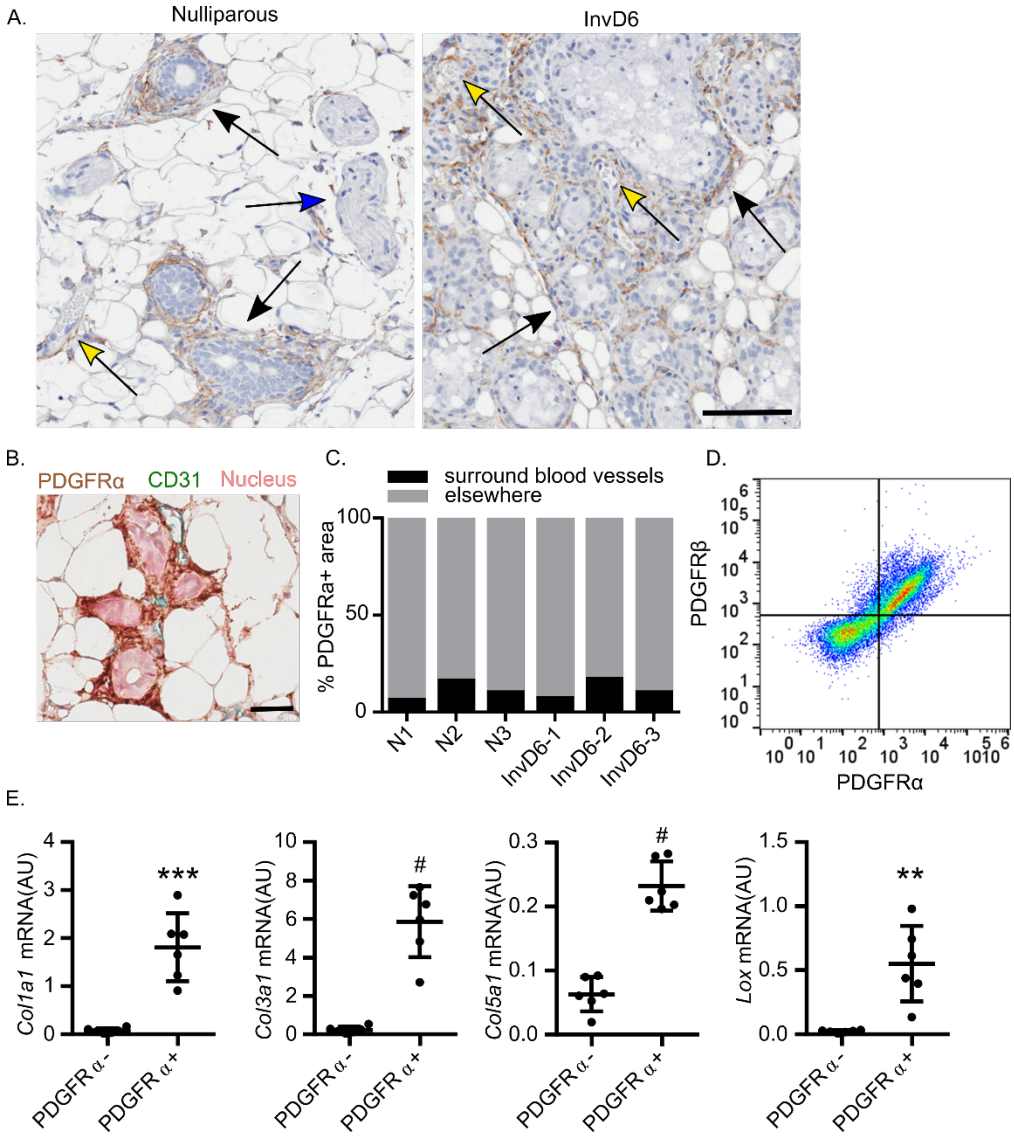
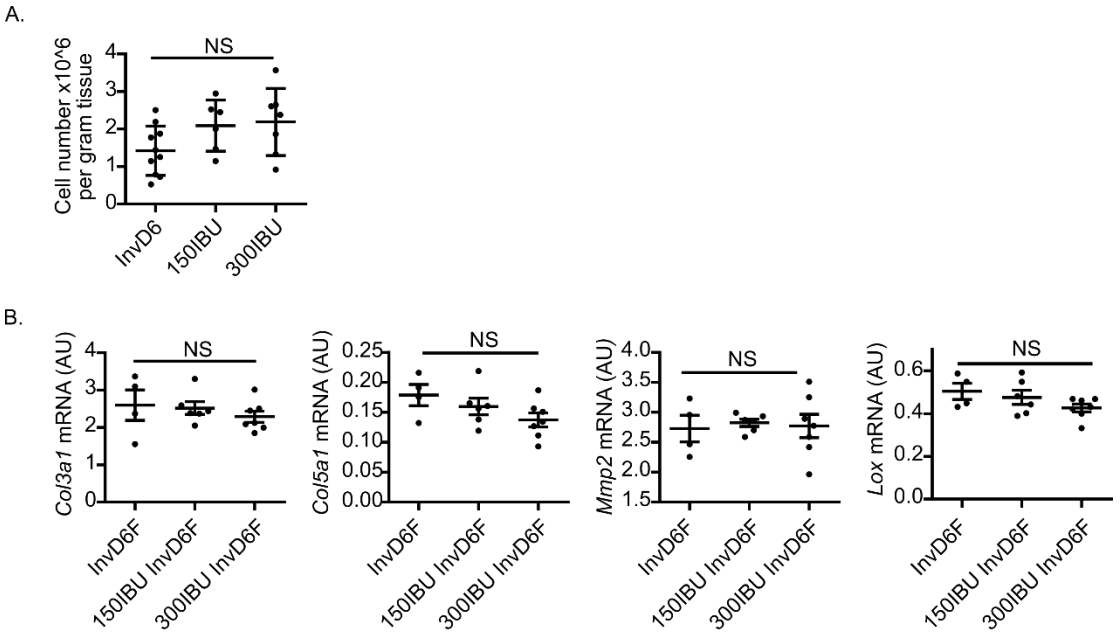
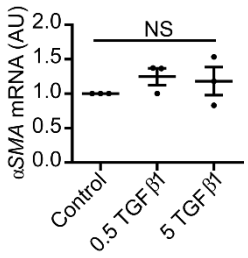


