Fig 1 - 3

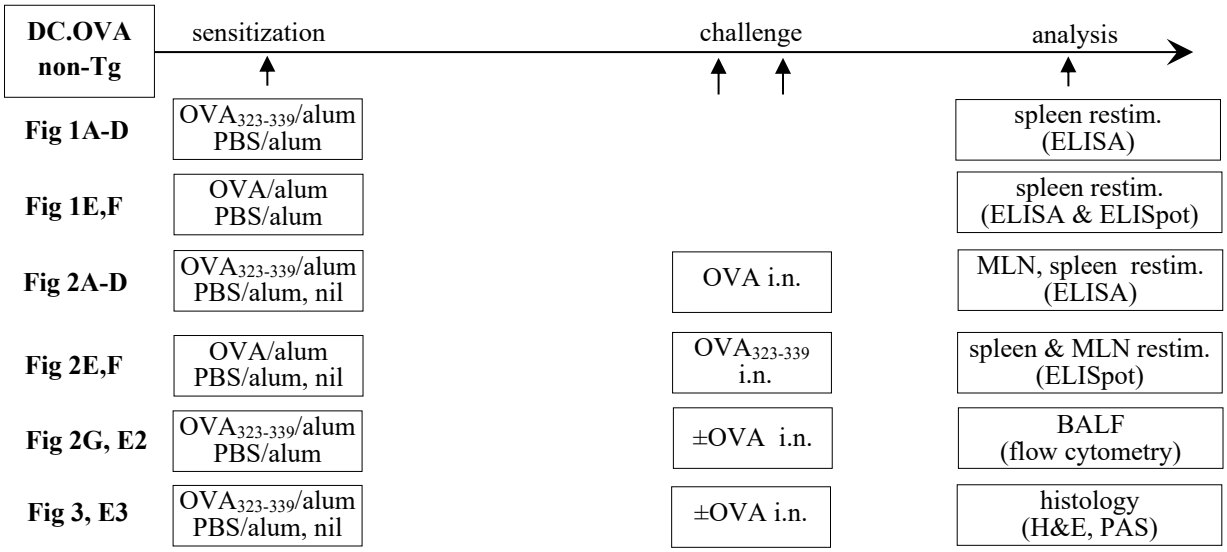


Fig 4

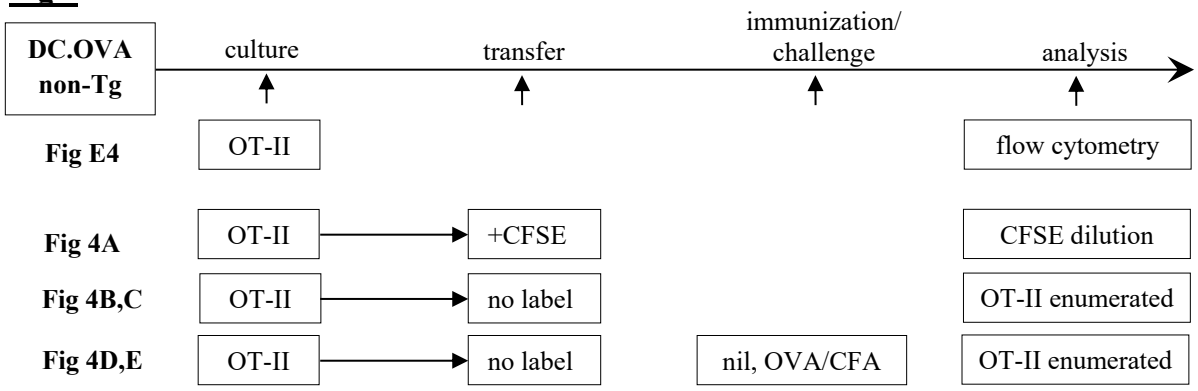
