

Neuregulin 1 signaling is essential for nerve-dependent axolotl limb regeneration

Johanna Farkas, Polina Freitas, Donald Bryant, Jessica Whited, James Monaghan
Development, 2016

<http://www.northeastern.edu/monaghanlab>



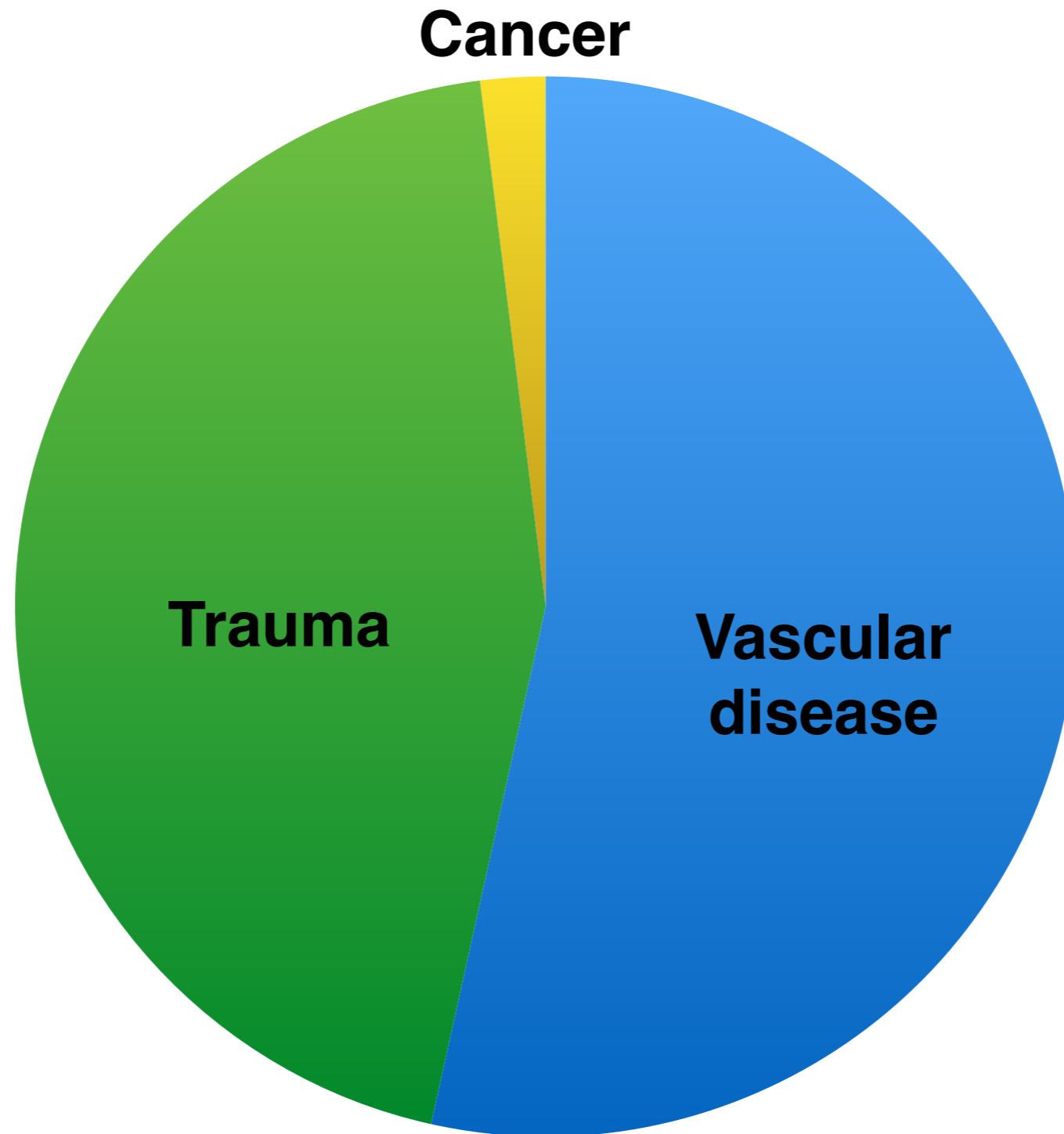


2 Million Americans live with limb loss



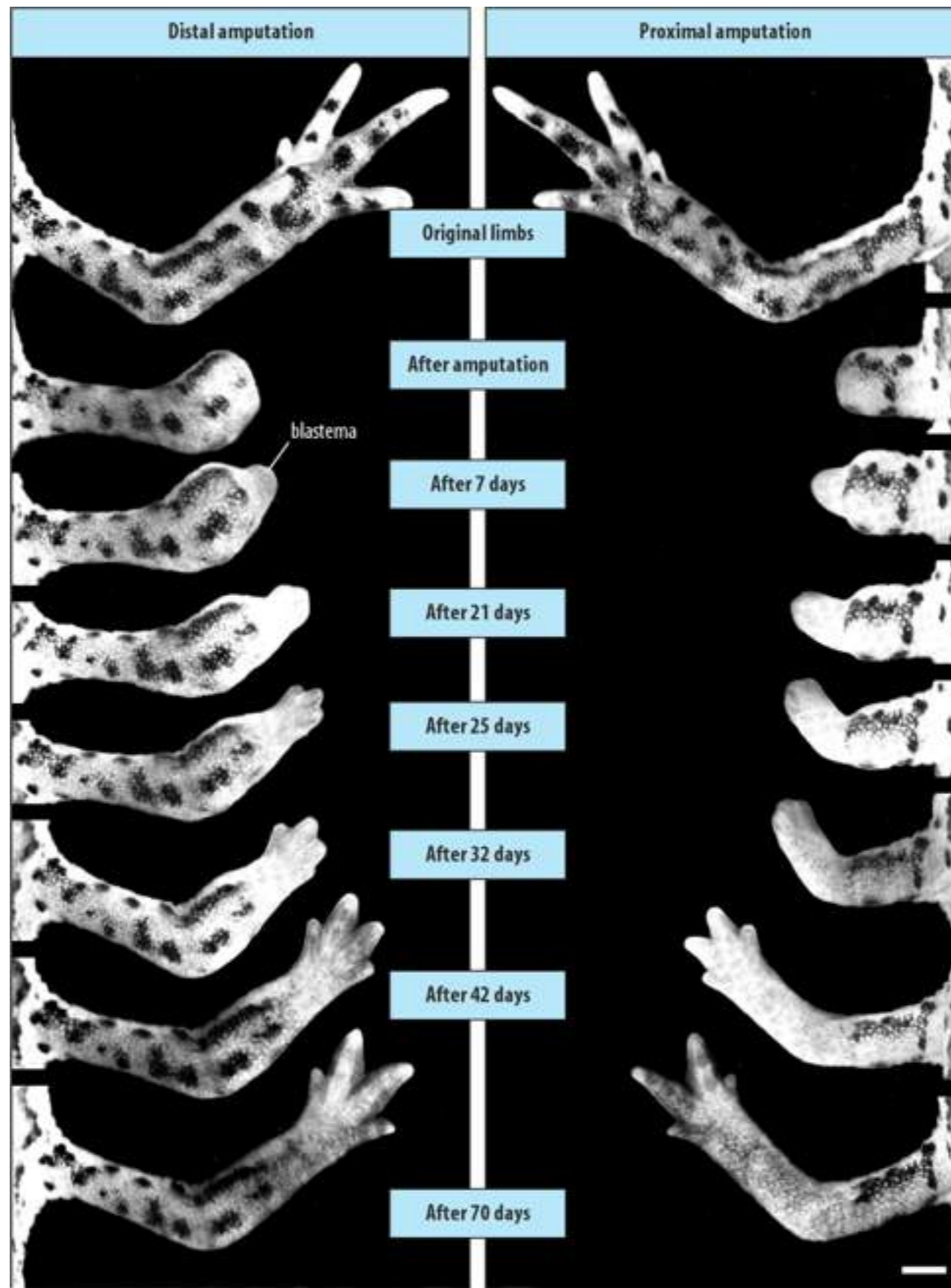
<http://www.theaustralian.com.au/sport/rio-olympics/rio-2016-paralympics-ones-to-watch>

