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## Stem Cells

Stem cells are cells with the potential to develop into many different types of cells in the body. They serve as a repair system for the body. There are two main types of stem cells: embryonic stem cells and adult stem cells.


Stem cells are different from other cells in the body in three ways:

- They can divide and renew themselves over a long time
- They are unspecialized, so they cannot do specific functions in the body
- They have the potential to become specialized cells, such as muscle cells, blood cells, and brain cells


Doctors and scientists are excited about stem cells because they could help in many different areas of health and medical research. Studying stem cells may help explain how serious conditions such as birth defects and cancer come about. Stem cells may one day be used to make cells and tissues for therapy of many diseases. Examples include Parkinson's disease, Alzheimer's disease, spinal cord injury, heart disease, diabetes, and arthritis.

*NIH: National Institutes of Health*

### Start Here

- Diseases Treated by Bone Marrow and Stem Cell Transplant [<https://bmtinfonet.org/transplant-article/diseases-treated-transplant/>] (Blood & Marrow Transplant Information Network)
- Introduction to Stem Cells [<https://stemcells.nih.gov/info/basics>]  (National Institutes of Health)
- Stem Cells: What They Are and What They Do [<https://www.mayoclinic.org/tests-procedures/bone-marrow-transplant/in-depth/stem-cells/art-20048117?p=1>] (Mayo Foundation for Medical Education and Research)  
Also in Spanish [<https://www.mayoclinic.org/es/tests-procedures/bone-marrow-transplant/in-depth/stem-cells/art-20048117?p=1>]
- What Are Stem Cells? [<https://www.aboutstemcells.org/stem-cell-intro>] (International Society for Stem Cell Research)

### Related Issues

- Cord Blood Testing and Banking [<https://medlineplus.gov/lab-tests/cord-blood-testing-and-banking/>]  (National Library of Medicine)  
Also in Spanish [<https://medlineplus.gov/spanish/pruebas-de-laboratorio/pruebas-y-bancos-de-sangre-del-cordon-umbilical/>]
- Donating Peripheral Blood Stem Cells [<https://www.nmdp.org/get-involved/join-the-registry/donate-pbsc>] (National Marrow Donor Program)  
Also in Spanish [<https://www.nmdp.org/es-us/get-involved/join-the-registry/donate-pbsc>]
- Donating Stem Cells and Bone Marrow [<https://www.cancer.org/cancer/managing-cancer/treatment-types/stem-cell-transplant/donors.html>] (American Cancer Society)  
Also in Spanish [<https://www.cancer.org/es/cancer/como-sobrellevar-el-cancer/tipos-de-tratamiento/trasplante-de-celulas-madre/proceso.html>]
- Life After Bone Marrow or Blood Stem Cell Transplant [<https://www.nmdp.org/patients/transplant-support/life-after-transplant>] (National Marrow Donor Program)

Planning for a Transplant -- Blood Stem Cell [<https://bloodstemcell.hrsa.gov/transplant-basics/planning-transplant>] (Health Resources and Services Administration)

- Treatment Before Transplant [<https://www.nmdp.org/patients/transplant-support/preparing-for-transplant/treatment-before-transplant>] (National Marrow Donor Program)
- What Should I Ask Before Considering an Unproven Stem Cell Treatment? [<https://www.aboutstemcells.org/info/what-should-i-ask-before-considering-an-unproven-stem-cell-treatment>] (International Society for Stem Cell Research)


## Specifics

- 9 Things to Know about Stem Cell Treatments [<https://www.aboutstemcells.org/info/nine-things-to-know-about-stem-cell-treatments>] (International Society for Stem Cell Research)
- About Transplantation -- Blood Stem Cell [<https://bloodstemcell.hrsa.gov/transplant-basics/about-transplantation>] (Health Resources and Services Administration)
- Getting a Stem Cell or Bone Marrow Transplant [<https://www.cancer.org/cancer/managing-cancer/treatment-types/stem-cell-transplant/process.html>] (American Cancer Society)  
Also in Spanish [<https://www.cancer.org/es/cancer/como-sobrellevar-el-cancer/tipos-de-tratamiento/trasplante-de-celulas-madre/efectos-secundarios-del-trasplante.html>]
- Stem Cell or Bone Marrow Transplant Side Effects [<https://www.cancer.org/cancer/managing-cancer/treatment-types/stem-cell-transplant/transplant-side-effects.html>] (American Cancer Society)  
Also in Spanish [<https://www.cancer.org/es/cancer/como-sobrellevar-el-cancer/tipos-de-tratamiento/trasplante-de-celulas-madre/donantes.html>]
- Stem Cell Transplants in Cancer Treatment [<https://www.cancer.gov/about-cancer/treatment/types/stem-cell-transplant>]  (National Cancer Institute)  
Also in Spanish [<https://www.cancer.gov/espanol/cancer/tratamiento/tipos/trasplante-de-celulas-madre>]
- Types of Stem Cells [<https://www.aboutstemcells.org/info/stem-cell-types>] (International Society for Stem Cell Research)
- Umbilical Cord Blood Donation Process and FAQs [<https://www.nmdp.org/get-involved/join-the-registry/donate-cord-blood/cord-blood-donation-process>] (National Marrow Donor Program)  
Also in Spanish [<https://www.nmdp.org/es-us/get-involved/join-the-registry/donate-cord-blood/cord-blood-donation-process>]





