



Figure S1. Comparison of the magnitude of movement in the direction of the gradient with movement in the direction of the flow. A) Diagram detailing the geometry used in the measurements. Positive displacements are in the direction of the gradient or flow. B) Mean displacements in the direction of the gradient and flow for the three cell lines in the study.

Table S1. Regression coefficients*

	coefficient	pipette	microfluidic device
accuracy			
<i>wt</i>			
	b_0	0.5108	0.2311
	b_1	-0.0011	0.0007
<i>pi3k1/2⁻</i>			
	b_0	0.3932	0.5154
	b_1	-0.0013	-0.0005
<i>pten⁻</i>			
	b_0	0.3266	0.3107
	b_1	-0.0006	-0.0001
speed			
<i>wt</i>			
	b_0	9.6728	10.4912
	b_1	-0.0124	-0.0013
<i>pi3k1/2⁻</i>			
	b_0	6.6665	15.4912
	b_1	-0.0036	-0.0170
<i>pten⁻</i>			
	b_0	5.9706	14.0759
	b_1	-0.0022	-0.0281
coordination index			
<i>wt</i>			
	b_0	6.6036	2.6837
	b_1	-0.0144	0.0113
<i>pi3k1/2⁻</i>			
	b_0	4.3792	8.1984
	b_1	-0.0138	-0.0102
<i>pten⁻</i>			
	b_0	3.3903	5.0617
	b_1	-0.0053	-0.0069

*The coefficients are from the fit of the data to the equation $y = b_0 + b_1d$, where y is either accuracy, speed, or coordination and d is the distance from the highest

concentration in the assay. The units for b_0 and b_1 vary for each motility variable. For accuracy, the chemotactic index is unitless so b_0 is unitless and b_1 is μm^{-1} . For speed and the coordination index, the units for b_0 and b_1 are $\mu\text{ms}/\text{min}$ and min^{-1} , respectively.