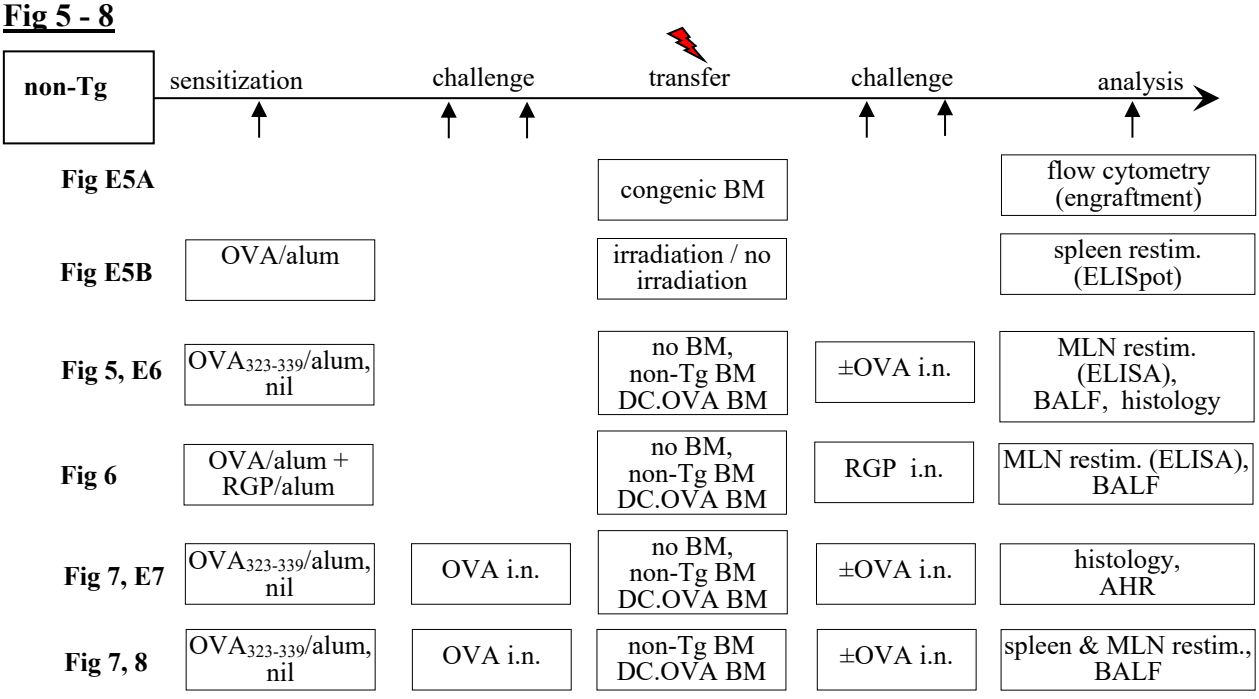
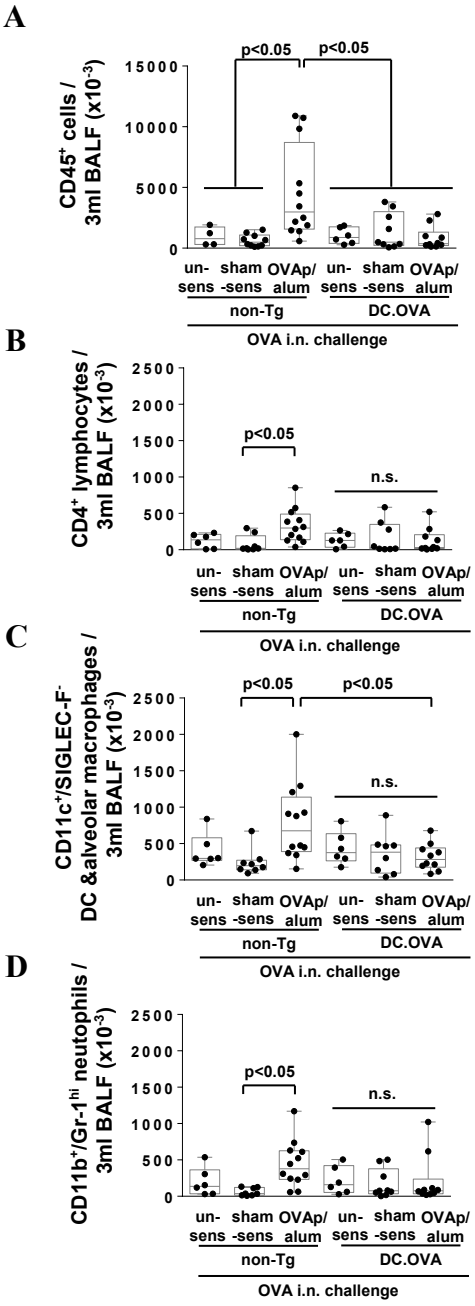


