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Supplemental Information

Epithelial Monolayers Coalesce on a Viscoelastic Substrate through Redistribution of Vinculin

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Supplementary legends

Movie S1

Coalescence in CL-S1monolayer on VE PDMS, overlaid with mask of cell-free area (green). Images were acquired by time-lapse phase microscopy with frames taken every 15 minutes.

Movie S2

Movie of Coalescence in CL-S1 monolayer incubated with 0.5 μM calcein, a marker for live cells, on VE PDMS. Images were acquired by time-lapse phase and epifluorescence microscopy with frames taken every 15 minutes.

Movie S3

CL-S1 cells on elastic PDMS. Images were acquired by time-lapse phase microscopy with frames taken every 15 minutes.

Figure S1

(A) G' (elastic moduli) and G'' (viscous moduli) values for PDMS at different crosslinker ratios. In the elastic (E) and soft elastic (SE) regimes, elastic properties predominate, whereas in the viscoelastic (VE) regime, elastic and viscous properties are of similar proportions. (B) Confocal projections of fibronectin-coated PDMS substrata immunostained for fibronectin. (C) Z-profile of fluorescence intensity of images in (B). (D) Confocal projections of HeLa cells, fixed, and immunostained 4h post-plating. (E) VE and E PDMS substrata were prepared by either spin-coating ~200ul PDMS at 6000g for 10s (regular, reg); or ~50ul PDMS at 8000 G for 30s (thin). (n=3). (F) Confocal images of CL-S1 cells plated on regular and thin VE PDMS substrata, fixed and immunostained 4h post-plating.

Movie S4

CL-S1 cells on viscous PDMS. Images were acquired by time-lapse phase microscopy with frames taken every 15 minutes.

Movie S5

MDCK monolayer and CL-S1 monolayer plated on VE PDMS substrata coated with rhodamine-fibronectin. Images were acquired by time-lapse phase and epifluorescence microscopy with frames taken every 30 minutes.

Movie S6

CL-S1 monolayers plated on E, SE and VE PDMS substrata coated with fibronectin-Alexa488. Images were acquired by time-lapse phase and epifluorescence microscopy with frames taken every 15 minutes.

Movie S7

PIV analysis of CL-S1 monolayers on VE and E PDMS substrata. Images were acquired by time-lapse phase microscopy with frames taken every 3 minutes.

Figure S2

(A) Confocal projection of mosaic cadherin expression in CL-S1 cells. (B) Confocal single plane of HeLa and MDCK cells fixed and immunostained 4h post-plating.

Sequence of VT constructs

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CCTCATGCAGTCTGTGAAGGAGACTGTGCGAGAGGCTGAAGCTGCTTCAATCAAAATCCGAACAGATG
CTGGCTTTACTCTGCGCTGGGTCAGAAAGACTCCCTGGTACCAGGGATCC

Sequence of pEGFP-C1 vector

Length: 523 bp, Vector size: 4733, Resistance: Kan, cloning site 5': EcoR I, cloning site 3': Bam HI, copy number: High

