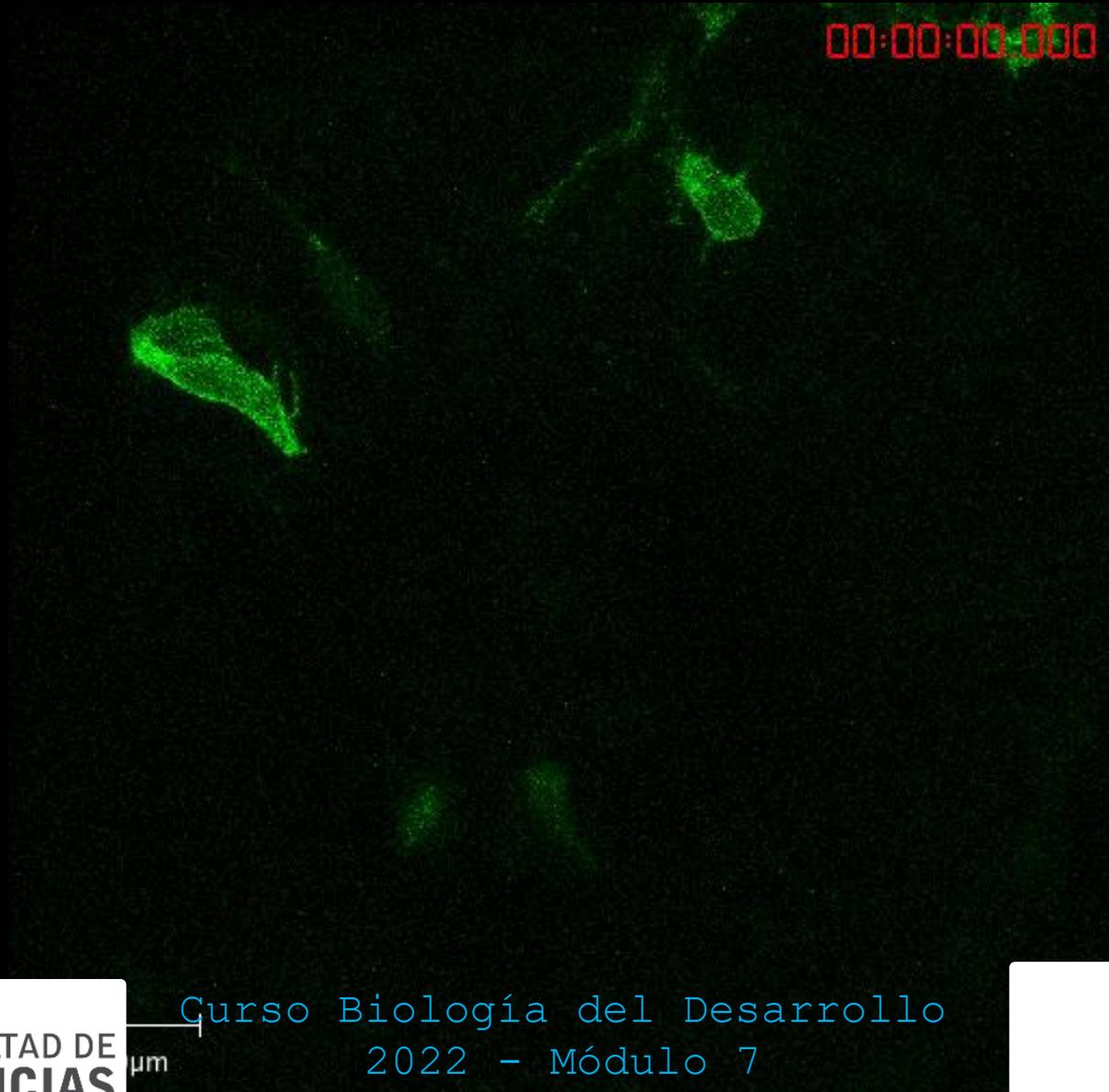


# Desarrollo neural: Neurogénesis



<https://youtu.be/CG71BM0nrIY>

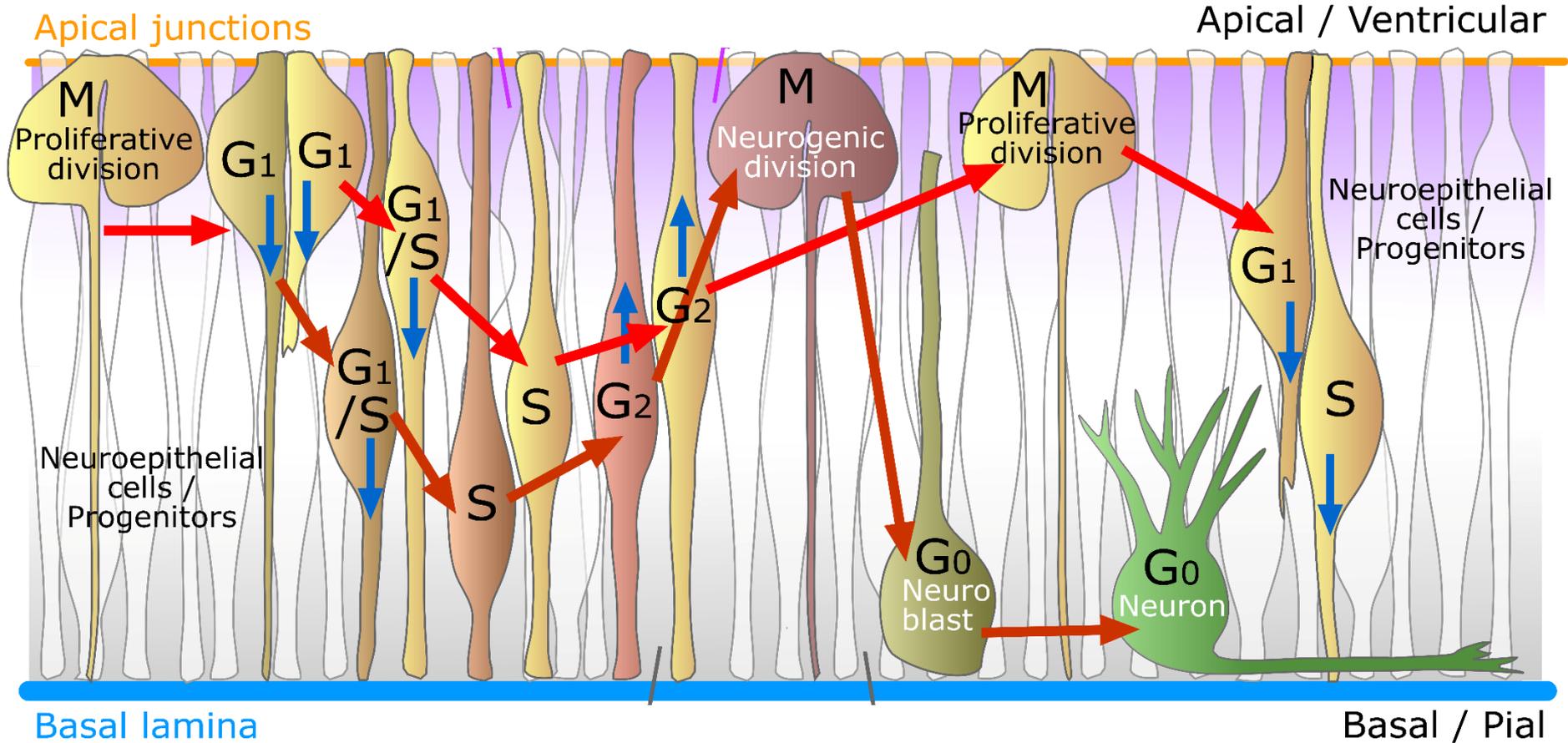


Curso Biología del Desarrollo  
2022 - Módulo 7  
Flavio Zolessi  
fzolessi@fcien.edu.uy



