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Medical Innovation Leads to Therapies

A. Alfred Taubman Medical Research Institute

Eva L. Feldman, M.D., Ph.D.

Russell N. DeJong Professor of Neurology

Director of the A. Alfred Taubman Medical Research Institute
University of Michigan Health System

Brookings Institute
June 8, 2010

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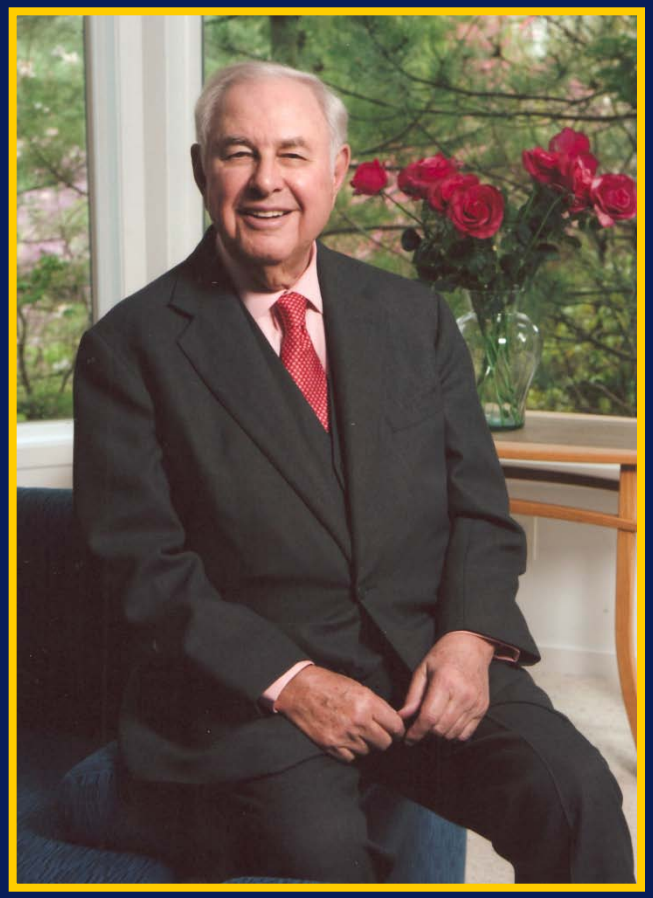
Mission of the A. Alfred Taubman Medical Research Institute

To provide the University of Michigan's finest medical scientists the freedom, resources and collaborative environment they need to push the boundaries of medical discovery, to produce breakthroughs in cures and treatment of disease and ultimately to alleviate human suffering.



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The A. Alfred Taubman Medical Research Institute

- **Launched in fall 2007 at the University of Michigan Medical School**
- **Funded with a generous endowment by A. Alfred Taubman**

- **Provides grant money for the research of leading U-M clinician scientists**
- **Supports “high risk, high reward” research that will lead to transformational discoveries in our understanding and treatment of disease.**

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The Unique Focus of the Institute

- **We support the work of physician scientists with active clinical practices.**
- **We fund research on a wide variety of diseases.**
- **We concentrate on translational research, which will lead from laboratory studies to clinical application as effectively and efficiently as possible.**
- **We provide funding for the last steps and most difficult steps – securing FDA approval for clinical trials**

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In less than 2 ½ years,

The Taubman Institute has lived up to Alfred Taubman's vision, fostering innovation that moves us closer to new treatments and cures:

- **122 publications in leading scientific journals with the initiation of five clinical trials**
- **Three clinical trials targeting human cancer stem cells**
- **A clinical trial for children with chemotherapy resistant neuroblastoma**

- **January 19, 2010, we began the first human clinical trial of direct intraspinal injections of stem cell in ALS**

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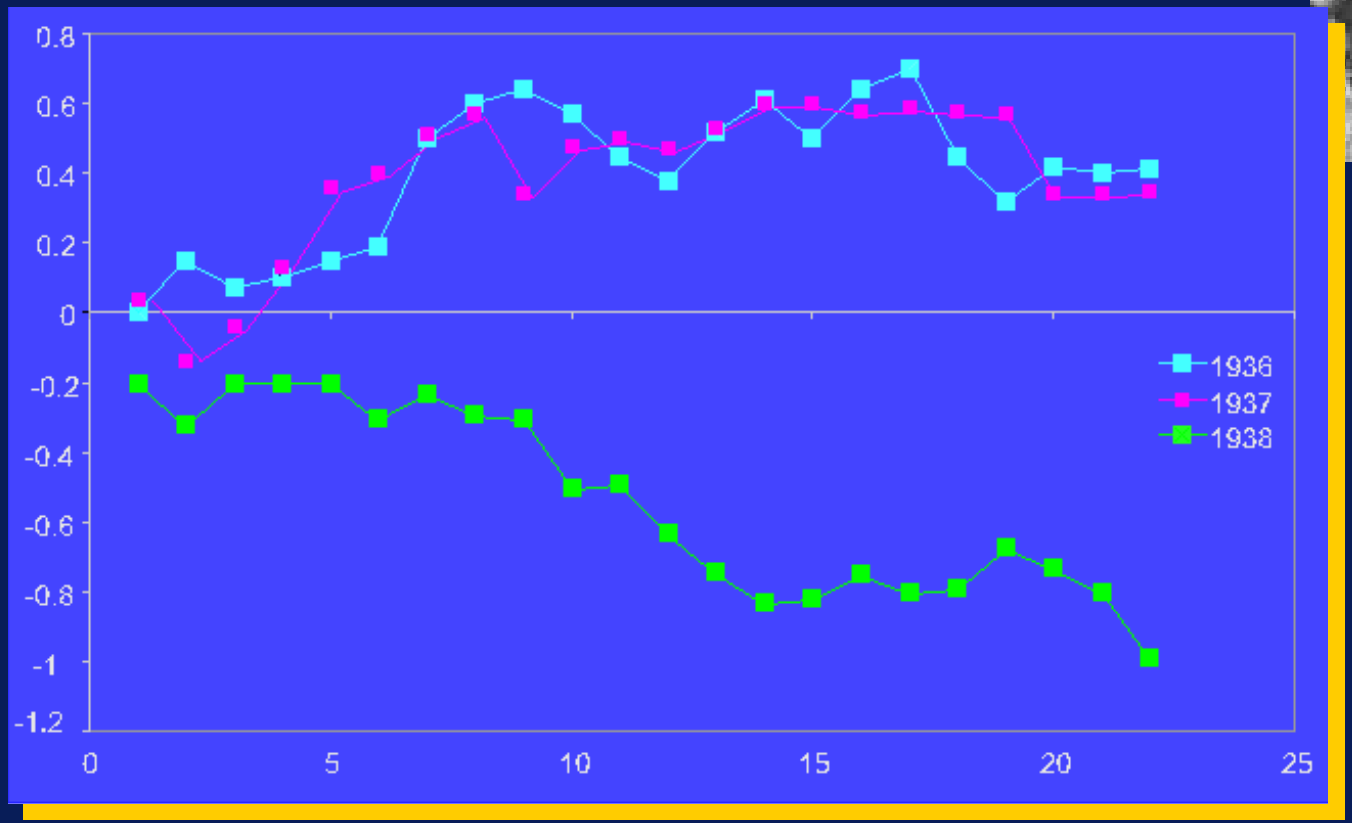
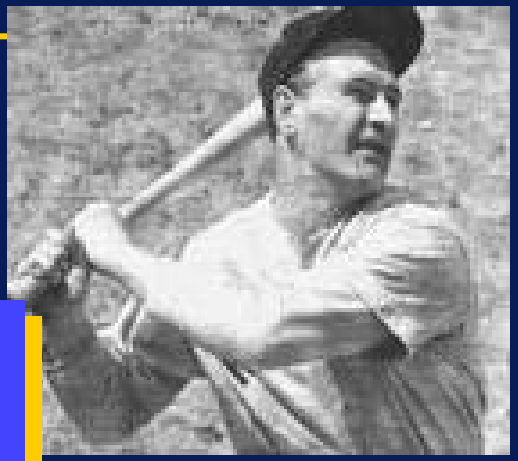
Lou Gehrig's Batting Averages Fall