Disease and accidents lead to limb loss



Data source:
Ziegler-Graham et al, 2008

Amphibians can fully regenerate limbs



http://www.mun.ca/biology/desmid/brian/BIOL3530/DEVO_14/ch14f04.jpg

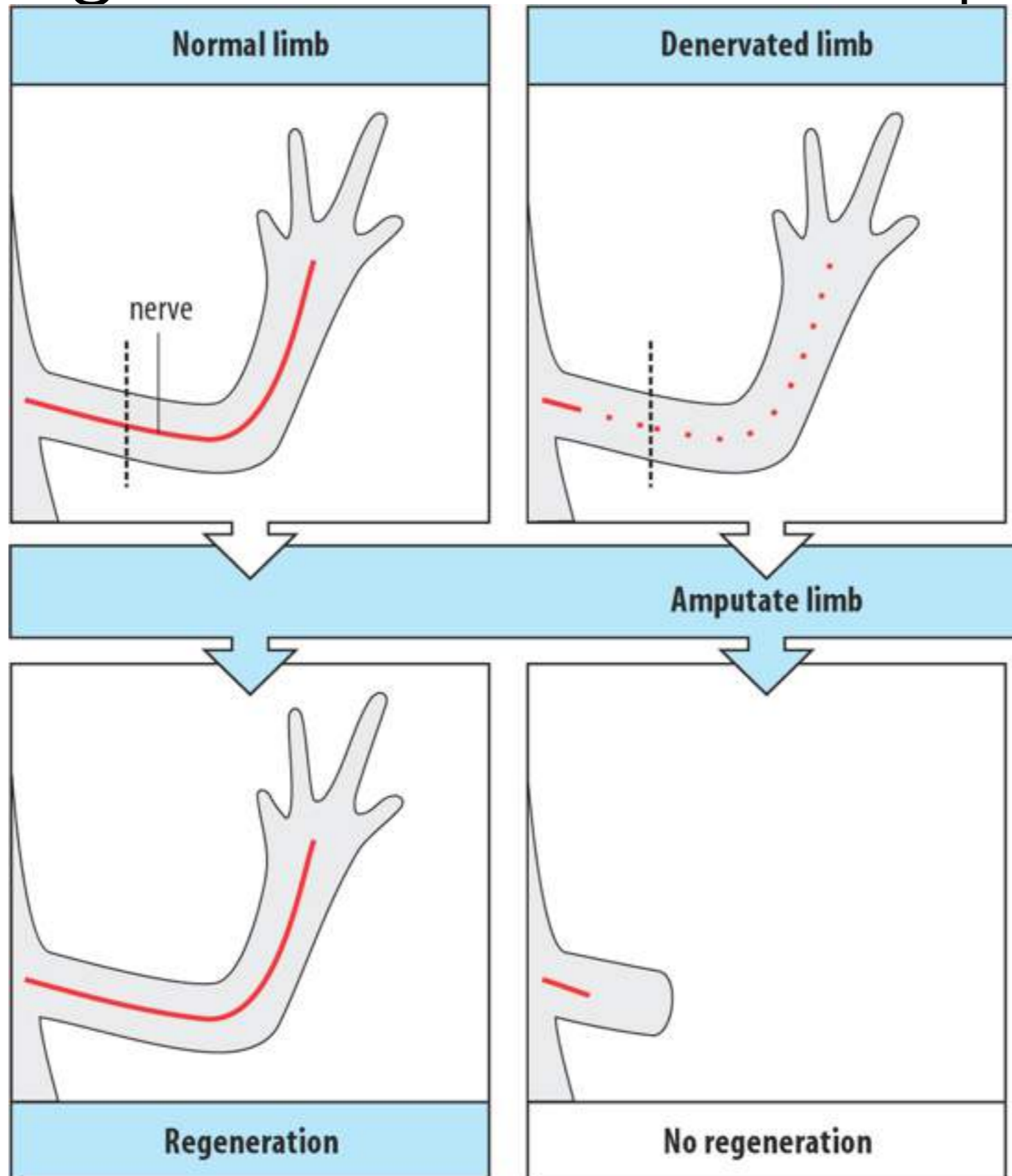
Amphibians can fully regenerate limbs



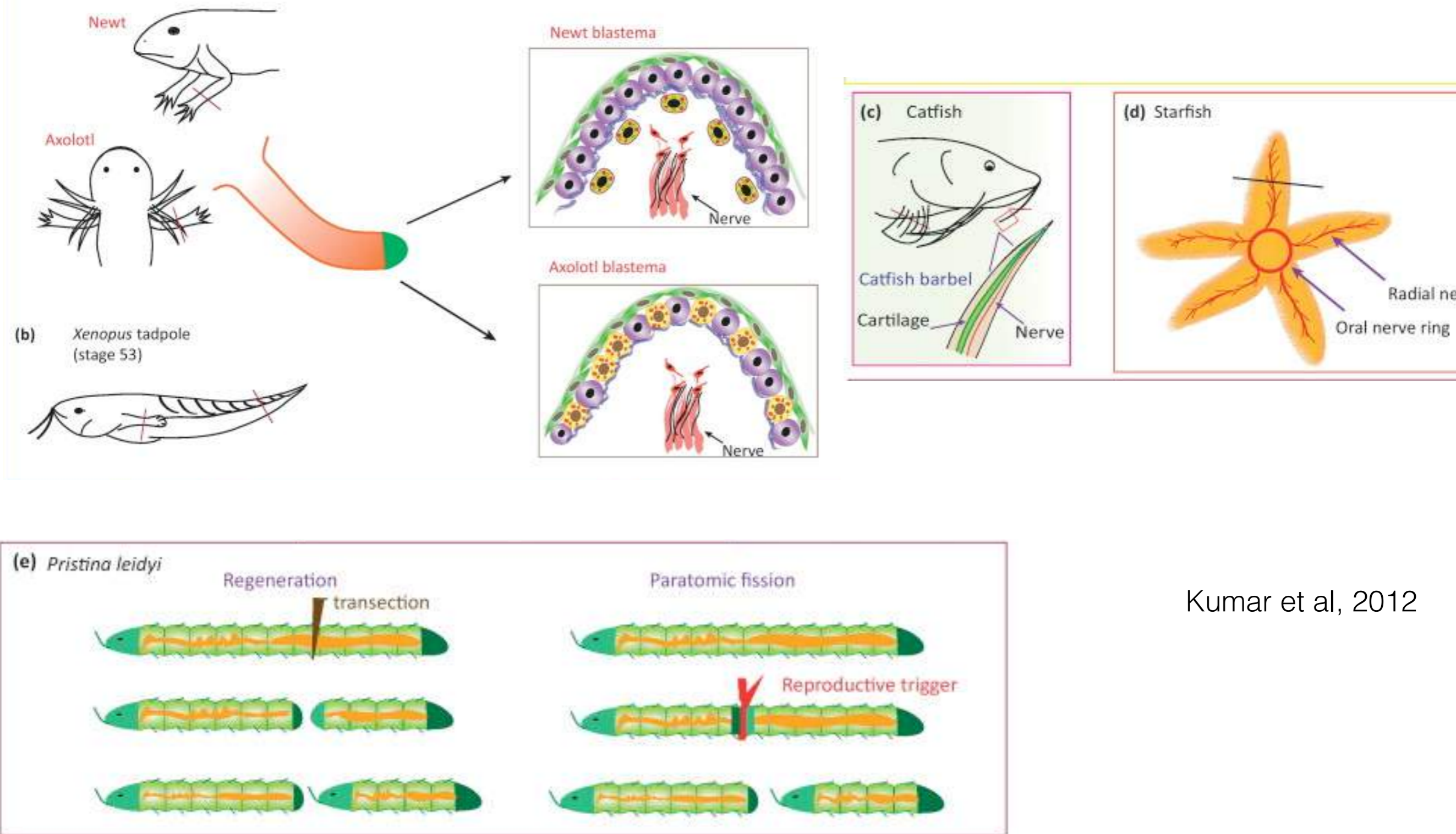
Video by HHMI:

https://www.youtube.com/watch?v=_rtF_coKT8U

Limb regeneration is nerve dependent

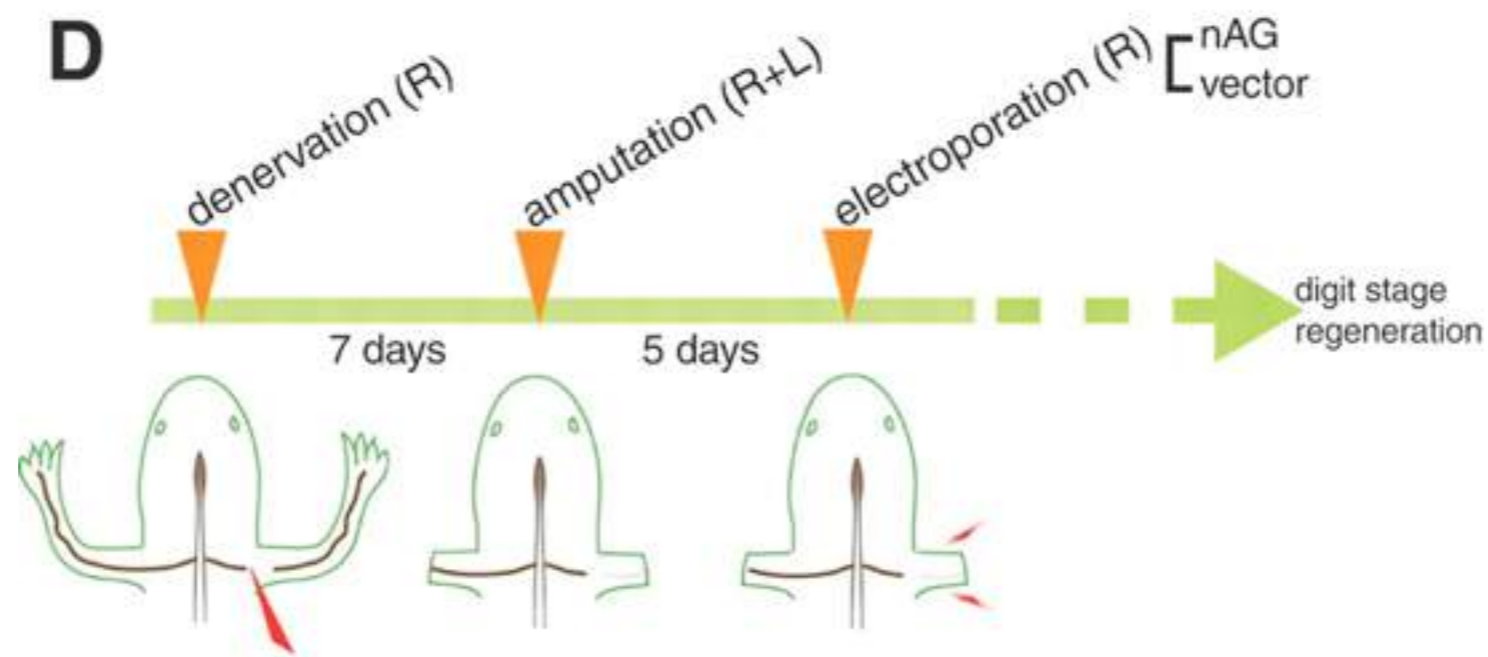


Regeneration is nerve dependent in many species



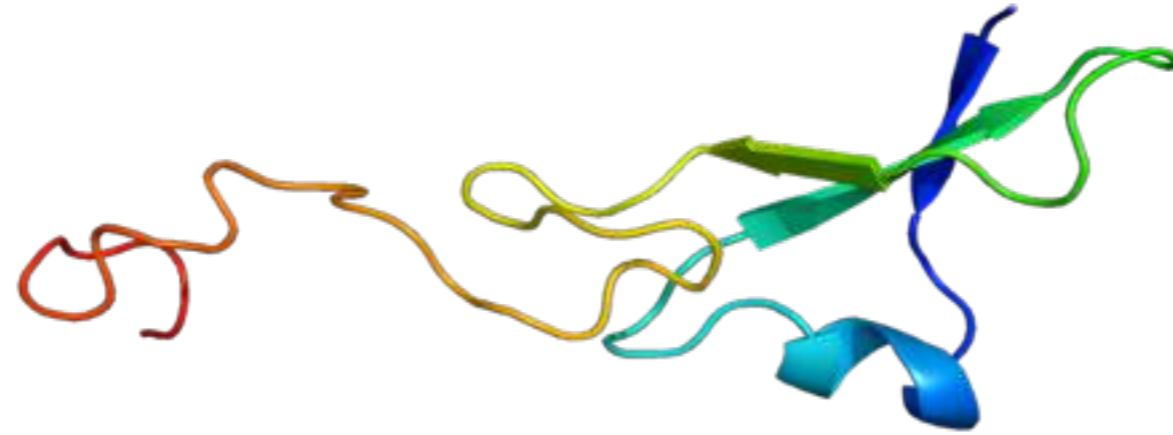
Kumar et al, 2012

Nerve-secreted nAG promotes newt limb regeneration



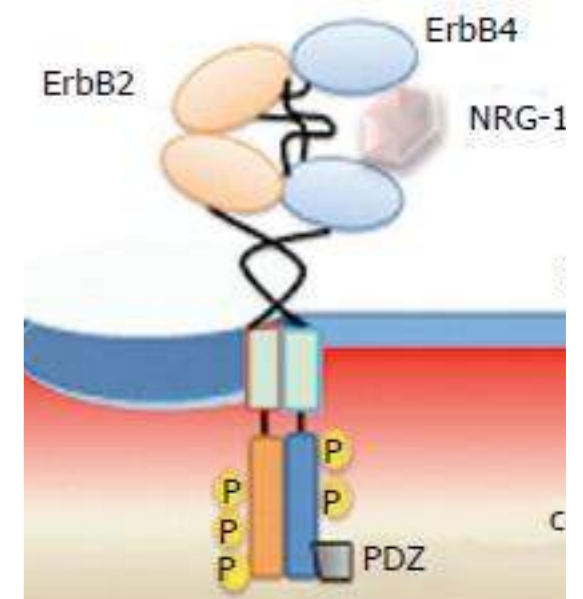
From Kumar et al, 2007
Science