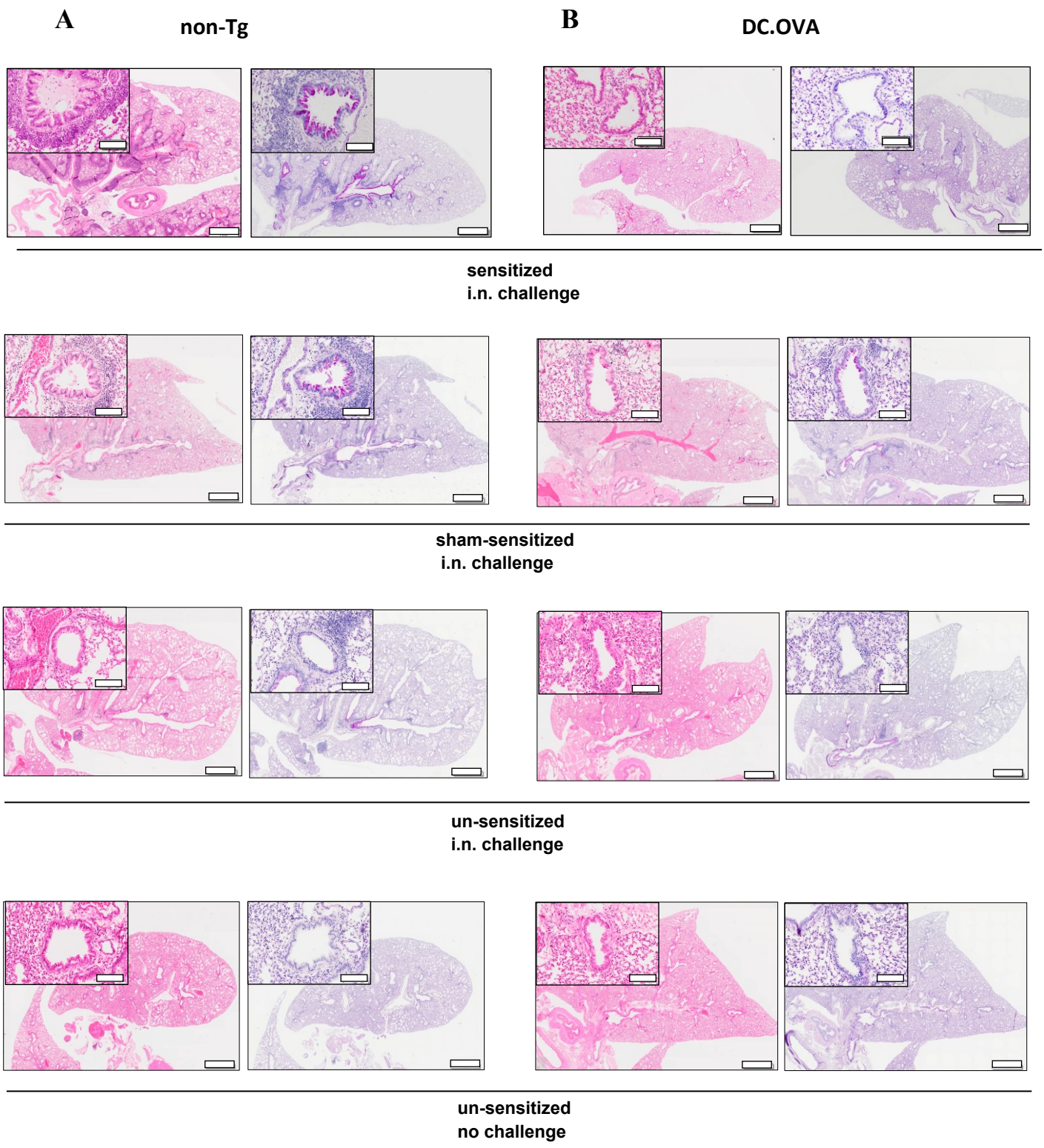
Fig 5 - 8



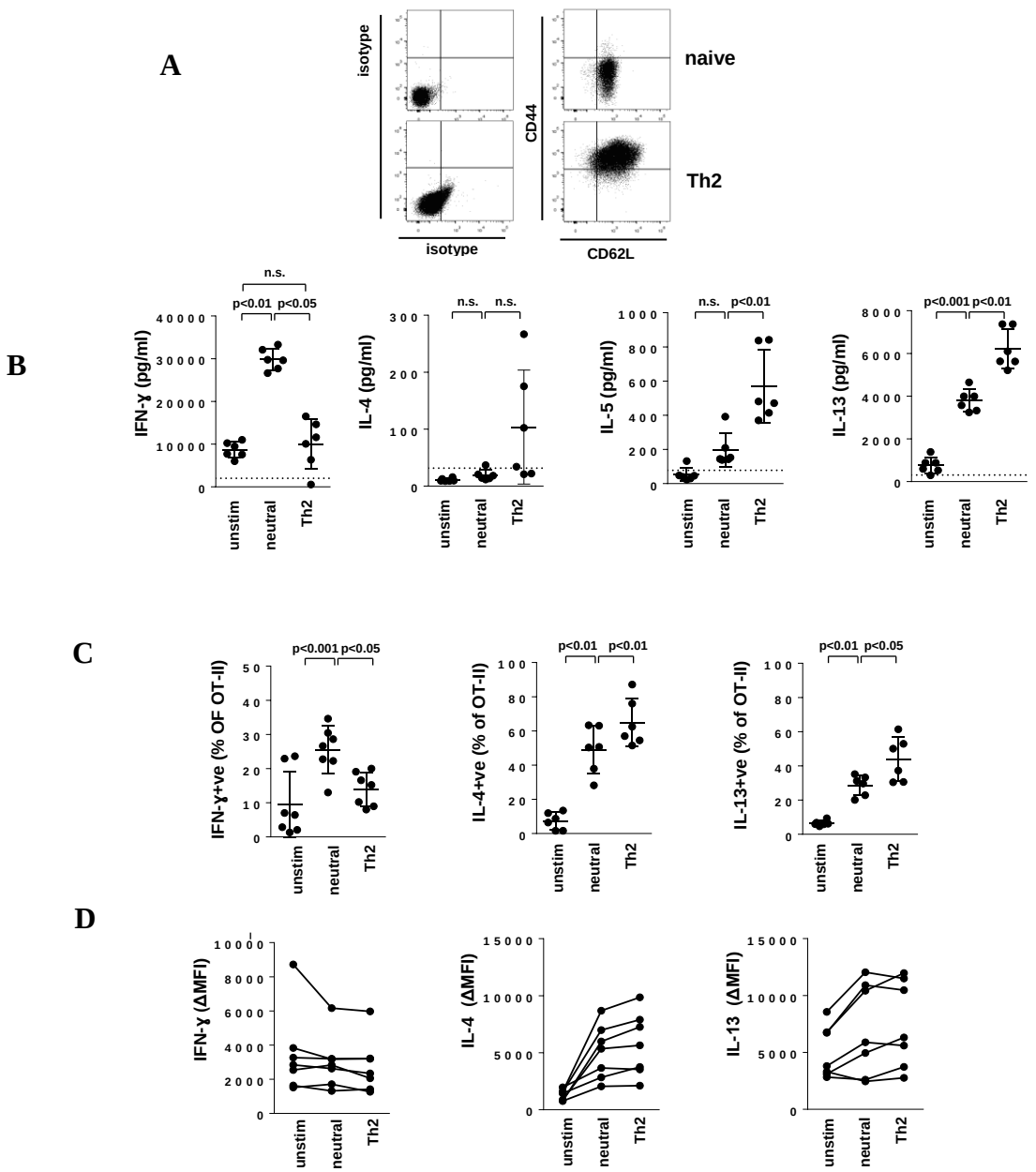
Supplemental Figure 1. Overview of experimental layouts.