Analysis of Gehrig's batting average on a week-by-week basis





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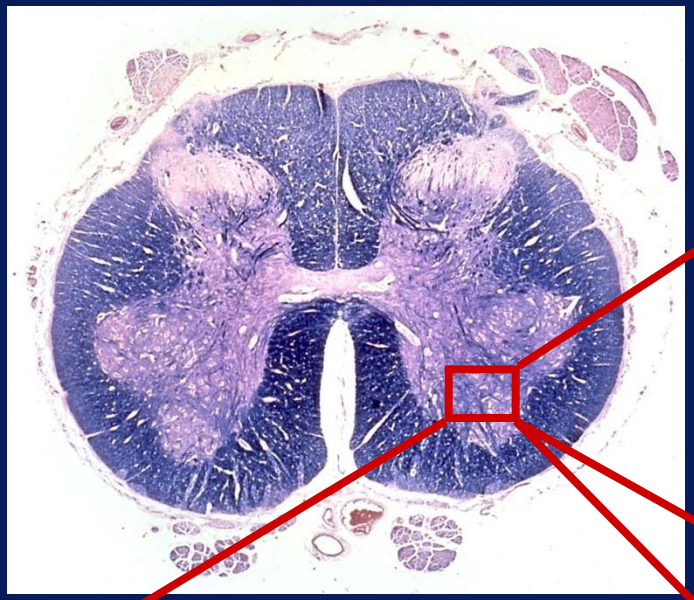
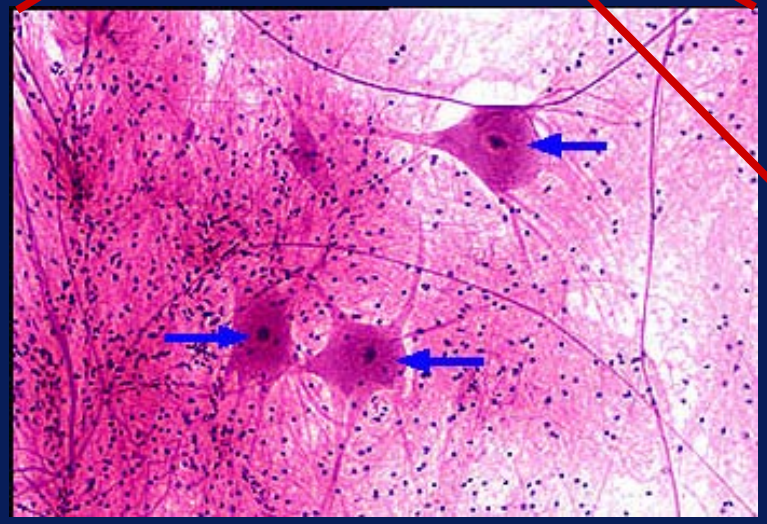
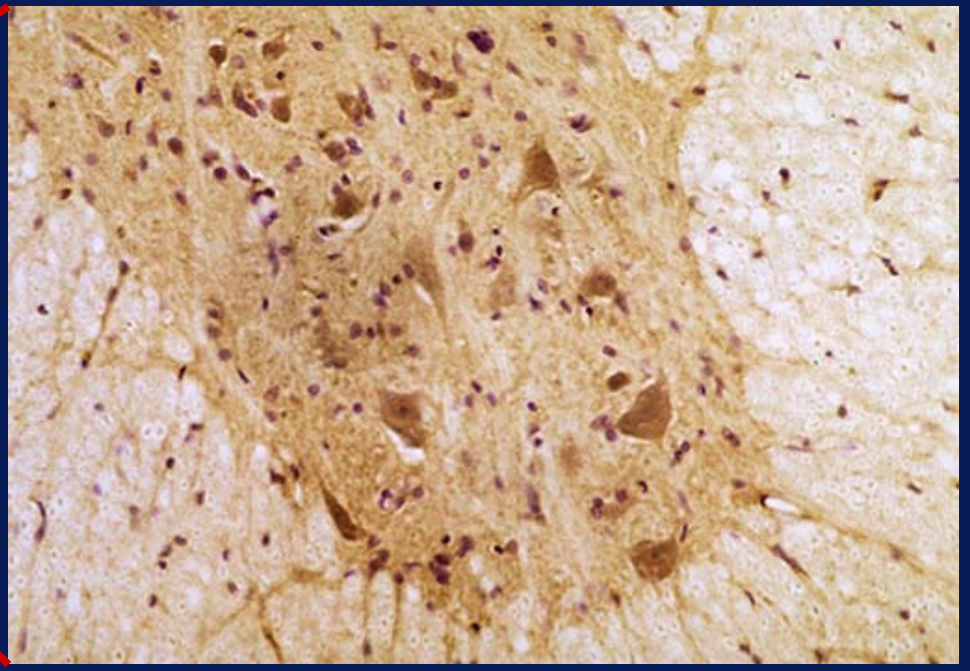
Brain and Spinal Cord Motor Neurons Die in ALS







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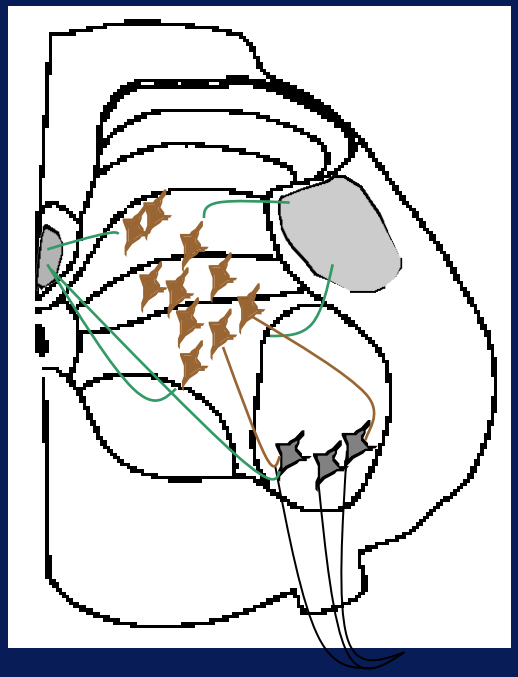
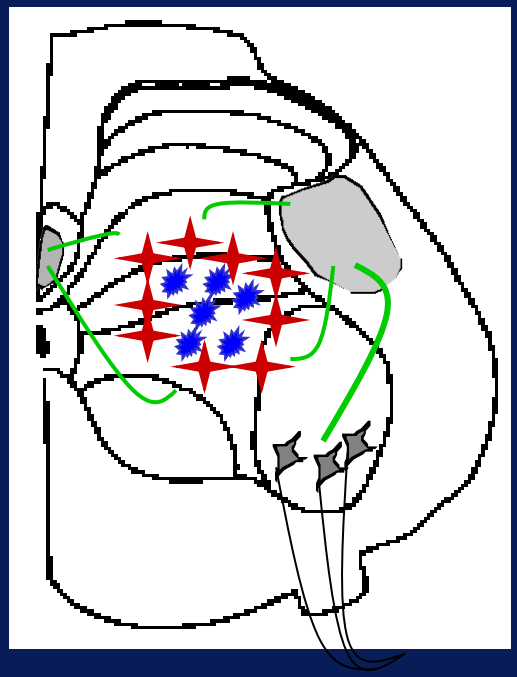
Strategy for Cell Replacement Therapy in ALS

