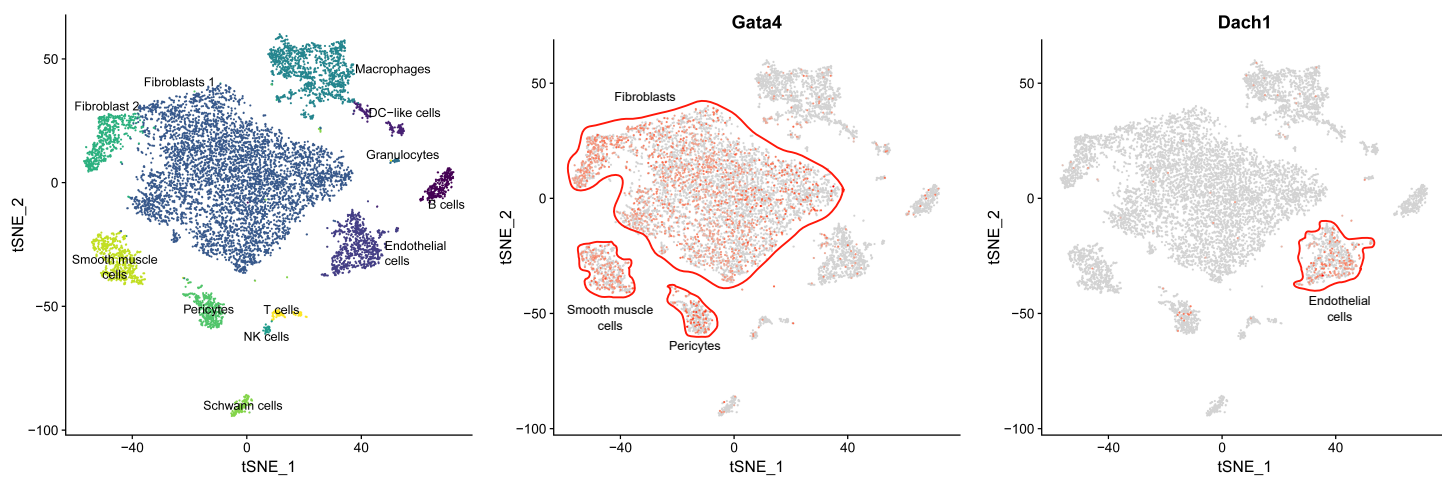


**Online Figure 1. Gating strategies for flow cytometry experiments in Figures 1.**

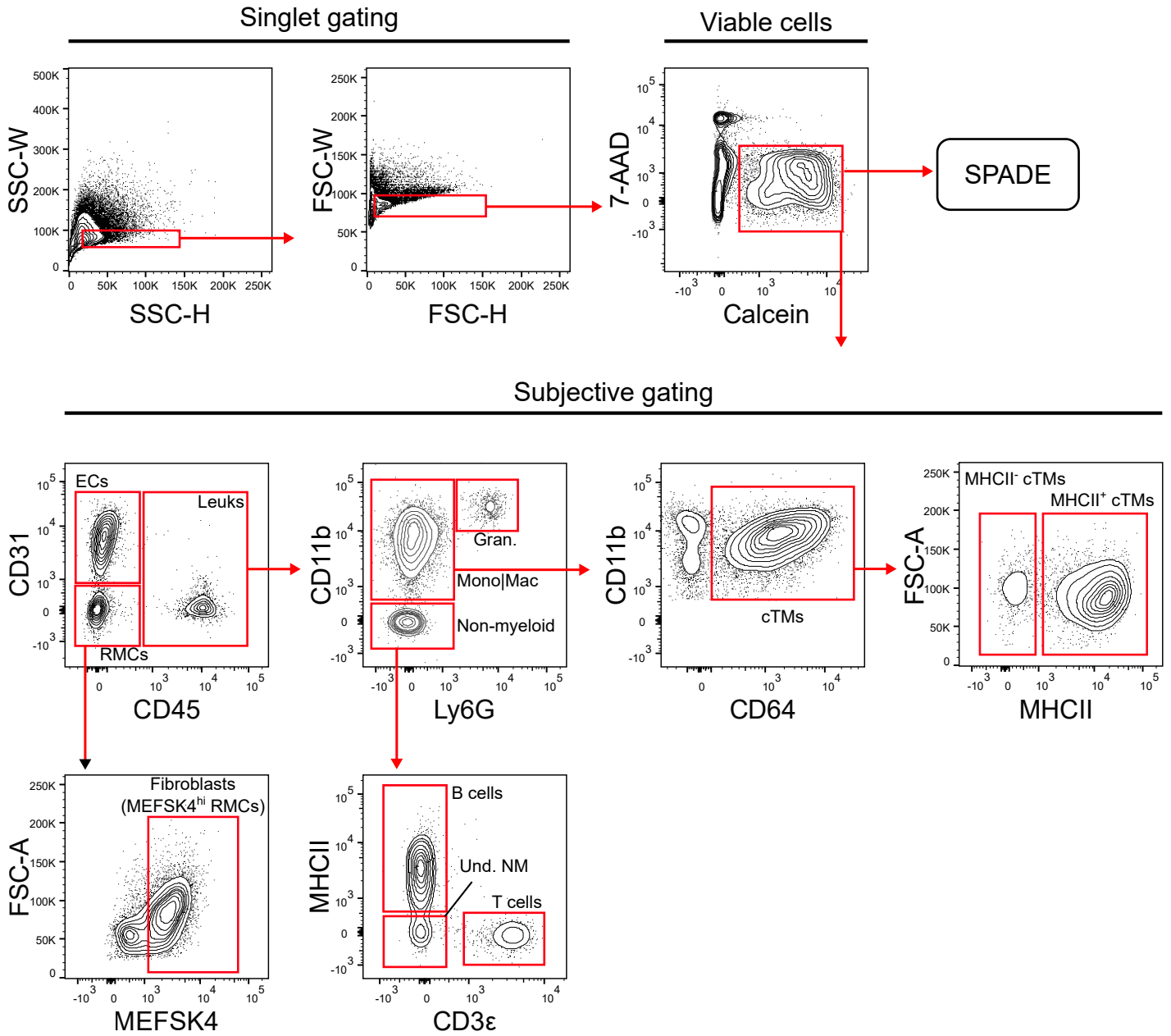
(A) Gating strategy used for analysis shown in Figure 1A-B and F. (B) Gating strategy and markers used for SPADE dendrogram shown in Figure 1E. Note: single and viable cell (Sytox Green<sup>low</sup>-, Calcein blue<sup>+</sup>) is identical to shown in Online Figure 1A. (C) Gating strategy for analysis shown in Figure 1F-G.

FSC-H: forward scatter height; FSC-A: forward scatter area; SPADE: spanning-tree progression analysis of density-normalized events.



**Online Figure 2. tSNE plot displaying Gata4 and Dach1 transcript levels in mouse cardiac non-myocytes.**

(A) Left panel shows tSNE projection with non-myocyte cell populations labelled. Middle and right panel shows tSNE projections with Gata4 and Dach1 transcript levels heat mapped (red= high, grey=low). Data from a previously published dataset5.