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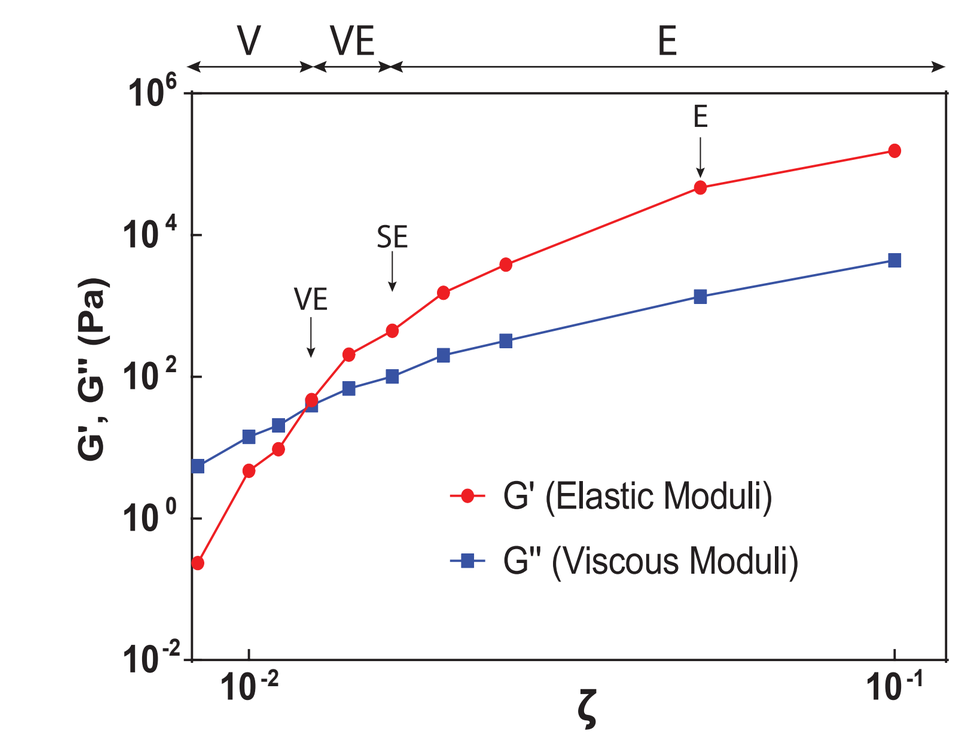
Figure S1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V
VE
E
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10^4
10^2
10^0
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