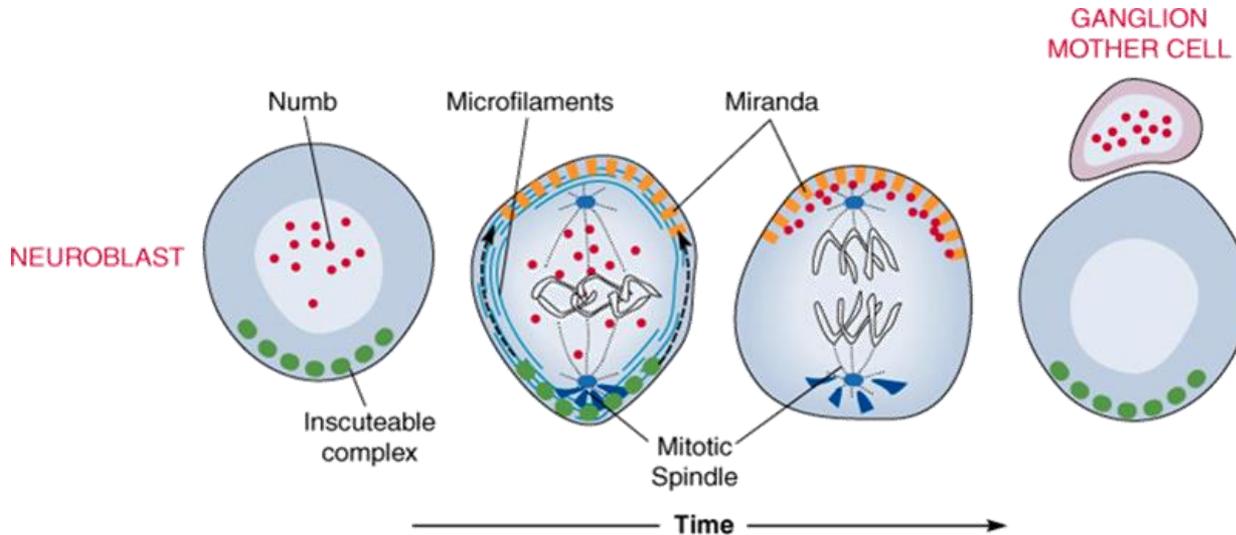
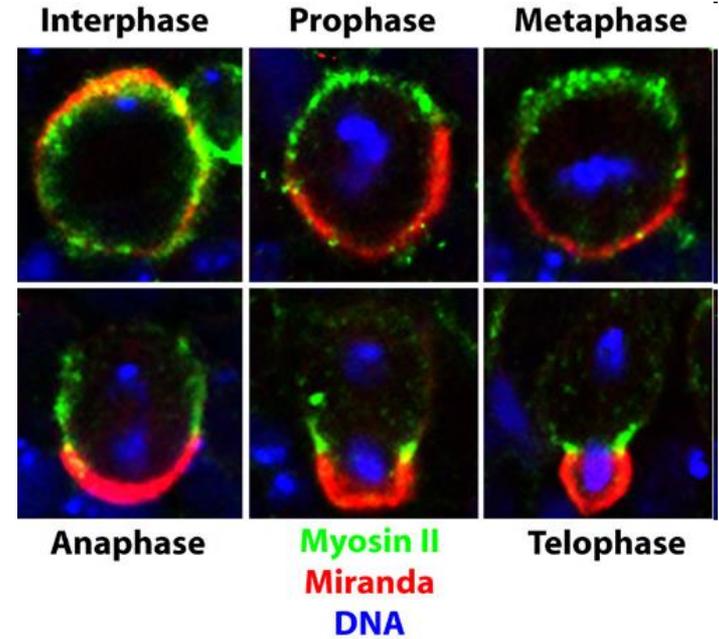
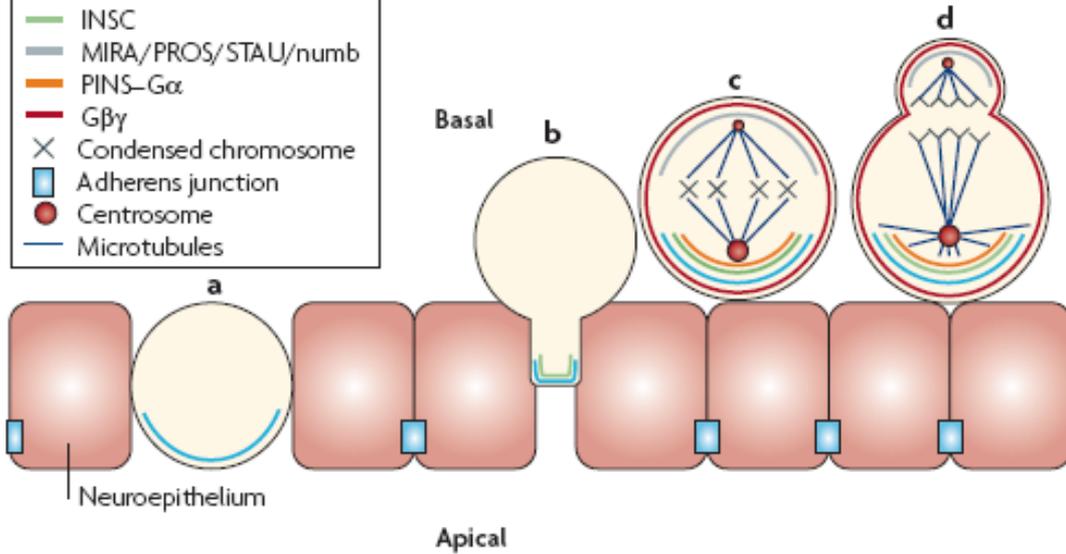


