Table S1. Outline of four rounds of CycIF including antibodies, used, Alexa Flour conjugation, dilution ratio, and micro-scope settings (Light, Exposure, and Gain).

CycIF Round	Antibody	Manufacture	Alexa Flour	Dilution	Light	Exposure	Gain
1	Anti-p-p38 (E-1)	Santa Cruz (sc-166182 AF594)	594 (Tx-Red)	1:25	65	703	13.3
	Anti-NFATc4 (B-2)	Santa Cruz (sc-271597 AF488)	488 (GFP)	1:30	61	462	12.2
	Anti-Smad3 (38-Q)	Santa Cruz (sc-101154)	*	1:25	52	755	15.2
2	Anti-MRTF-A (G-8)	Santa Cruz (sc-390324 AF546)	546 (RFP)	1:25	52	582	6.6
	Anti- Rock-1 (G-6)	Santa Cruz (sc-17794 AF647)	674 (Cy5)	1:30	61	586	14.3
	Anti-NFκB p50 (E-10)	Santa Cruz (sc-8414)	*	1:25	58	908	15.4
3	Anti-p-JNK (G-7)	Santa Cruz (sc-6254 AF546)	546 (RFP)	1:50	42	151	7.4
	Anti-p-Akt1/2/3 (C-11)	Santa Cruz (sc-514032 AF647)	647 (Cy5)	1:30	61	586	14.3
	Anti-ASMA	abcam (ab5694)	*	1:250	61	911	14.4
4	Anti-p-ERK (E-4)	Santa Cruz (sc-7383 AF488)	488 (GFP)	1:30	58	391	14
	Texas Red®-X phal-loidin	Fisher (T7471)	594 (Tx-Red)	1:40	65	676	17.1
	Anti-p-FAK (Tyr397)	invitrogen (700255)	*	1:250	58	1140	15.4
1 - 4	*mouse-anti-rabbit IgG PE-Cy7	Santa Cruz (sc-516721)	750 (Cy7)	1:100	-	-	-
	Hoechst 33342	Fisher (H3570)	DAPI	1:1000	35	51	9

Table S2. All p-values from two-way ANOVA analysis. Significance at α=0.05 are bolded and denoted with an *. .

	p_{E2}	p_{sex}	p_{sex*E2}
Cell Density	0.87	0.58	0.15
Cell Area	0.89	0.81	0.43
Cell Elongation	0.62	0.67	0.07
Nucleus Area	0.45	0.53	0.43
Nucleus Elongation	0.72	0.97	0.49
α-SMA	0.94	0.57	0.16
F-Actin	0.92	0.97	0.49
P-ERK	0.49	0.94	**0.02***
P-p38	0.37	**0.04***	0.43
ROCK1	0.06	**0.048***	0.47
P-FAK	**0.01***	0.53	0.34
p-JNK	0.17	0.07	0.394
p-AKT	0.24	0.86	0.06
NFAT	0.52	**0.01***	0.62
NF-κB	0.63	0.50	0.30
SMAD3	0.99	0.38	0.20
MRTF	0.43	0.53	0.31