Year of publication 2017

Jordan W Raff, Renata Basto (2017 Feb 8)
Centrosome Amplification and Cancer: A Question of Sufficiency.

**Summary**

Centrosome amplification is a common feature of many types of cancer, but whether it is a cause or consequence is hotly debated. In this issue of Developmental Cell, Levine et al. (2017) provide strong evidence that centrosome amplification is sufficient to initiate tumorigenesis in a mouse model.

Year of publication 2015

Maddalena Nano, Renata Basto (2015 Dec 9)
The Janus soul of centrosomes: a paradoxical role in disease?
*Chromosome research : an international journal on the molecular, supramolecular and evolutionary aspects of chromosome biology* : 127-144 : [DOI : 10.1007/s10577-015-9507-3]

**Summary**

The centrosome is the main microtubule organizing center of animal cells. It contributes to spindle assembly and orientation during mitosis and to ciliogenesis in interphase. Numerical and structural defects in this organelle are known to be associated with developmental disorders such as dwarfism and microcephaly, but only recently, the molecular mechanisms linking centrosome aberrations to altered physiology are being elucidated. Defects in centrosome number or structure have also been described in cancer. These opposite clinical outcomes-arising from reduced proliferation and overproliferation respectively-can be explained in light of the tissue- and developmental-specific requirements for centrosome functions. The pathological outcomes of centrosome deficiencies have become clearer when considering its consequences. Among them, there are genetic instability (mainly aneuploidy, a defect in chromosome number), defects in the symmetry of cell division (important for cell fate specification and tissue architecture) and impaired ciliogenesis. In this review, we discuss the origins and the consequences of centrosome flaws, with particular attention on how they contribute to developmental diseases.

Delphine Gogendeau, Katarzyna Siudeja, Davide Gambarotto, Carole Pennetier, Allison J Bardin, Renata Basto (2015 Nov 17)
Aneuploidy causes premature differentiation of neural and intestinal stem cells.
*Nature communications* : 8894 : [DOI : 10.1038/ncomms9894]

**Summary**

Aneuploidy is associated with a variety of diseases such as cancer and microcephaly.
Although many studies have addressed the consequences of a non-euploid genome in cells, little is known about their overall consequences in tissue and organism development. Here we use two different mutant conditions to address the consequences of aneuploidy during tissue development and homeostasis in Drosophila. We show that aneuploidy causes brain size reduction due to a decrease in the number of proliferative neural stem cells (NSCs), but not through apoptosis. Instead, aneuploid NSCs present an extended G1 phase, which leads to cell cycle exit and premature differentiation. Moreover, we show that this response to aneuploidy is also present in adult intestinal stem cells but not in the wing disc. Our work highlights a neural and intestine stem cell-specific response to aneuploidy, which prevents their proliferation and expansion.

Renata Basto, Karen Oegema (2015 Sep 18)

Methods in cell biology : xvii-xix

Summary