# Proliferación celular y neurogénesis

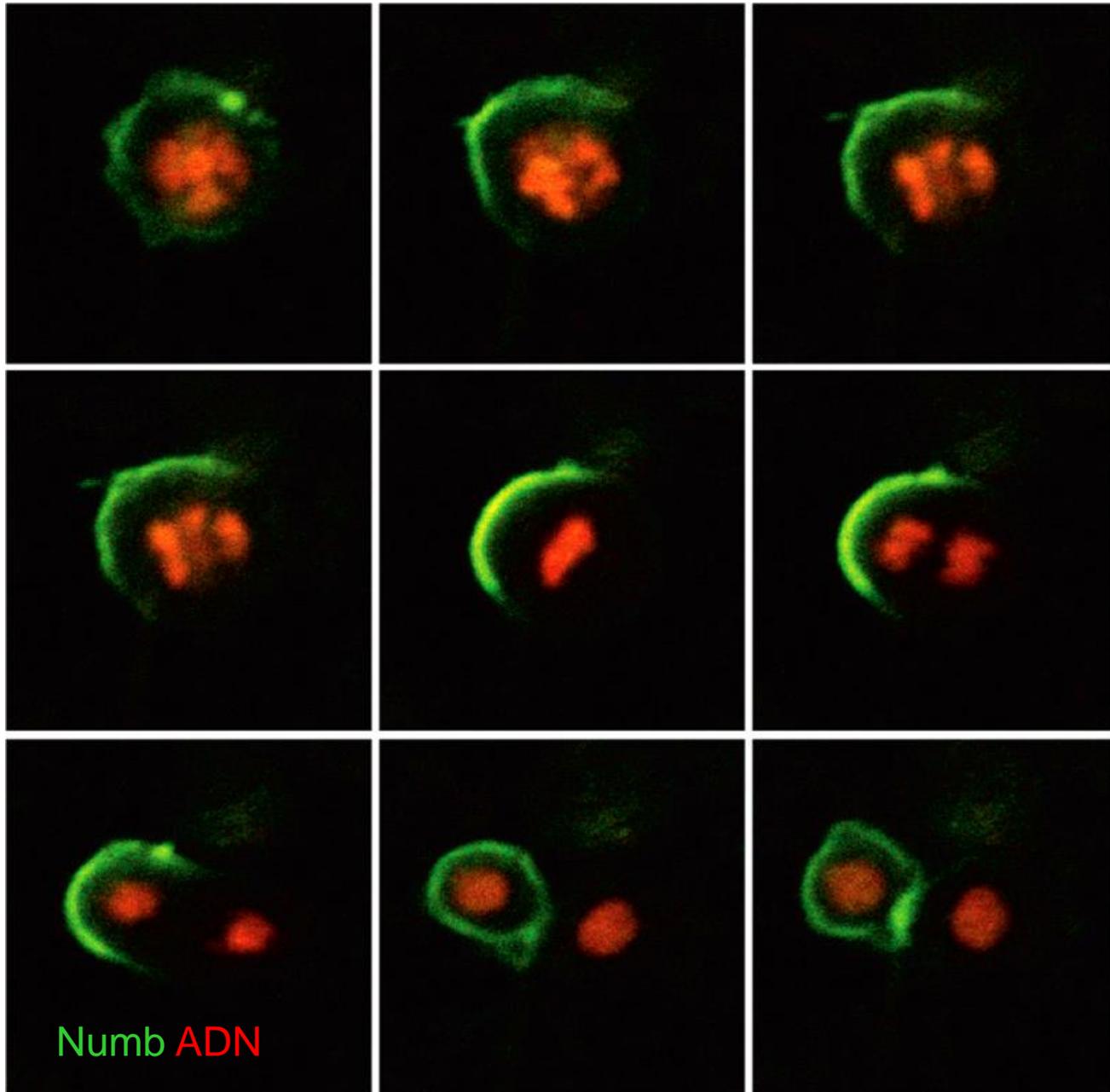


# División asimétrica y determinantes citoplásmicos

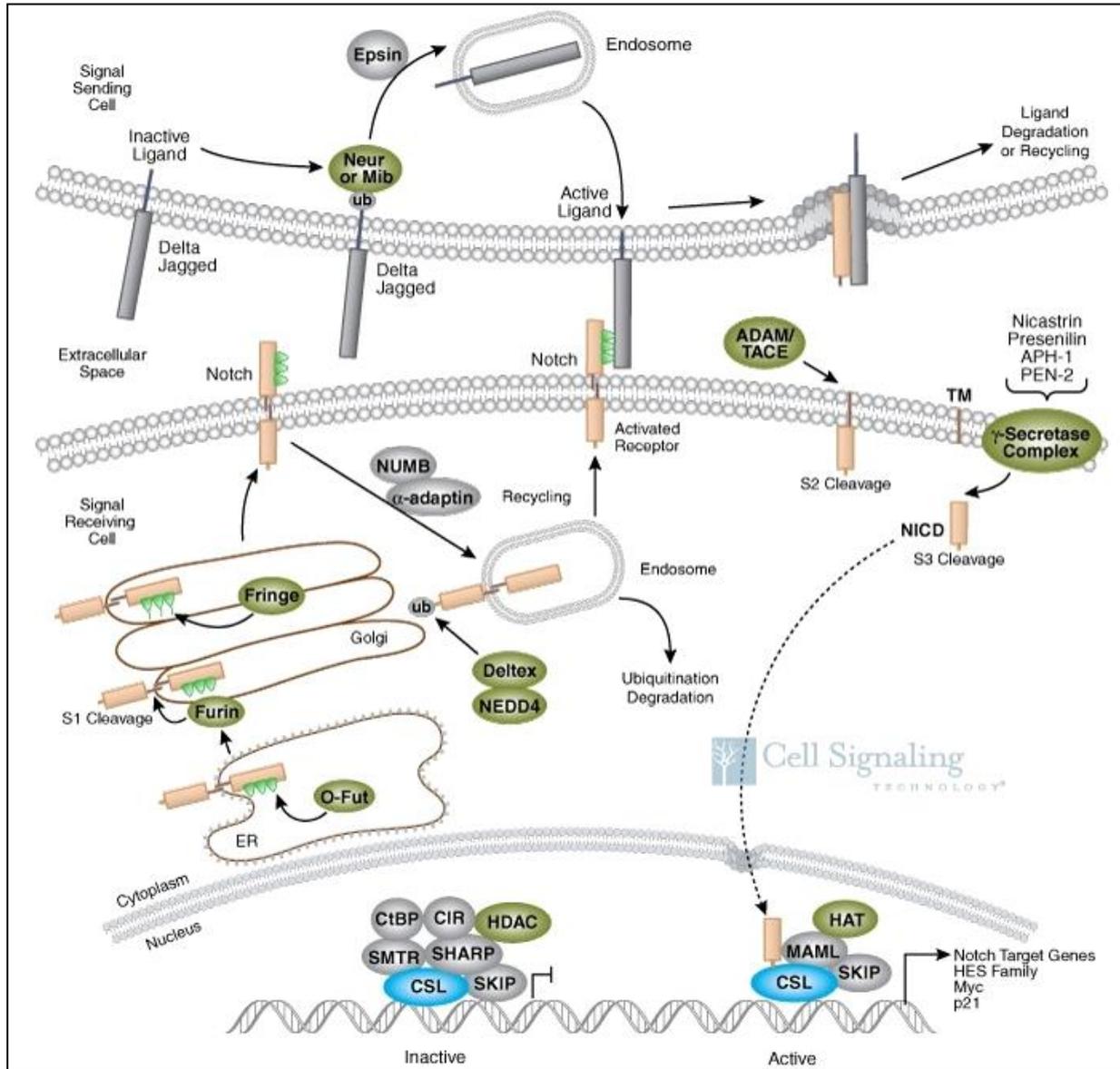
- BAZ- $\text{PAR6}$ - $\text{aPKC}$
- INSC
- MIRA/ $\text{PROS}$ / $\text{STAU}$ / $\text{numb}$
- PINS- $\text{G}\alpha$
- $\text{G}\beta\gamma$
- × Condensed chromosome
- Adherens junction
- Centrosome
- Microtubules



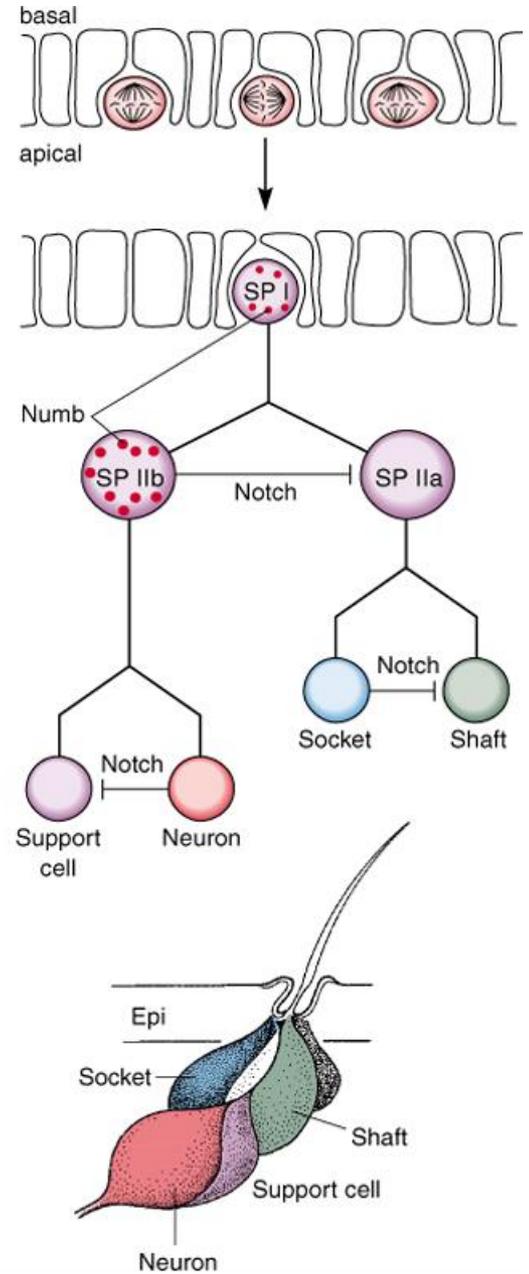
# División asimétrica y determinantes citoplásmicos: numb