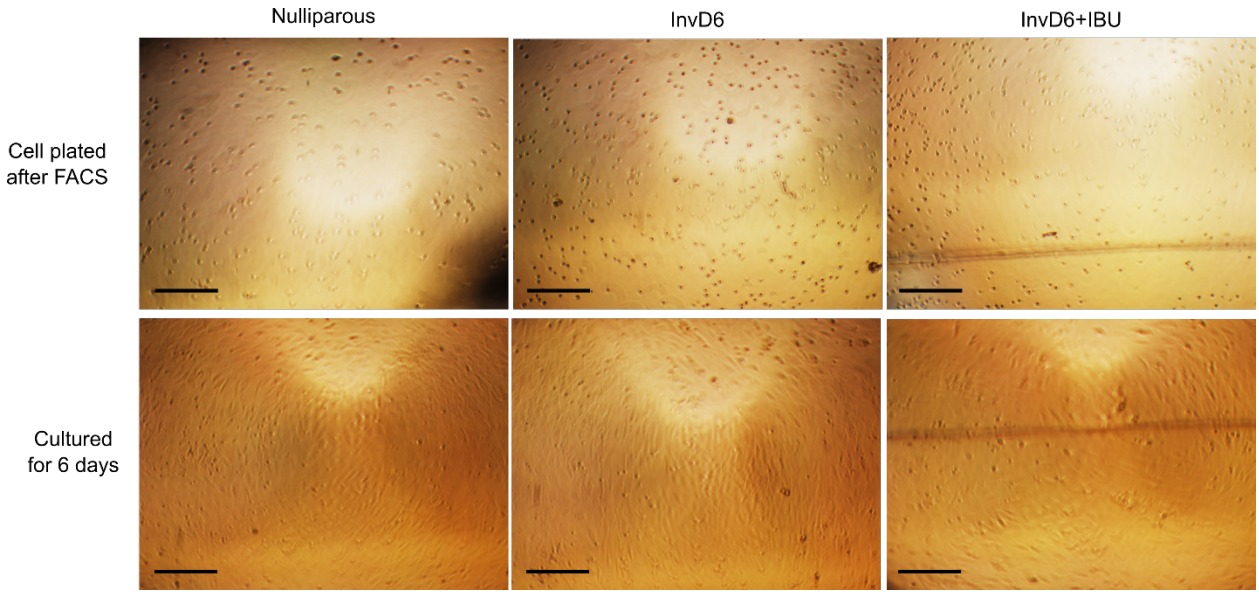

**Supplemental figure 1.** PDGFRα is expressed dominantly by stromal cells surrounding mammary ducts and alveoli. **A)** IHC staining of PDGFRα in nulliparous (left panel) and InvD6 mouse mammary glands (right panel). Black arrows: mammary ductal and alveolar structures; blue arrow: muscle; yellow arrows: blood vessel. **B)** Co-staining for PDGFRα (brown) and CD31 (green) in nulliparous Balb/c mammary gland shows lack of dual positive cells. Counterstain: pink. Scale bar: 30 μm. **C)** Quantification of PDGFRα positive area surround $CD31^+$ blood vessels (black) or elsewhere (gray) in three mammary glands from nulliparous mice (N 1-3) and three InvD6 mammary glands (InvD6 1-3). **D)** Flow cytometry for PDGFRα and PDGFRβ in nulliparous mouse mammary glands reveals significant dual positivity. **E)** RT-qPCR for *Col1a1, Col3a1, Col5a1* and *LOX* gene expression in sorted $PDGFR\alpha^+$ and $PDGFR\alpha^-$ cells. N=6. Scale bar: 100 μm. **P<0.01, ***P<0.001, #P<0.0001.