Neuregulin-1/ErbB2



By Emw <https://commons.wikimedia.org/w/index.php?curid=8820642>

- Growth factor important in neuronal and heart development
- Alternative splicing produces many isoforms
- Receptors include ErbB2 and EGFR



From Vasti and Hertig, 2014
World Journal of Cardiology

Fig 1

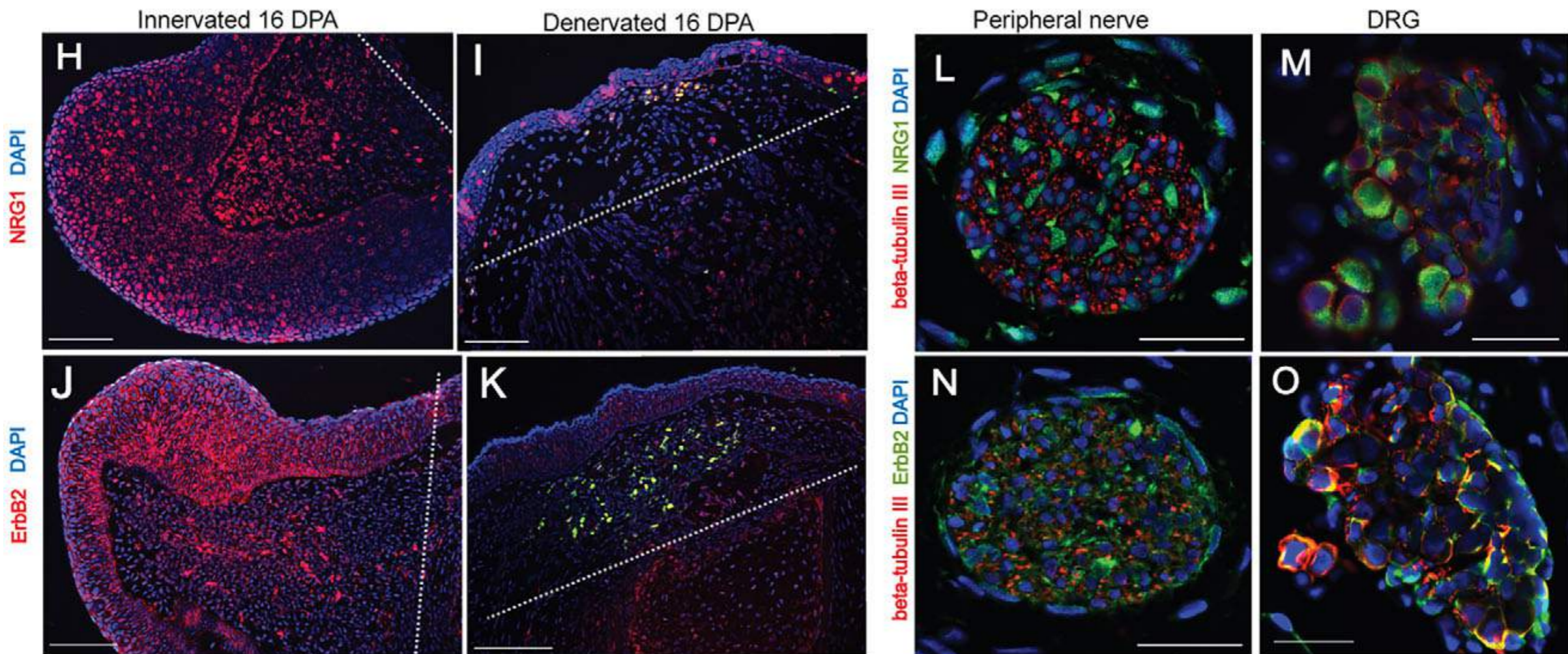
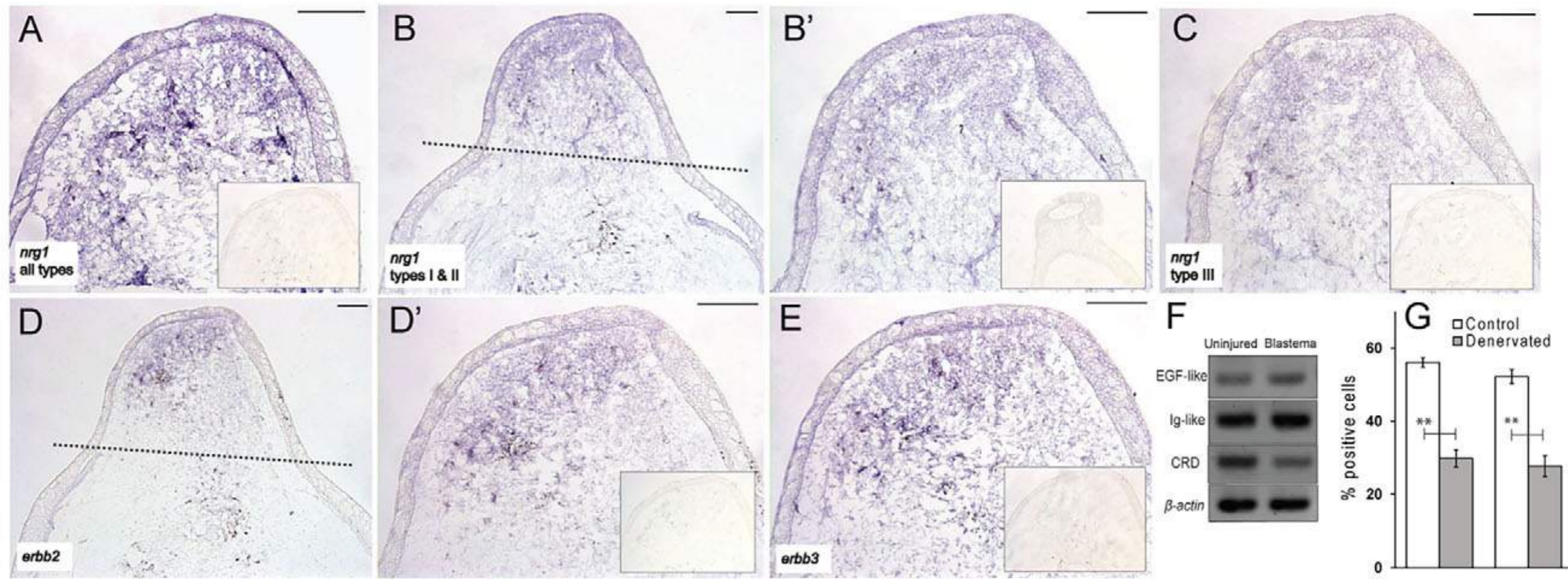