# División asimétrica y determinantes citoplásmicos: numb

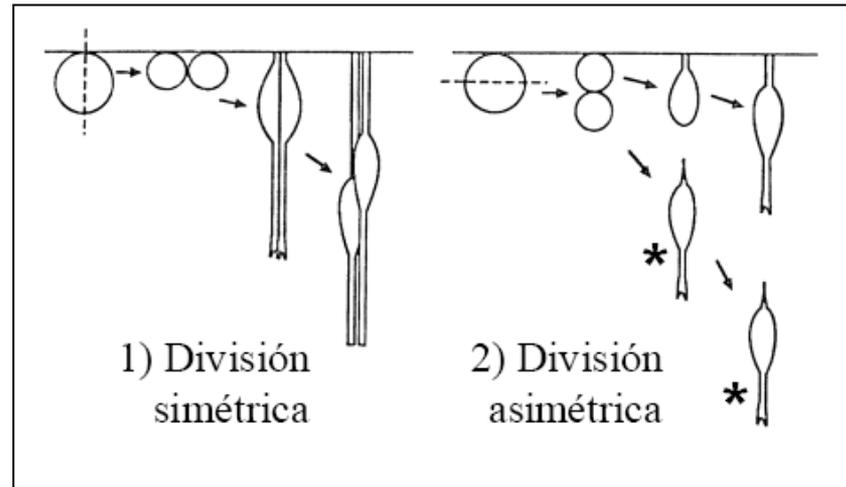


Specified SOPs



## Cleavage Orientation and the Asymmetric Inheritance of Notch1 Immunoreactivity in Mammalian Neurogenesis

Anjen Chenn and Susan K. McConnell  
Department of Biological Sciences  
Stanford University  
Stanford, California 94305



Sin embargo...  
El número de  
divisiones  
horizontales no se  
corresponde con el  
número de  
neuronas  
generadas

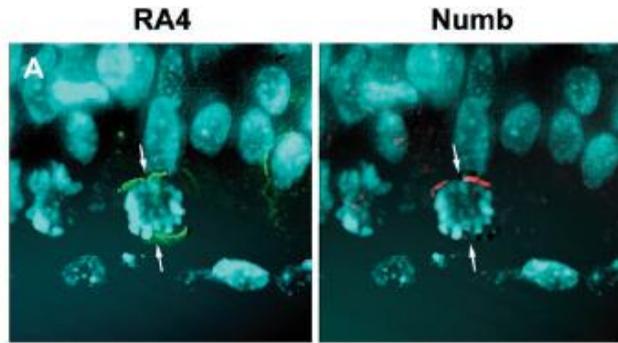
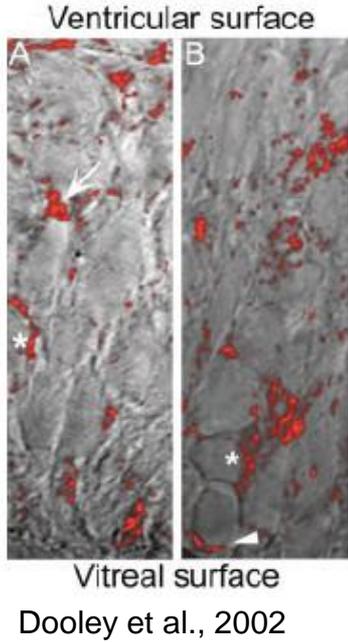


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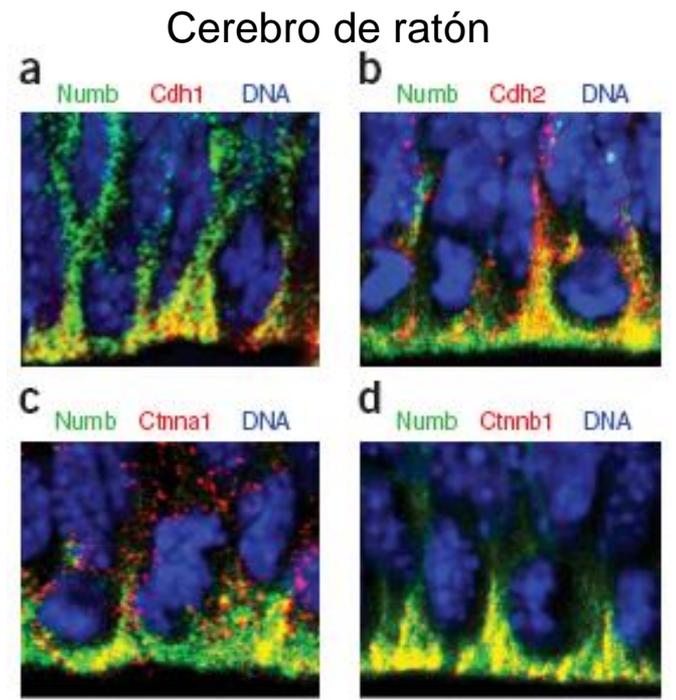
<https://youtu.be/OZBjPCHruEE>