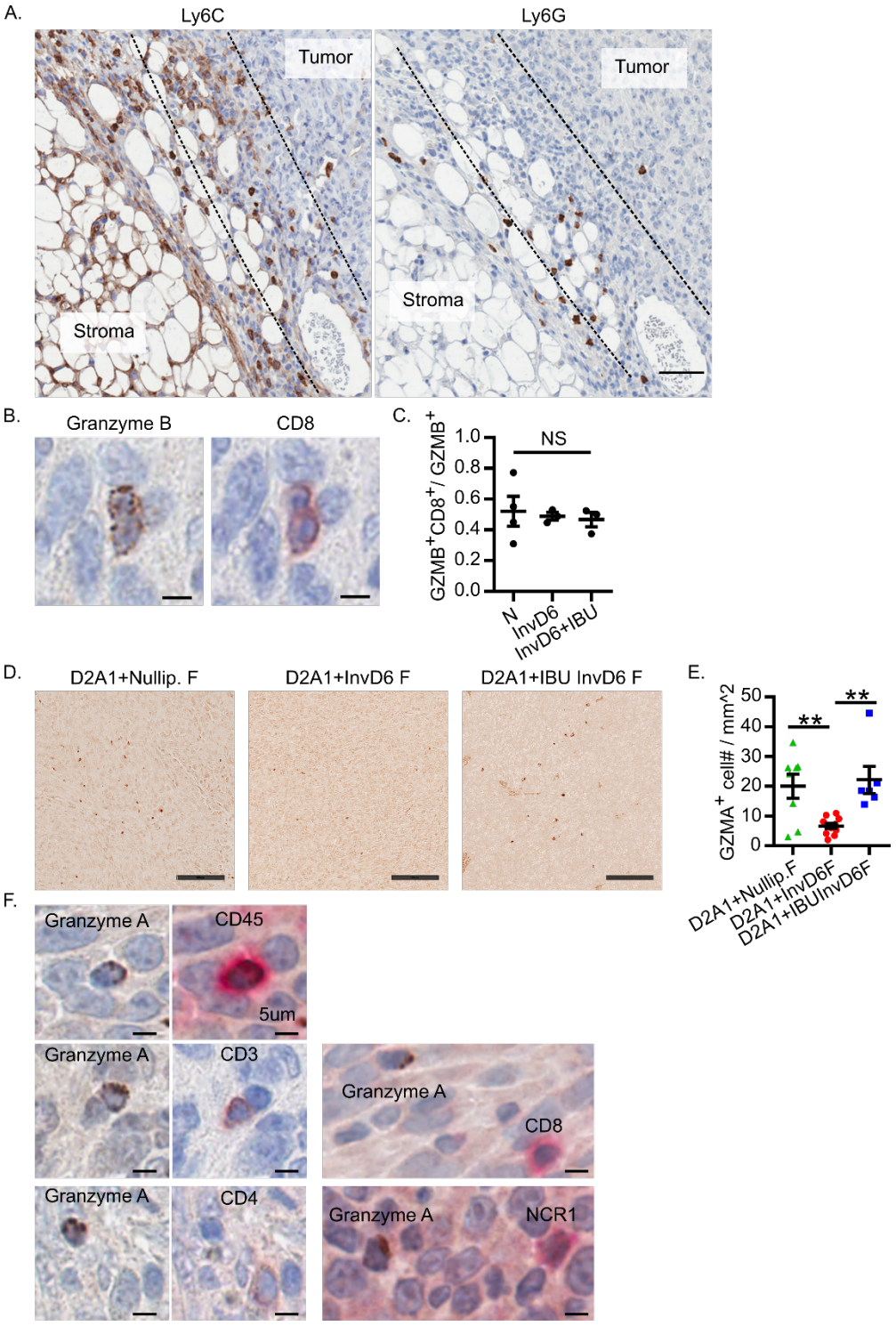

**Supplemental figure 2.** Effects of ibuprofen treatment on PDGFRα$^{+}$ cells in the InvD6 mammary gland. **A)** PDGFRα$^{+}$ cell number per gram mammary gland tissue quantitated by FACS analysis, in the absence or presence of two doses of ibuprofen treatment (150IBU:150 mg/kg and 300IBU: 300 mg/kg Ibuprofen in diet) for 6 days following weaning. N=6. **B)** RT-qPCR of *Col3a1, Col5a1*, *Lox* and *MMP2* gene expression in InvD6 fibroblasts in the absence or presence of ibuprofen. N=4-7. NS: not significant.




**Supplemental figure 3.** TGFβ1 does not induce fibroblast $\alpha$*SMA* expression in floating collagen cultures. RT-qPCR of $\alpha$*SMA* in primary mammary fibroblasts without (Control) or with the treatment of 0.5 ng/ml TGFβ1 (0.5 TGFβ1) and 5 ng/ml TGFβ1 (5 TGFβ1). N=3. NS: not significant.