Fig 1

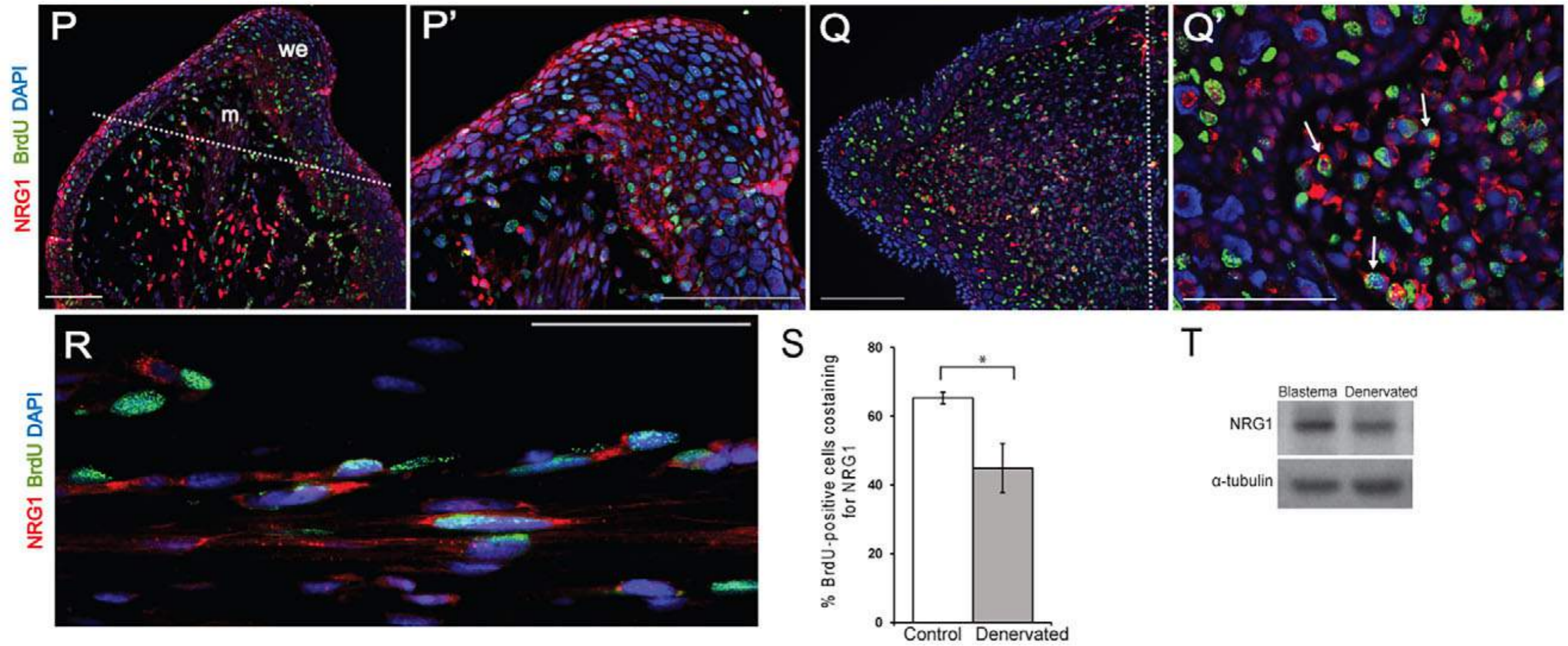


Fig 2

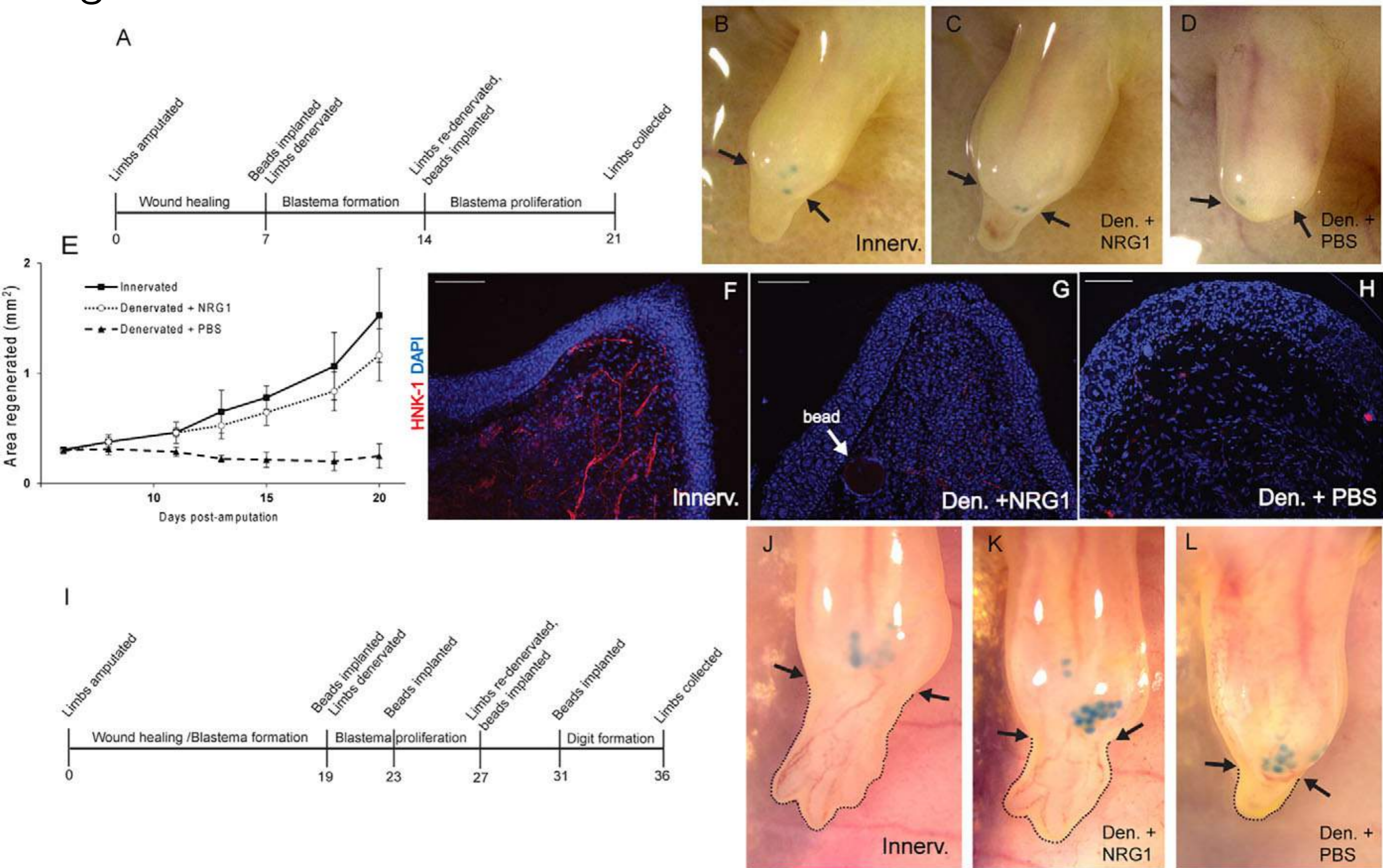


Fig S1

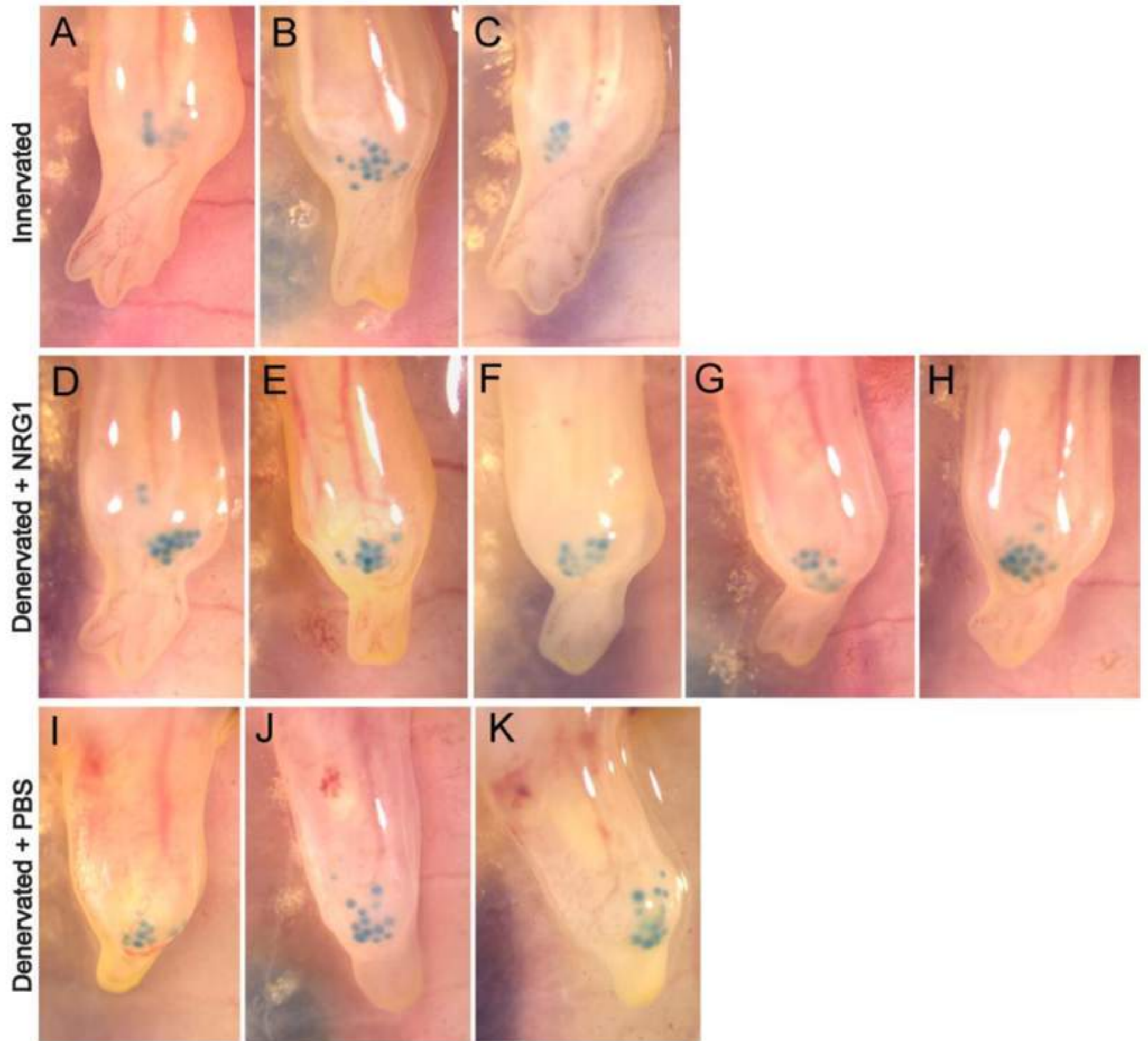


