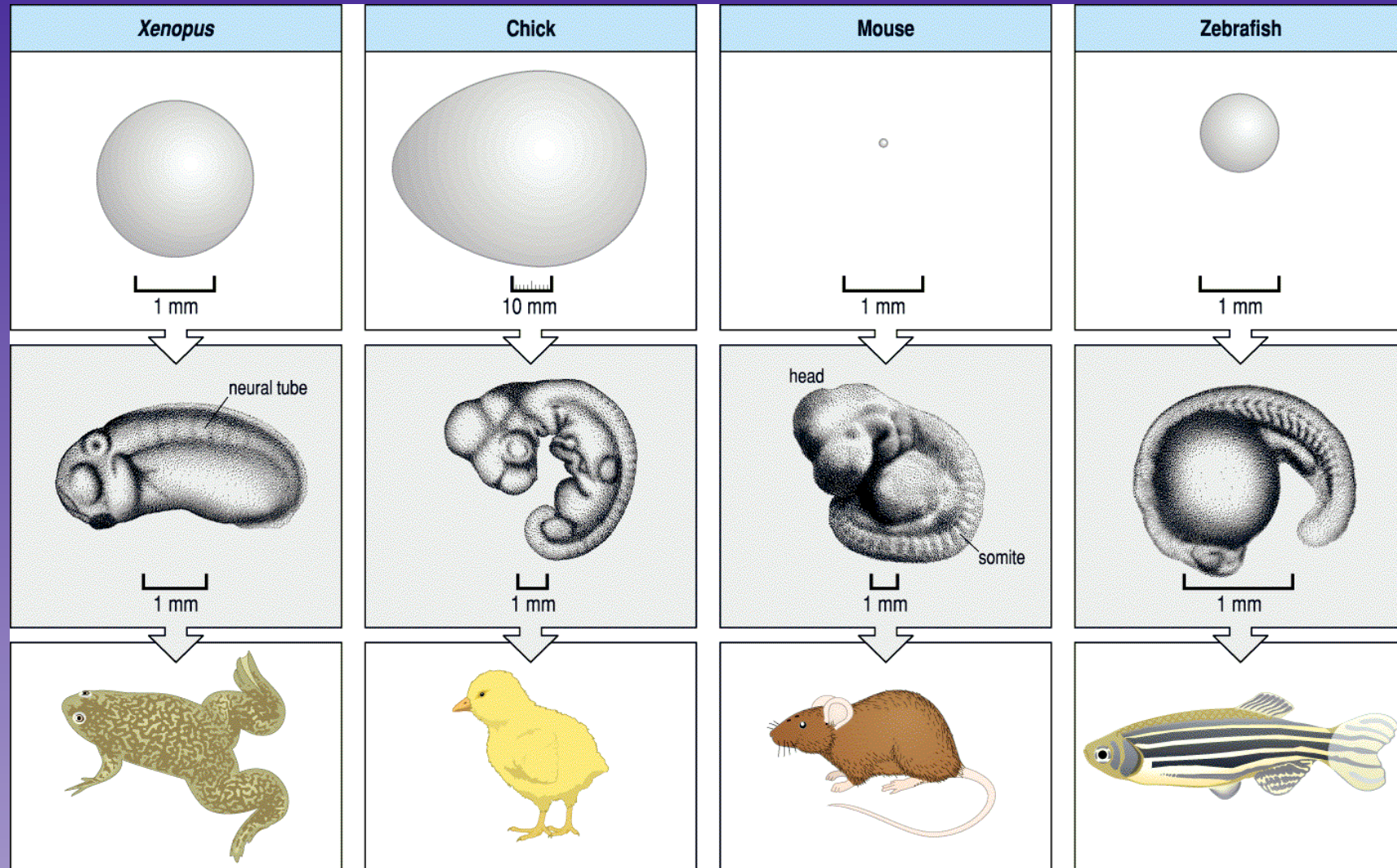
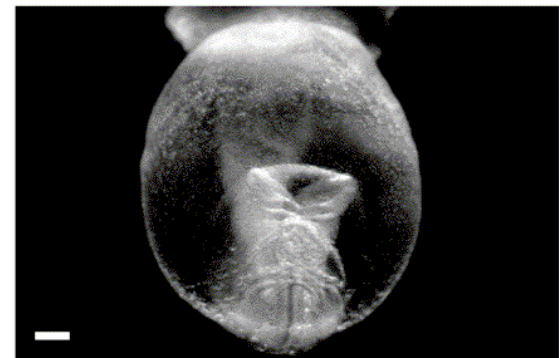
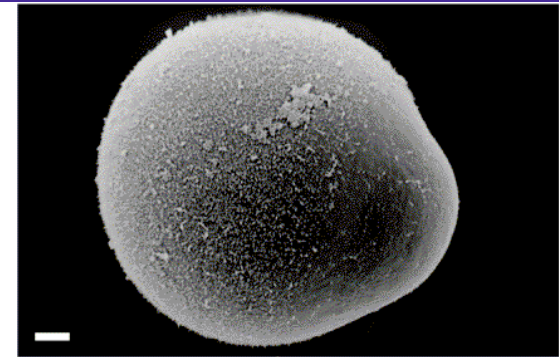
