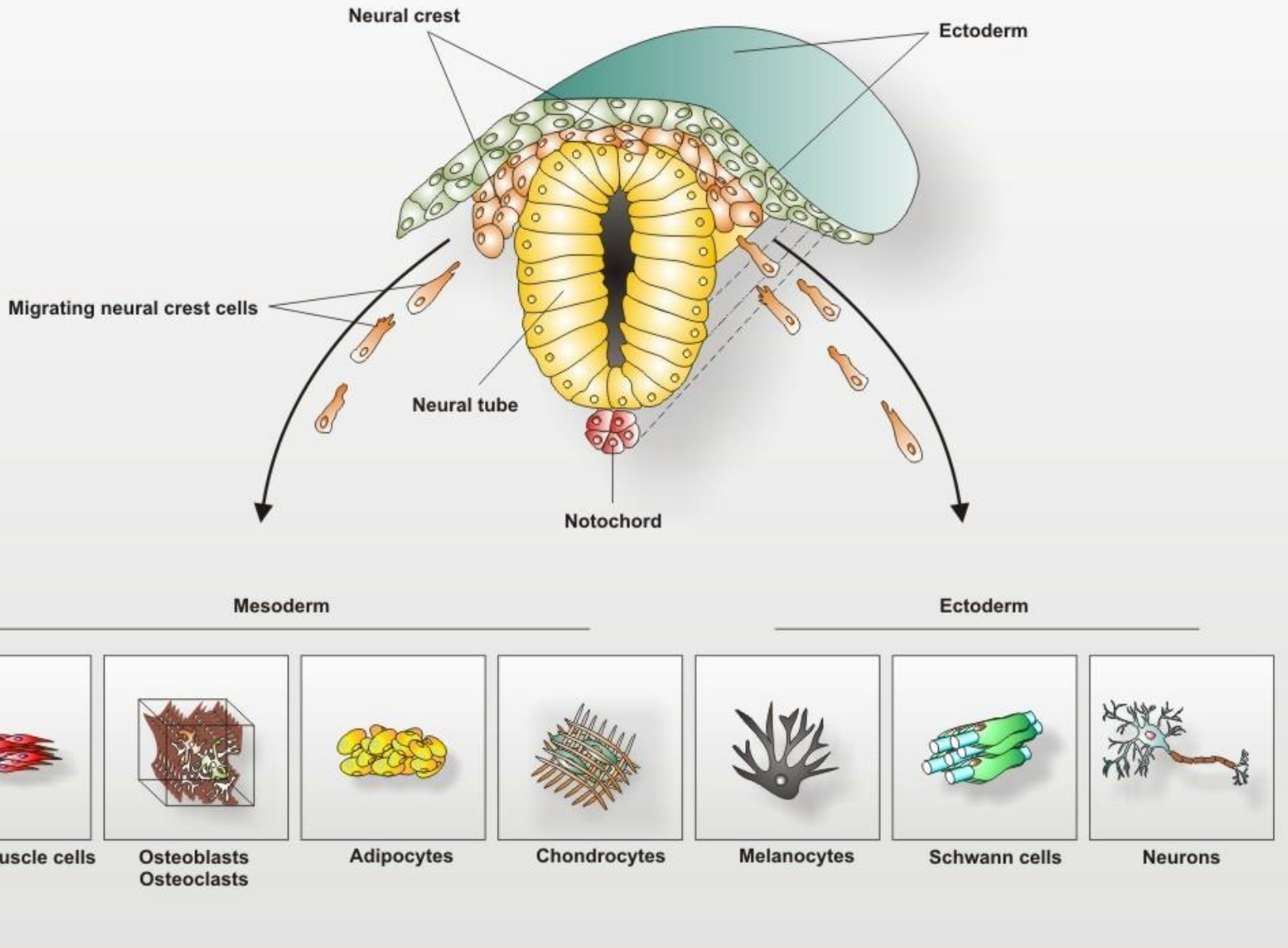
Роль рецепторов ErbB в формировании глиальных клеток периферической нервной системы и хромаффинных клеток

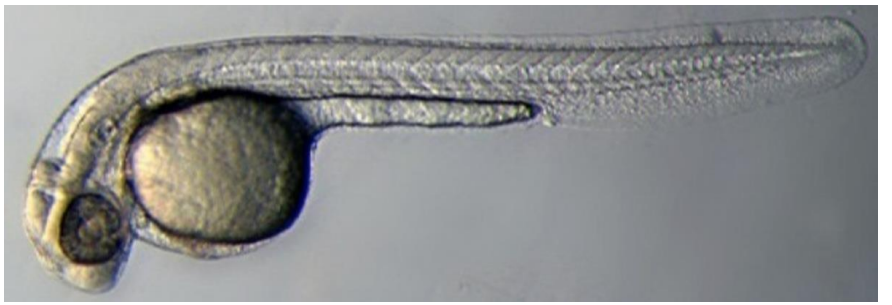
Широков Максим Павлович, **Дячук В.А.**

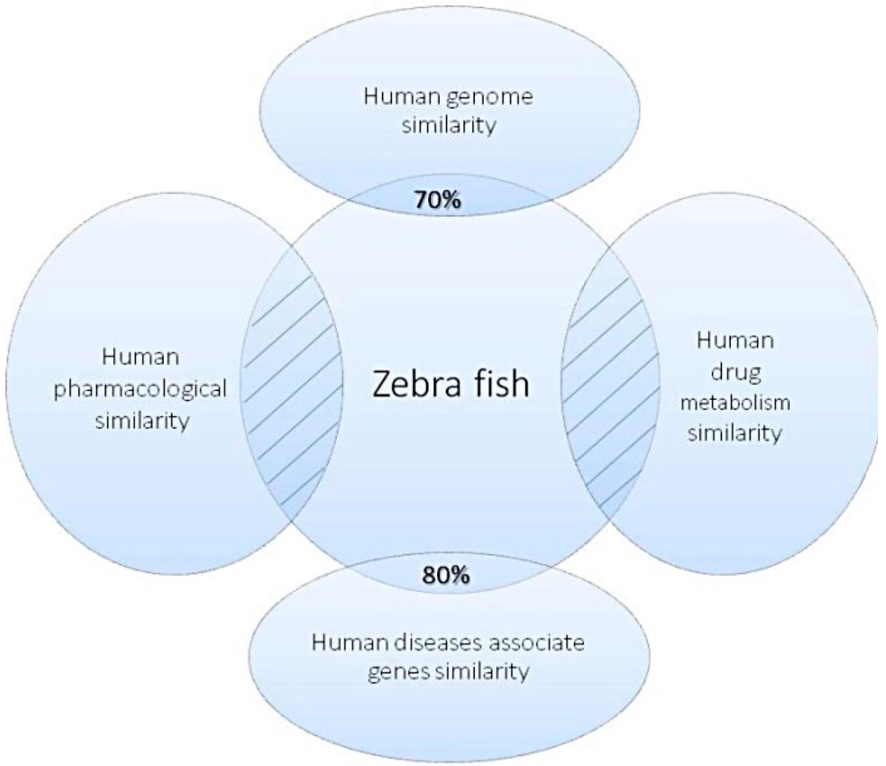
Национальный Научный Центр морской биологии Дальневосточного отделения Российской Академии наук , Россия