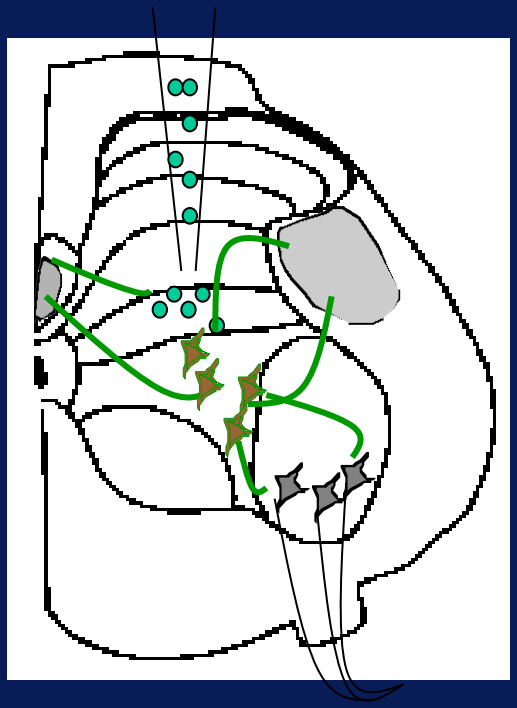
Control



ALS



Cell grafting



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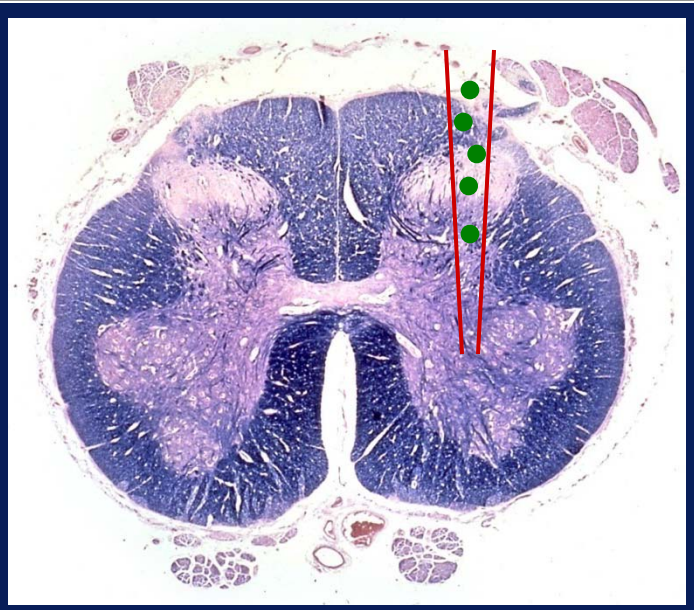
Technique for Spinal Stem Cell Grafting in ALS



Stem cells into spinal cord

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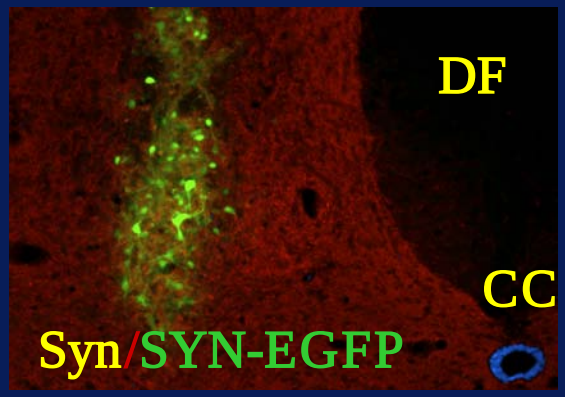
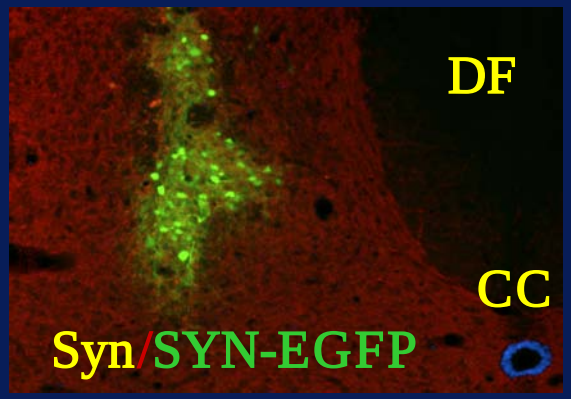
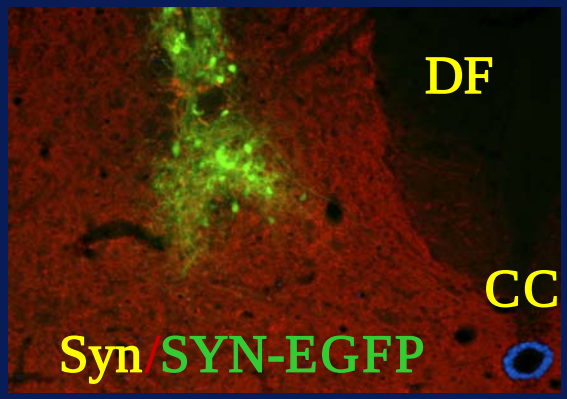
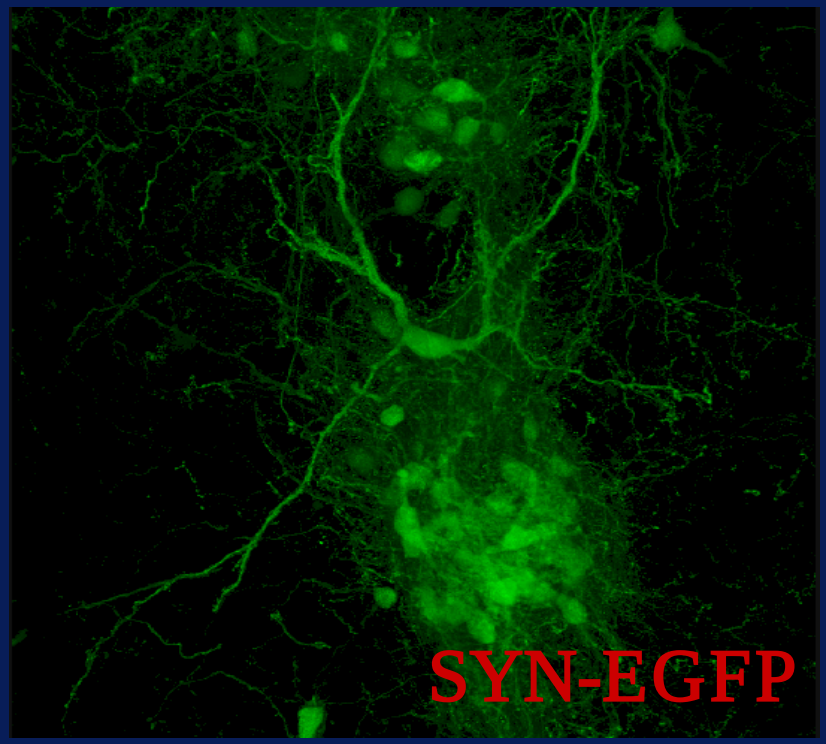
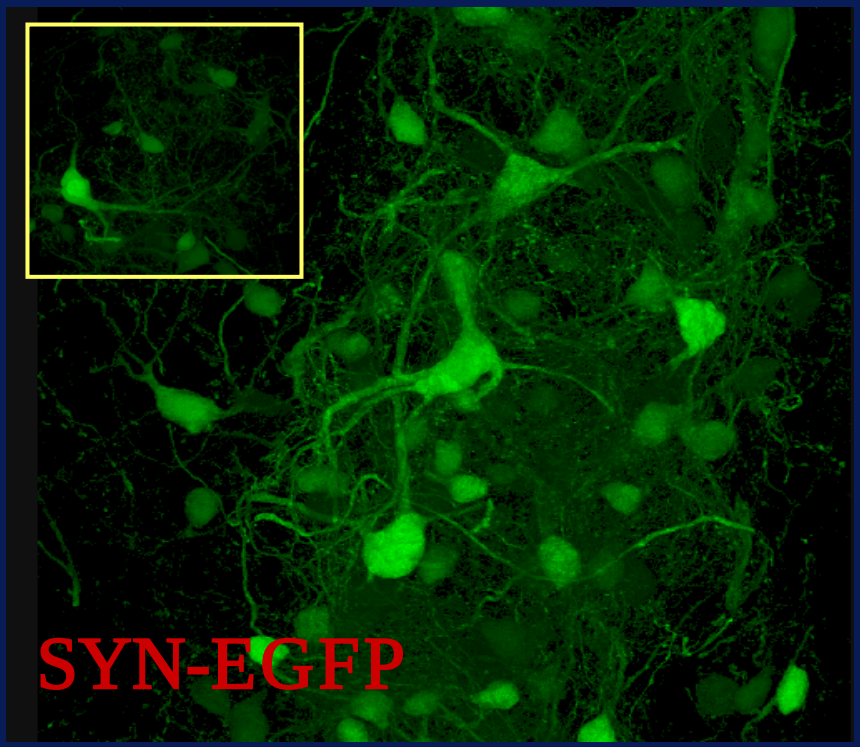
Survival and Maturation of Green-Labeled Stem Cells in ALS After Grafting