# ¿Es Numb un determinante citoplásmico en vertebrados?

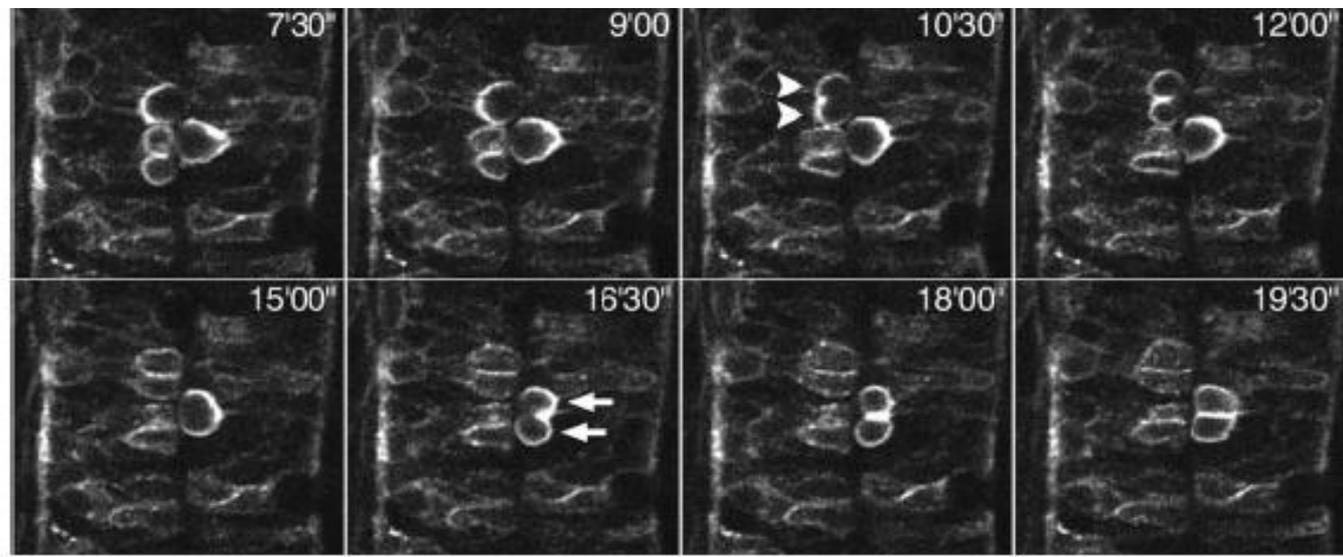


Silva et al., 2002

## Retina de pollo



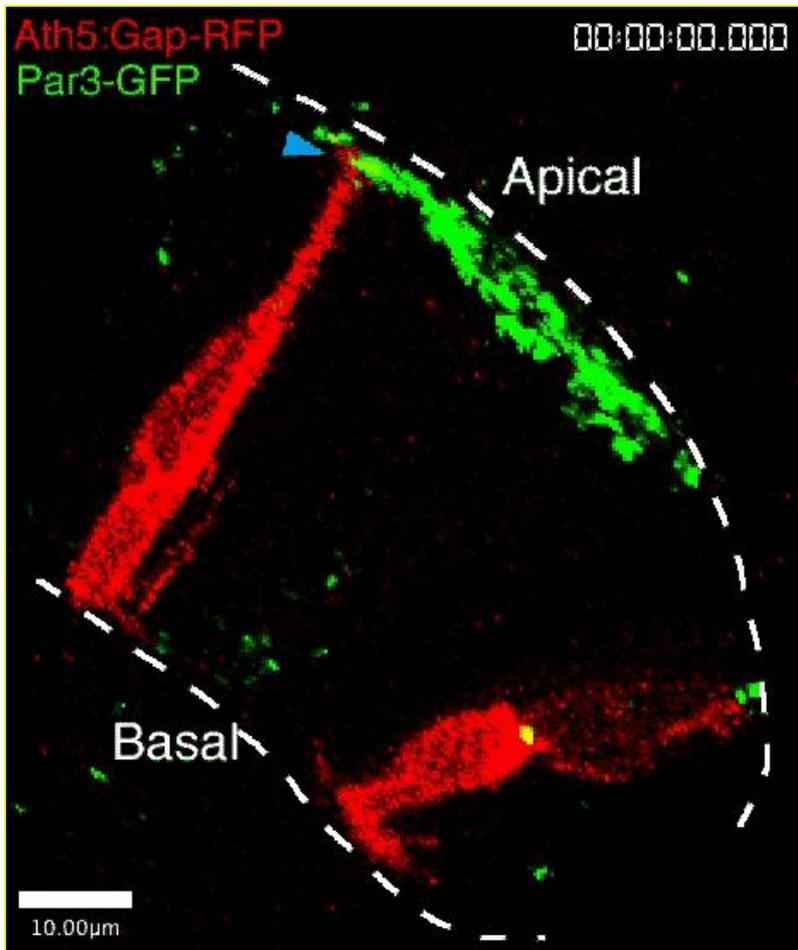
Rasin et al., 2007



## Médula espinal de pez cebra

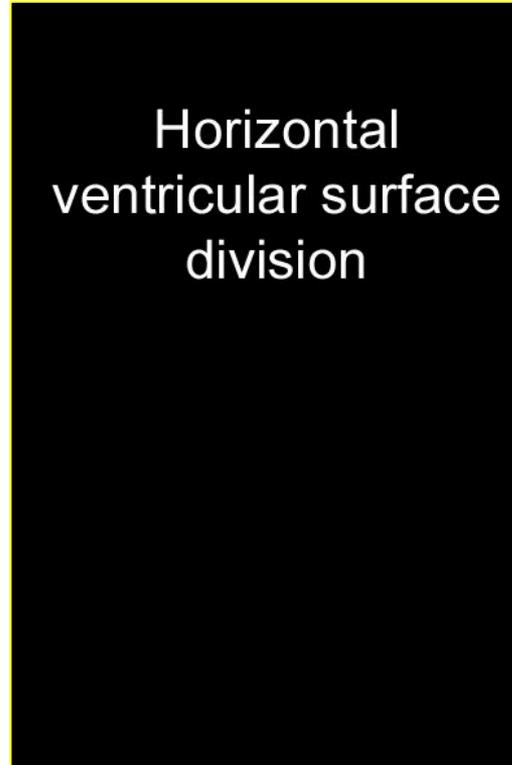
Reugels et al., 2006

# Divisiones asimétricas y polaridad del neuroepitelio

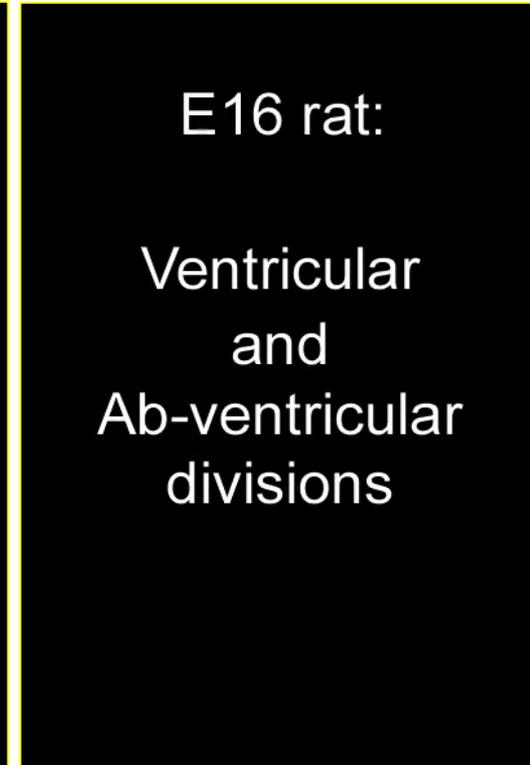


Zolessi et al., 2006

<https://youtu.be/-0ntEAml9ag>

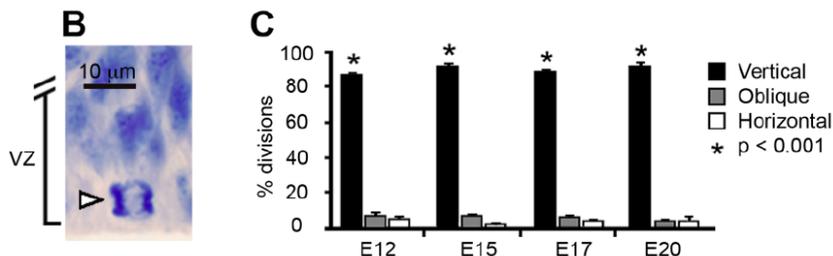


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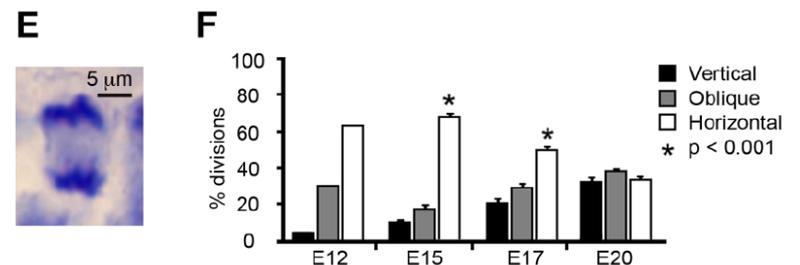


<https://youtu.be/57nArPNN6kw>

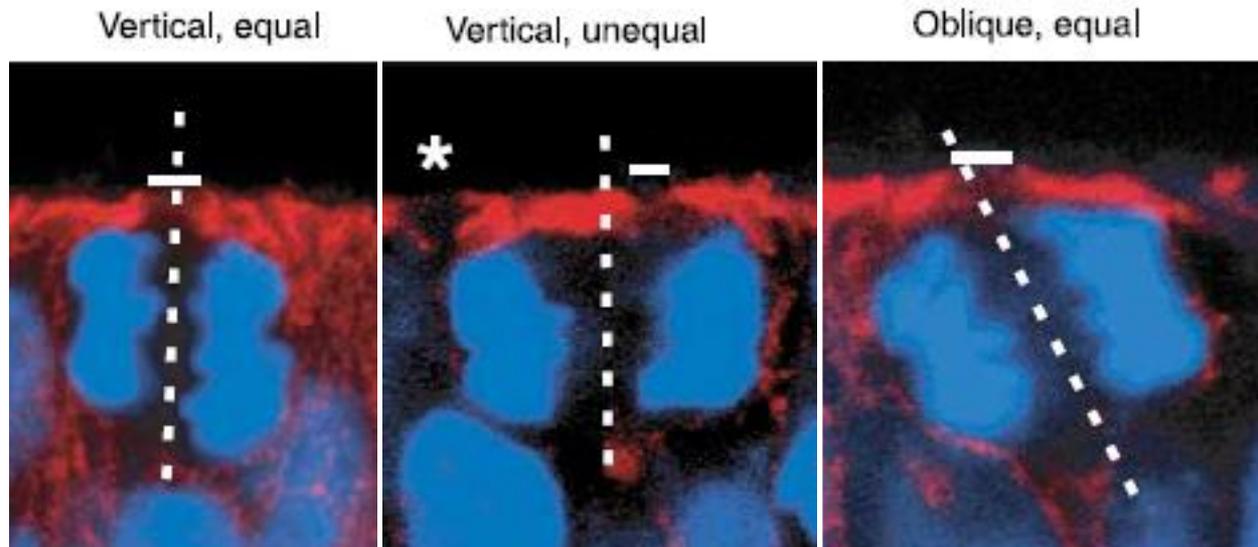
Orientation of VZ surface divisions *in vivo*