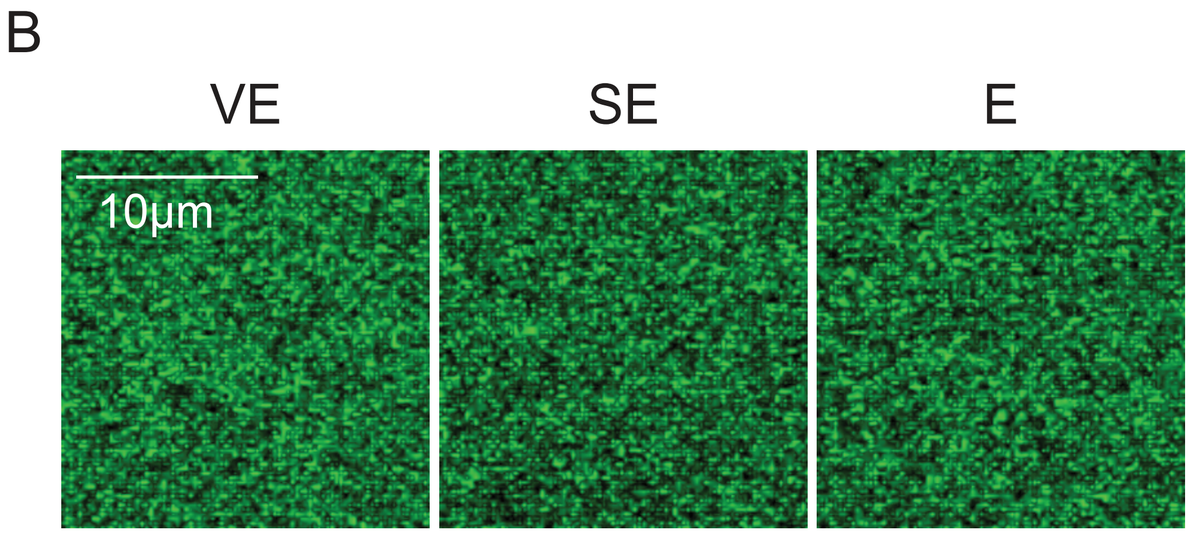
G', G'' (Pa)
E
SE
VE
G' (Elastic Moduli)
G'' (Viscous Moduli)
10^{-2}
10^{-1}
ζ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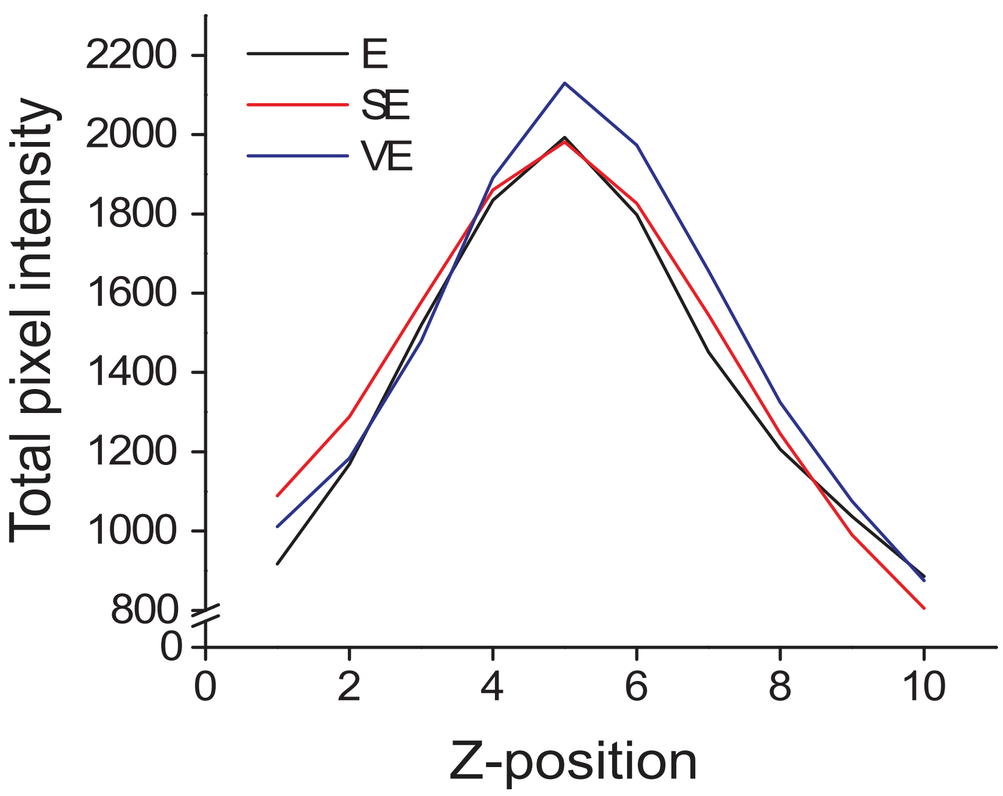
VE
SE
E
10μm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SE