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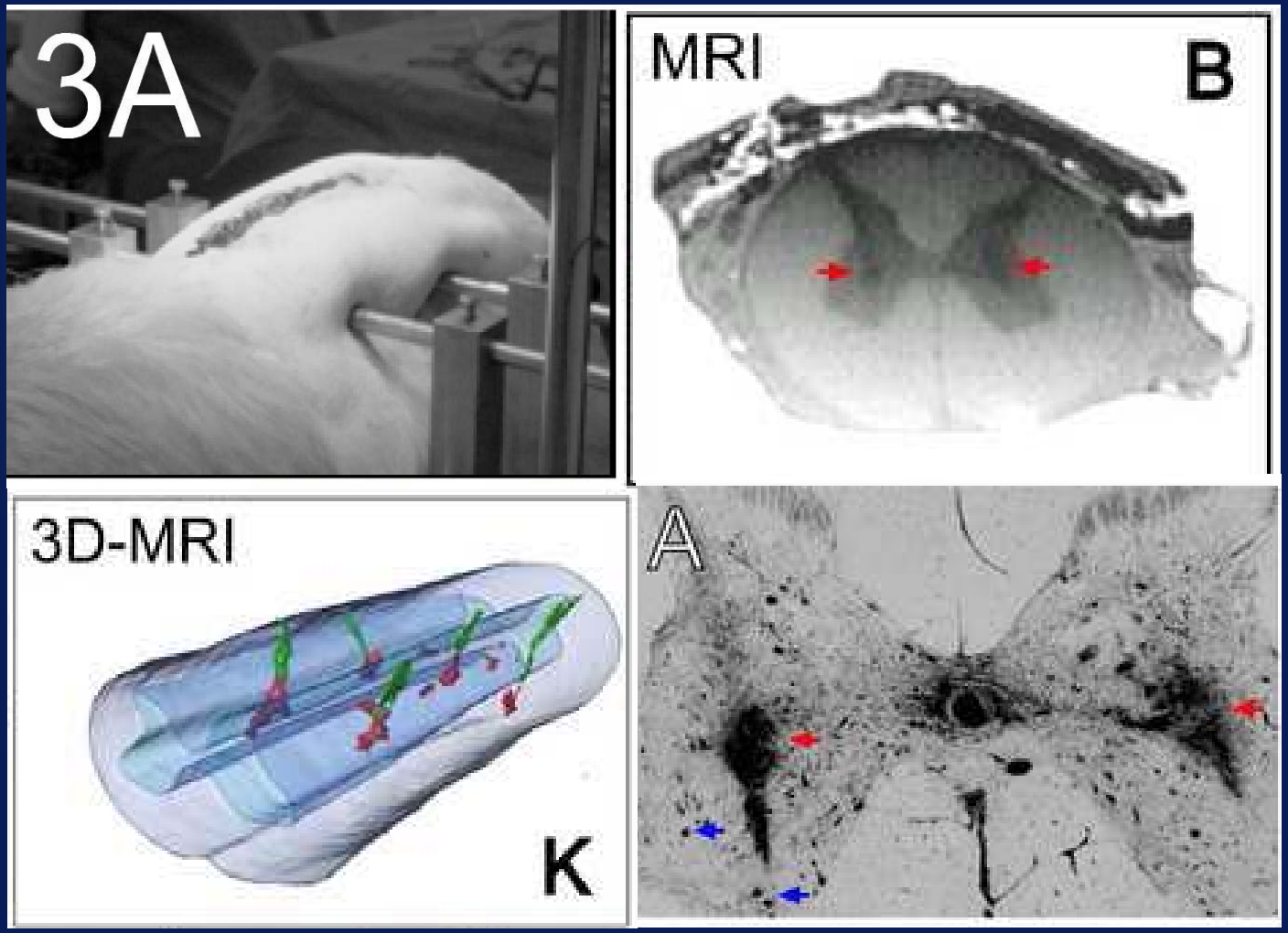
Survival and Maturation of Iron-Labeled Stem Cells in Mini-pigs After Grafting



