

NUCLEAR LOCATION FORETELLS CHROMOSOME ANOMALIES

It is well known that chromosomes occupy distinct territories inside the nucleus, and that this arrangement is not random. However, the origin and the biological impact of this topographic setting is far from being fully understood.

The study by [Sjoerd Lkaaseen et al.](#)¹: “Nuclear chromosome locations dictate segregation error frequencies” published in Nature sheds light on the consequences of the topographic location inside the nucleus on chromosome segregation. The authors nicely demonstrate that peripheral chromosomes need more time to congress to the metaphase plate, and that this delayed timing is correlated to an increase in frequency of non-disjunction.

Hence, they provide evidence linking 3D positioning of chromosome territories and frequency of segregation error for different chromosome pairs which may play a role in genome evolution during development and tumorigenesis.

These results are in line with the observation that absence of clustering of chromosomes at the interface between the two pronuclei after fecundation is associated with a delayed congression because of greater distance to the metaphase plate, an increase in the number of lagging chromosomes, segregation errors and micronuclei formation ([T. Cavazza et al.](#)², *Cell* 184, 2860 (2021)).

1- <https://www.nature.com/articles/s41586-022-04938-0>

2- <https://www.sciencedirect.com/science/article/pii/S009286742100492X>