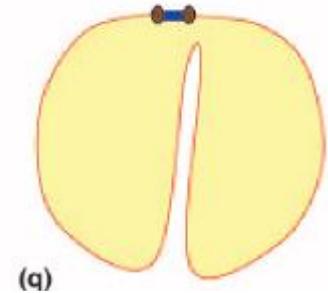
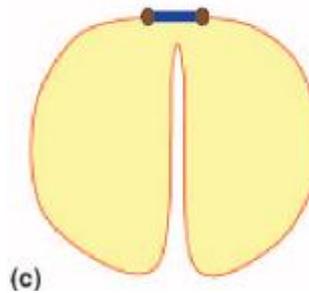
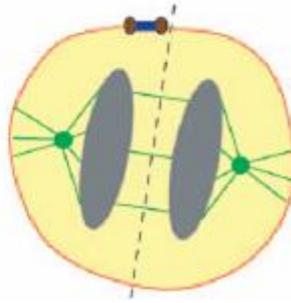
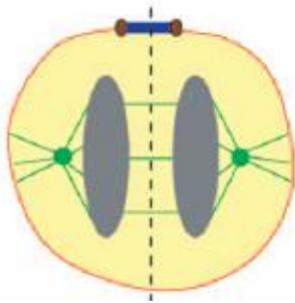
Orientation of abventricular divisions *in vivo* Noctor et al., 2008