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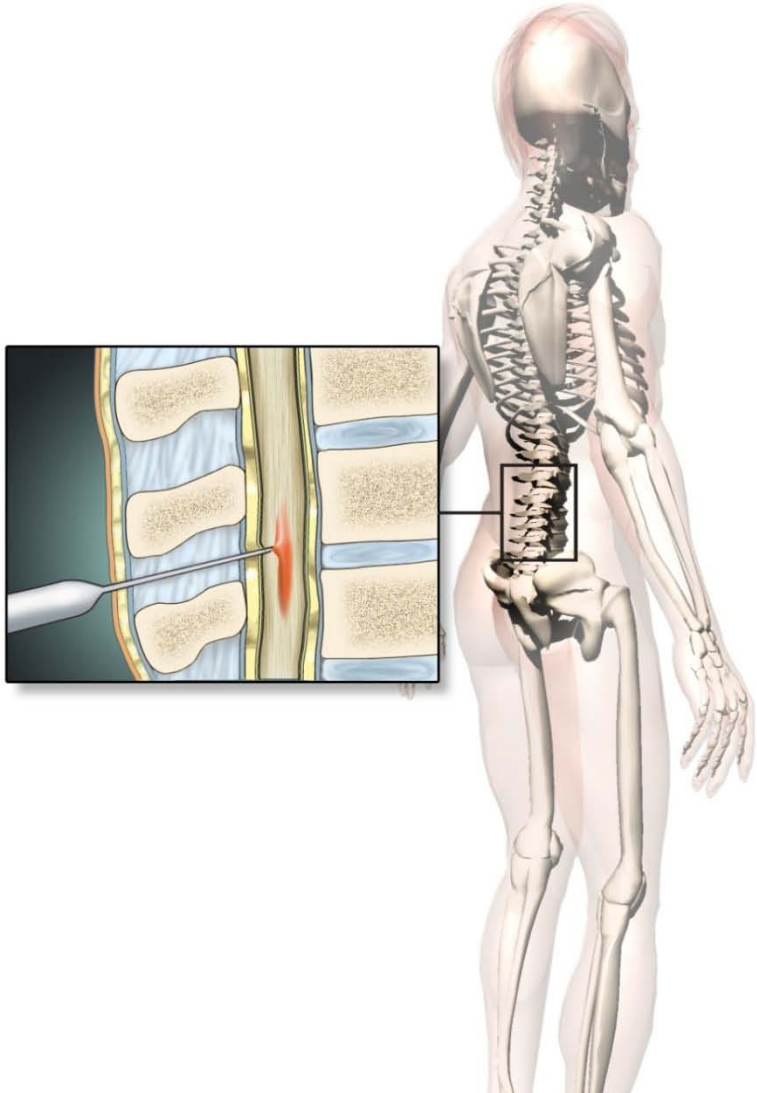
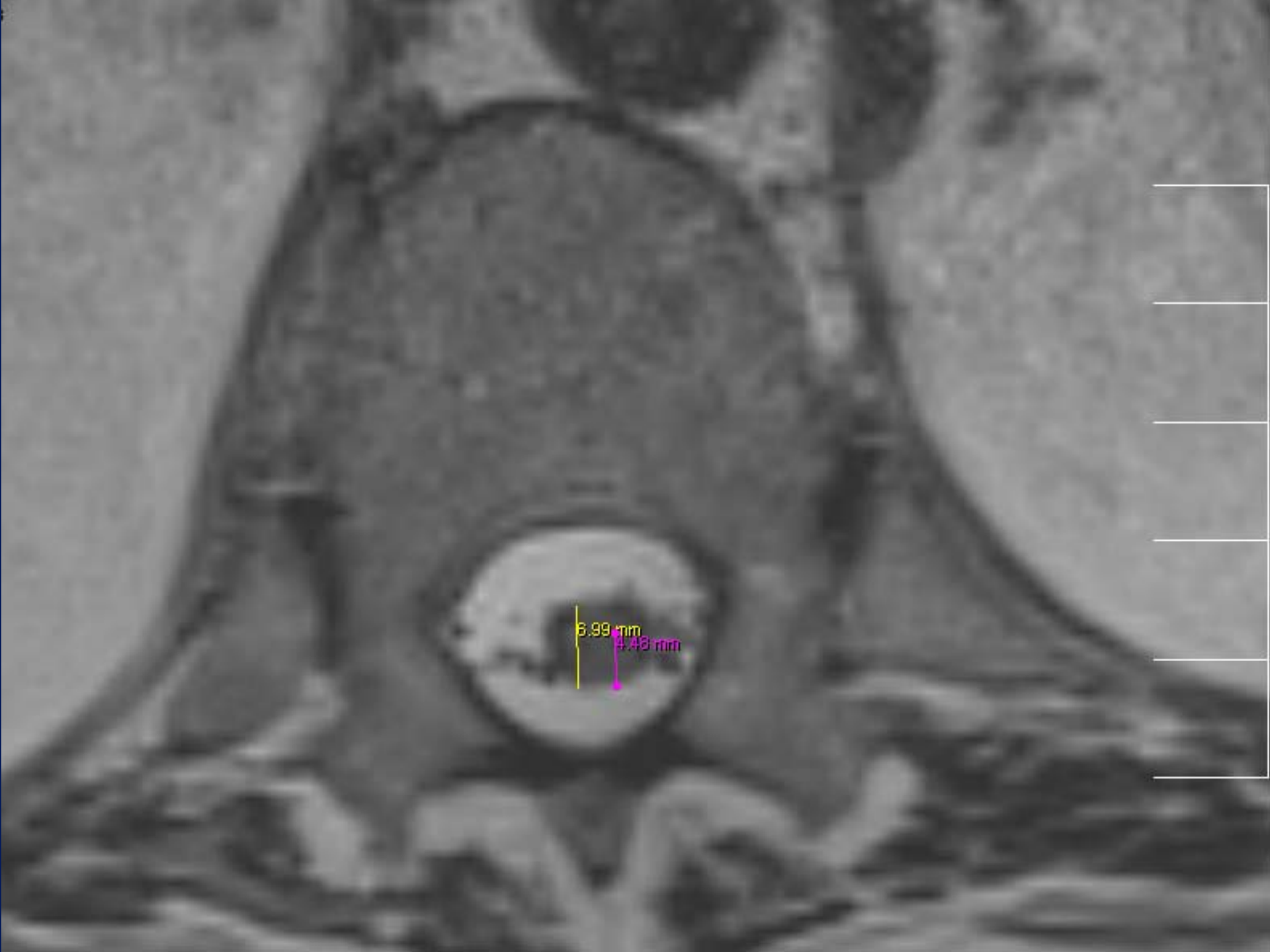
Stem Cells as Therapy in ALS



- **FDA Phase 1 safety trial**
- **18 patients with ALS**
- **Initial patients with severe leg weakness**
- **Progressively less affected patients**
- **Initial unilateral injections to bilateral injections of neural stem cells**


HAR
56.91 mm


6.99 mm
4.48 mm


LEFT


LUXTEC

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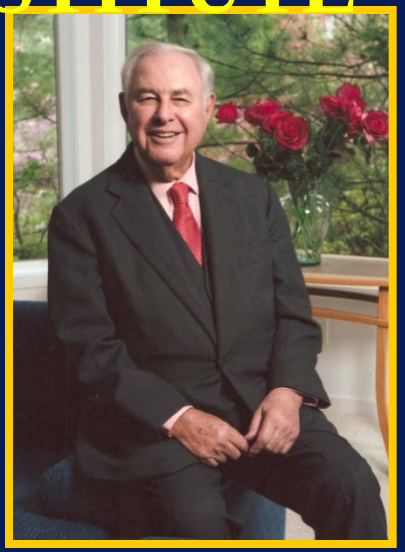
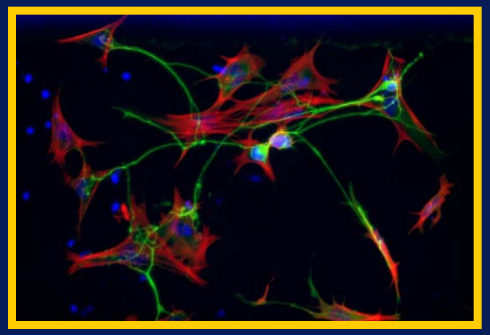
MEDICAL RESEARCH INSTITUTE





"Where scientists create cures"

www.taubmaninstitute.org

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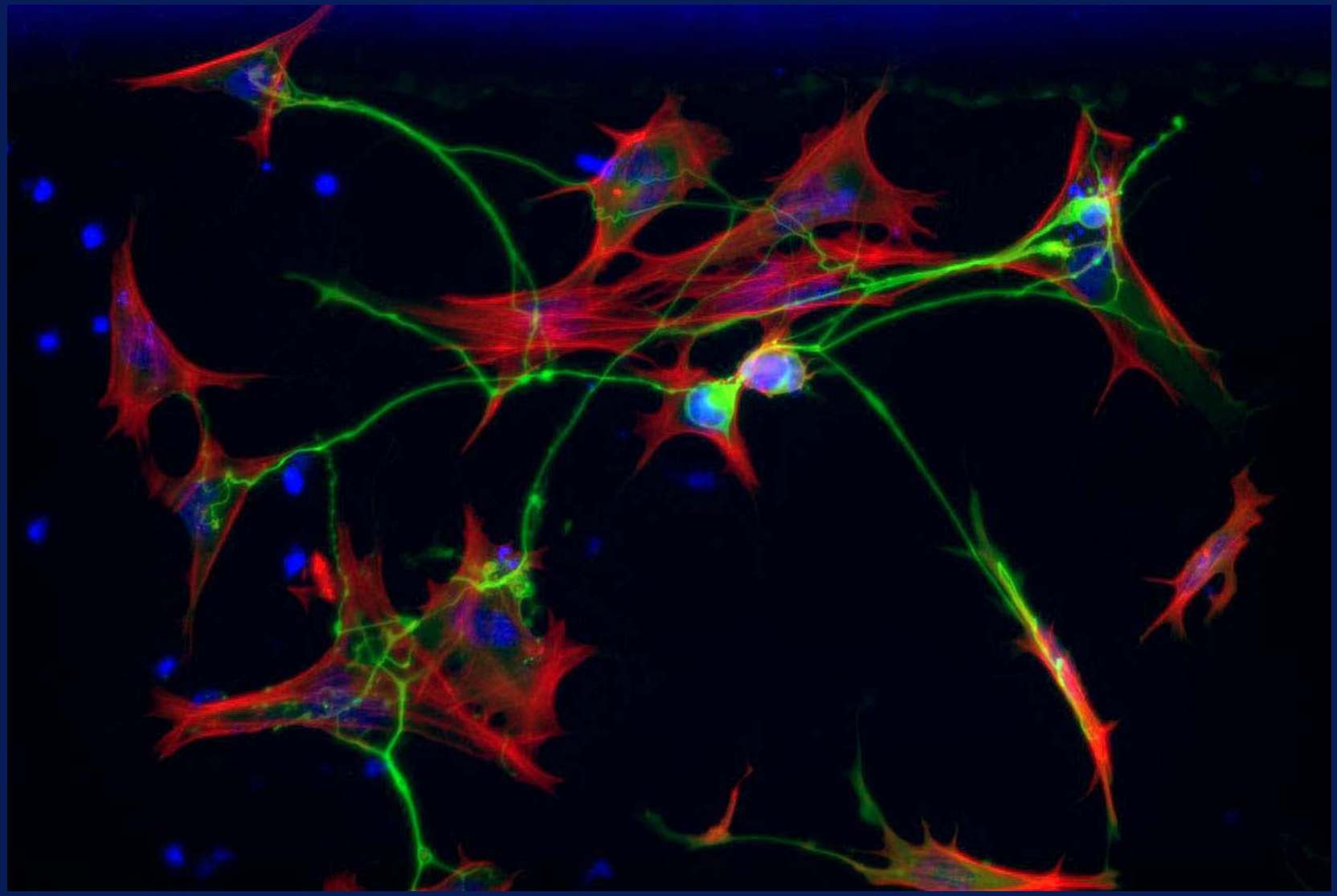
Maturation of Stem Cells into Neurons