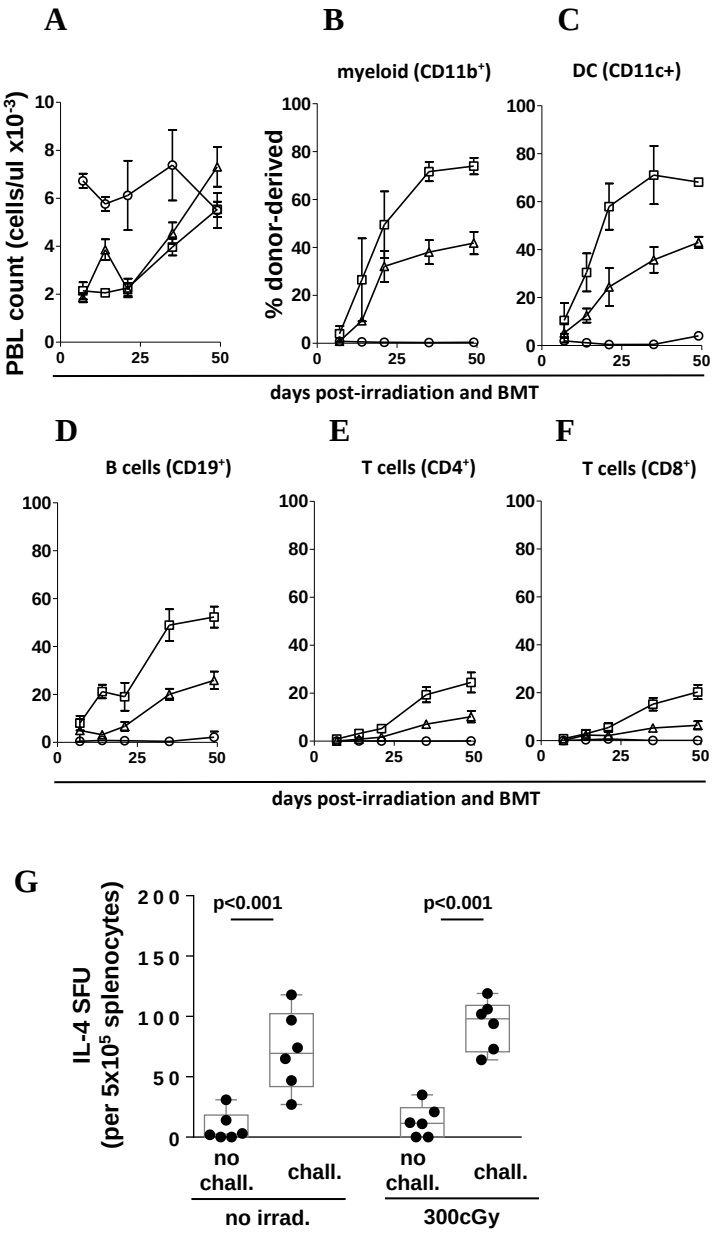
Supplemental Figure 2. Expression of allergen in DC prevents airways inflammation. A-D) DC.OVA or non-transgenic littermates (non-Tg) were sensitized with $OVA_{323-339}$/alum (day 0,14), sham-sensitized with PBS/alum (sham-sens.) or left unsensitised (unsens.) and i.n. challenged with OVA (11,12,13,14 and 19,20,21,22 days post-sensitization). One day after the last i.n. challenge mice were euthanized, BALF collected and analysed by flow cytometry. Data are pooled from 2 experiments with box and whisker plots showing individual values, median, quartiles and range. ANOVA, Neuman-Keuls post-test.



Supplemental Figure 3. Expression of allergen in DC prevents pathology. DC.OVA or non-transgenic littermates (non-Tg) were sensitized with $OVA_{323-339}$/alum (day 0,14), sham-sensitized with PBS/alum(sham-sensitized) or left unsensitised (un-sensitized) and i.n. challenged with OVA (11,12,13,14 and 19,20,21,22 days post-sensitization) as indicated. One day after the last i.n. challenge mice were euthanized, BALF collected and lungs fixed for analysis. Untreated BALB/c mice (un-sensitized, no challenge) were included for comparison. Sections were stained with hematoxylin and eosin or periodic acid-Schiff's stain and images collected. Images shown are representative of 4 (un-sens) or 6 (all other groups) mice per group pooled from 2 experiments. Scale bar denotes 1mm in low power micrographs and 100µm in high-power insets.