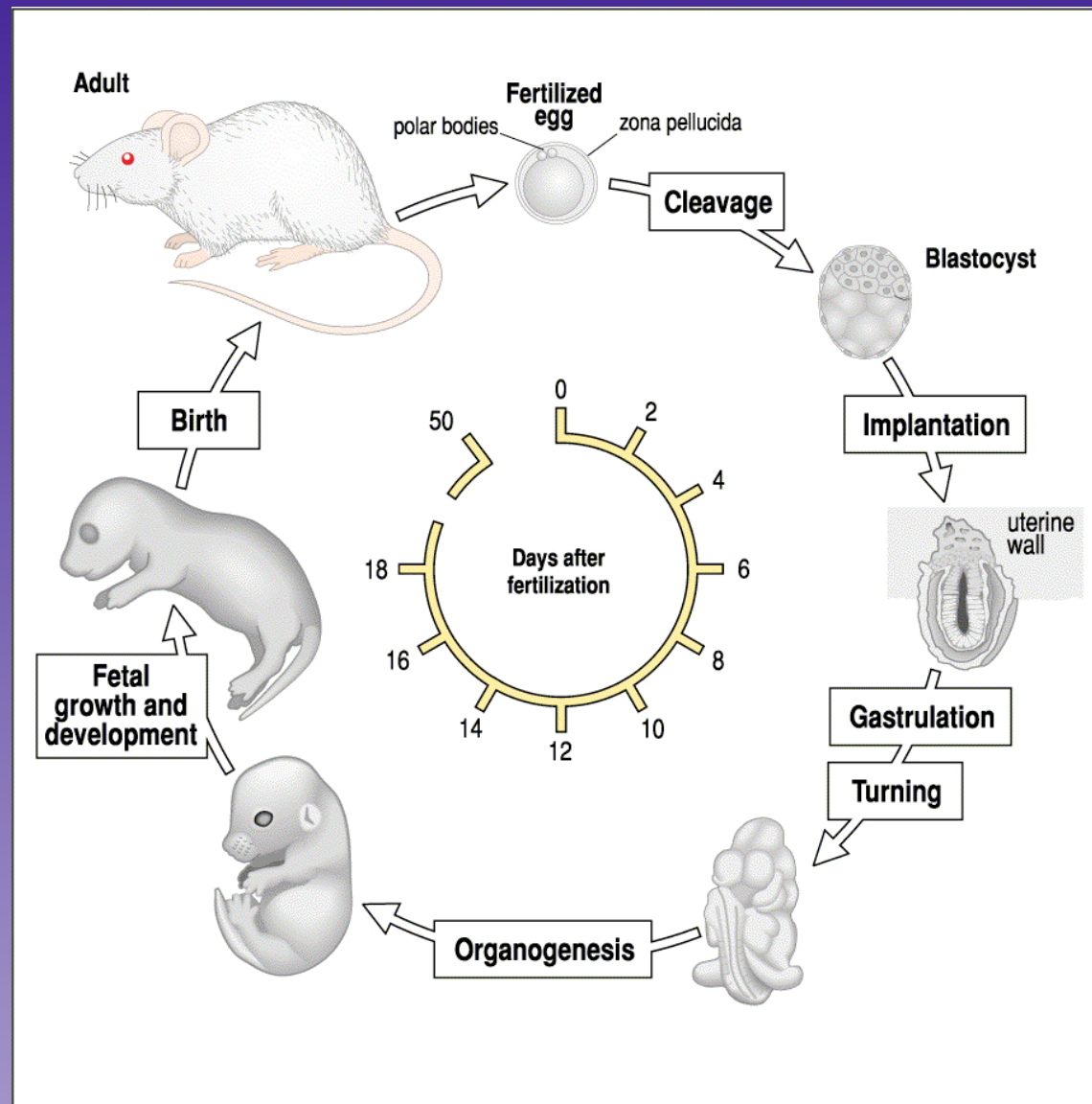
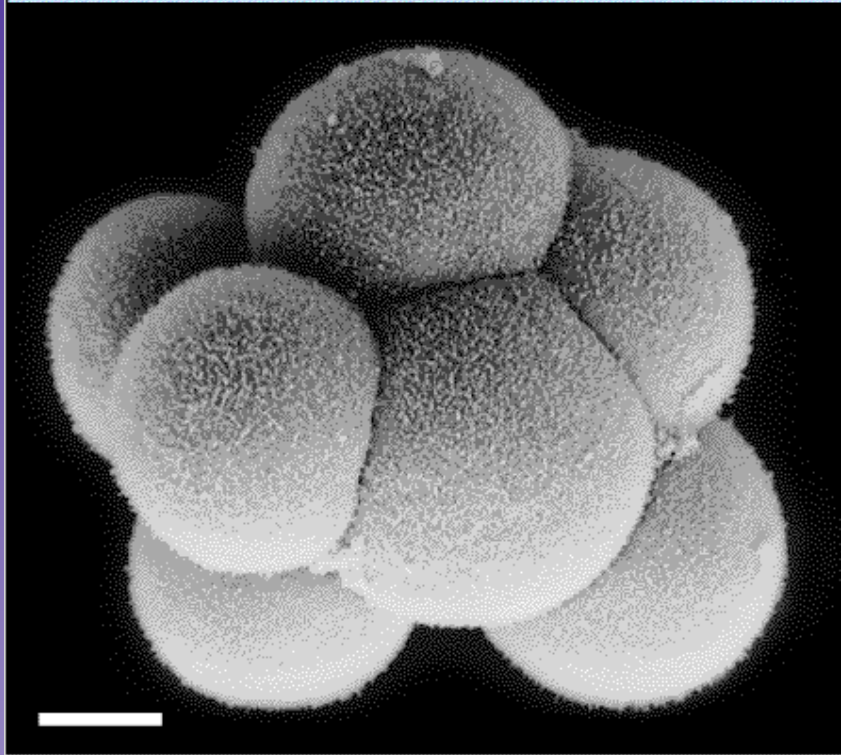