Fig 2

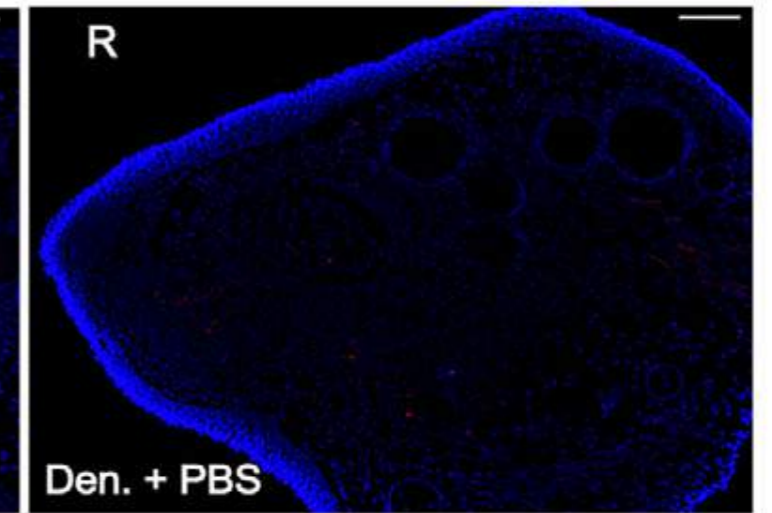
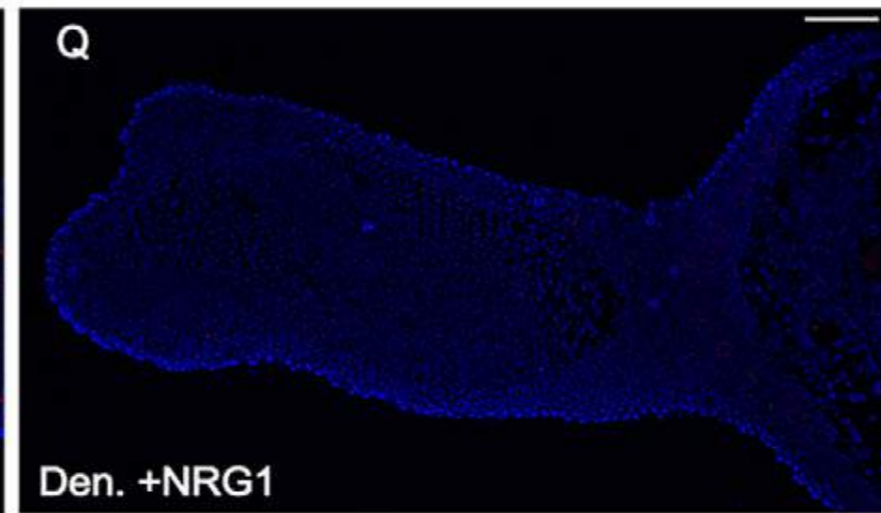
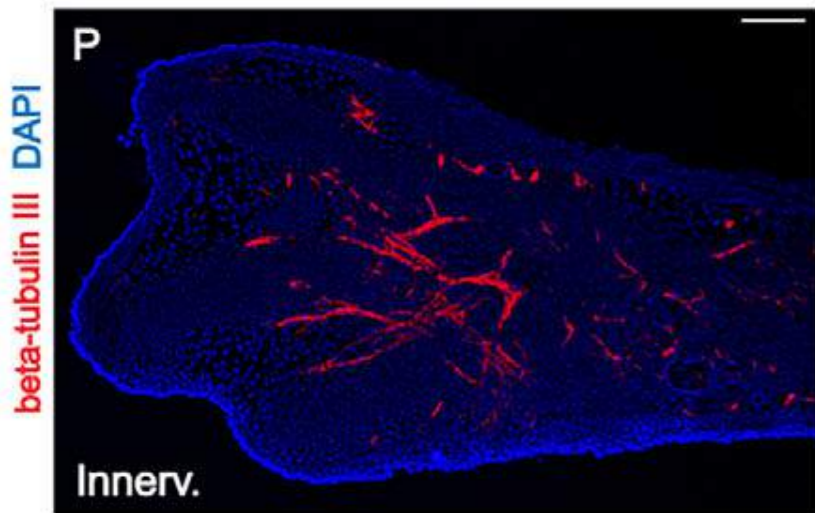