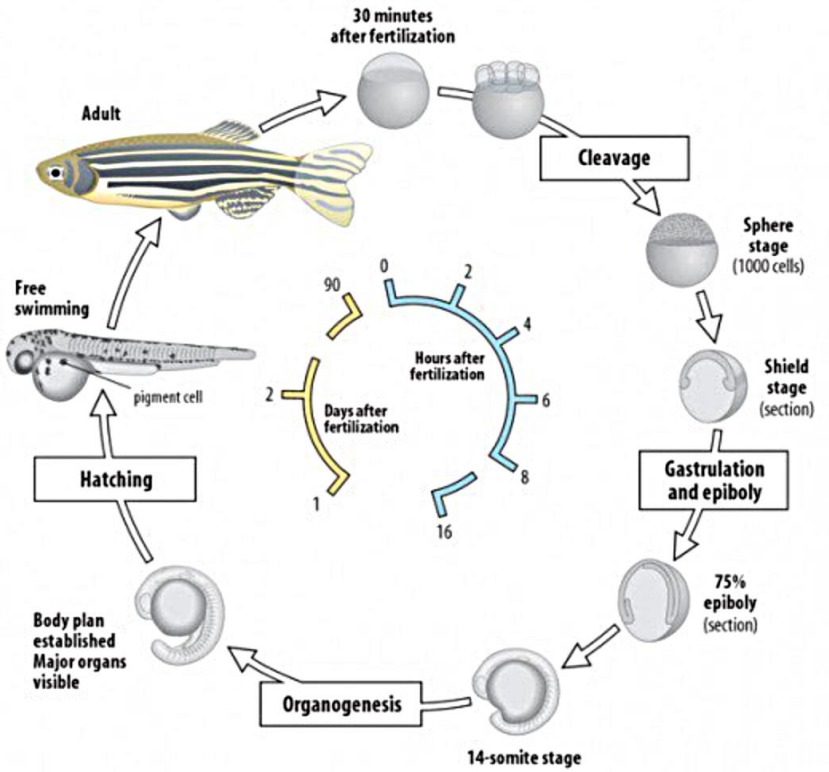

Neural crest
Ectoderm
Migrating neural crest cells
Neural tube
Notochord
Mesoderm
Ectoderm
Smooth muscle cells
Osteoblasts
Osteoclasts
Adipocytes
Chondrocytes
Melanocytes
Schwann cells
Neurons

Zebrafish transgenic lines for developmental biology

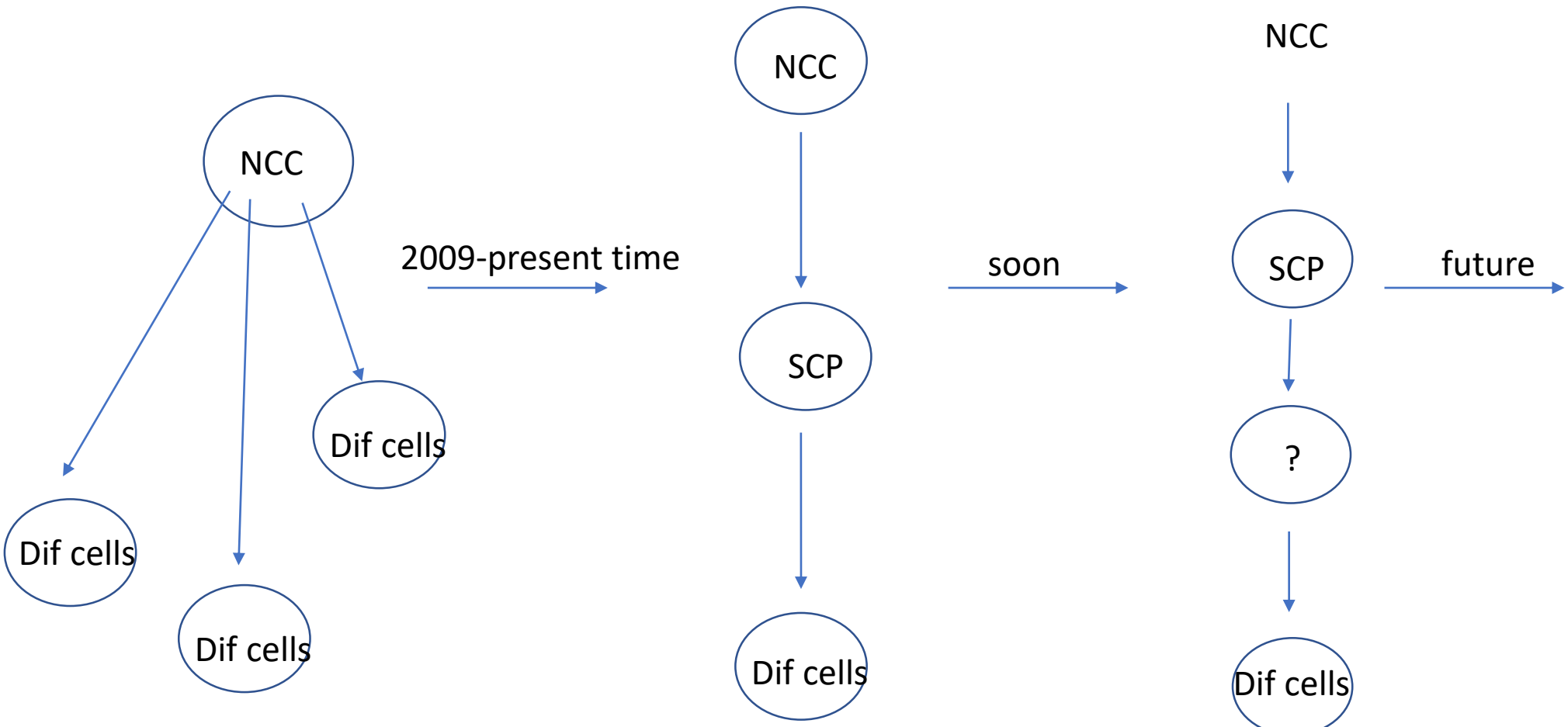
1. **They're an awesome model of human development**
2. **Their embryos are transparent**
3. **Fast reproduction**
4. **Inexpensive**