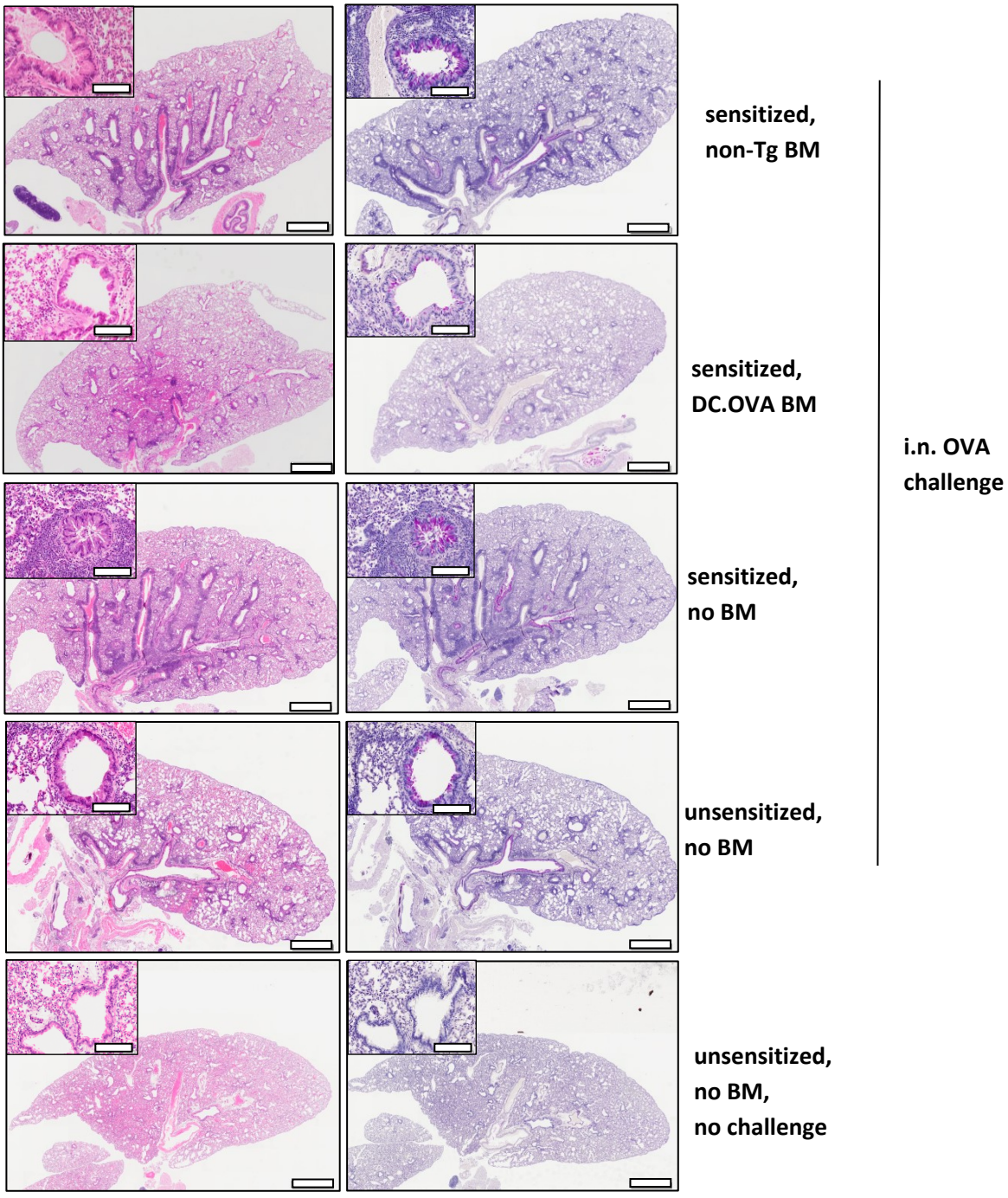


Supplemental Figure 4. Characterisation of Th2-skewed OVA-specific T cells. Spleen and lymph node cells from CD45.1$^+$ or CD45.2$^+$ OT-II mice were cultured under neutral or Th2-skewing conditions. **A)** Naive (upper panels) and Th2-skewed cells (lower panels) were compared by flow cytometry. **B-E)** OT-II T cells initially cultured IL-2/no $OVA_{323-339}$ (unstim) or in neutral or Th2-skewing conditions were either (**B**) restimulated for 3 days with $OVA_{323-339}$ and then cytokines in culture supernatant determined by ELISA or (**C,D**) stimulated with PMA/ionomycin and intracellular cytokine staining and cytometry performed. Data are representative of 2 mice per group from 2 experiments (A) or 5-6 mice per group pooled from 3-4 experiments (C) or individual mice pooled from three experiments (D). Bars where shown depict mean ± SD. ANOVA and Tukey's multiple comparison test (B,D).