## Videos and Tutorials

- Becoming a Blood Stem Cell Donor [<https://www.youtube.com/watch?v=mnTnkR7l0zk>]   (National Cancer Institute)

## Statistics and Research

- Donation and Transplantation Statistics [<https://bloodstemcell.hrsa.gov/data/donation-and-transplantation-statistics>] (Health Resources and Services Administration)
- Focus on Stem Cell Research [<https://www.ninds.nih.gov/current-research/focus-tools-topics/focus-stem-cell-research>]  (National Institute of Neurological Disorders and Stroke)

## Clinical Trials

- ClinicalTrials.gov: Hematopoietic Stem Cell Transplantation [<https://clinicaltrials.gov/search?intr=%22hematopoietic+stem+cell+transplantation%22&aggFilters=status:not%20rec>]  (National Institutes of Health)
- ClinicalTrials.gov: Hematopoietic Stem Cells [<https://clinicaltrials.gov/search?cond=%22Hematopoietic+Stem+Cells%22&aggFilters=status:not%20rec>]  (National Institutes of Health)
- ClinicalTrials.gov: Stem Cell Transplantation [<https://clinicaltrials.gov/search?intr=%22Stem+Cell+Transplantation%22&aggFilters=status:not%20rec>]  (National Institutes of Health)
- ClinicalTrials.gov: Stem Cells [<https://clinicaltrials.gov/search?cond=%22Stem+Cells%22&aggFilters=status:not%20rec>]  (National Institutes of Health)

## Journal Articles



## References and abstracts from MEDLINE/PubMed (National Library of Medicine)

- Article: Impact of allogeneic dental pulp stem cell injection on tissue regeneration...  
[<https://www.ncbi.nlm.nih.gov/pubmed/40739139>]
- Article: The synergic impact of decellularized testis scaffold and extracellular vesicles derived...  
[<https://www.ncbi.nlm.nih.gov/pubmed/40713602>]
- Article: Single-cell transcriptomics identifies PDGFRA(+) progenitors orchestrating angiogenesis and periodontal tissue regeneration. [<https://www.ncbi.nlm.nih.gov/pubmed/40707447>]
- Stem Cells -- see more articles [<https://pubmed.ncbi.nlm.nih.gov/?term=%22Hematopoietic+Stem+Cells%22%5Bmajr%3Anoexp%5D+OR+%22Stem+Cells%22%5Bmajr%3Anoexp%5D+AND+humans%5Bmh%5D+AND+english%5Bla%5D+AND+%22last+2+Years%22+%5Bedat%5D+NOT+%28letter%5Bpt%5D+OR+case+reports%5Bpt%5D+OR+editorial%5Bpt%5D+OR+comment%5Bpt%5D%29+AND+free+full+text%5Bsb%5D+>]

## Reference Desk

- Stem Cell Glossary [<https://www.aboutstemcells.org/info/glossary>] (International Society for Stem Cell Research)

## Find an Expert

- Blood & Marrow Transplant Information Network [<https://bmtinfonet.org/>]
- National Institute of Neurological Disorders and Stroke [<https://www.ninds.nih.gov/>] 
- NIH Stem Cell Information [<https://stemcells.nih.gov/>]  (National Institutes of Health)
- Public Cord Blood Banks and Donation Hospitals [<https://www.nmdp.org/what-we-do/partnerships/global-transplant-network/cord-blood-banks-and-hospitals>] (National Marrow Donor Program)

## Children

- Stem Cell Transplants (For Parents) [<https://kidshealth.org/en/parents/stem-cells.html>] (Nemours Foundation)  
Also in Spanish [<https://kidshealth.org/es/parents/stem-cells.html>]

## Teenagers

- Stem Cell Transplants (For Teens) [<https://kidshealth.org/en/teens/stem-cells.html>] (Nemours Foundation)  
Also in Spanish [<https://kidshealth.org/es/teens/stem-cells.html>]

## Patient Handouts

- Bone marrow (stem cell) donation [<https://medlineplus.gov/ency/patientinstructions/000839.htm>] (Medical Encyclopedia)  
Also in Spanish [<https://medlineplus.gov/spanish/ency/patientinstructions/000839.htm>]



## MEDICAL ENCYCLOPEDIA

Bone marrow (stem cell) donation [<https://medlineplus.gov/ency/patientinstructions/000839.htm>]

## Related Health Topics

Bone Marrow Transplantation [<https://medlineplus.gov/bonemarrowtransplantation.html>]

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