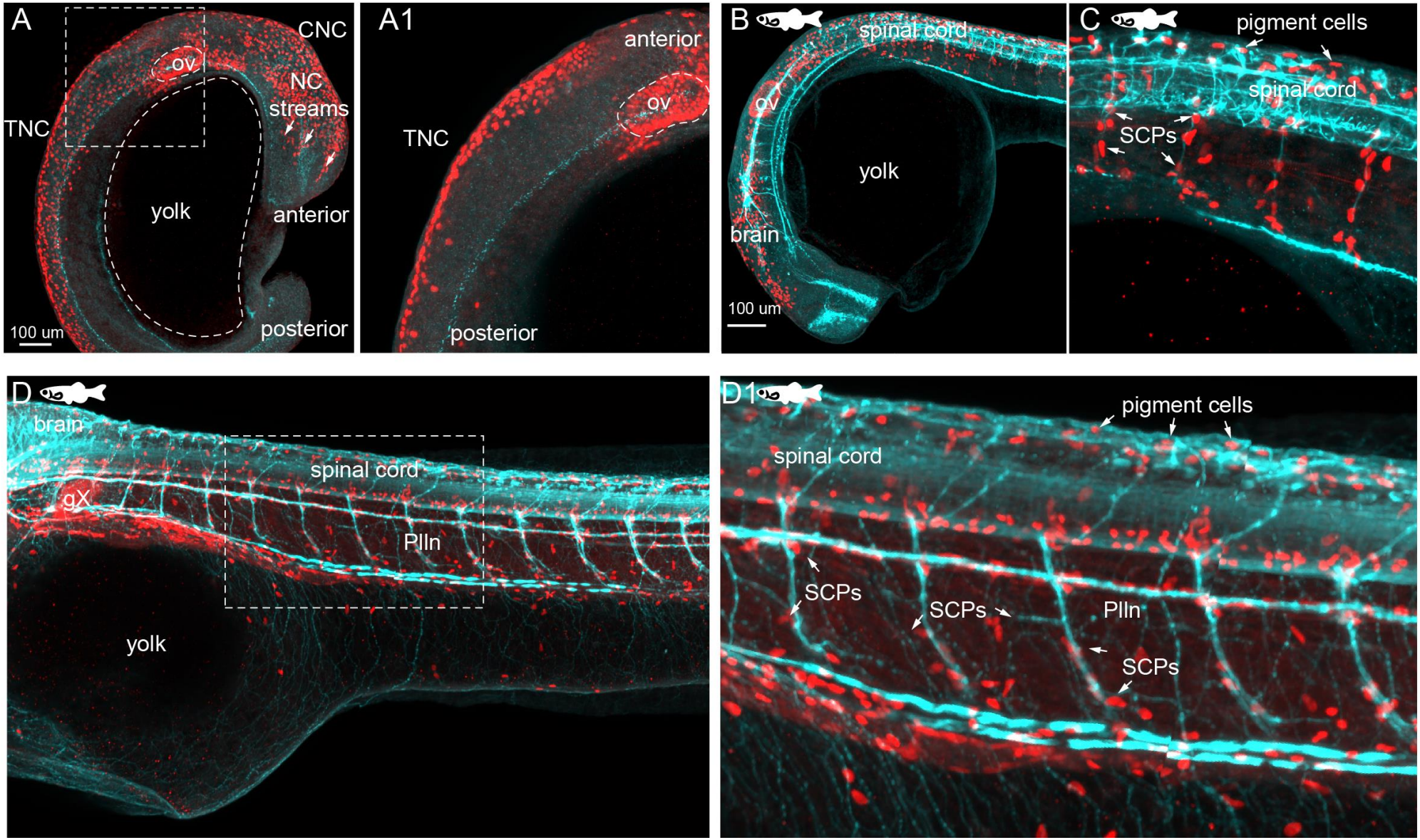


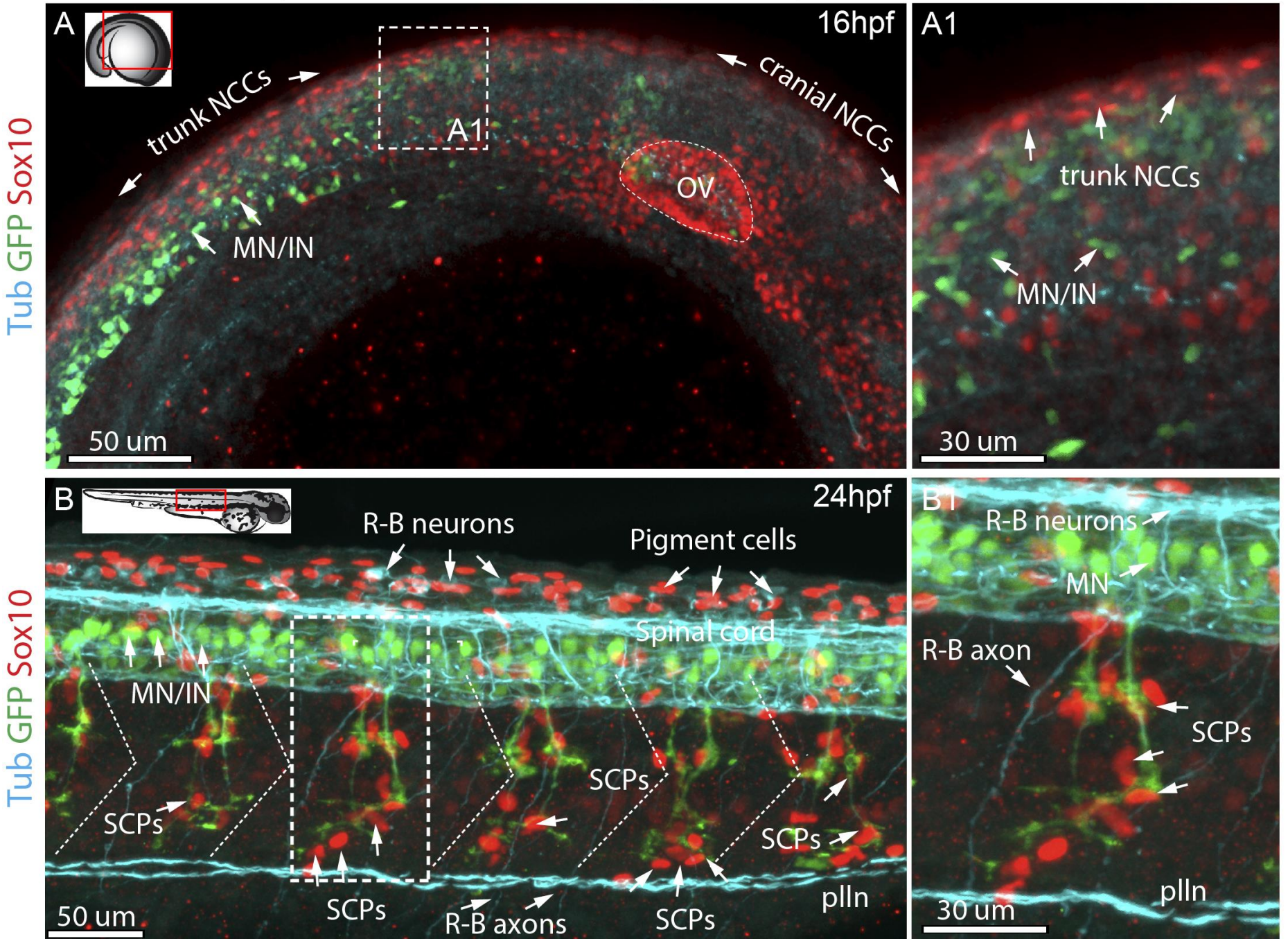


Evolution of understanding the hierarchy of embryonic cell types

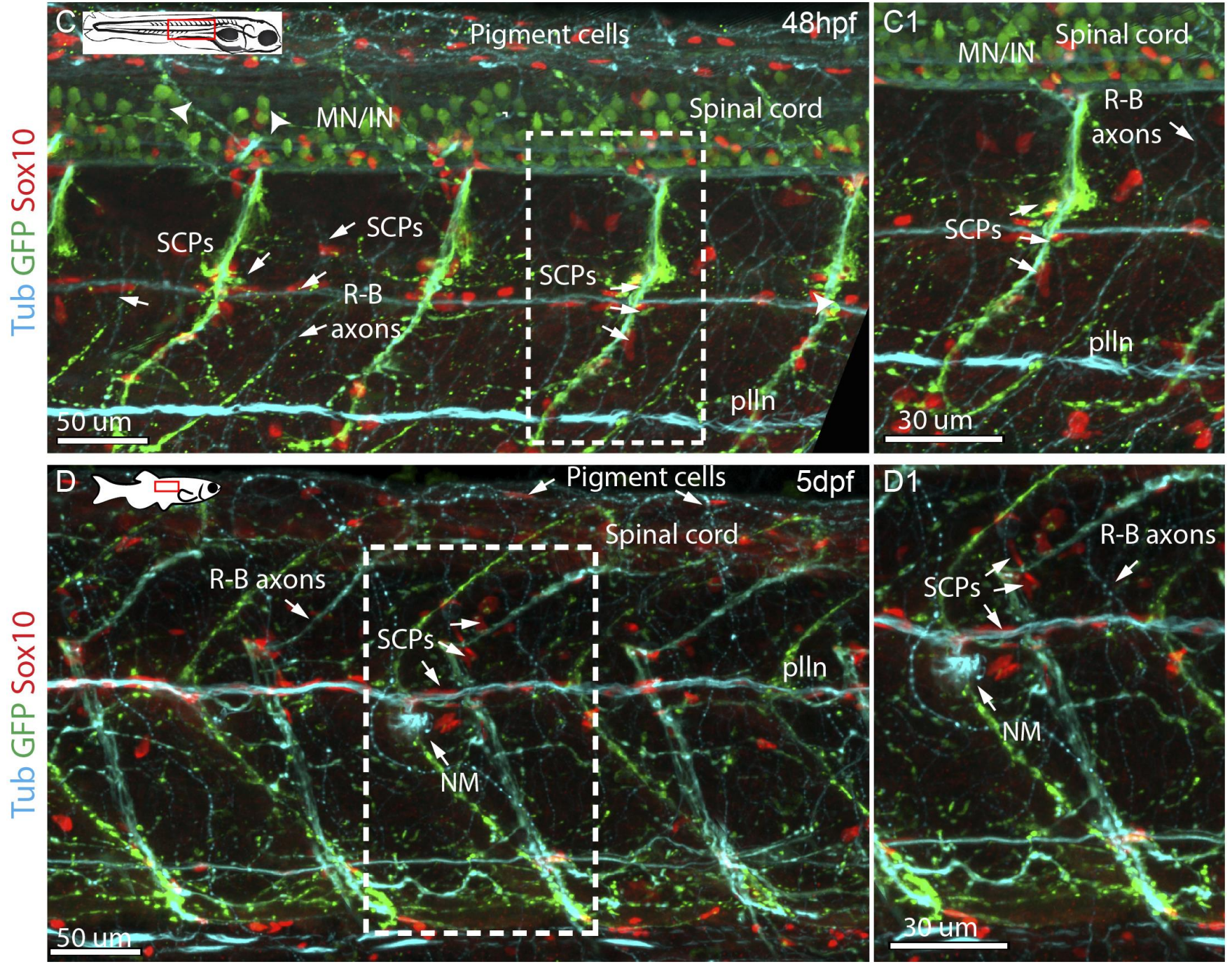


Expression of SOX10 in Zebrafish larvae (WT)