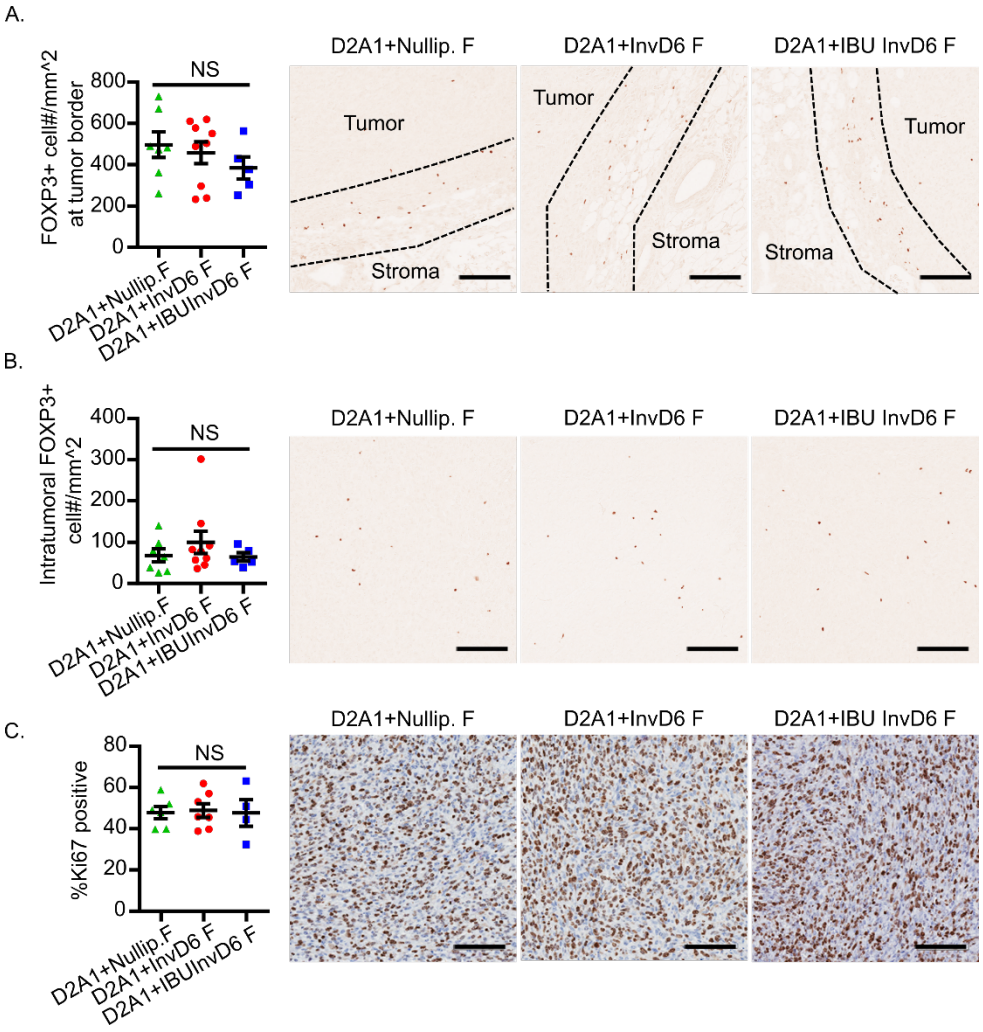



**Supplemental figure 4.** Fibroblast ex vivo adhesion and cell culture survival are independent of reproductive state. Top panel: Sorted PDGFRα$^{+}$ mammary fibroblasts used in the D2A1 tumor cell co-injection experiments and plated at equal concentration. Bottom panel: cells in the top panel after 6 days of culture. Scale bar: 100 μm.

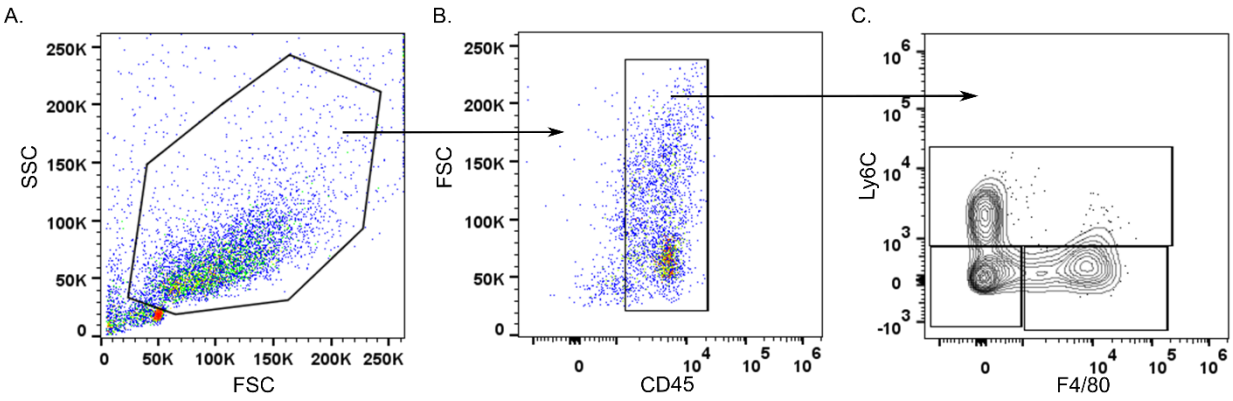



**Supplemental figure 5.** Immunohistochemical characterization of tumor infiltrating immune cells. **A)** Ly6C and Ly6G staining in serial sections of representative D2A1+ InvD6 F tumor. Dashed lines show tumor border. Scale bar: 50 μm. **B)** IHC staining of granzyme B (left panel) and CD8 (right panel) of the same tumor section. **C)** Quantification the percentage of granzyme $B^+$ cells that are $CD8^+$. **D)** Representative images of granzyme $A^+$ cells within tumors from each

group. Scale bar: 100 μm. **E)** Quantification of IHC staining for intratumoral granzyme $A^+$ cells by group. **F)** IHC co-staining for granzyme A and immune cell markers CD45, CD3, CD8, CD4, and NCR1, as indicated by labels. Scale bar: 5 μm.




**Supplemental figure 6.** FOXP3 and Ki67 IHC tumor analyses demonstrate no differences between fibroblast groups. **A)** Left panel: Quantification of FOXP3$^+$ cells at the tumor border. Right Panel: representative images of FOXP3$^+$ cells at the tumor border. Scale bar: 100 µm. **B)** Left panel: Quantification of intratumoral FOXP3$^+$ cells. Right Panel: representative images of intratumoral FOXP3$^+$ cells. Scale bar: 100 µm. Counterstaining is not shown in A) and B) to enhance visualization of positive cells. **C)** Left panel: Quantification of Ki67$^+$ cells in tumor. Right Panel: representative images of Ki67$^+$ cells. Scale bar: 20 µm.