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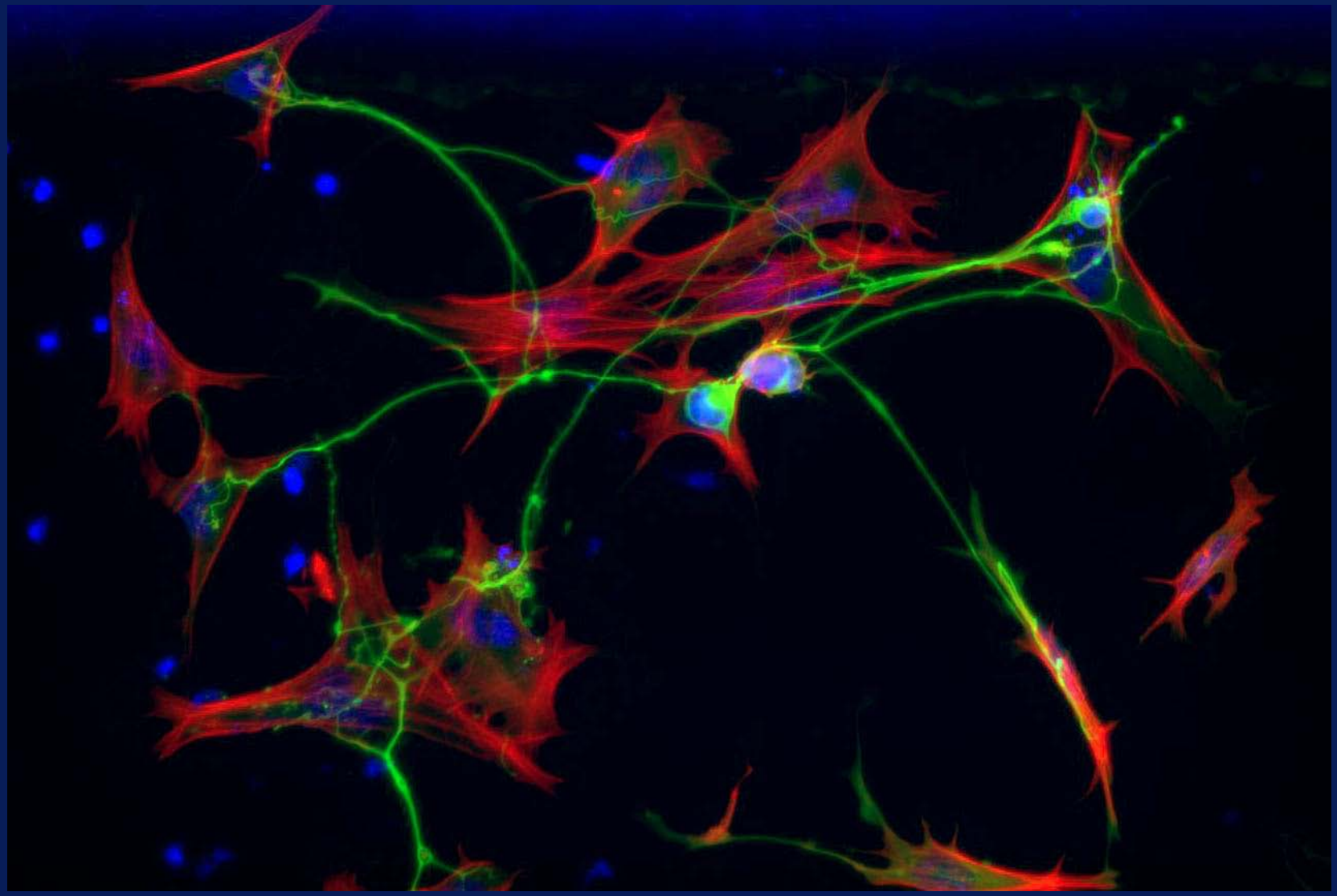
Maturation of Stem Cells into Neurons



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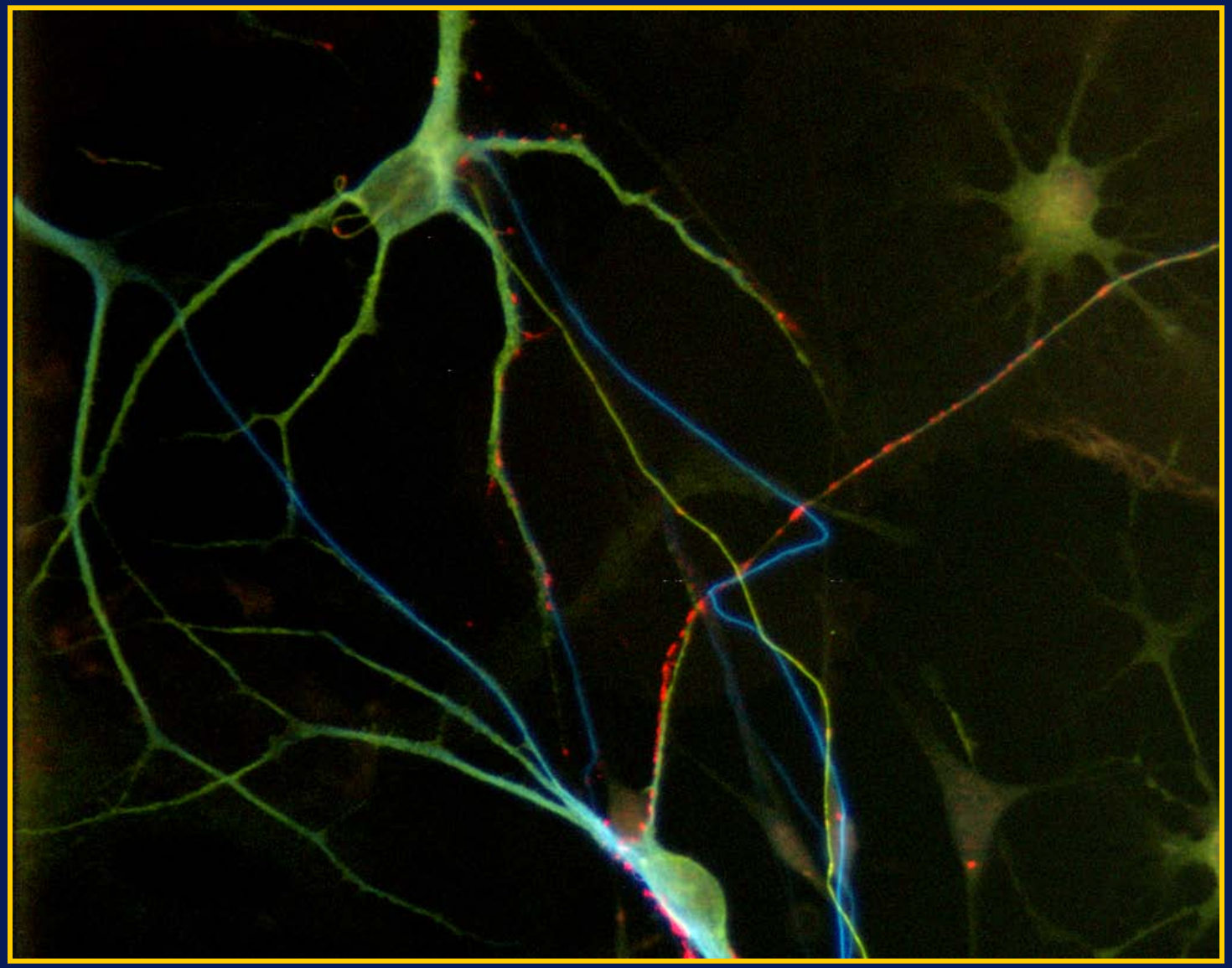
Maturation of Stem Cells into Neurons