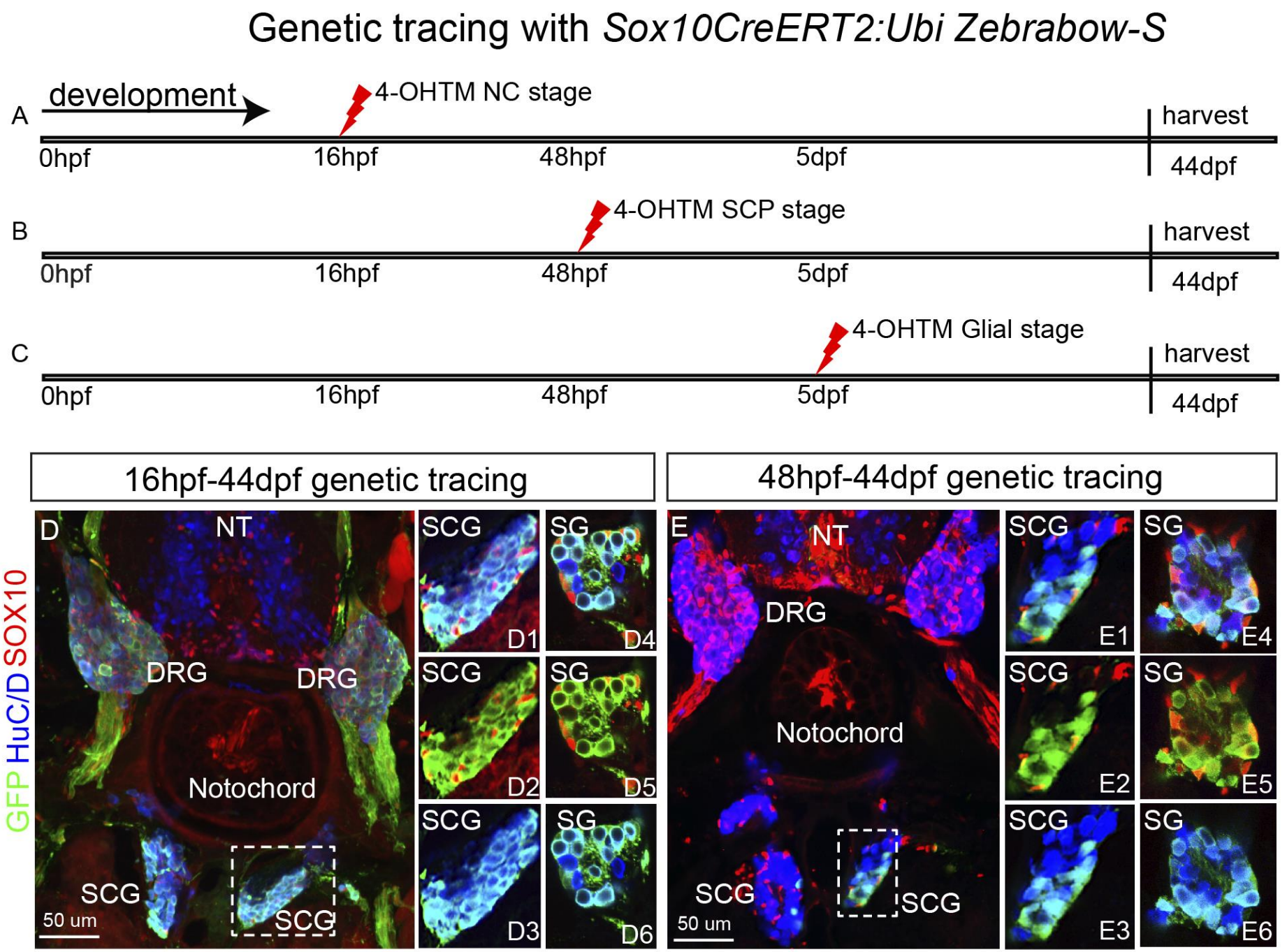



Expression of SOX10 in Tg(hb9:GFP) zebrafish larvae
A
16hpf
trunk NCCs
cranial NCCs
A1
OV
MN/IN
50 um
A1
trunk NCCs
MN/IN
30 um
Tub GFP Sox10
B
24hpf
R-B neurons
Pigment cells
Spinal cord
MN/IN
SCPs
SCPs
SCPs
SCPs
SCPs
R-B axons
pIln
50 um
B1
R-B neurons
MN
R-B axon
SCPs
pIln
30 um
Tub GFP Sox10

