

Research trends and hotspots of mesenchymal stromal cells in intervertebral disc degeneration: a scientometric analysis

Objective: Mesenchymal stromal cells (MSC) are important potential candidates for regenerative therapy for intervertebral disc degeneration (IDD). This scientometric study aimed to summarize the main research trends, identify current research hotspots, and measure the networks of the contributors and their scientific productivity.

Methods: We searched SCI-Expanded edition of the WOS Core Collection. The search strategy was built with terms including “intervertebral disc” “intervertebral disc degeneration” “nucleus pulposus” and “mesenchymal stromal cells”. VOSviewer (version 1.6.17) and CiteSpace (version 5.8.R3) were utilized to analyze the retrieved text files.

Results: A total of 1102 publications regarding MSC in IDD were recognized from January 2000 to April 2022. The number of records every year followed an overall uptrend with fluctuations. The main trend of research demonstrated the practice of gradually applying MSC-based therapy to IDD with the assistance of advances in biomaterials and IDD pathology. A recent focus on MSC-derived exosomes and notochordal cells was detected. The cornerstone studies were mainly contributed by Japan, USA, and European countries, while China dominated in the number of recent publications. Tokai University with Daisuke Sakai was the most productive contributor. Cell Biology, Tissue Engineering, and Biomaterials were the categories with deep engagement in this field.

Conclusions: MSC in IDD has been an increasingly active topic. MSC-derived exosomes and notochordal cells are likely to be the next research hotspots. The insights into trends of the research and contributors could provide reference for researchers and their academic cooperation.

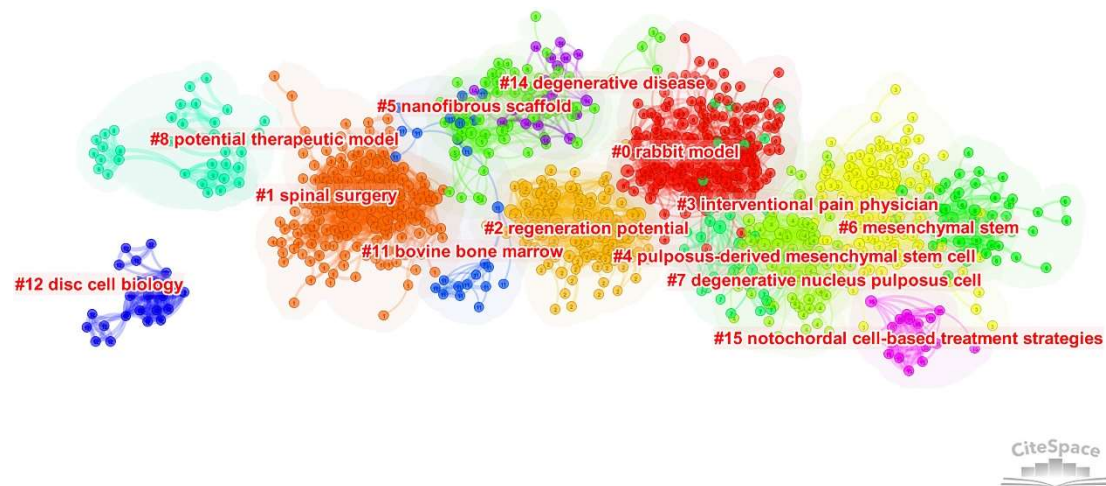


Fig.1 Visualization map of the reference co-citation network clusters

Figure legend: According to how frequently they are cited together, references of the publications (nodes) are divided into 13 clusters, ranked based on cluster size. The cluster names are derived from the titles of their representative article. The early clusters are placed in the left of the figure, while the recent ones in the right side.