All animals and plants are generated from similar individuals

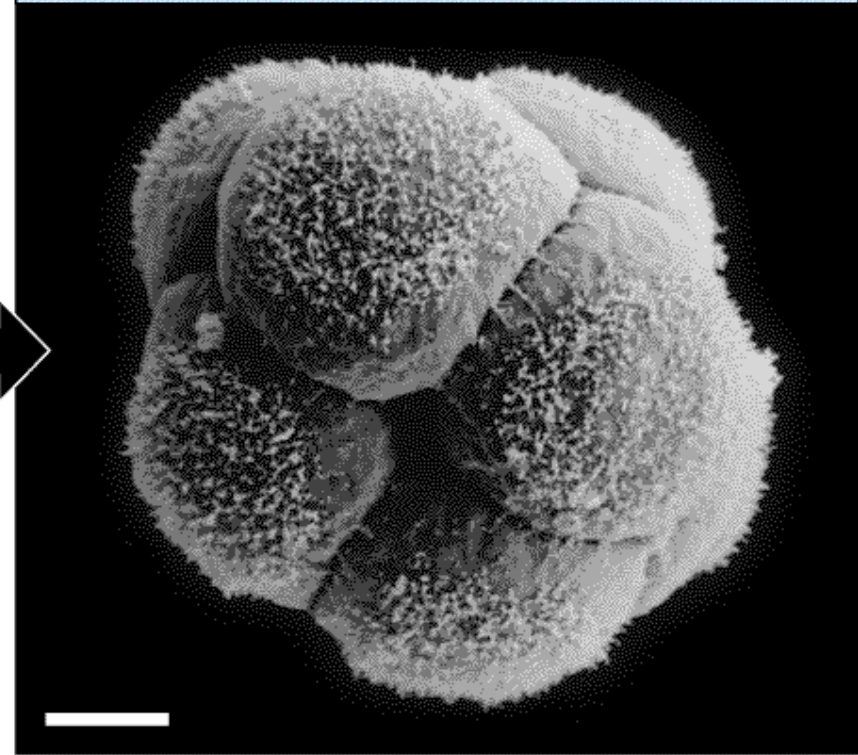




Eight-cell stage



Compaction



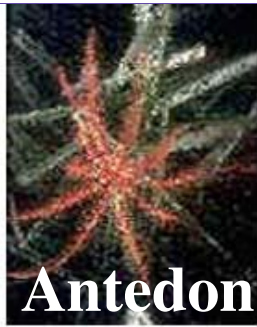
Lewis Wolpert:

- It is not birth or marriage, but gastrulation that is truly the most important moment of your life

