

The rigorous definition of a stem cell requires that it possesses two properties:

- Self-renewal** - which is the ability to go through numerous cycles of cell division while still maintaining its undifferentiated state.
- Multipotency** or multidifferentiative potential - which is the ability to generate progeny of several distinct cell types, (for example glial cells and neurons) as opposed to unipotency which is the term for cells that are restricted to producing a single-cell type.

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However, some researchers do not consider multipotency to be essential, and believe that unipotent self-renewing stem cells can exist.

These properties can be illustrated with relative ease in vitro, using methods such as clonogenic assays, where the progeny of a single cell is characterized.