

Table S1. Division orientation (ϑ) and position of sister cells (ρ) relative to the direction of movement in the A compartment, P compartment or both

Angle	Interval	Proportion (%)	χ^2
ϑ (both)*	0°-29°	32.1	$P=0.347$
	30°-60°	36.5	
	61°-90°	31.3	
ρ (both)*	0°-29°	49.4	$P<0.001$
	30°-60°	28.9	
	61°-90°	21.7	
ϑ (A) [†]	0°-29°	34.5	$P=0.367$
	30°-60°	35.4	
	61°-90°	30.1	
ρ (A) [†]	0°-29°	47.8 [§]	$P<0.001$
	30°-60°	28.9	
	61°-90°	23.3	
ϑ (P) [‡]	0°-29°	25.4	$P=0.065$
	30°-60°	39.9	
	61°-90°	34.7	
ρ (P) [‡]	0°-29°	53.9 [§]	$P<0.001$
	30°-60°	29.0	
	61°-90°	17.1	

χ^2 tests whether proportions differ from random (33%-34%-33%). Only after rearrangement, the three intervals differ from random.

0°=direction of movement.

* $n=747$, [†] $n=554$, [‡] $n=193$ sister pairs.

[§]Comparing A and P shows that in P, more cells (5%) end up in the interval close to the direction of movement (0°-29°) after the rearrangement.

The whole group of ϑ and the whole group of ρ differ significantly in all three cases ('both', A and P) showing the impact of the rearrangements (Mann-Whitney, $P<0.001$). Furthermore, ϑ (A) differs significantly from ϑ (P) (Mann-Whitney, $P=0.043$). This difference is due to slightly differently oriented divisions of P cells with fewer cells dividing in the direction of movement. That ρ does not differ between A and P (Mann-Whitney, $P=0.143$), although there are differences in division orientation, suggests that more rearrangement occurs in P (see also [§]).