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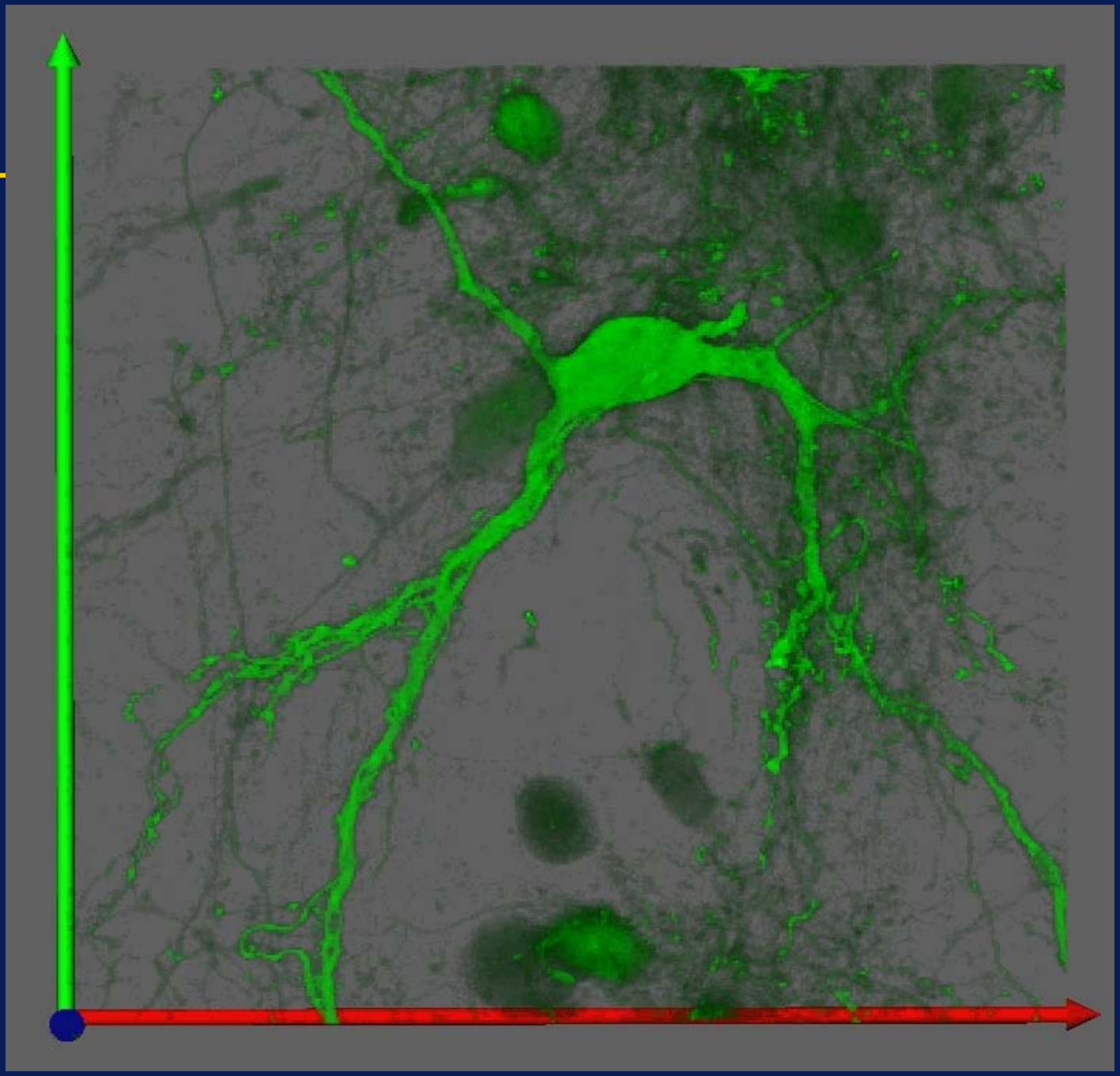

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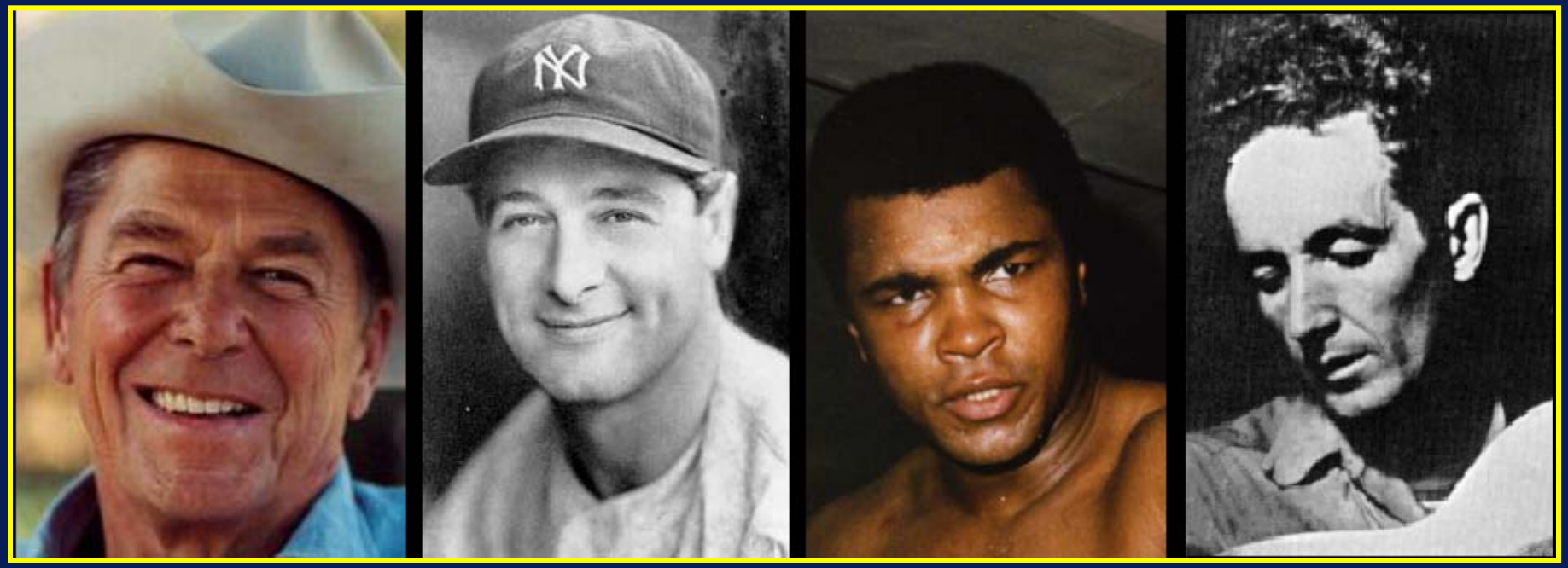
Stem Cells as Therapies in Neurology

