

Supplementary Information

Supplementary video captions

Video S1 The evolution of the velocity orientations obtained by PIV for MCF-10A WT cells (left) compared with the corresponding simulations (right).

Video S1 The evolution of the velocity orientations obtained by PIV for MCF-10A cells with RAB5A overexpression (left) compared with the corresponding simulations (right).

Cell line	β	σ_0	F_0	α	M
HeLa soluble/o	4	350	0	14.2	1.4123
	4	150	14	14.2	1.8298
	4	150	14	14.2	1.9230
	4	150	14	14.2	1.4108
HeLa fibrillar/o	4	250	8	1.42	0.4462
	4	200	0	14.2	0.9386
	4	200	8	14.2	0.8864
	4	200	0	14.2	0.6502
	4	300	0	14.2	1.2091
HeLa plastic/o	4	250	8	14.2	1.4756
	4	120	0	14.2	0.0429
	4	150	0	14.2	0.5505
	4	120	8	14.2	0.3614
lung-ECs/o	4	150	12	14.2	0.0294
	4	150	0	14.2	0.5666
	4	150	0	14.2	0.7127
	4	150	8	14.2	0.7737
	4	120	8	14.2	0.3254
VEC-positive/o	4	100	8	1.42	0.6498
	4	100	10	1.42	1.6901
VEC-null/o	4	100	10	1.42	0.9691
	4	400	8	14.2	7.1948
MCF-10A WT/o	8	40	8	1.42	0.2950
	6	25	8	1.42	0.3760
	10	65	10	1.42	0.2441
	10	55	16	1.42	0.3194
	10	55	16	1.42	0.5188
	8	20	20	1.42	0.2304
	10	75	12	1.42	0.4070
	8	30	20	1.42	0.1070
	10	85	12	1.42	0.3971
MCF-10A RAB5A/o	20	30	45	1.42	1.2374
	100	30	50	1.42	0.2649
	30	30	50	1.42	0.5751
	80	30	50	1.42	0.6449
	60	30	50	1.42	0.2281
MCF-10A WT/c	32	25	8	7.1	0.5084
	16	30	8	7.1	0.8579
HeLa plastic/c	32	0.1	8	7.1	0.5992
	32	5	8	7.1	0.3692
MCF-10A RAB5A/c	100	550	18	1.42	0.4092

Table S1: Best parameters used to fit the experiments, under open (o) or closed (c) boundary conditions. The value of M is also reported (see text) to assess the quality of the fit.