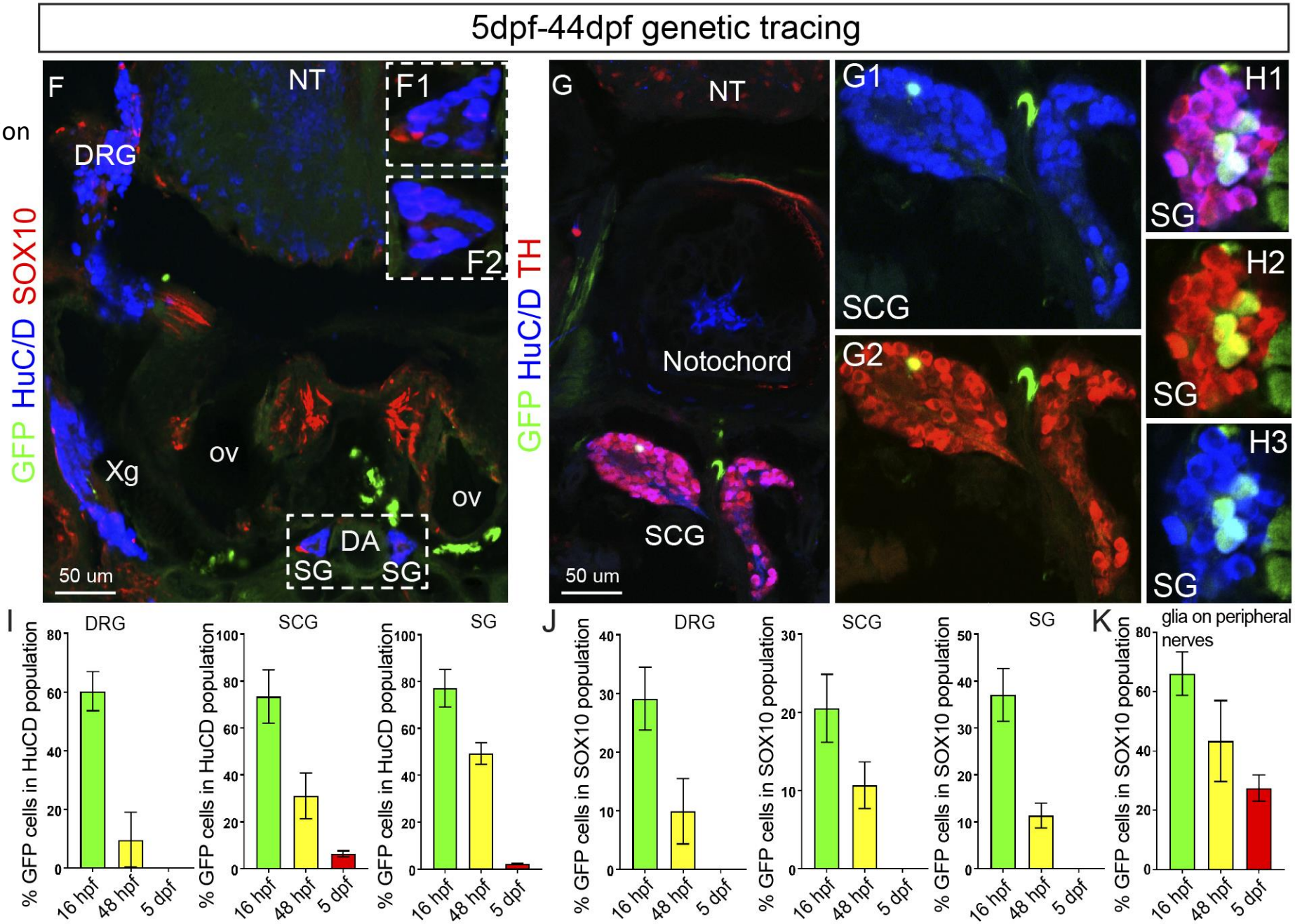
continuation



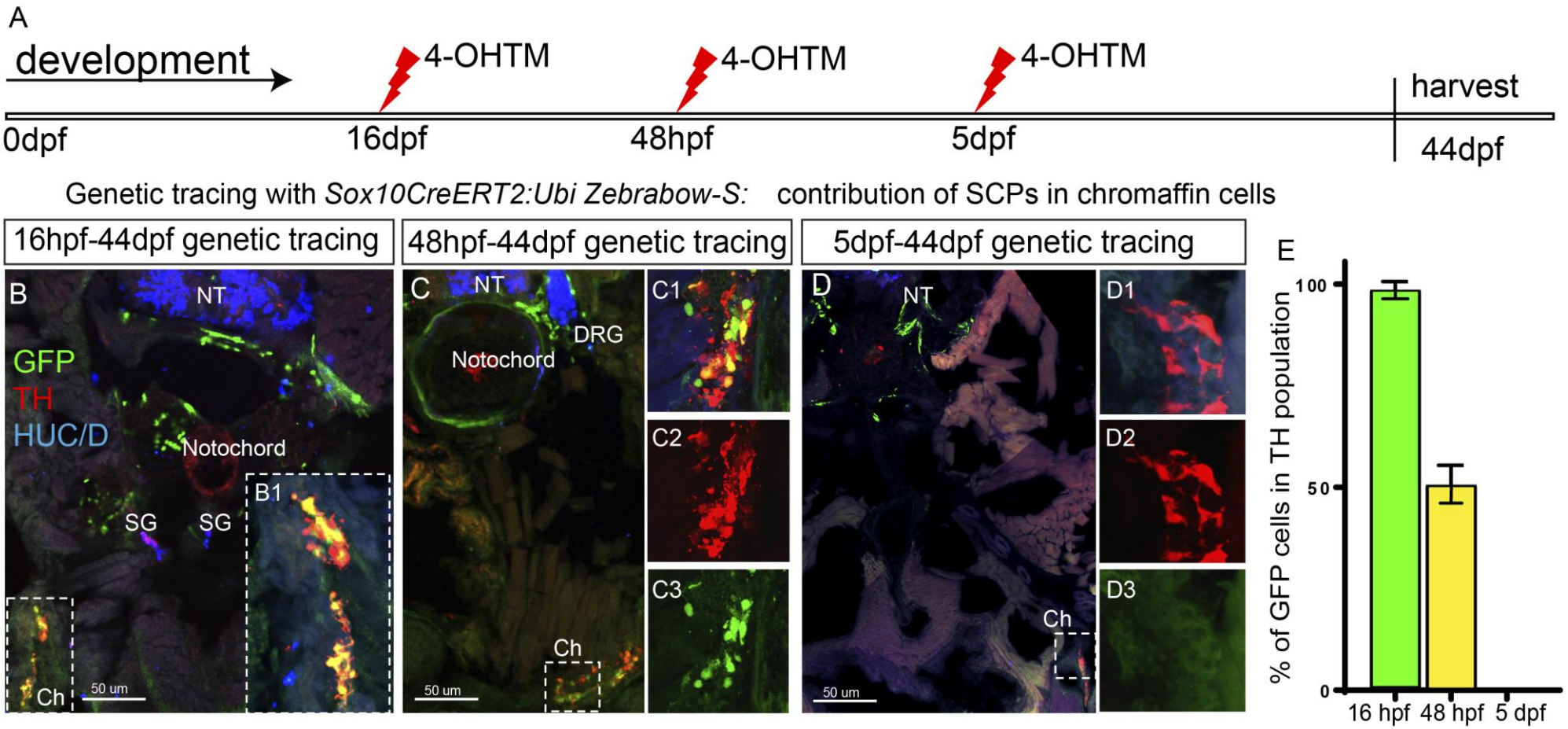
Sympathetic neurons in SCG and SG originate from nerve-associated Schwann cell precursors



