

Supplemental Figure 1: Schematic diagram for all transfer vectors used. (A) The anti-VEGFR2 transfer vector contains the self-inactivating promoter (SINp), a packaging signal (Ψ), a cytomegalovirus promoter (CMVp) regulating the light chain of TTAC-0001 fused to mCherry (TTAC-0001-LC-RFP), a CMVp regulating the heavy chain of TTAC-0001 (TTAC-0001-HC), a SV40 promoter (SV40p) regulating the blasticidin resistance gene ($Blast^r$), and the 3' LTR. The VEGFR2_CaRQ transfer vector contained the SINp, Ψ , a CMVp regulating VEGFR2, a CMVp regulating CaRQ, a CMVp regulating Venus, a SV40p regulating $Blast^r$, and the 3' LTR. The VEGFR2_RCaMP transfer vector contains the SINp, Ψ , a CMVp regulating VEGFR2, a CMVp regulating pm-RCaMP1.07 (i.e. RCaMP1.07 labelled to the plasma membrane), a SV40p regulating the $Blast^r$, and the 3' LTR. The VEGFR2 transfer vector contained the SINp, Ψ , a CMVp regulating VEGFR2, a CMVp regulating Venus, a SV40p regulating the zeocin resistance gene (Zeo^r), and the 3' LTR. The RCaMP transfer vector contains the SINp, Ψ , a CMVp regulating pm-RCaMP1.07, a SV40p regulating $Blast^r$, and the 3' LTR. The CaRQ transfer vector contained the SINp, Ψ , a CMVp regulating CaRQ, a CMVp regulating Venus, a SV40p regulating $Blast^r$, and the 3' LTR. The Null transfer vector contained the SINp, Ψ , a CMVp regulating a plasma membrane-labelled Cerulean (pm-Cerulean), a SV40p regulating $Blast^r$, and the 3' LTR.

Supplemental Video 1: Representative video of VEGFR2+RCaMP cells in response to anti-VEGFR2. Total observation time is 1 minute, 40 seconds. The scale bar represents 50 μm . This experiment was repeated in triplicate (n=3 independent tests).

Supplemental Video 2: VEGFR2+CaRQ cell blebbing in response to anti-VEGFR2. Total observation time is 6 minutes, 40 seconds. The scale bar represents 6 μm . This experiment was repeated in triplicate (n=3 independent tests).

Supplemental Video 3: VEGFR2+CaRQ cell migrates towards an anti-VEGFR2 source cell. Total observation time is 1 hour. Scale bar is 20 μm . This experiment was repeated in triplicate (n=3 independent tests).