

Table S1. Microtubule dynamics in HUVEC in the presence and absence of paclitaxel

nM Paclitaxel	0	0.25	1	10
Growth				
Rate ($\mu\text{m}/\text{min}$)	12 \pm 0.6 (100)	12.1 \pm 0.4 (101)	9.9 \pm 0.5 (83)*	11.1 \pm 0.9 (93)
Duration (sec)	8.7 \pm 0.5 (100)	7.5 \pm 0.4 (86)	7.9 \pm 0.5 (91)	6.6 \pm 0.6 (76)
Distance (μm)	1.8 \pm 0.1 (100)	1.6 \pm 0.1 (89)	1.4 \pm 0.2 (78)	1.2 \pm 0.1 (67)
Shortening				
Rate ($\mu\text{m}/\text{min}$)	16.2 \pm 1.0 (100)	18.3 \pm 1.0 (113)	14.7 \pm 1.0 (91)	15.4 \pm 1.4 (95)
Duration (sec)	9.6 \pm 0.5 (100)	7.9 \pm 0.6 (82)	6.8 \pm 0.5 (71)***	7.0 \pm 0.5 (73)***
Distance (μm)	2.7 \pm 0.2 (100)	2.5 \pm 0.3 (93)	1.9 \pm 0.2 (70)	1.7 \pm 0.1 (63)*
Frequency (min^{-1})				
Catastrophe	1.9 \pm 0.2 (100)	2.1 \pm 0.2 (111)	2.1 \pm 0.2 (111)	1.8 \pm 0.1 (95)
Rescue	5.7 \pm 0.5 (100)	7.5 \pm 0.8 (132)	9.0 \pm 0.7 (158)***	8.5 \pm 0.6 (149)**
Percentage of time				
Growing	22.9 \pm 2.1 (100)	22.8 \pm 2.1 (100)	19.3 \pm 2.6 (84)	15.1 \pm 2.1 (66)*
Shortening	24.2 \pm 2.6 (100)	20.8 \pm 1.7 (86)	10.8 \pm 1.5 (45)***	16.5 \pm 1.1 (68)*
Pausing	52.9 \pm 3.6 (100)	56.5 \pm 3.2 (107)	69.9 \pm 3.5 (132)***	68.5 \pm 2.6 (129)**
Dynamicity ($\mu\text{m}/\text{min}$)	6.1 \pm 0.4 (100)	6.7 \pm 0.6 (110)	3.6 \pm 0.4 (59)***	4.1 \pm 0.4 (67)**
Microtubules measured	35	21	30	25

Values represent the mean \pm standard error.

Numbers in parentheses are percent of control (untreated cells).

Catastrophe: the transition from either growth or pause phase to shortening phase.

Rescue: the transition from shortening phase to either growth or pause phase.

Dynamicity: the total length change of individual microtubule during life history.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ compared to cells at 0 concentration of paclitaxel using ANOVA with Dunnett post-test.

Table S2. Microtubule dynamics in HUVEC in the presence and absence of vinblastine

nM Vinblastine	0	1.2	2.5	6
Growth				
Rate ($\mu\text{m}/\text{min}$)	12 \pm 0.6 (100)	12.1 \pm 0.4 (101)	9.9 \pm 0.6 (83)	10.6 \pm 1.1 (88)
Duration (sec)	8.7 \pm 0.5 (100)	7.4 \pm 0.5 (85)	7.6 \pm 0.9 (87)	7.3 \pm 2.1 (84)
Distance (μm)	1.8 \pm 0.1 (100)	1.5 \pm 0.5 (83)	1.2 \pm 0.2 (67)	1.1 \pm 0.2 (61)
Shortening				
Rate ($\mu\text{m}/\text{min}$)	16.2 \pm 1.0 (100)	15.5 \pm 0.9 (96)	14.9 \pm 1.3 (92)	12.7 \pm 2.8 (78)
Duration (sec)	9.6 \pm 0.5 (100)	7.9 \pm 0.5 (82)	6.1 \pm 0.4 (64)***	6.2 \pm 1.2 (65)***
Distance (μm)	2.7 \pm 0.2 (100)	2.1 \pm 0.6 (78)	1.4 \pm 0.1 (52)**	1.4 \pm 0.4 (52)**
Frequency (min^{-1})				
Catastrophe	1.9 \pm 0.2 (100)	2.5 \pm 0.2 (132)	1.5 \pm 0.2 (79)	1.3 \pm 0.2 (68)
Rescue	5.7 \pm 0.5 (100)	7.5 \pm 0.6 (132)	10.2 \pm 0.7 (179)***	8.5 \pm 0.6 (149)*
Percentage of time				
Growing	22.9 \pm 2.1 (100)	24.4 \pm 2.6 (107)	10.7 \pm 2.2 (47)**	7.7 \pm 2.1 (34)***
Shortening	24.2 \pm 2.6 (100)	24.8 \pm 1.8 (102)	17.0 \pm 1.8 (70)	10.8 \pm 1.1 (45)***
Pausing	52.9 \pm 3.6 (100)	50.7 \pm 4.3 (96)	72.3 \pm 2.6 (137)**	81.4 \pm 2.6 (154)***
Dynamicity ($\mu\text{m}/\text{min}$)	6.1 \pm 0.4 (100)	6.8 \pm 0.6 (111)	2.8 \pm 0.3 (46)***	2.3 \pm 0.3 (38)***
Microtubules measured	20	15	15	15

Values represent the mean \pm standard error.