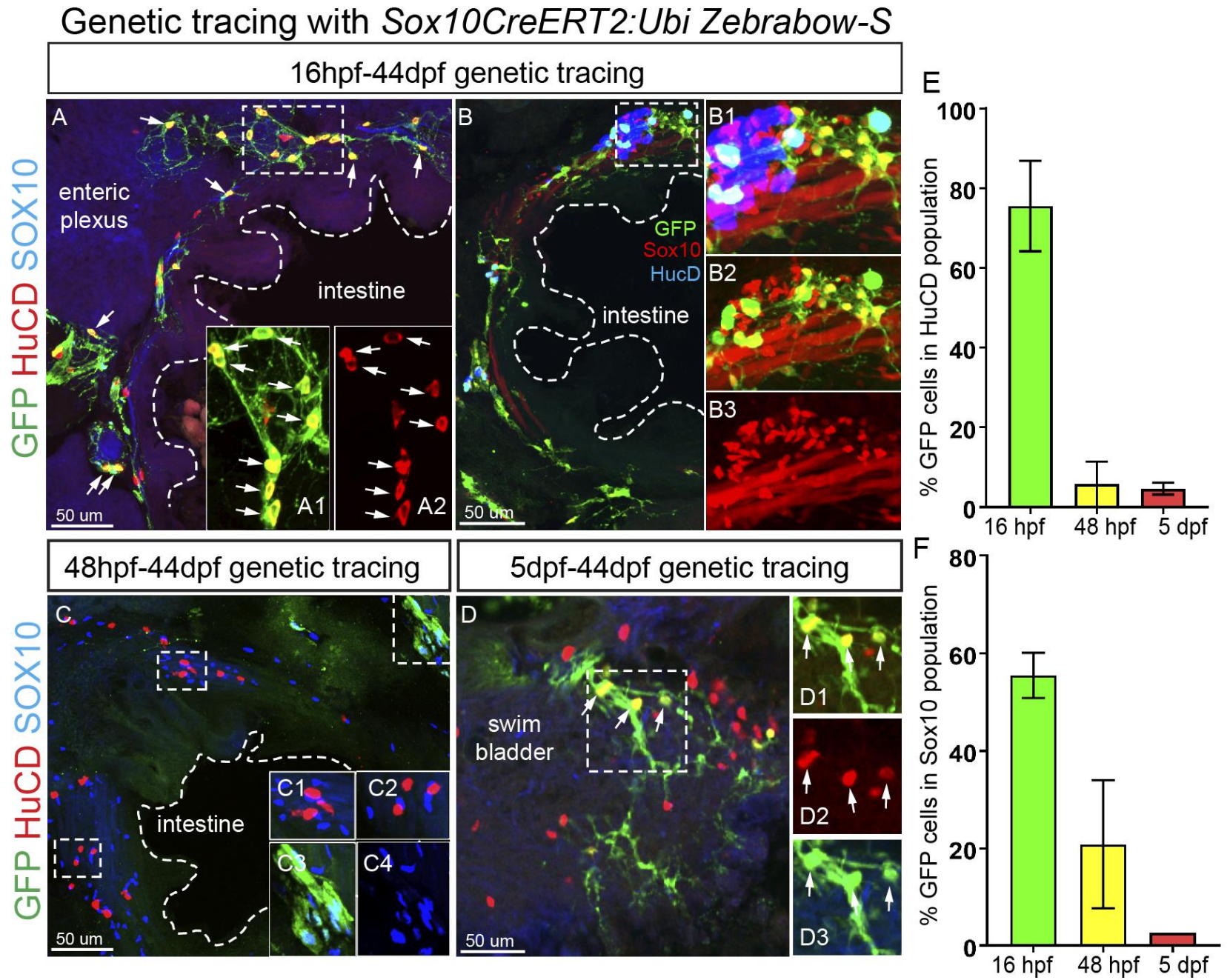
continuation



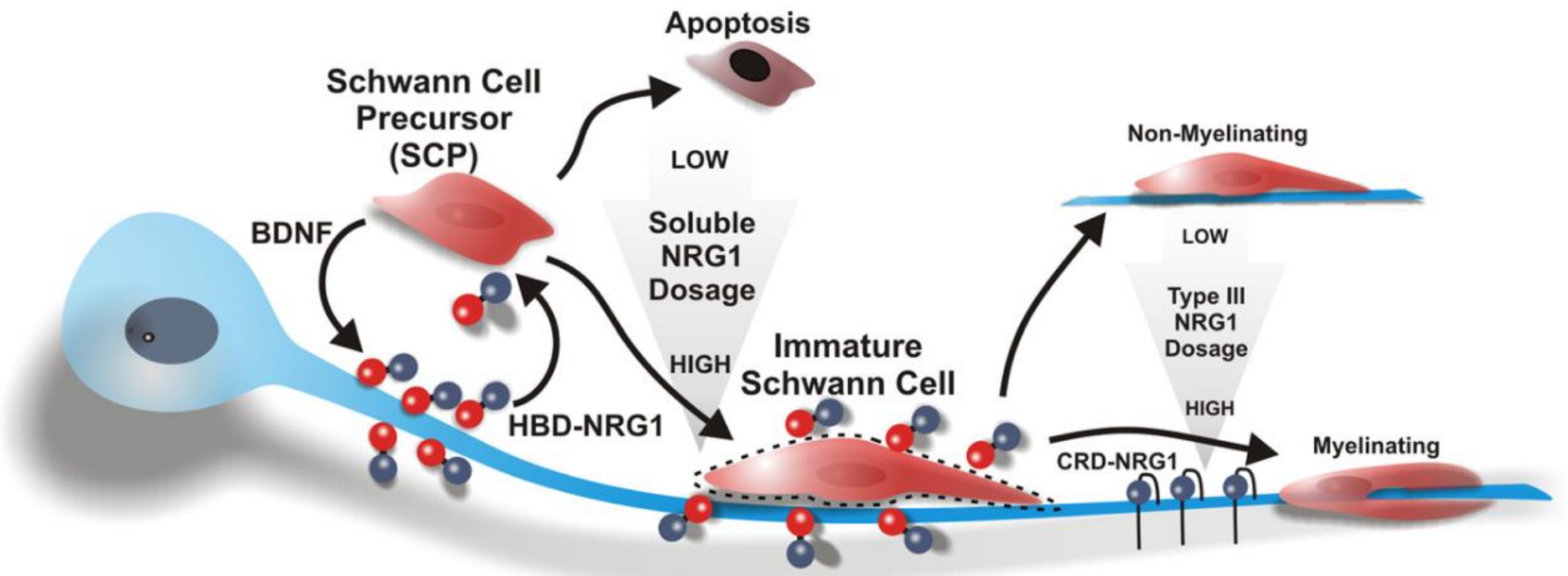
Zebrafish chromaffin cells originate from SCPs



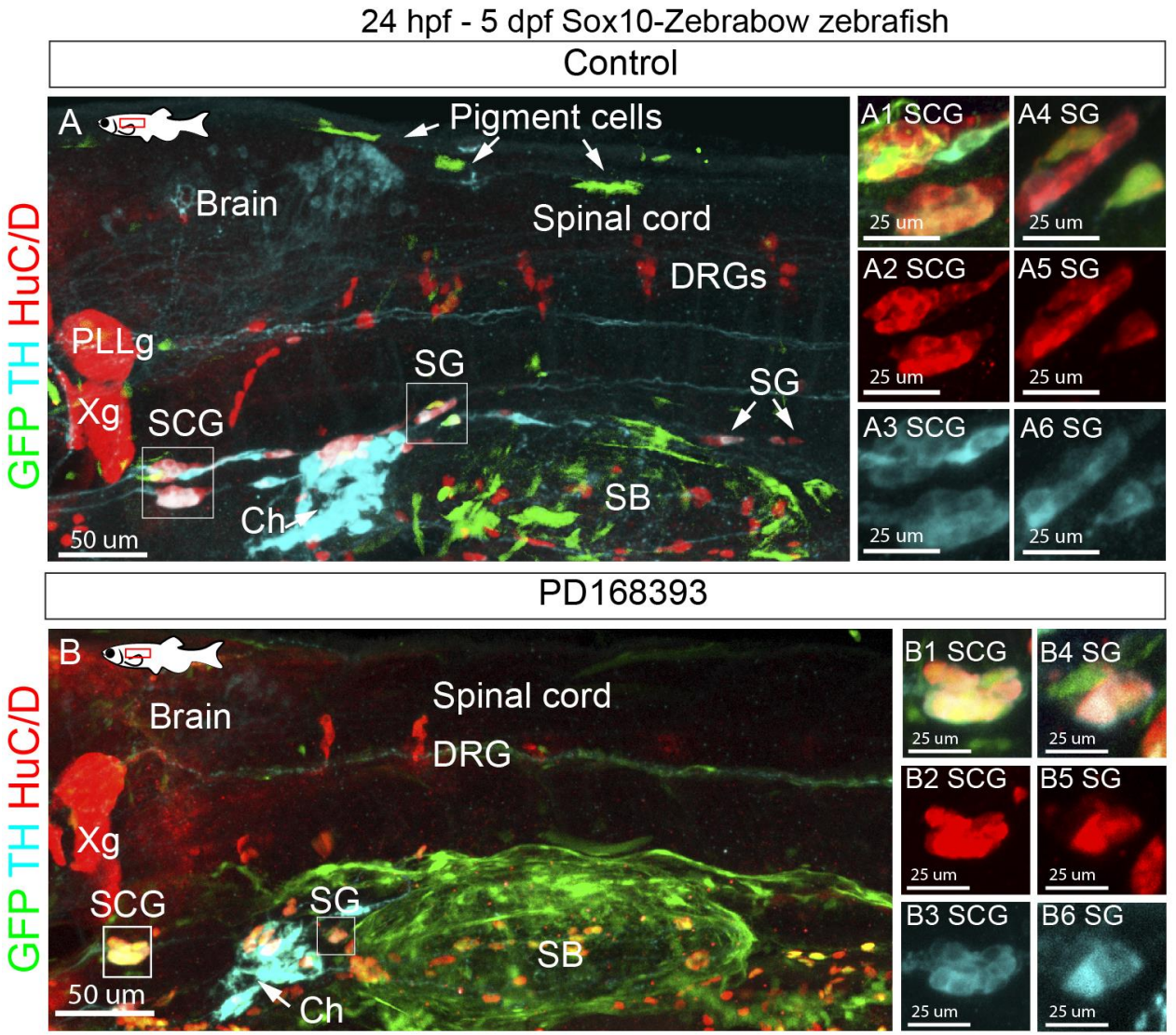