La rigenerazione nella scala evolutiva



Planaria



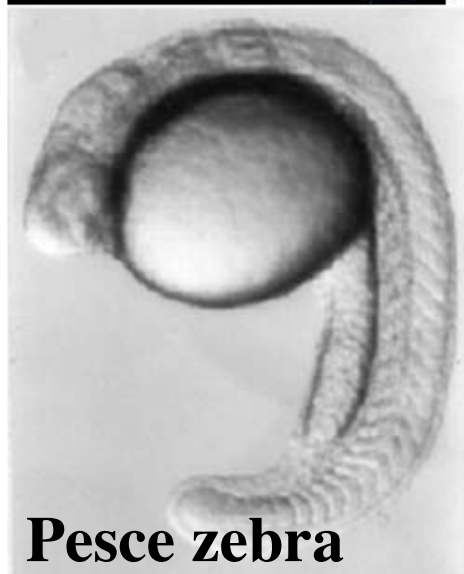
Antedon



Salamandra



Rana



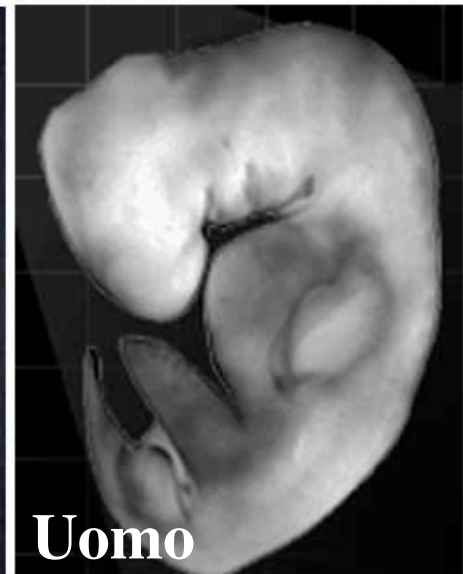
Pesce zebra



Pollo

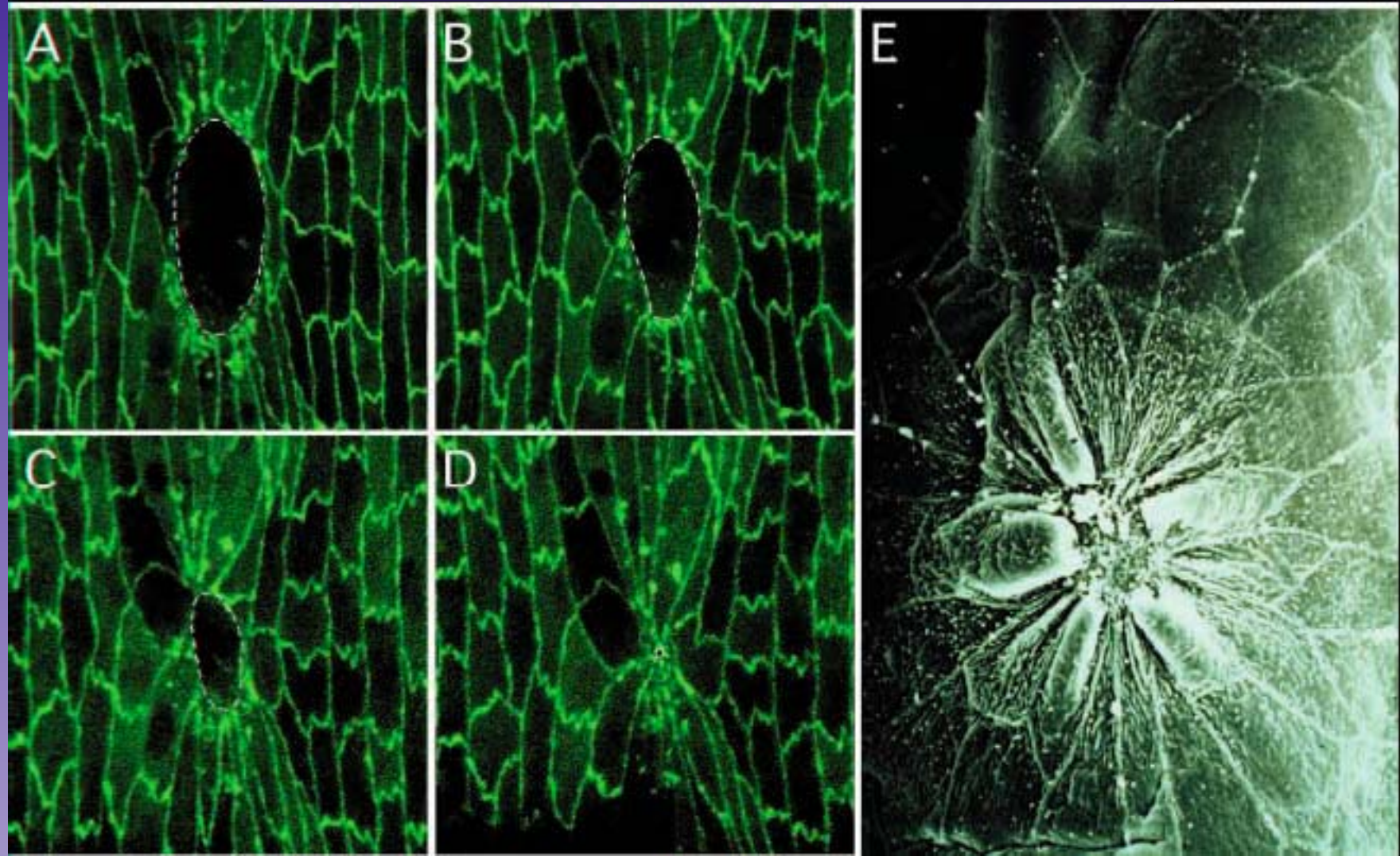


Topo



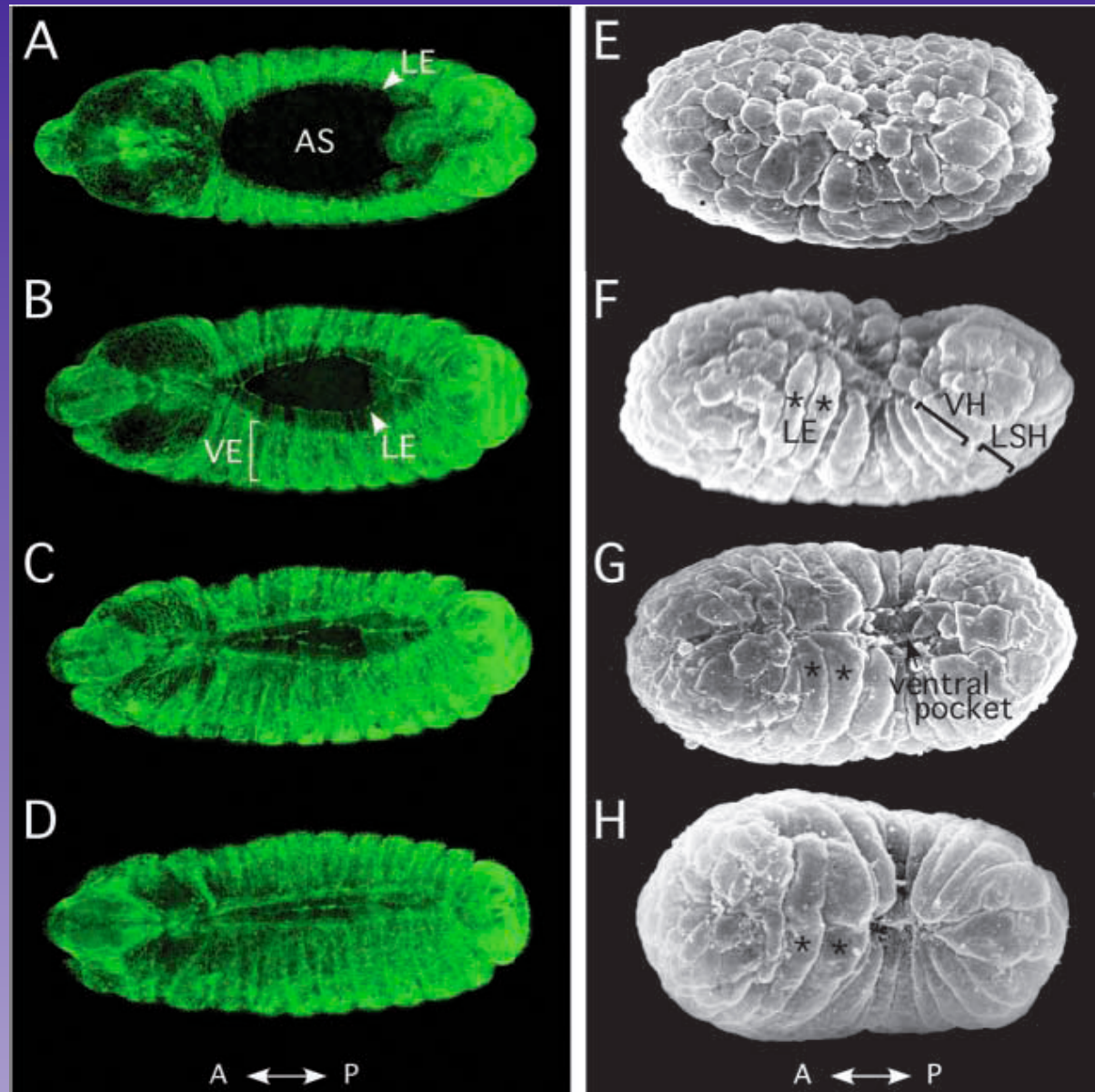
Uomo

La rigenerazione ricapitola in genere il corrispondente processo di sviluppo embrionale



Una lesione dell'epidermide di *Drosophila* si rimargina

La naturale chiusura dell'epidermide nell'embrione di *Drosophila*



Come possiamo riparare i nostri organi o ricostruirne di nuovi ?

a. Imparando dalle Planarie

b. Studiando le nostre cellule staminali e costruendo organi artificiali con biomateriali

Neuron, Vol. 28, 31–40, October, 2000, Copyright 2000 by Cell Press

Induction of Midbrain Dopaminergic Neurons from ES Cells by Stromal Cell–Derived Inducing Activity

Hiroshi Kawasaki,* Kenji Mizuseki,*
Satomi Nishikawa,† Satoshi Kaneko,‡
Yoshihisa Kuwana,§ Shigetada Nakanishi,‡
Shin-Ichi Nishikawa,† and Yoshiki Sasai*^{k#}

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TECHNICAL REPORTS

Efficient generation of midbrain and hindbrain neurons from mouse embryonic stem cells

Sang-Hun Lee^{1†}, Nadya Lumelsky^{1†},
Lorenz Studer^{1,2}, Jonathan M. Auerbach¹,
and Ron D. McKay^{1*}

© 1999 Nature America Inc. • <http://biotech.nature.com>

RESEARCH

Induction of a midbrain dopaminergic phenotype in *Nurr1*-overexpressing neural stem cells by type 1 astrocytes

Joseph Wagner¹, Peter Åkerud^{1†}, Diogo S. Castro^{2†}, Pontus C. Holm¹, Josep M. Canals^{1,4}, Evan Y. Snyder³, Thomas Perlmann², and Ernest Arenas^{1*}