Numbers in parentheses are percent of control (untreated cells).

Catastrophe: the transition from either growth or pause phase to shortening phase.

Rescue: the transition from shortening phase to either growth or pause phase.

Dynamicity: the total length change of individual microtubule during life history.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ compared to cells at 0 concentration of vinblastine using ANOVA with Dunnett post-test.

Table S3. Microtubule dynamics in HUVEC in the presence and absence of colchicine

nM Colchicine	0	0.2	2	4
Growth				
Rate ($\mu\text{m}/\text{min}$)	12 \pm 0.6 (100)	15.9 \pm 0.8 (133)**	10.9 \pm 0.8 (91)	11.9 \pm 1.1 (99)
Duration (sec)	8.7 \pm 0.5 (100)	6.11 \pm 0.2 (70)	9.4 \pm 1.3 (108)	8.1 \pm 1.1 (93)
Distance (μm)	1.8 \pm 0.1 (100)	2.2 \pm 0.3 (122)	1.6 \pm 0.2 (89)	1.6 \pm 0.2 (89)
Shortening				
Rate ($\mu\text{m}/\text{min}$)	16.2 \pm 1.0 (100)	20.5 \pm 1.3 (127)	18.4 \pm 2.3 (114)	15.6 \pm 2.0 (96)
Duration (sec)	9.6 \pm 0.5 (100)	8.5 \pm 0.4 (89)	6.7 \pm 0.5 (70)**	8.2 \pm 0.8 (85)
Distance (μm)	2.7 \pm 0.2 (100)	2.9 \pm 0.2 (107)	2.1 \pm 0.2 (78)	2.3 \pm 0.3 (85)
Frequency (min^{-1})				
Catastrophe	1.9 \pm 0.2 (100)	2.9 \pm 0.2 (153)**	1.3 \pm 0.2 (68)	1.0 \pm 0.1 (53)**
Rescue	5.7 \pm 0.5 (100)	6.7 \pm 0.3 (118)	9.2 \pm 0.6 (161)**	7.5 \pm 0.8 (132)
Percentage of time				
Growing	22.9 \pm 2.1 (100)	33.7 \pm 3.5 (147)*	12.0 \pm 1.2 (52)*	8.0 \pm 1.2 (35)***
Shortening	24.2 \pm 2.6 (100)	28.7 \pm 1.3 (119)	11.8 \pm 1.8 (49)***	11.6 \pm 1.5 (48)***
Pausing	52.9 \pm 3.6 (100)	41.5 \pm 1.8 (78)	76.2 \pm 2.4 (144)***	80.4 \pm 1.3 (152)***
Dynamicity ($\mu\text{m}/\text{min}$)	6.1 \pm 0.4 (100)	10.0 \pm 0.6 (164)***	3.4 \pm 0.4 (56)***	2.9 \pm 0.3 (48)***
Microtubules measured	20	15	15	15

Values represent the mean \pm standard error.

Numbers in parentheses are percent of control (untreated cells).

Catastrophe: the transition from either growth or pause phase to shortening phase.

Rescue: the transition from shortening phase to either growth or pause phase.

Dynamicity: the total length changes of individual microtubules during their life history.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ compared to cells at 0 concentration of colchicine using ANOVA with Dunnett post-test.

Table S4. Microtubule dynamics in the leading and trailing edges of HUVEC

	leading edge	trailing edge	trailing/leading
Growth			
Rate ($\mu\text{m}/\text{min}$)	9.7 ± 0.6	11 ± 0.9	1.1
Distance (μm)	2.9 ± 0.7	6.9 ± 1.5	2.4*
Duration (sec)	5 ± 0.2	6.7 ± 0.4	1.3**
Shortening			
Rate ($\mu\text{m}/\text{min}$)	14.4 ± 3.4	15.7 ± 2	1.1
Distance (μm)	5.7 ± 1.5	1.6 ± 0.2	0.3*
Duration (sec)	5.9 ± 0.5	6.5 ± 0.3	1.1
Frequency (min^{-1})			
Rescue	12.6 ± 1.9	8.0 ± 0.5	0.6*
Catastrophe	1.7 ± 0.3	2.5 ± 0.4	1.5
Percentage of time			
Growing	9.56 ± 0.6	24.4 ± 3.8	2.6**
Shortening	11.9 ± 2.6	21 ± 3.2	1.8*
Pausing	78.5 ± 2.7	54.6 ± 5.0	0.7**
Dynamicity ($\mu\text{m}/\text{min}$)	3.2 ± 0.7	6.1 ± 0.7	1.9**
Microtubules measured	20	15	

Values represent the mean \pm standard error.

Catastrophe: the transition from either growth or pause phase to shortening phase.

Rescue: the transition from shortening phase to either growth or pause phase.

Dynamicity: the total length change of individual microtubules during life history.

* $p < 0.05$, ** $p < 0.01$ using ANOVA with Dunnett post-test.