Evolution of the stem cells and cancer publishing landscape

Dr Andrew Plume, Elsevier

9th International Heinrich F.C. Behr-Symposium on Stem Cells and Cancer
19th September 2016
Stem cell literature is growing exponentially

Regardless of the database examined, there has been exponential growth in journal articles on stem cells over the last 25 years.

Source: Scopus, WoS and PubMed searches with term “stem cell” and limited to journal articles.
Stem cell research funding is growing linearly

Owing to *ex post* categorization across awarded grants, trends in stem cell funding at the overall level do not anticipate developments in the field but recapitulate historical developments.

Source: NIH Estimates of Funding for Various Research, Condition, and Disease Categories (RCDC)
Hematopoietic stem cell literature is growing linearly

Source: Scopus searches with term "h*matopoietic stem cell" or "h*matopoietic embryonic stem cell" AND cancer and limited to journal articles.
(Human) embryonic stem cells took off in 2003

There has been biphasic growth of journal articles on embryonic stem cells, with a tipping point in 2003 in the wake of a pair of key papers published in May that year in *Cell*. Since then, over a fifth of all ESC articles each year relate to human ESCs.

Source: Scopus searches with term “embryonic stem cell” or “human embryonic stem cell” and limited to journal articles.
(Induced) pluripotent stem cells took off in 2006

There has been biphasic growth of journal articles on pluripotent stem cells, with a tipping point in 2006 in the wake of key papers published in the 16 months ending December 2007 in *Science, Nature* and *Cell*. Since then, the proportion PSC articles relating to induced PSCs has climbed rapidly to over half each year in the last 4 years. The 2012 Nobel Prize in Physiology or Medicine was awarded for pioneering work on PSCs in the 1960s and the more recent work on their induction.

Source: Scopus searches with term “pluripotent stem cell” or “induced pluripotent embryonic stem cell” and limited to journal articles.
Cancer stem cells took off in 2006

There has been biphasic growth of journal articles on cancer stem cells, with a tipping point in 2006 amidst a series of papers identifying CSCs in various cancers published in the period 2003-2008 in *PNAS, Nature* and *Cell Stem Cell* (among others).

Source: Scopus searches with term "stem cell" or "cancer stem cell" and limited to journal articles; Kreso & Dick (2014) “Evolution of the Cancer Stem Cell Model” *Cell Stem Cell* 14(3) pp 275-91
Embryonic/pluripotent/neuronal stem cells

Hematopoietic stem cells

Source: 2001-05 CWTS term map with seeds Cell Stem Cell, Stem Cell Reports, Stem Cell Research, Stem Cell Research and Therapy, Stem Cell Reviews and Reports, Stem Cells, Stem Cells and Development, Stem Cells International, Stem Cells Translational Medicine; cluster resolution 0.7, based on 585 documents.
hESC burst in 2006-10 map

Node size
- count of occurrences

Co-occurrence clustering
- less alike
- more alike

Node colours
- Cluster

Embryonic/pluripotent stem cells
- Neuronal stem cells
- Hematopoietic stem cells
- Regenerative medicine

Source: 2006-10 CWTS term map with seeds Cell Stem Cell, Stem Cell Reports, Stem Cell Research, Stem Cell Research and Therapy, Stem Cell Reviews and Reports, Stem Cells, Stem Cells and Development, Stem Cells International, Stem Cells Translational Medicine; cluster resolution 0.9, based on 2,743 documents.
iPSC and CSC burst 2011-15 map

Source: 2011-15 CWTS term map with seeds Cell Stem Cell, Stem Cell Reports, Stem Cell Research, Stem Cell Research and Therapy, Stem Cell Reviews and Reports, Stem Cells, Stem Cells and Development, Stem Cells International, Stem Cells Translational Medicine; cluster resolution 0.9, based on 6,306 documents.
hESC burst in 2006-10 map

Source: 2006-10 CWTS term map with seeds Cell Stem Cell, Stem Cell Reports, Stem Cell Research, Stem Cell Research and Therapy, Stem Cell Reviews and Reports, Stem Cells, Stem Cells and Development, Stem Cells International, Stem Cells Translational Medicine; cluster resolution 0.9, based on 2,743 documents.
iPSC and CSC burst 2011-15 map

Node size
count of occurrences

Co-occurrence clustering
less alike
more alike

Node colours
Relative citation impact

Source: 2011-15 CWTS term map with seeds Cell Stem Cell, Stem Cell Reports, Stem Cell Research, Stem Cell Research and Therapy, Stem Cell Reviews and Reports, Stem Cells, Stem Cells and Development, Stem Cells International, Stem Cells Translational Medicine; cluster resolution 0.9, based on 6,306 documents.
hESC burst in 2006-10 map

Node size
- count of occurrences

Co-occurrence clustering
- less alike
- more alike

Node colours
- Relative activity

Source: 2006-10 CWTS term map with seeds Cell Stem Cell, Stem Cell Reports, Stem Cell Research, Stem Cell Research and Therapy, Stem Cell Reviews and Reports, Stem Cells, Stem Cells and Development, Stem Cells International, Stem Cells Translational Medicine; cluster resolution 0.9, based on 2,743 documents.
iPSC and CSC burst 2011-15 map

Co-occurrence clustering
less alike
more alike

Node size
count of occurrences

Node colours
Relative activity

Embryonic/pluripotent stem cells
Neuronal stem cells

Embryonic stem cell
pluripotent stem cell

Hematopoietic stem cells / cancer stem cells

Rise of therapeutic applications using animal models, and clinical trials

Source: 2011-15 CWTS term map with seeds Cell Stem Cell, Stem Cell Reports, Stem Cell Research, Stem Cell Research and Therapy, Stem Cell Reviews and Reports, Stem Cells, Stem Cells and Development, Stem Cells International, Stem Cells Translational Medicine; cluster resolution 0.9, based on 6,306 documents.
The best free way to manage your research
Organize, share, discover

1. Download Mendeley for free
2. Add all your PDFs
3. Organize, cite and collaborate...

DOWNLOAD MENDELEY

Available for Mac, Windows and Linux

Reference Manager
Generate citations and bibliographies in Microsoft Word, LibreOffice, and LaTeX.

Read and Annotate
Open PDFs and capture your thoughts through sticky notes and highlights.

Add and Organize
Import and organize PDFs from your computer, EndNote™, Papers or Zotero.

Collaborate
Connect with colleagues and securely share your papers, notes and annotations.

Backup, Sync and Mobile
Access your papers on the web, iPhone or iPad.

Network and Discover
Discover papers, people and public groups.
Article-level metrics (citations with a delay, altmetrics more immediately)

Journal-level metrics (an immediate ‘signal’ of inherent value)
Stem cell journal map 2001-05

Source: 2011-15 CWTS journal map with seeds Cell Stem Cell, Stem Cell Reports, Stem Cell Research, Stem Cell Research and Therapy, Stem Cell Reviews and Reports, Stem Cells, Stem Cells and Development, Stem Cells International, Stem Cells Translational Medicine
Journal citation impact as a ‘signal to read’

Source: 2011-15 CWTS journal map with seeds Cell Stem Cell, Stem Cell Reports, Stem Cell Research, Stem Cell Research and Therapy, Stem Cell Reviews and Reports, Stem Cells, Stem Cells and Development, Stem Cells International, Stem Cells Translational Medicine
Funding

Literature

Scopus® SciVal MENDELEY CiteScore™