



## ABOUT THE ALLEN SPINAL CORD ATLAS

The [Allen™ Spinal Cord Atlas](#) is a unique genome-wide map of the juvenile and adult mouse spinal cord detailing gene activity patterns at the cellular level. For scientists conducting spinal cord injury and disease research, the creation of a full picture of gene activity in the normal spinal cord fulfills a long standing scientific need. The data and integrated search and viewing tools are publicly available for free online at [www.brain-map.org](http://www.brain-map.org) to encourage widespread scientific use.

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“The spinal cord is relatively small, compared to the brain, but it is a crucial highway for transmitting signals between the brain and the rest of the body in order to make everything work the way we need it to. It may be small, but can be catastrophic when it becomes broken. The problem is that we know very little about the genes that control different functions in the spinal cord. This mouse spinal cord atlas **will absolutely help researchers advance their work in this area in quantum leaps, and maybe it will help us discover how to make spinal cord patients take leaps of their own.**”

-Jane Roskams, Ph.D., Associate Professor at the Brain Research Center and iCord  
University of British Columbia

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## IMPLICATIONS

The mouse is a well-established model for the study of human diseases. The mouse shares approximately 90 percent of genes and the basic structural and functional architecture of the nervous system with humans. The Allen Spinal Cord Atlas, therefore, provides researchers and clinicians with an expanded foundation of knowledge to discover new treatments for numerous diseases and disorders, including:

- **Amyotrophic Lateral Sclerosis (ALS) or Lou Gehrig's Disease**—affects an estimated 30,000 Americans ([The ALS Association](#))
- **Multiple Sclerosis (MS)** – affects an estimated 2.5 million people worldwide. In the US more than 200 people are diagnosed every week ([National MS Society](#))
- **Spinal Cord Injury** – up to 400,000 Americans are currently living with a spinal cord injury ([National Spinal Cord Injury Statistical Center - NSCISC](#));
- **Spinal Muscular Atrophy (SMA)** – approximately 1 in 35 to 40, or 7 million, Americans are carriers of SMA. It is estimated that 1 in 6,000 or 1 in 10,000 infants worldwide are born with SMA every year ([Spinal Muscular Atrophy \(SMA\) Foundation](#))

## SCIENTIFIC MODEL

The Allen Institute employs a high-throughput model, collecting data using an assembly line approach. The combination of laboratory robots, automated imaging devices and high-powered computational systems enables the generation of data on an unprecedented scale. The Allen Spinal Cord Atlas was produced using a process called *in situ* hybridization, which stains specific areas where a gene is expressed or “turned on.” A series of thin tissue sections spaced evenly throughout the length of the juvenile and adult mouse spinal cords were analyzed, allowing scientists to view where each gene is active in the spinal cord, down to the level of individual cells. Digital photographs were obtained using automated microscopes and incorporated into free, Web-based viewing applications.

## KEY ATLAS FEATURES

- Free, public online access with no registration requirement.
- Image-based data comprising genome-wide coverage (approximately 17,000 genes).
- Microscopic resolution down to the cellular level.
- Data from both juvenile and adult developmental stages.
- Surveys across the full length of the spinal cord.
- Detailed anatomic reference atlas of the adult mouse spinal cord that can be viewed along with the data.

## HOW IT WILL BE USED BY THE COMMUNITY

A large group of scientists throughout the research community use the Atlas to advance understanding of the spinal cord in health and disease. The atlas provides an essential normal baseline for comparison with models of spinal cord injuries and diseases found in humans, thereby expediting the search for the cause of specific diseases and promising therapeutic targets for new drug development.

## FUNDING

This project was made possible through the Institute's unique funding model designed to transform public, private and foundation funds into open community resources that fuel a diversity of breakthrough scientific discoveries. Generous donors include:

- [The ALS Association®](#)
- [Paralyzed Veterans of America Research Foundation™](#)
- [Wyeth™ Research](#)
- [PEMCO™ Insurance](#)
- [National Multiple Sclerosis Society®](#)
- [International Spinal Research Trust™, UK](#)
- Philanthropist [Paul G. Allen](#)
- Other anonymous donors

## WEB SITES

To learn more about the Allen Institute, visit [www.alleninstitute.org](http://www.alleninstitute.org). To access the Allen Mouse Spinal Cord Atlas and other public resources from the Allen Institute, visit [www.brain-map.org](http://www.brain-map.org).

## MEDIA CONTACT

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