VE
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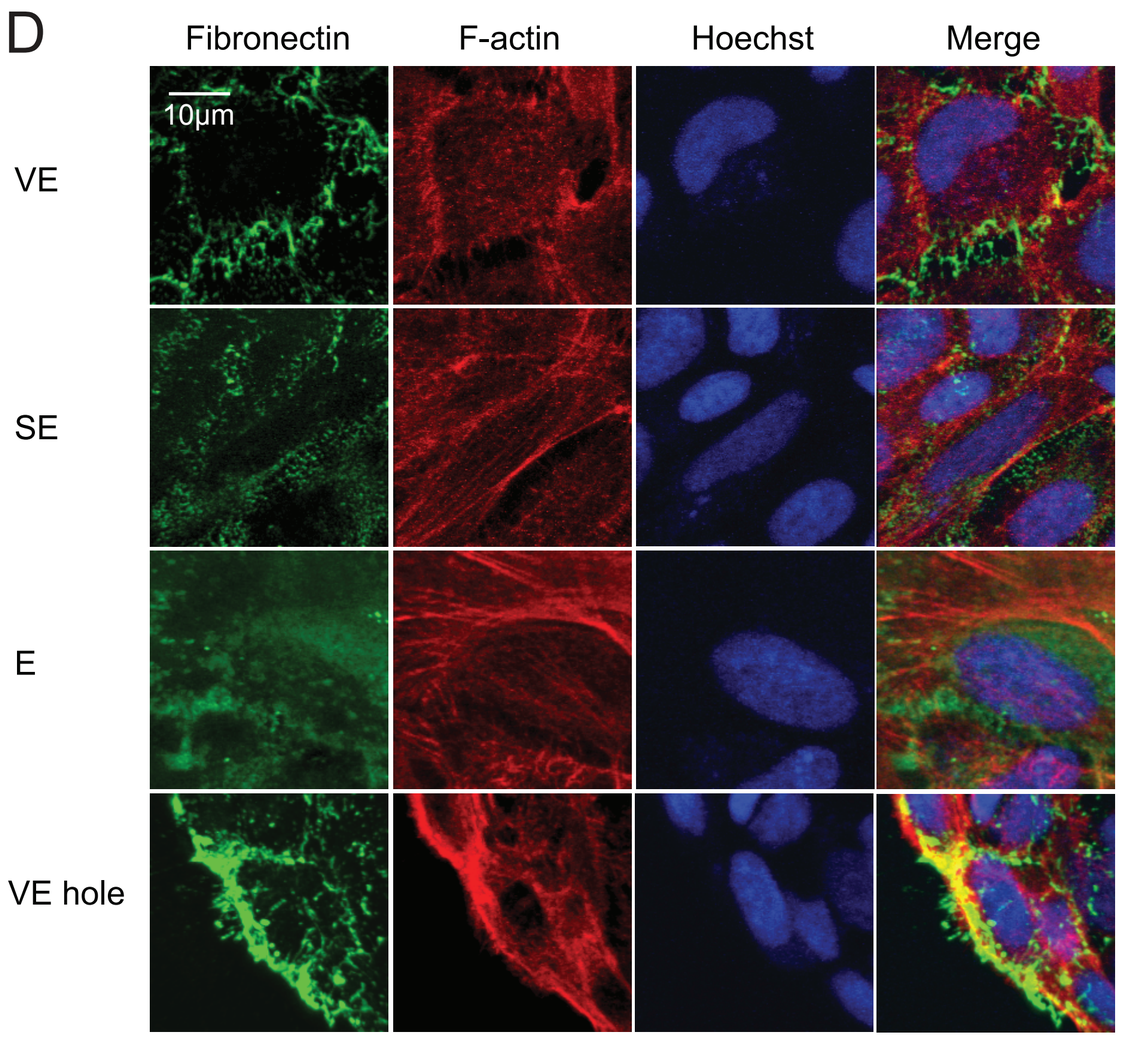
Z-position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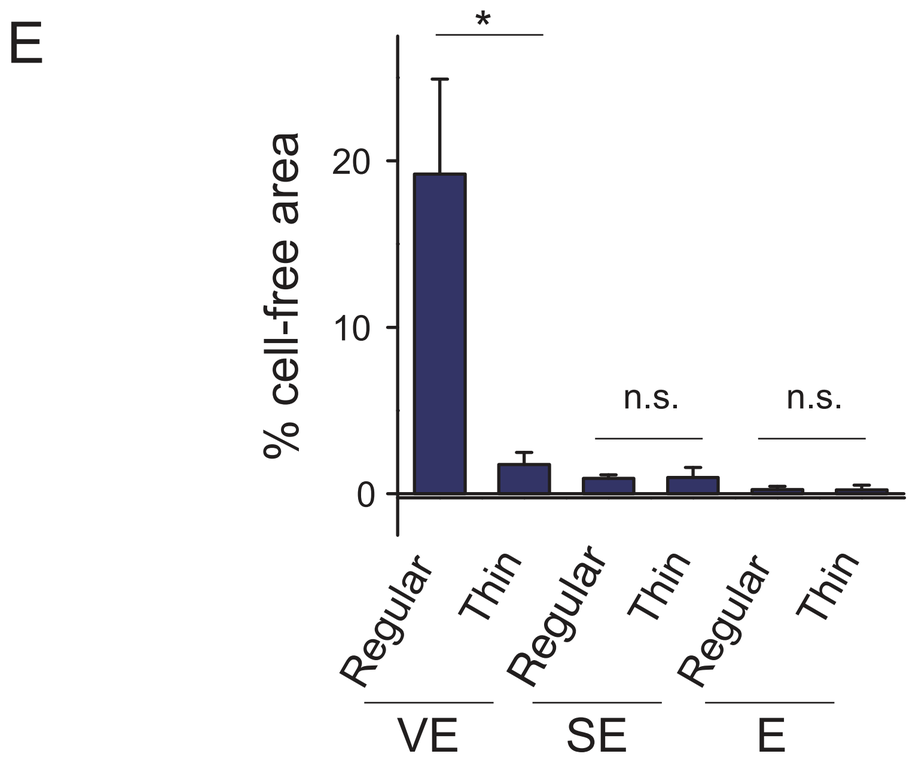
Fibronectin
F-actin
Hoechst
Merge
10μm
VE
SE
E
VE hole