**Supplemental figure 7.** Characterization of monocyte derived cells by flow cytometry. **A)** Cells are gated by forward scatter and side scatter. **B)** Immune cells are further gated by CD45 and forward scatter. **C)** $CD45^{+}$ cells are further gated by F4/80 and Ly6C. Three populations are indicated. Monocyte: $Ly6C^{+}F4/80^{-}$. Macrophages: $Ly6C^{-}F4/80^{+}$. Immature myeloid progenitor cells: $Ly6C^{-}F480^{-}$

**Supplemental method**

**Immunohistochemistry.** 4 μm sections of formalin-fixed, paraffin-embedded mouse mammary glands were used for IHC. Slides were pretreated with Target Retrieval Solution (Dako S1699 or DAKO S2367). Then, slides were treated with 3% $H_2O_2$ in Methanol for 10 minutes, followed by protein block (Dako, X0909) for 1 hour. Primary and secondary antibody information are as follows:

| Targets | Primary Antibody vendor and catalog # | Dilution | Secondary antibody vendor and catalog # | Dilution | Chromogen and color |
|---|---|---|---|---|---|
| PDGFRα | R&D, AF1062 | 1:300 | Santa Cruz, SC2922 | 1:100 | DAKO, K3468, brown |
| CD31 | Abcam, ab28364 | 1:100 | ThermoFisher, 31461 | 1:100 | Bio SB, BSB0129, green |
| Ly6G | BD Biosciences, 551459 | 1:1000 | Biocare, RT517H | N/A | DAKO, K3468, brown |
| Granzyme A | Santa Cruz, SC5515 | 1:100 | Santa Cruz, SC2922 | 1:100 | DAKO, K3468, brown |
| CD45 | BD pharmingen, 550539 | 1:400 | Santa cruz, SC2021 | 1:100 | Biocare, WR806, red |
| CD3 | Abcam ab16669 | 1:100 | Histofine, Simple Stain, anti-rabbit | N/A | Vector, SK-4200, brick red |
| CD4 | eBioscience, 14-9766-82 | 1:100 | Histofine, Simple Stain, anti-rat | N/A | Vector, SK-4200, brick red |
| NCR1 | Abcam ab199128 | 1:50 | Histofine, Simple Stain, anti-rabbit | N/A | Biocare, WR806, red |
| FOXP3 | eBioscience, 14-5773-82 | 1:100 | Biocare, RT517H | N/A | DAKO, K3468, brown |
| Ki67 | Neo-markers, RM9106s | 1:100 | ThermoFisher, 31461 | 1:100 | DAKO, K3468, brown |

All primary antibodies were incubated for 1 hour at room temperature, and secondary antibodies were incubated for 30 minutes in room temperature. For dual co-staining slides, three methods were used based on the primary antibodies combination. Method-1: a combination of DAB (DAKO K3468, brown) with Warp Red (Biocare, WR806, red). Method-2: a combination of DAB (DAKO K3468, brown) with PolyDetector HRP Green kit (Bio SB, BSB0129, green). Method-3: AEC (Vector SK-4200) was used with antigen retrieval (BioGenex HK086) between each staining targets. For PDGFRα and CD31 dual staining, tissues were counterstained with Nuclear Fast Red (American MasterTech, STNFRPT) for 1 minutes. For other staining, tissues were counterstained with hematoxylin (DAKO, S3301) for 6 minutes.

**Flow cytometry.** $1x10^6$ cells per sample were blocked with CD16/32 (eBioscience, 14-0161-81) for 30 minutes and cell surface markers were stained for 20 minutes. PDGFRα (BioLegend, 135910): 1:100 dilution, PDGFRβ (BioLegend, 136007): 1:100 dilution, CD45 (eBioscience, 25-0451-82): 1:800 dilution, Ly6C (BioLegend, 128012): 1:400 dilution, F4/80 (BioLegend, 123108): 1:200 dilution. Cells were stained for 20 minutes. Experiments were performed on an

LSRFortessa (BD Biosciences; Oregon Health and Science University Flow Cytometry Shared Resource) and analysis was performed using FlowJo (FlowJo, LLC Data Analysis Software, Ashland, OR).