# Las divisiones verticales (o casi) pueden ser asimétricas

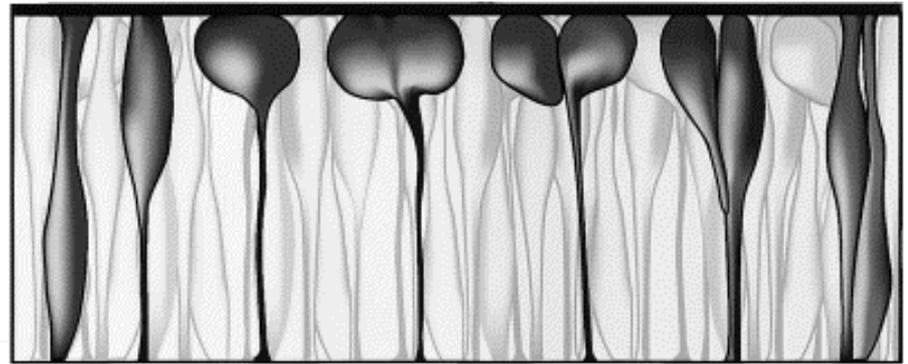


Kosodo et al., 2004

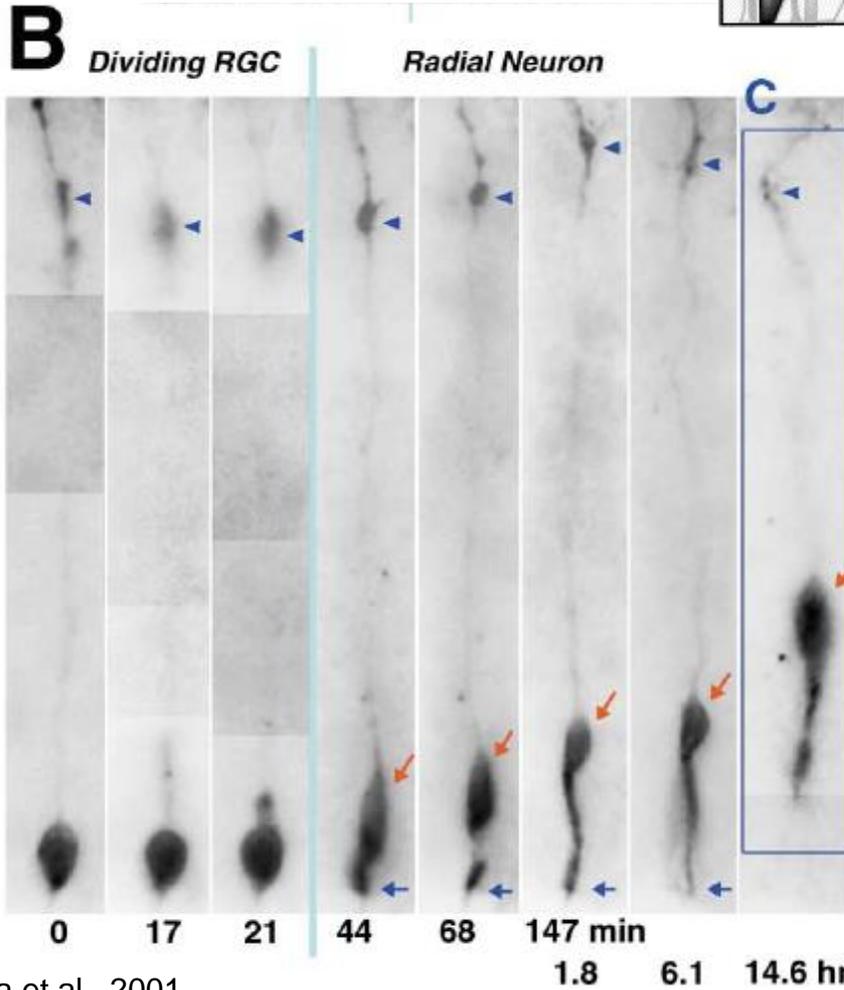


# Divisiones asimétricas y herencia del proceso basal

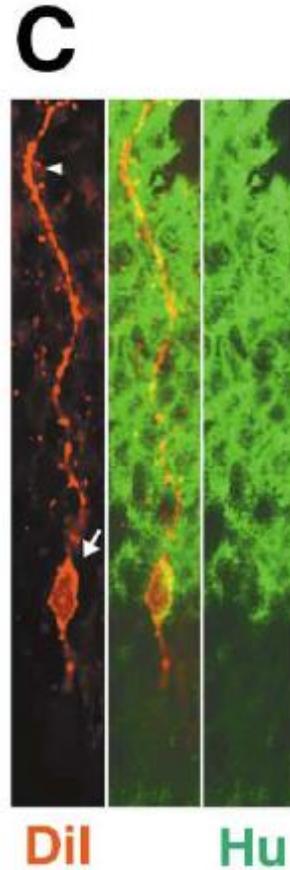
Retina



Das et al., 2003

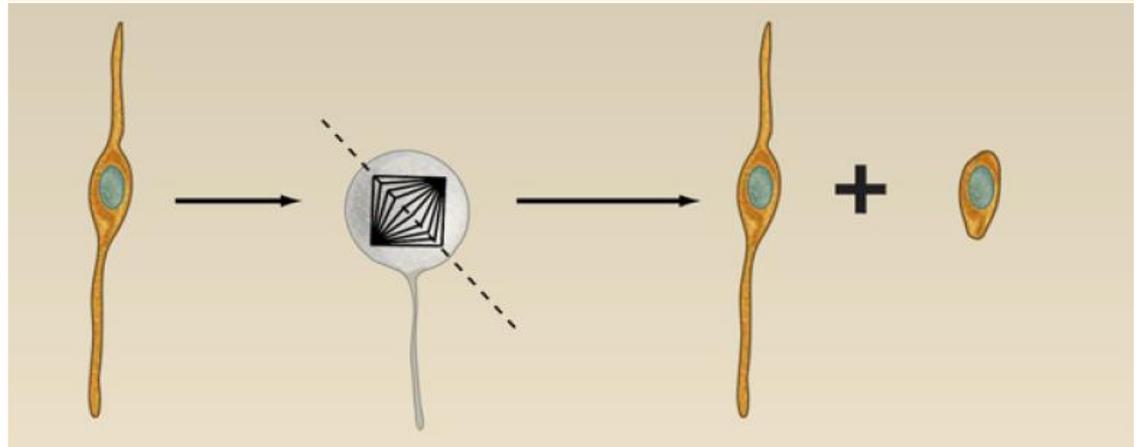
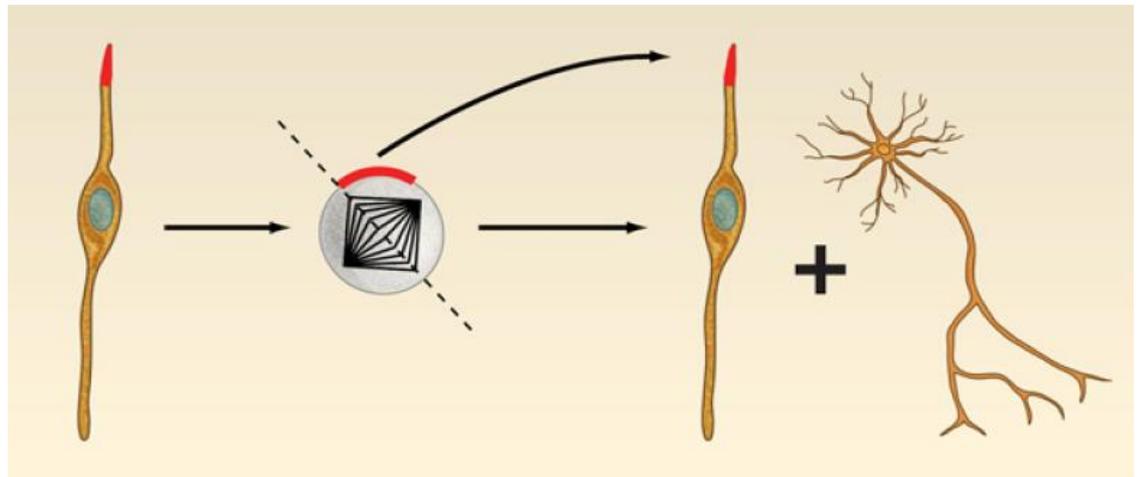
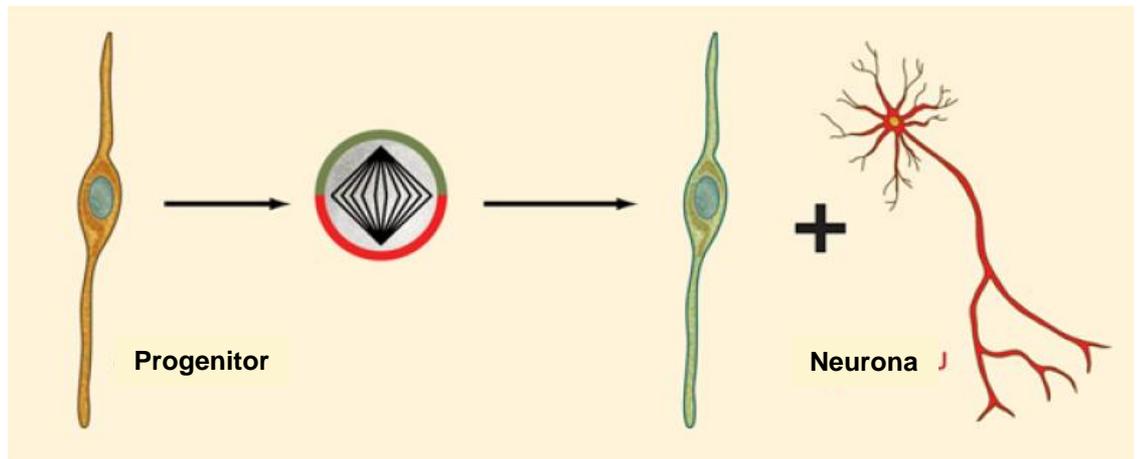


Miyata et al., 2001



Corteza cerebral

Resumen de algunos  
mecanismos  
propuestos para  
las divisiones celulares  
asimétricas  
neurogénicas



# Human TKTL1 implies greater neurogenesis in frontal neocortex of modern humans than Neanderthals

ANNELINE PINSON , LEI XING , TAKASHI NAMBA, NEREO KALEBIC , JULA PETERS , CHRISTINA EUGSTER OEGEMA , SOFIA TRAIKOV, KATRIN REPPE, STEPHAN RIESENBERG , TOMISLAV MARICIC , RAZVAN DERIHACI , PAULINE WIMBERGER , SVANTE PÄÄBO , AND WIELAND B. HUTTNER  fewer

[Authors Info & Affiliations](#)

SCIENCE • 9 Sep 2022 • Vol 377, Issue 6611 • DOI: 10.1126/science.abl6422



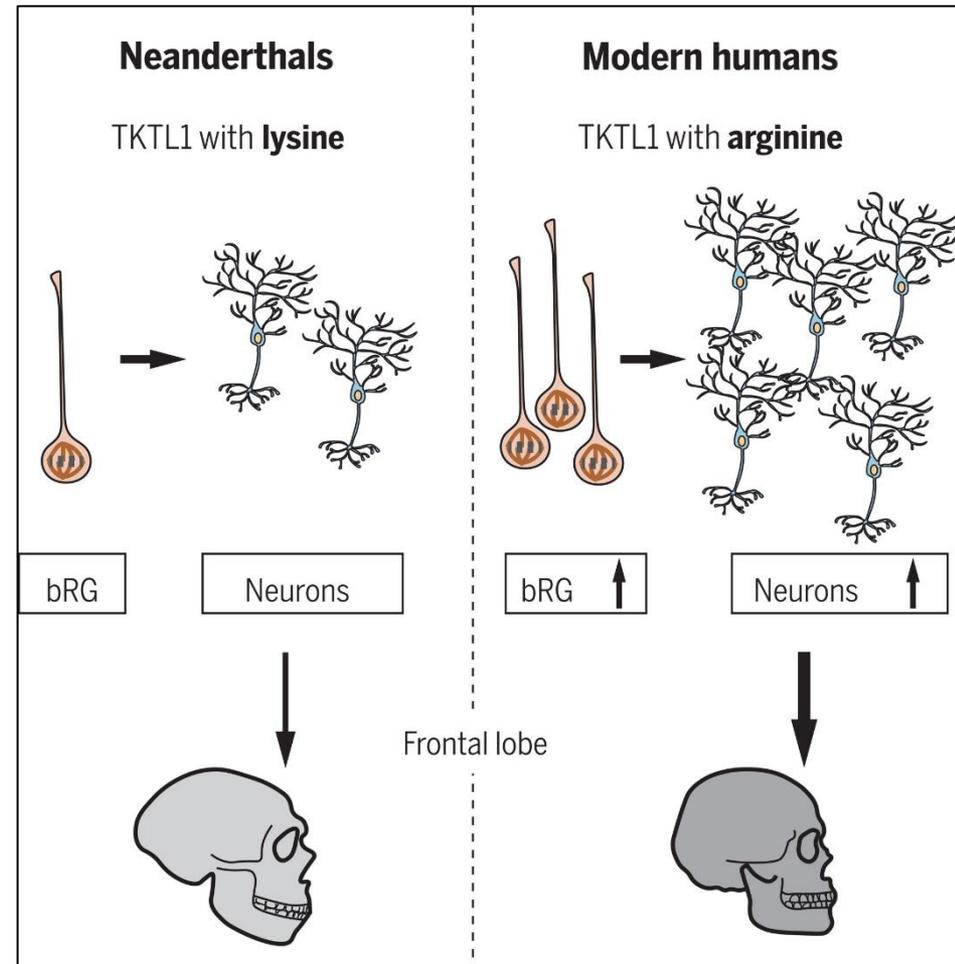
Svante Pääbo  
The Nobel Prize in Physiology or Medicine 2022