**Online Figure 3. Gating strategies for cardiac cell populations and SPADE analysis in Figures 2-4.**

7-AAD: 7-aminoactinomycin D; SSC-W: side scatter width; SSC-H: side scatter height; FSC-W: forward scatter width; FSC-H: forward scatter height; FSC-A: forward scatter area; SPADE: spanning-tree progression analysis of density-normalized events.

**Online Table 1.** Antibodies used.

<b>Antibody/reagent</b>	<b>Clone</b>	<b>Concentration (<math>\mu\text{g/ml}</math>)</b>	<b>Supplier</b>
anti-CD146	ME-9F1	1.0	Biolegend
anti-CD31	390	0.5	Biolegend
anti-CD11b	M1/70	0.5	Biolegend
anti-CD45	30-F11	1.0	Biolegend
anti-Ly6G	1A8	0.5	Biolegend
anti-MEFSK4	MEFSK4	1.5	Miltenyi Biotec
anti-CD39a	Duha59	1.0	Biolegend
anti-CD59a	mCD59.3	1.0	Biolegend
anti-NK1.1	PK136	1.0	Biolegend
anti-Ly6G	1A8	1.0	Biolegend
anti-CD64	X54-5/7.1	0.5	Biolegend
anti-CD3 $\epsilon$	145-2C11	0.25	Biolegend
anti-B220	RA3-6B2	1.25	Biolegend
anti-I-A/I-E	M5/114.15.2	0.25	Biolegend
anti-CD16/CD32	93	4.0	Biolegend
Anti-Dach1	Polyclonal	0.83	Proteintech
Anti-PCM1	Polyclonal	5.3	Proteintech
Anti-Gata4	532020	0.7	R&D Systems