- **On 9/17/2009, we received FDA approval to complete transplantation of stem cells into the spinal cords of patients with amyotrophic lateral sclerosis**
- **Begins a new era of therapies for neurology**




kVp
112
FLUORO
49
mA/mAs
4.2

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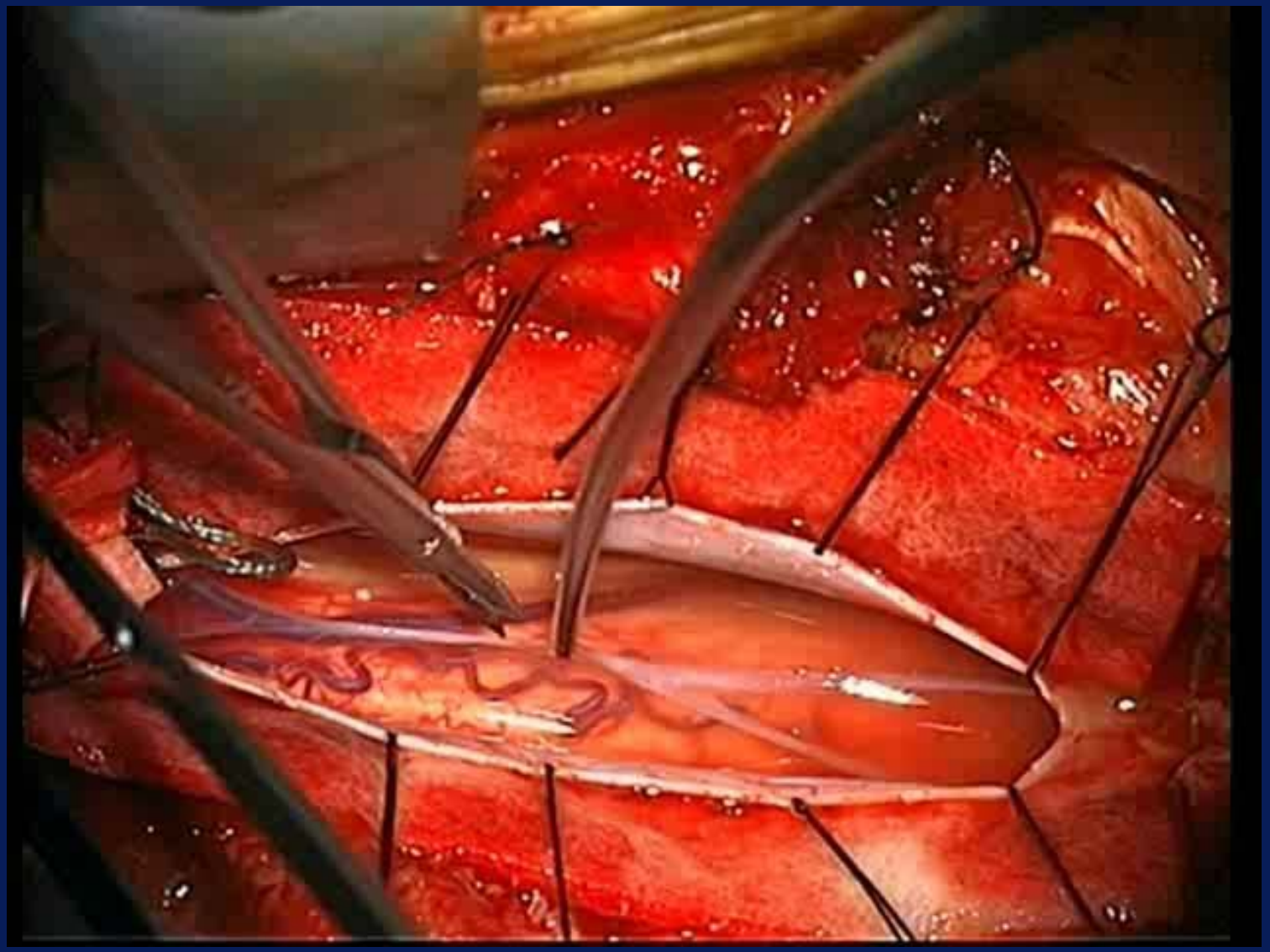
Step 1: Expose the Spinal Cord



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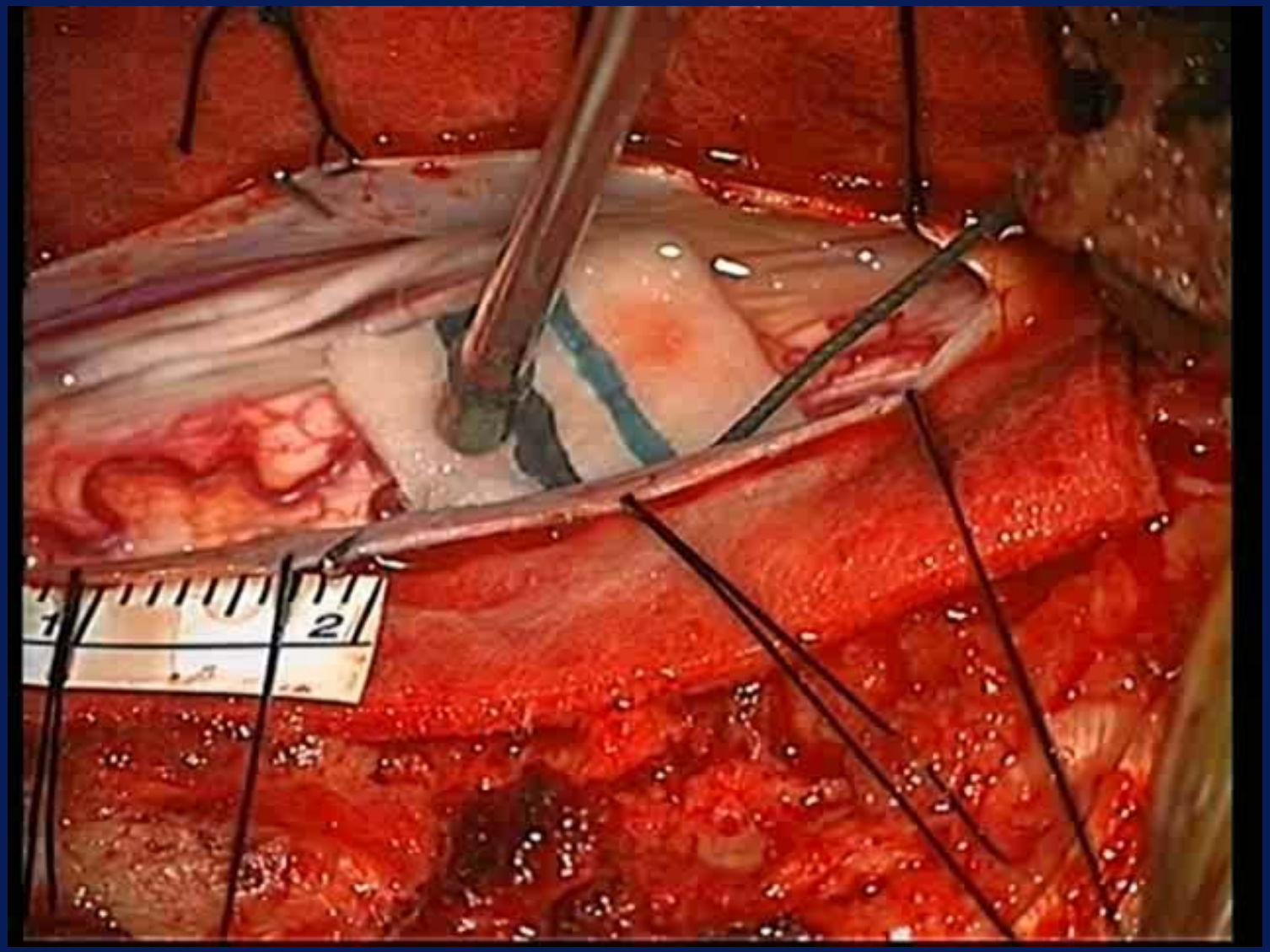
Step 2: Confirm Position for Injection



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Step 3: Inject Stem Cells