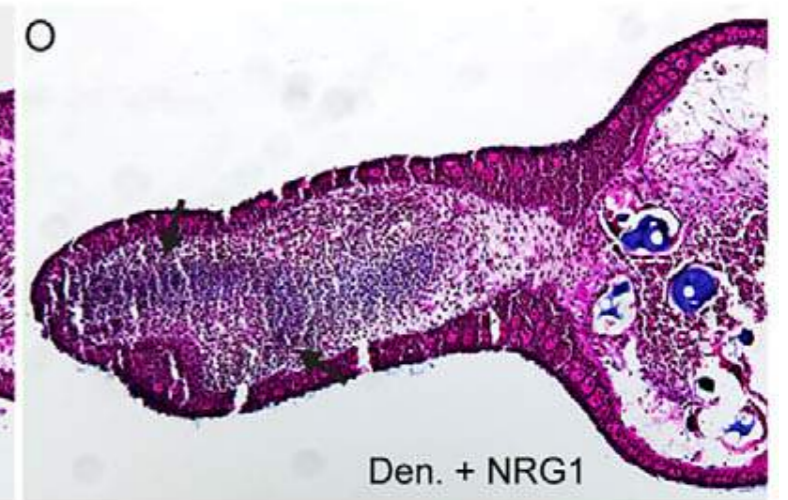
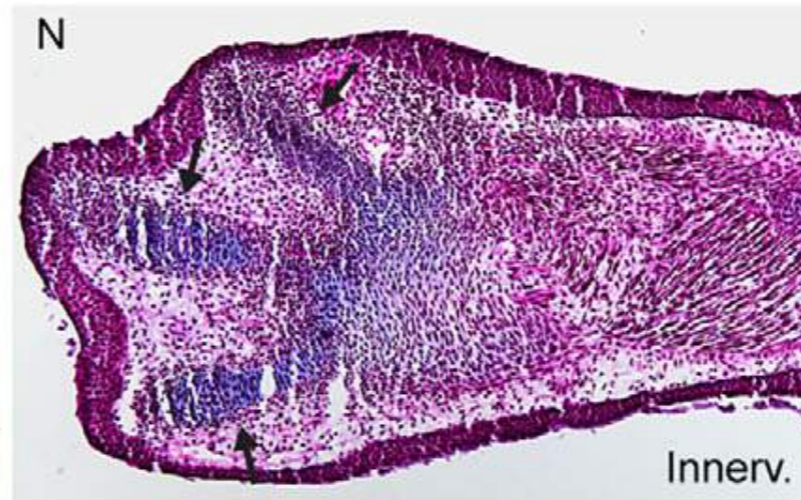
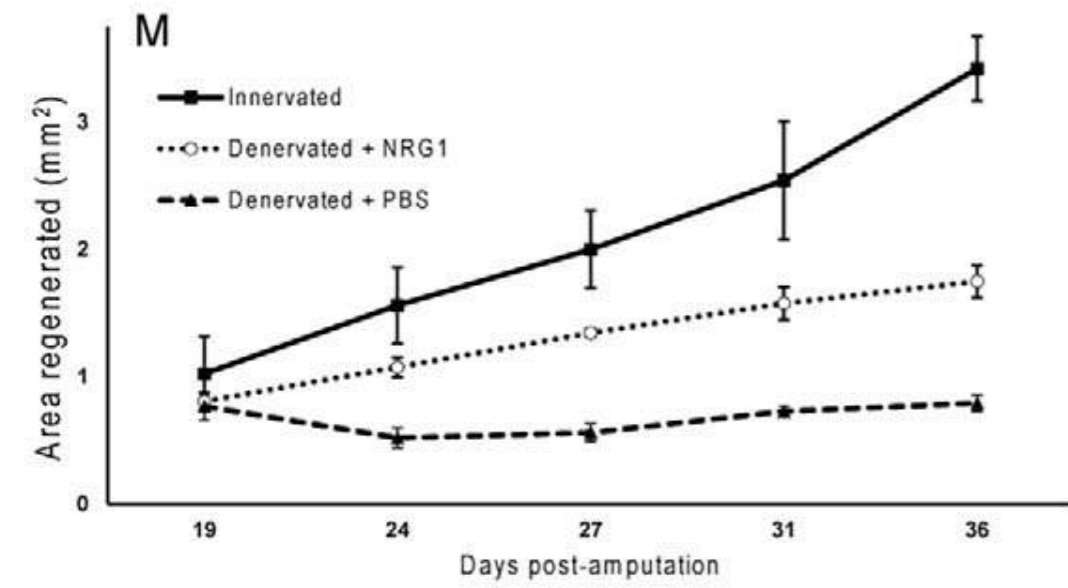