NCCs and SCPs convergently differentiate into the neurons of peripheral nervous system

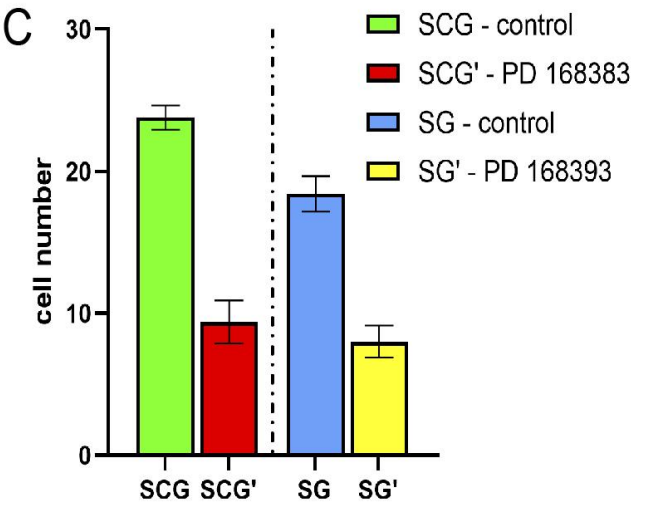


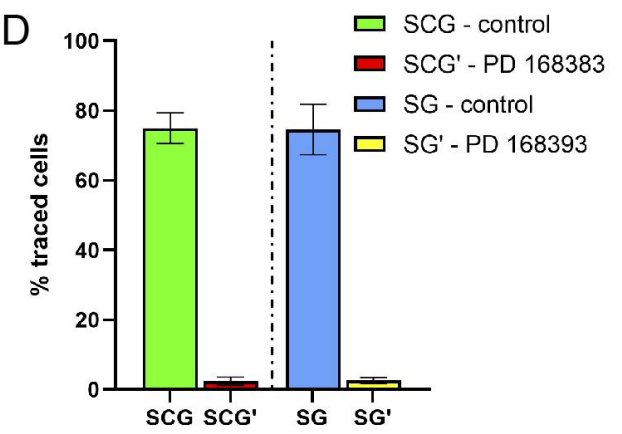
NRG1-ErBb signaling involves in neuroglial interactions