E
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n.s.
n.s.
Regular
Thin
Regular
Thin
Regular
Thin
VE
SE
E

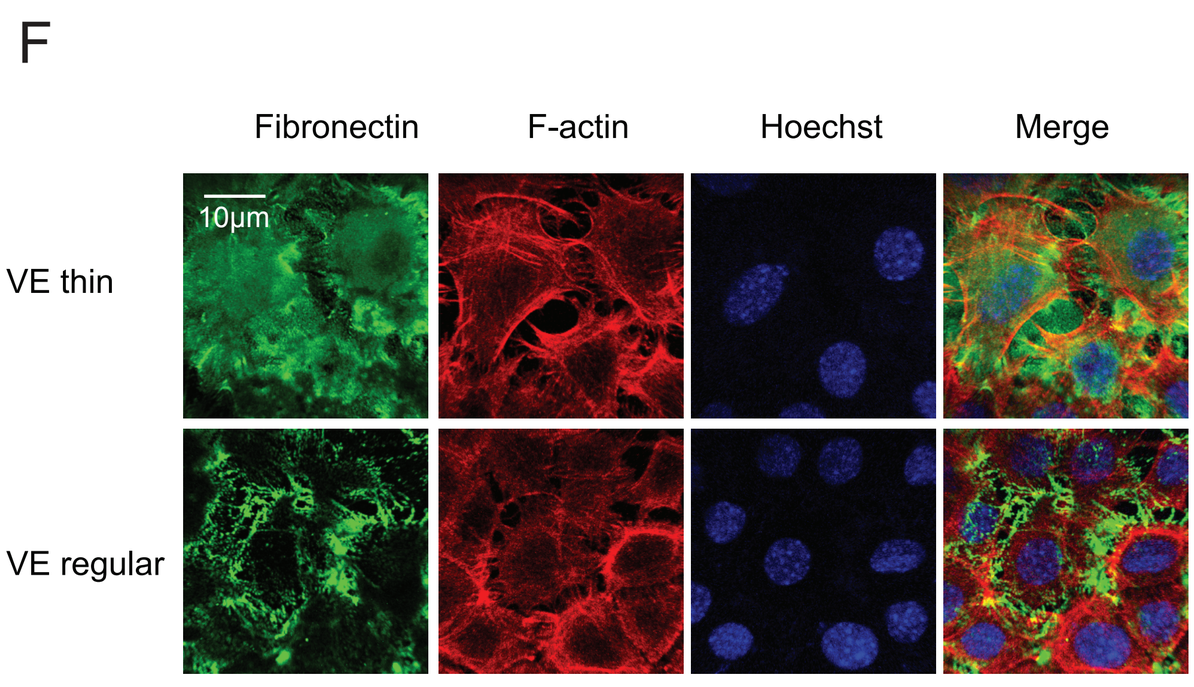
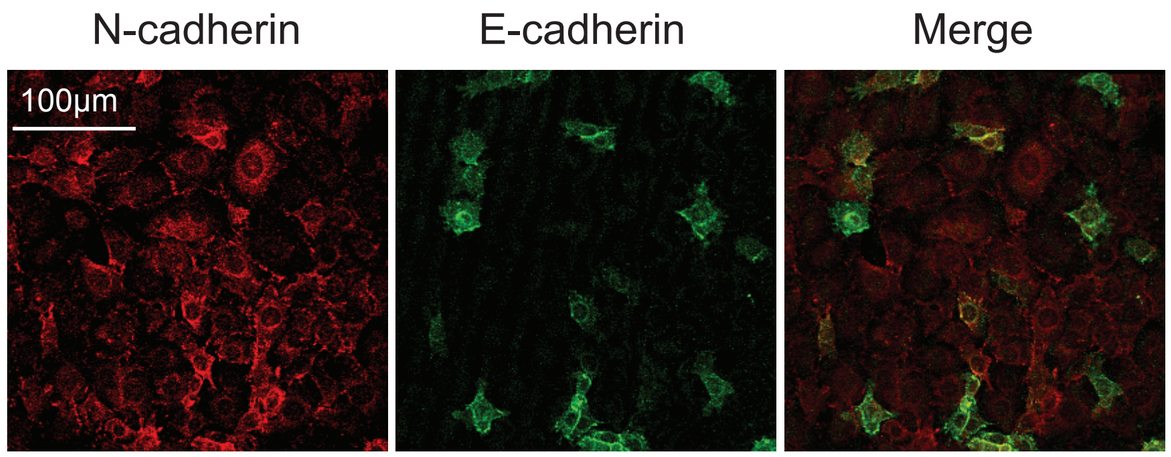
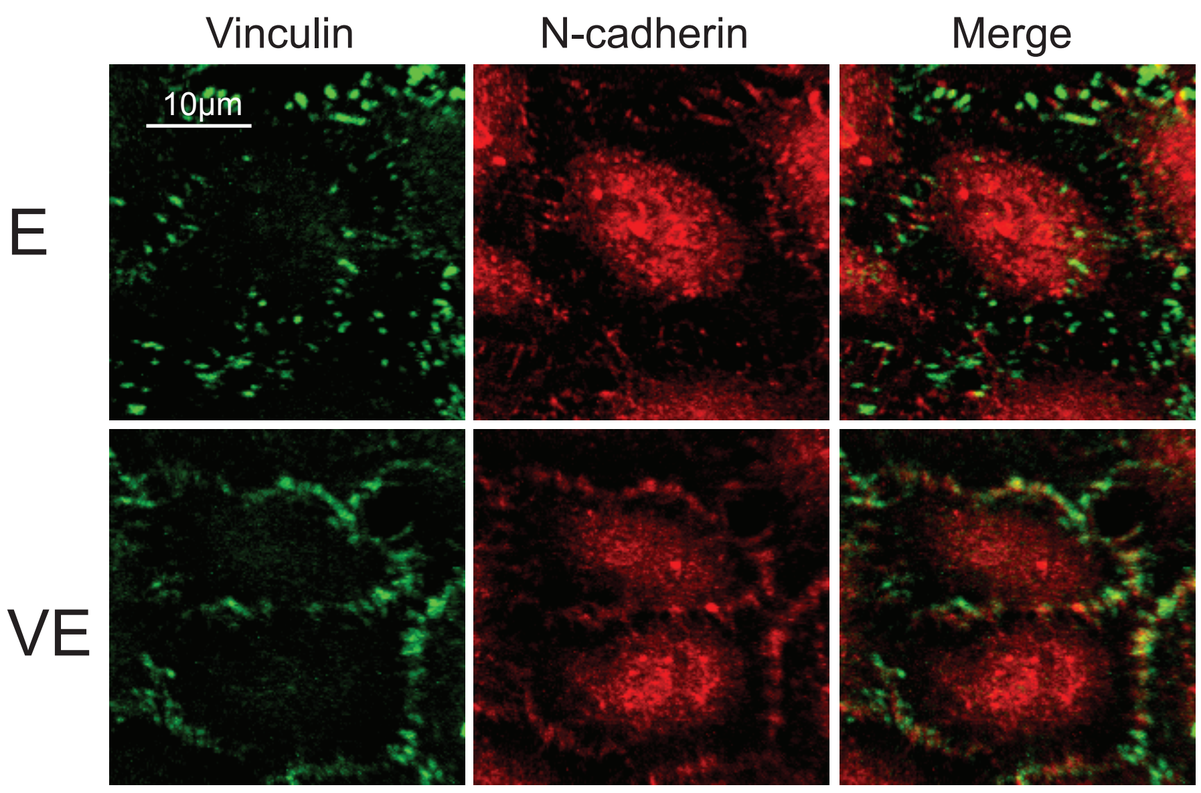