Born: 20 April 1955, Stockholm, Sweden

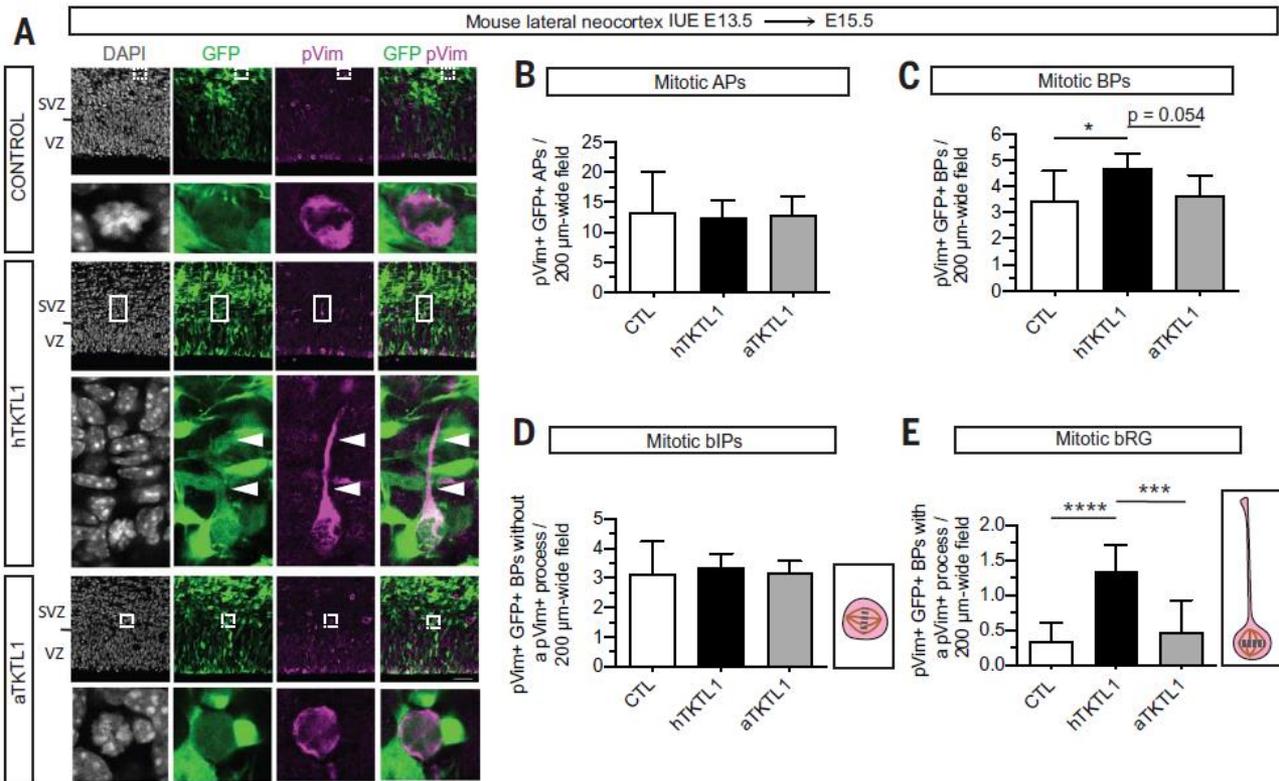
Affiliation at the time of the award: Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany, Okinawa Institute of Science and Technology, Okinawa, Japan

Prize motivation: “for his discoveries concerning the genomes of extinct hominins and human evolution”

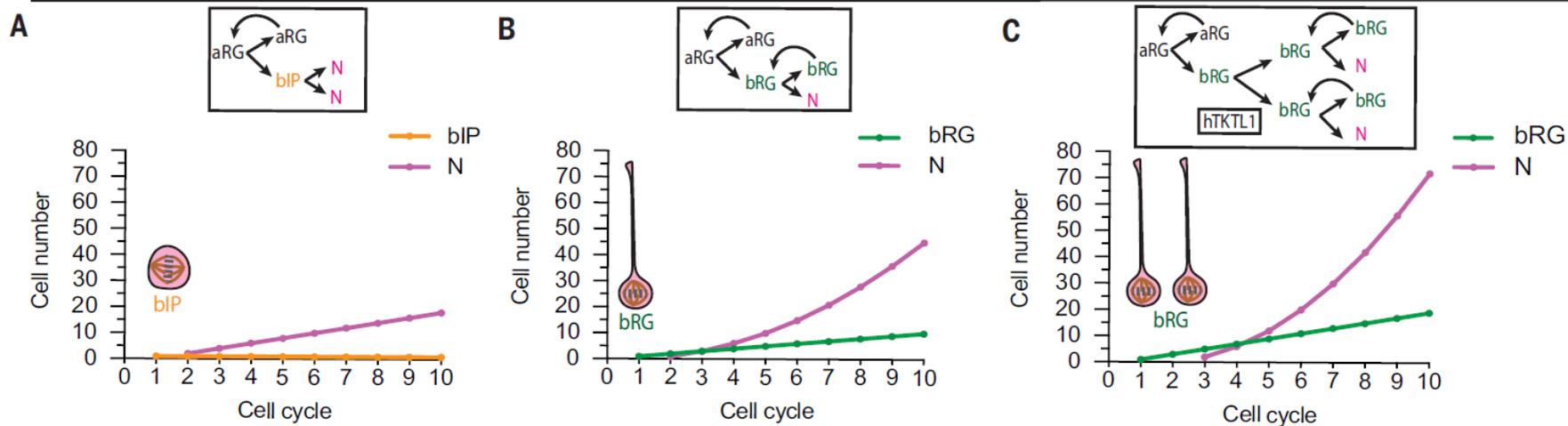
Prize share: 1/1



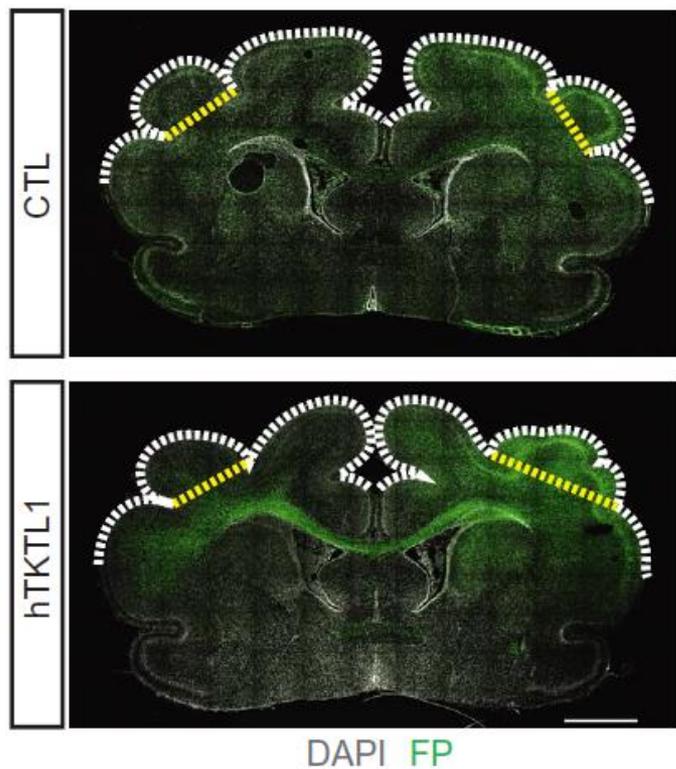
<https://doi.org/10.1126/science.abl6422>



Neuron generation from bIPs (A) vs. bRG (B) vs. hTKTL1-increased bRG (C)



Ferret lateral neocortex IUE E33 → P2 (A) or P16 (B-I)



Human neocortical tissue PCW 8-14 → CRISPR/Cas9 → FFT culture 72h