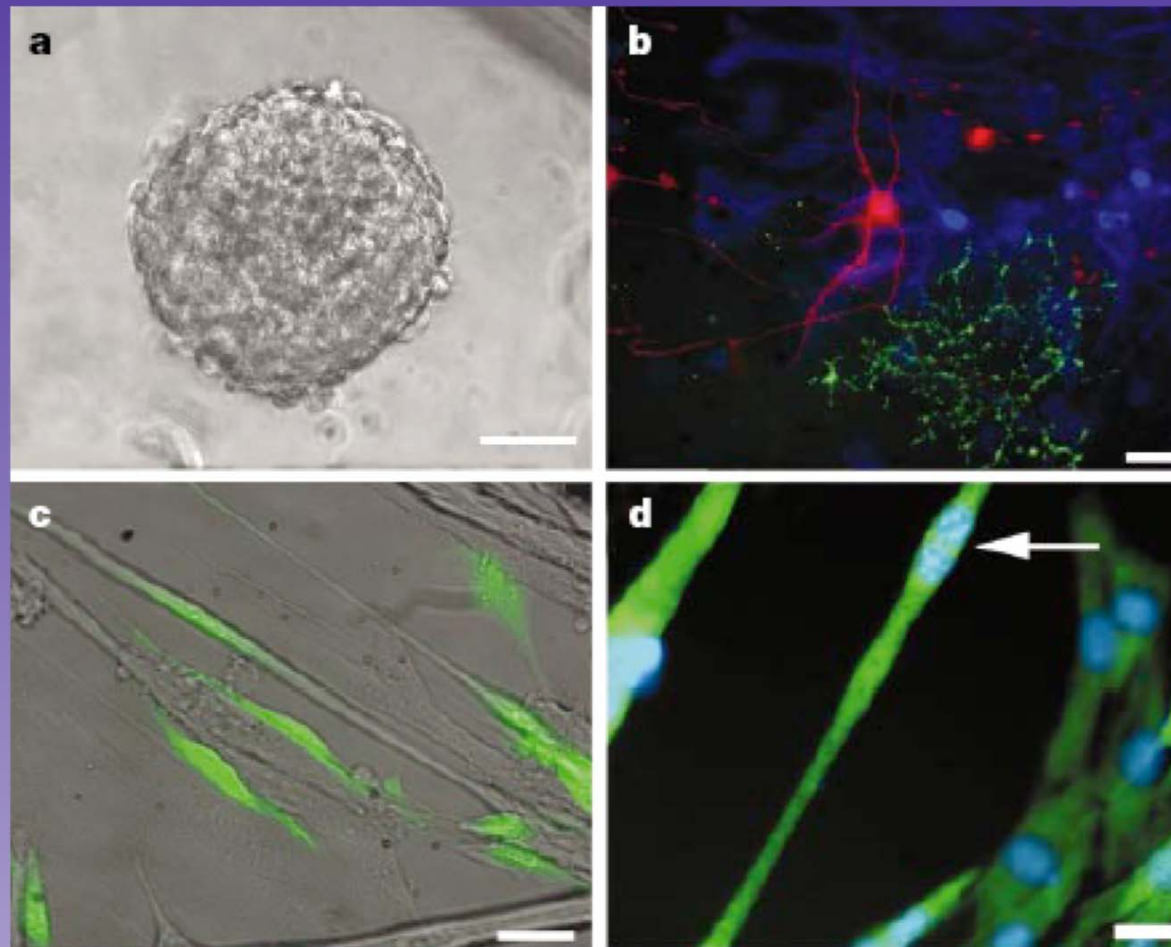
PNAS | December 19, 2000 | vol. 97 | no. 26 | 14686-14691

Neurobiology

In vivo induction of massive proliferation, directed migration, and differentiation of neural cells in the adult mammalian brain

James Fallon*, Steve Reid*, Richard Kinyamu*, Isaac Opole*,
Rebecca Opole*, Janie Baratta*, Murray Korc, Endo*,
Alexander Duong*, Gemi Nguyen*, Masoud Karkehabadhi*,
Daniel Twardzik[□], and Sandra Loughlin[|]

Le cellule staminali neurali sono cresciute come neurosfere e possono differenziare in neuroni (rosso), astrociti (blu) e oligodendrociti (verde) ma anche in cellule muscolari



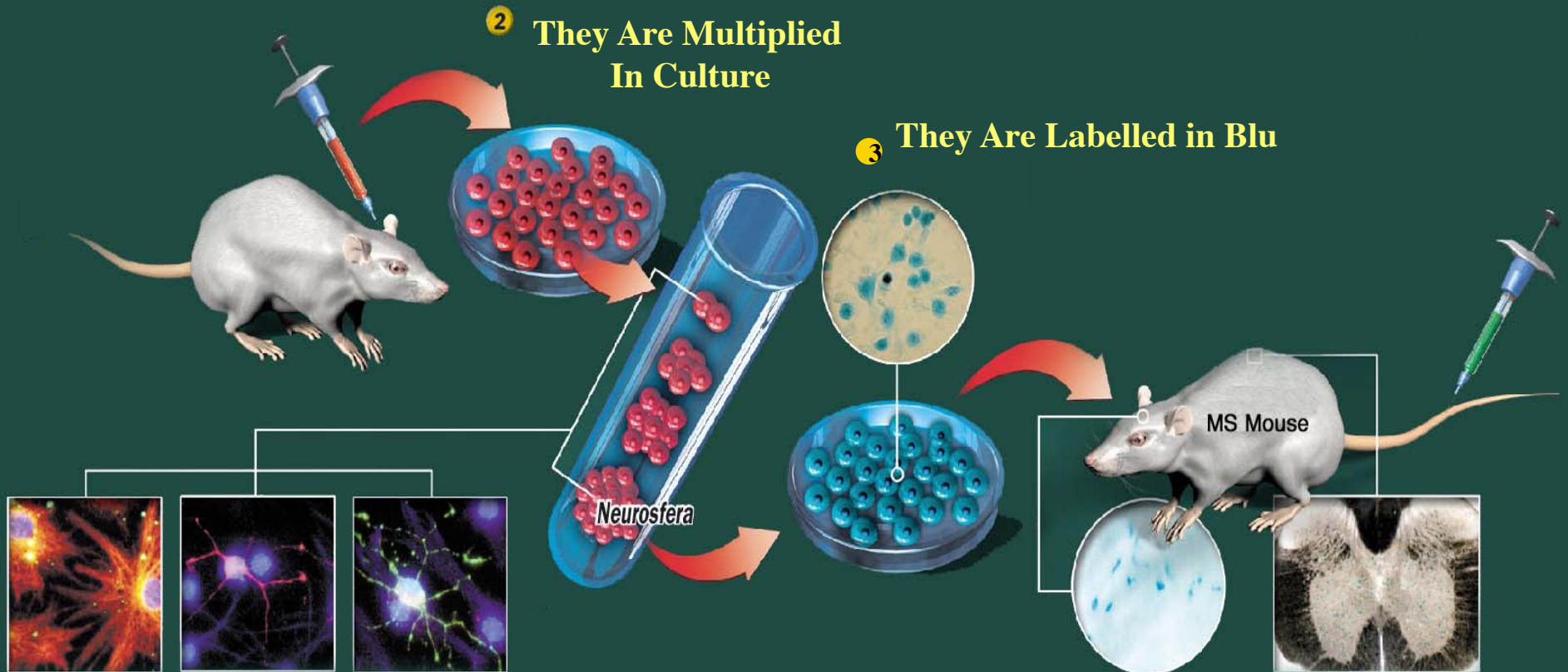
Injection of Brain Stem Cells and Their Progeny Greatly Improves Clinical Symptoms in a Chronic Animal Model of Multiple Sclerosis

