

# Stem cells 'by default'

April 12 2012

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In spite of considerable research efforts around the world, we still do not know the determining factors that confer stem cells their main particular features: capacity to self-renew and to divide and proliferate. The scientist Jordi Casanova, head of the "Morphogenesis in Drosophila" lab at the Institute for Research in Biomedicine and CSIC Research Professor, proposes in an article in the journal *Embo Reports* that we may be working from an incorrect angle.

Casanova's notion is that stem cells emerge not because of the presence of factors that confer capacity to the stem cell but because of factors that repress the cellular signals for differentiation and specialization.

Casanova believes that somehow all non-differentiated cells intrinsically carry the qualities of the stem cell by default and that there are factors at work that remove these capacities. Said another way: a stem cell is a stem cell because it has evaded differentiation. According to Casanova, if the idea of "a stem cell by default" is considered, research should focus not on what a cell requires to become a stem cell but what it must escape from.

To support his notion, Jordi Casanova analyzes from this new perspective the properties and characteristics currently known about stem cells and tests whether they generally fit the hypothesis. The author of this article hopes that this new angle stimulates research in the international scientific community working on stem cells and [cell differentiation](#) in order to confirm or reject the hypothesis. The generation of new knowledge in this field is of enormous interest given

the potential of therapeutic applications based on [stem cells](#).

**More information:** *EMBO reports*, Advance online publication 10 April 2012; [doi:10.1038/embor.2012.47](https://doi.org/10.1038/embor.2012.47)

Provided by Institute for Research in Biomedicine (IRB Barcelona)

Citation: Stem cells 'by default' (2012, April 12) retrieved 20 March 2024 from <https://phys.org/news/2012-04-stem-cells-default.html>

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