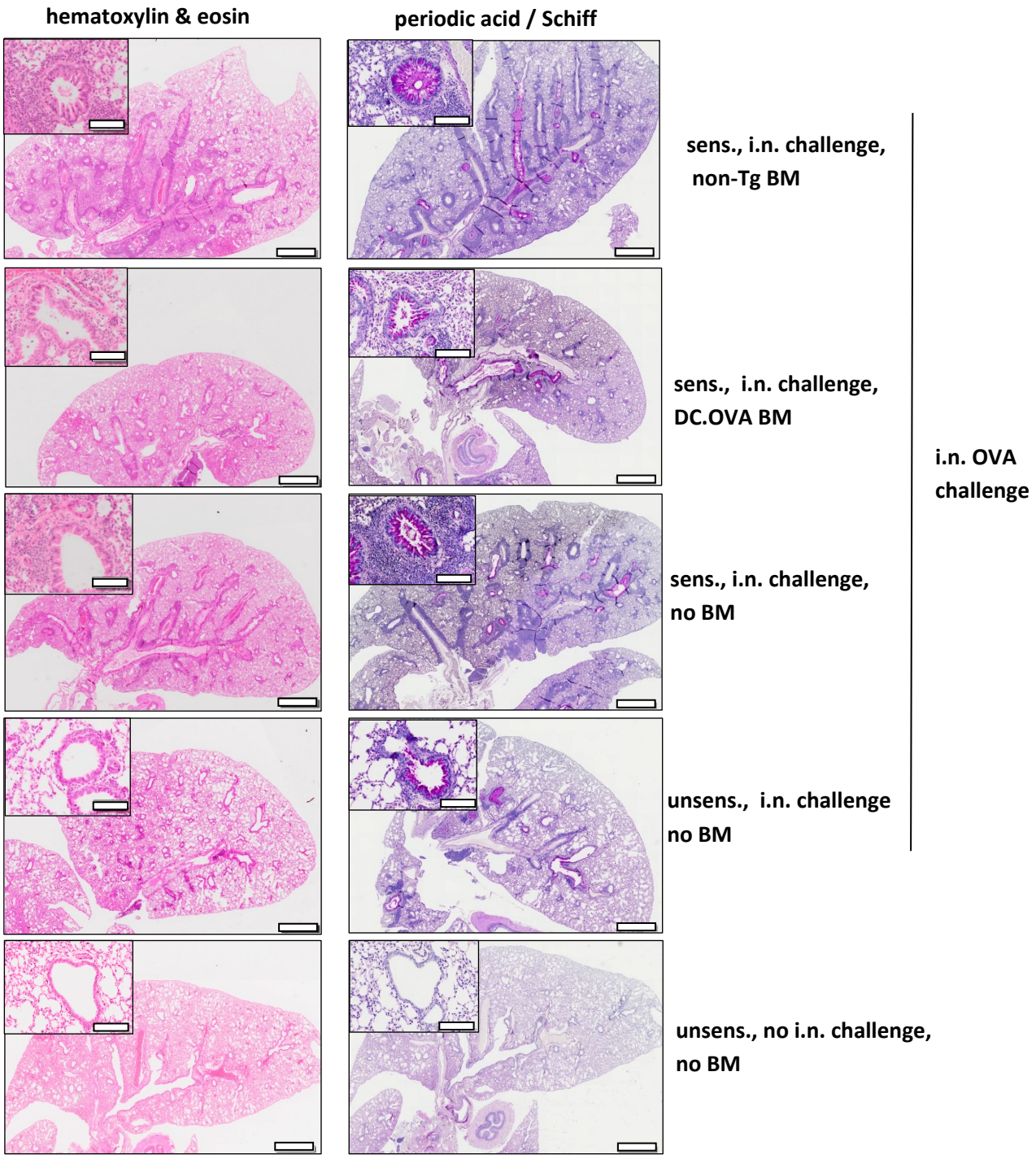


<u>Supplemental Figure 5.</u> Low-dose irradiation facilitates engraftment whilst preserving immunity.

A-F) BALB/c mice were irradiated (300cGy) and BM ($2x10^7$, open squares) or lin^{-ve} $c\text{-}kit^{+ve}$ HPC (10^5, open triangles) from $CD45.1^+$ BALB/c mice injected i.v. At the indicated times blood was collected from transplanted mice and unirradiated untransplanted controls (open circles) and engraftment determined by flow cytometry. **G)** BALB/c mice were sensitized (OVA/alum i.p.) and 14 days later irradiated (300cGy). 28 days after irradiation mice were challenged or not with a second i.p. OVA/alum sensitization and a further week later euthanized and spleens collected. Cells producing IL-4 in response to $OVA_{323\text{-}339}$ were enumerated by ELISpot. Data shown are mean ± SD (n= 4/gp) pooled from 2 separate experiments (A-F) or individual mice pooled from 2 experiments with median, quartiles and range shown (G).