F
Fibronectin
F-actin
Hoechst
Merge
10μm
VE thin
VE regular

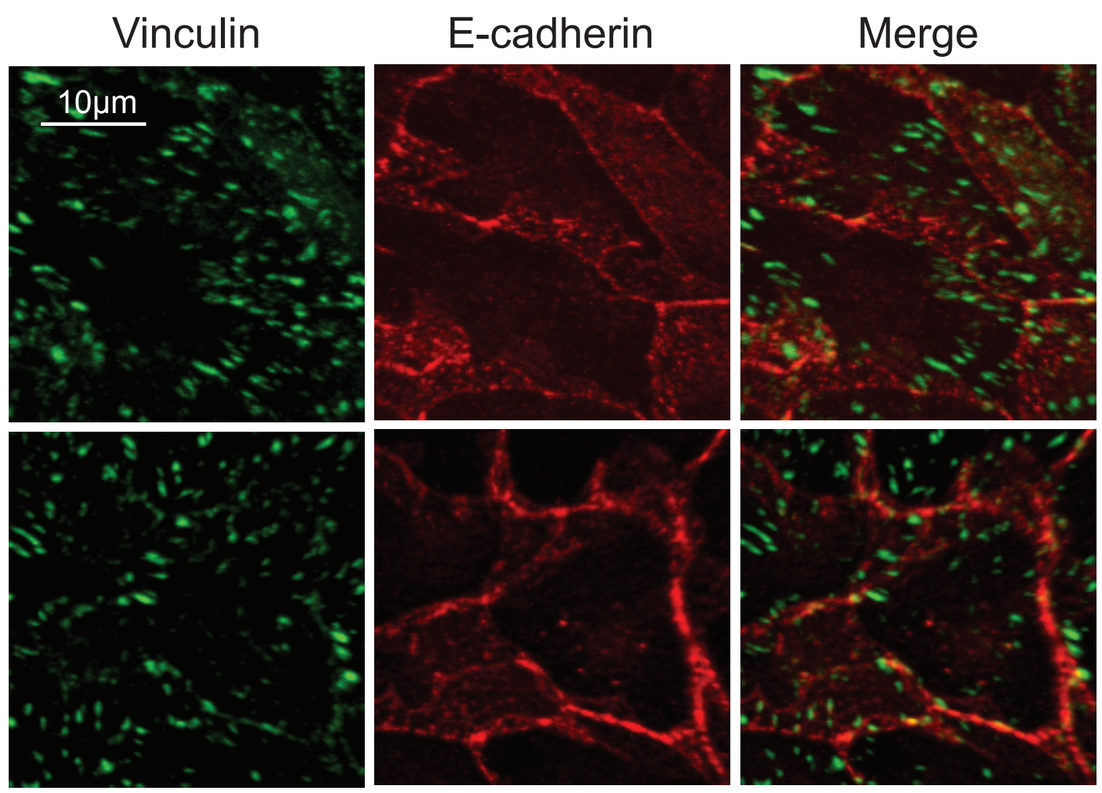
Figure S2

A


N-cadherin
E-cadherin
Merge
100μm

B


Vinculin
N-cadherin
Merge
10μm
E
VE
HeLa


Vinculin
E-cadherin
Merge
10μm
MDCK