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# Stem cell ontology: why does it matter?

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## Abstract

Session: Asking the Hidden Questions Raised by Stem Cells: History, Philosophy, and Biology (Lucie Laplane, Jane Maienschein, Melinda Fagan, Michel Vervoort) Stemness (ability to self-renew and potency to differentiate) is the property by which stem cells are defined. Since few years, there is a debate on the kind of property "stemness" really is, mainly between the proponents of the "entity" and "state" views. According to the formers, stem cells are entities belonging to a particular kind, or type of cells, defined by the stemness properties. According to the latters, stemness describes a cell state rather than a category. The main concern of my talk will be to evaluate the consequences of the "entity" and "state" visions of stem cells for therapeutic strategies against cancers. This concern is related to the recent emergence of the "cancer stem cell" (CSC) theory. According to this theory: (1) cancers are initiated, maintained and propagated by CSCs exclusively, (2) CSC can escape classical therapies and lead to relapses, and (3) killing the CSC would be necessary and sufficient to cure cancer. We will show that (3) is true only in the "entity" framework. The state views are suggesting other therapeutic strategies against cancers. This analysis will highlight the critical importance of determining the ontological status of stem cells.

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