Fig 3

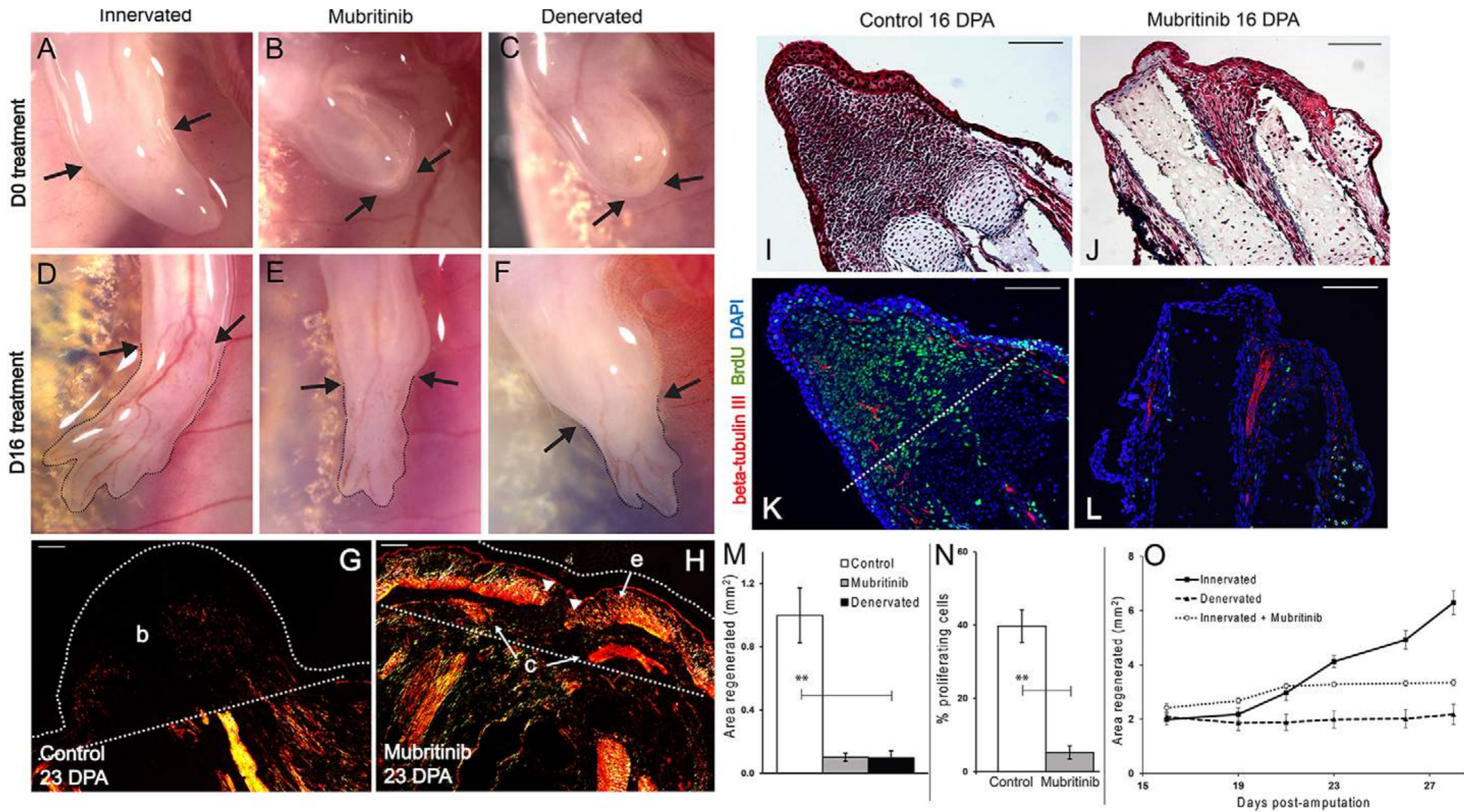


Fig 4

