁻ Ly6D ⁺	adoptive transfer
Ly6D ⁻ CD115 ⁻ CDP	Lin ⁻ CD11c ⁻ MHCII ⁻ Flt3 ⁺ c-Kit ^{int} CD115 ⁻ Ly6D ⁻	adoptive transfer
Ly6D ⁺ CD115 ⁻ CDP	Lin ⁻ CD11c ⁻ MHCII ⁻ Flt3 ⁺ c-Kit ^{int} CD115 ⁻ Ly6D ⁺	adoptive transfer
Ly6D ⁻ pre-pDC	Lin ⁻ CD11c ⁻ MHCII ⁻ Flt3 ⁺ c-Kit ^{int} CD115 ⁻ CD81 ⁺ SiglecH ⁺ IL7Rα ⁺ Ly6D ⁻	adoptive transfer
Ly6D ⁺ pre-pDC	Lin ⁻ CD11c ⁻ MHCII ⁻ Flt3 ⁺ c-Kit ^{int} CD115 ⁻ CD81 ⁺ SiglecH ⁺ IL7Rα ⁺ Ly6D ⁺	adoptive transfer
Ly6D ⁺ pre-cDC	Lin ⁻ CD11c ⁺ MHCII ⁻ Flt3 ⁺ CD172α ^{lo} Ly6D ⁺	adoptive transfer