<u>Supplemental Figure 6.</u> BM transfer terminates Th2 responses and prevents allergen-elicited airways inflammation. BALB/c mice were sensitized with $OVA_{323-339}$/alum (day 0,14) or not and some mice irradiated (300cGy) and injected with BM from DC.OVA (OVA^{+ve} BMT) or non-Tg (OVA^{-ve} BMT) donors. 4 weeks later mice were i.n. challenged with OVA daily (28,29,30,31 and 37,38,39,40 days after BMT). One day after the last i.n. challenge mice were euthanized. BALF collected and lungs fixed for analysis. Untreated BALB/c mice (unsens, no BM, no challenge) were included for comparison. Sections were stained with H&E or PAS and images collected. Images are representative of 6 mice/group pooled from 2 experiments. Scale bar denotes 1mm in low power micrographs and 100µm in high-power insets.



Supplemental Figure 7. Transfer of OVA-encoding BM ameliorates established airways inflammation. BALB/c mice were sensitised with $OVA_{323-339}$/alum (day 0,14) or not and challenged with OVA i.n. daily (11,12,13,14 and 20,21,22,23 days after sensitisation). Some mice were irradiated (300cGy) and injected with BM from DC.OVA (DC.OVA BM) or non-Tg (non-Tg BM) donors. 4 weeks later mice were i.n. challenged with OVA daily (28,29,30,31 and 37,38,39,40 days after BMT). One day after the last i.n. challenge mice were euthanized, BALF collected and lungs fixed for analysis. Untreated BALB/c mice (unsens., no i.n. challenge, no BMT) were included for comparison. Sections were stained with H&E or PAS and images. Scale bar denotes 1mm in low power micrographs and 100µm in high-power insets.

Antigen	Conjugation	Clone	Supplier / #
CD4	PE	GK1.5	BioLegend 100408
CD4	FITC	GK1.5	BioLegend 100306
CD4	PE-Cy7	GK1.5	BioLegend 100422
CD4	biotin	GK1.5	In house
CD8αα	PerCP.Cy5.5	53-6.7	BioLegend 100734
CD8αα	biotin	YTS-169	in house
CD11b	PerCP.Cy5.5	M1/70	BioLegend 101228
CD11c	FITC	N418	BioLegend 117306
CD11c	APC	N418	BioLegend 117310
CD44	FITC	IM7	BioLegend 100366
CD45.1	PE	A20	BioLegend 110708
CD45.1	APC	A20	BioLegend 110714
CD45.2	PE.Cy7	104	BioLegend 109830
CD45.2	AF700	104	BioLegend
CD45.2	APC	104	BioLegend 109814
CD45R	FITC	B220	BioLegend 103206
CD62L	APC	MEL-14	BioLegend 104412
CD279	BV605	29F.1A12	BioLegend135219
LAG-3	BV786	C9B7W	BioLegend 125129
CD244	FITC	m2B4	BioLegend 133504
Ly-6G/C (Gr-1)	FITC	RB6-8C5	in-house
Ly-6C/G Gr-1	biotin	RB6-8C5	in-house
Siglec-F	PE	E50-2440	Pharmingen 552126
TCR	Pacific Blue	H57-597	BioLegend 109226
TCR Vα2	PE	B20.1	BioLegend 127808
TCR Vβ5.1/5.2	FITC	MR9-4	BD 553189
IFN-ɣ (I.C.C.)	APC	XMG1.2	BioLegend 505810
IFN-ɣ (I.C.C.)	PerCP.Cy5.5	XMG1.2	BioLegend 505808
IL-4 (I.C.C)	PE	11B11	BioLegend 504104
IL-13 (I.C.C.)	PE-Cy7	eBio13A	eBioscience 25-713-80
IFN-ɣ (ELISA)	unconj	R4-6A2	BioLegend 505706
IL-4 (ELISA/ELISpot)	unconj	1B11	BioLegend 504108
IL-5 (ELISA)	unconj	TRFK5	Biolegened 504302
IL-13 (ELISA)	unconj	13A	eBioscience 14-7133

IFN-ɣ (ELISA)	biotin	XMG1.2	BioLegend 505804
IL-4 (ELISA/ELISpot)	biotin	BVD6-24G2	BioLegend 504202
IL-5 (ELISA)	biotin	TRFK4	BioLegend 504402
IL-13 (ELISA)	biotin	1316H	eBioscience 13-7135

Supplemental Table 1. Antibodies used for flow cytometry, ELISA and ELISpot.