① Neural Stem Cells
Are Isolated
From The Adult Brain

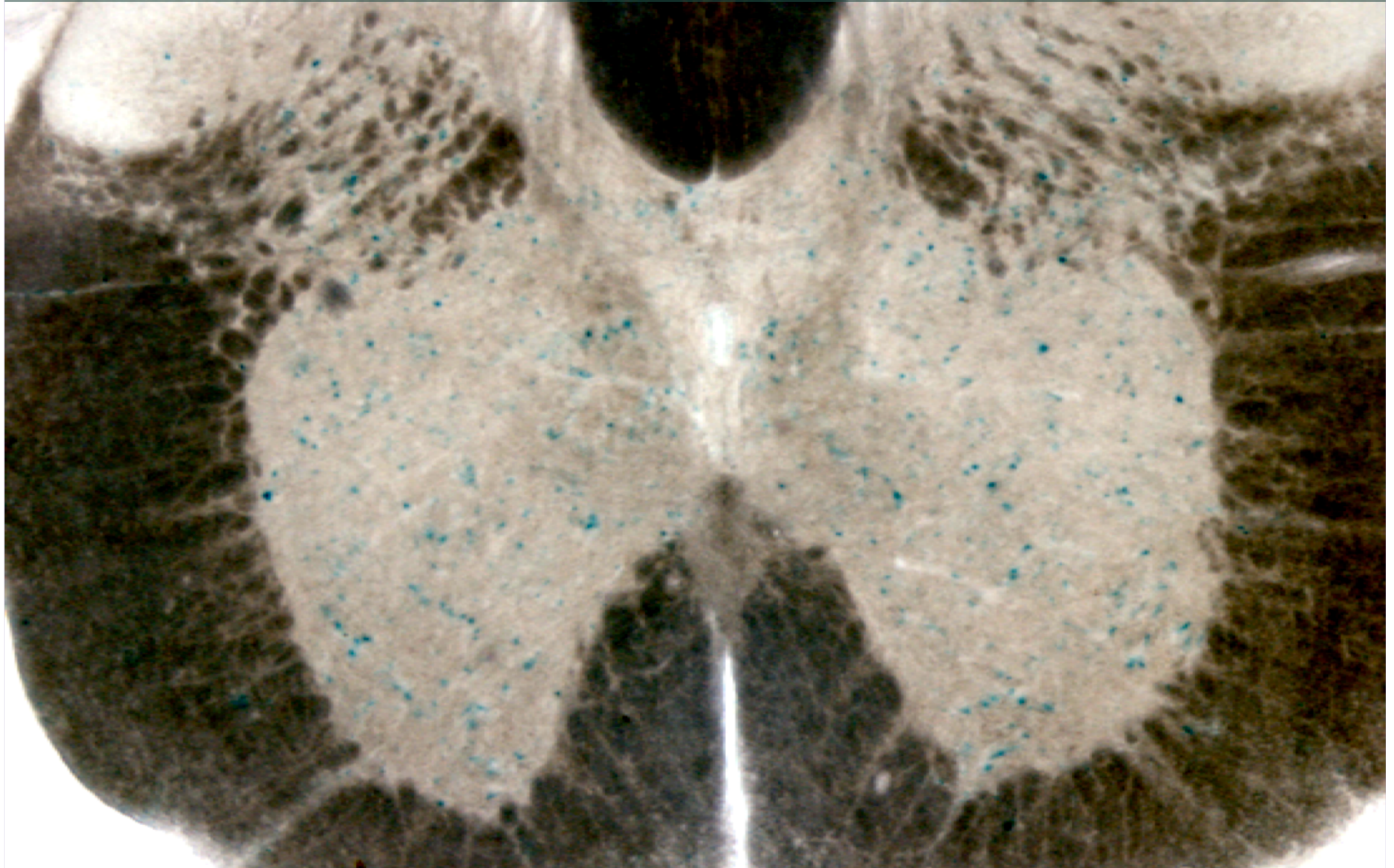
② They Are Multiplied
In Culture

③ They Are Labelled in Blu

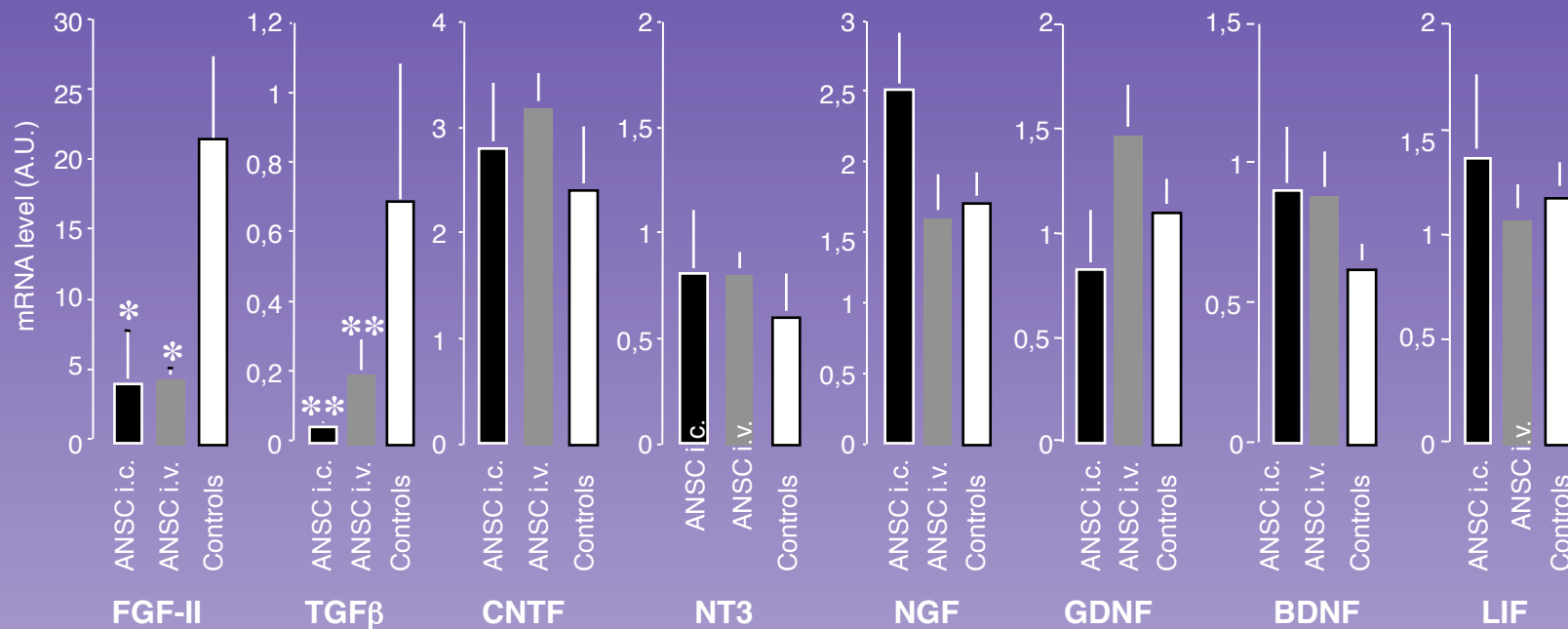
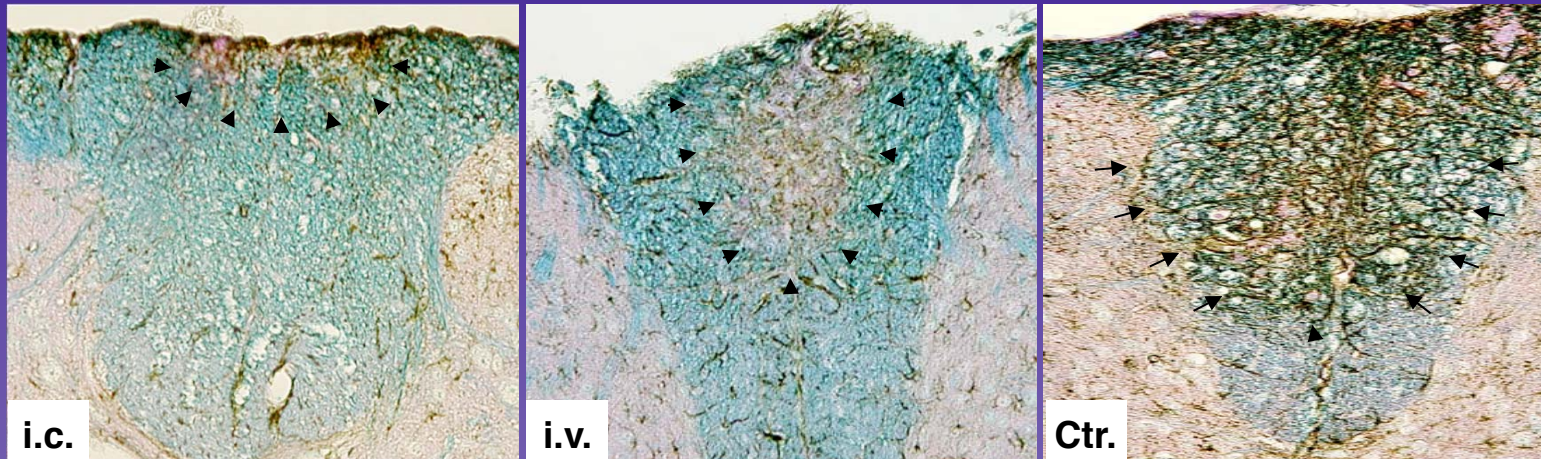
④ They Are Injected into the
Tail Vein of MS Mice



and enter into the diseased brain areas



Transplanted neural stem cells inhibit astroglyosis



* $p \leq 0.05$; ** $p = 0.06$

≥ 30 days post-transplantation