Supplementary Figure and Figure legends

Fig S1

Fig. S1. High density of ECM in OS patient samples. Trichrome staining of OS patient metastatic tumor samples.
Fig S2

A

ctrl-T
attL12-T

B

ctrl-T
attL12-T

C

ctrl-T
attL12-T

D

Ctri-T
attL12-T

E

ctri-T
attL12-T

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Fig. S2. Immunohistochemistry staining of ECM markers on sensitive and resistant tumor models after control-T or attIL12-T cell treatment. Osteosarcoma PDX-bearing mice were subjected to control-T or attIL12-T cell treatment. Four days after the second T-cell infusion, tumors were collected and sectioned. (A-E) Immunohistochemistry staining of (A) sparc, (B) integrin β1, (C) fibronectin, (D) laminin, and (E) collagen. Scale bar: 500 µm. The bar graphs show the density (mean ± SEM) of ECM marker staining. *P < 0.05; **P < 0.01; ***P < 0.001; ****P < 0.0001.
**Fig. S3.** Isolation of CAFs from OS tumors. (A) Schema of CAF isolation and images showing cell shape. (B) Flow cytometry confirmation of FAP expression on isolated CAFs.
Fig. S4. Schema of tumor cell-CAF in vitro coculture experiment. CM, conditioned medium.
Fig S5. CAF apoptosis is induced specifically by attIL12-T cells. CAFs from OS1, OS2, and OS33 tumors were cocultured with control-T, attIL12-T, alL12-T, wtIL12-T, or ttIL12-T cells at a 1:3 ratio in CM for 48 h. Cells were stained with ghost dye 510, anti-human CD3, FAP, and cas3/7 for flow cytometry analysis. The bar graphs show the percentages (mean ± SEM) of cas3^+FAP^+ cells. ****P < 0.0001.
Fig S6

OS1 CAF  

OS2 CAF  

OS33 CAF  

Fig. S6. CSV expression on CAFs. CAFs from OS1, OS2, or OS33 tumors were stained with anti-CSV antibody (84-1) and AF405 anti-mouse IgG to detect the percentages of CAFs that express CSV.
**Fig S7.**

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**Fig. S7. attIL12-T cells do not induce FAS expression on bone marrow cells.** Patient-derived BM cells were cocultured with control-T or attIL12-T cells at a 1:3 ratio for 48 h. Flow cytometry was used to determine FAS expression on CD33⁺ BM cells.
Fig S8. Downregulation of collagen and fibronectin is dependent on CSV-attIL12-T cell coculture. OSD cells, CAFs, and T cells were cocultured at a 1:1:3 ratio for 48 h. Collagen I and fibronectin levels in supernatant were determined via ELISA. Violin plots represent the concentrations (mean± SEM) of collagen and fibronectin. *P < 0.05; **P < 0.01; ***P < 0.001; ****P < 0.0001.