Development of peripheral neurons and chromaffin cells is perturbed in zebrafish larvae treated with ERBB inhibitor PD168393



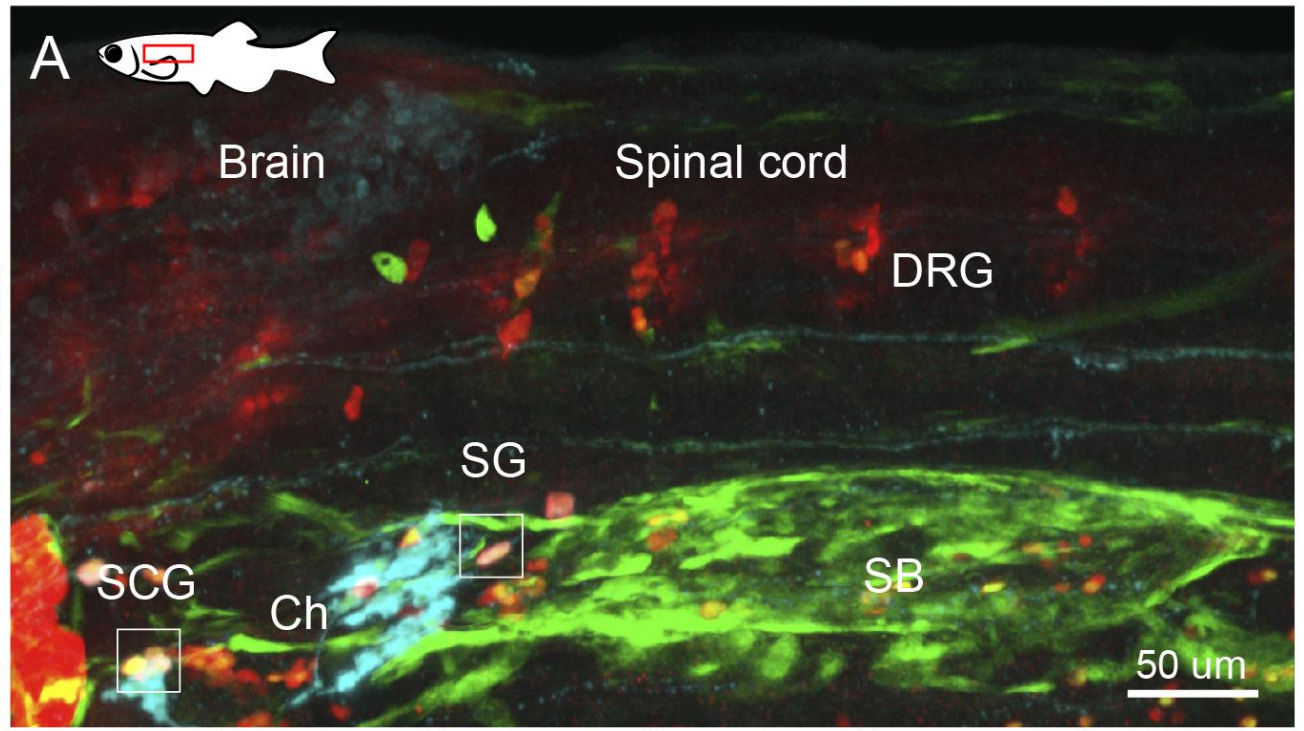


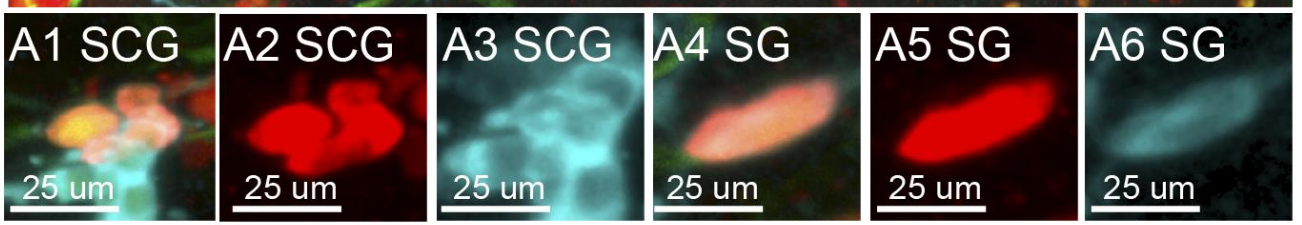


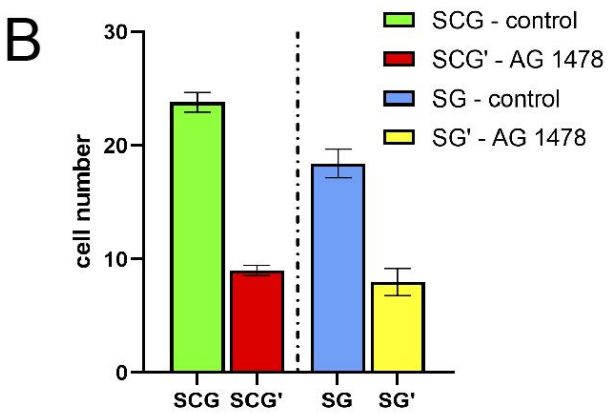
Development of DRG, sympathetic ganglia and chromaffin cells after ERBB2/3 inhibition with AG-1478

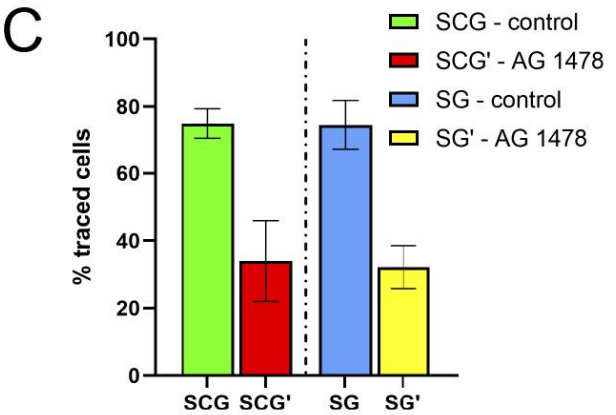
24 hpf - 5 dpf Sox10-Zebrabow zebrafish

AG 1478

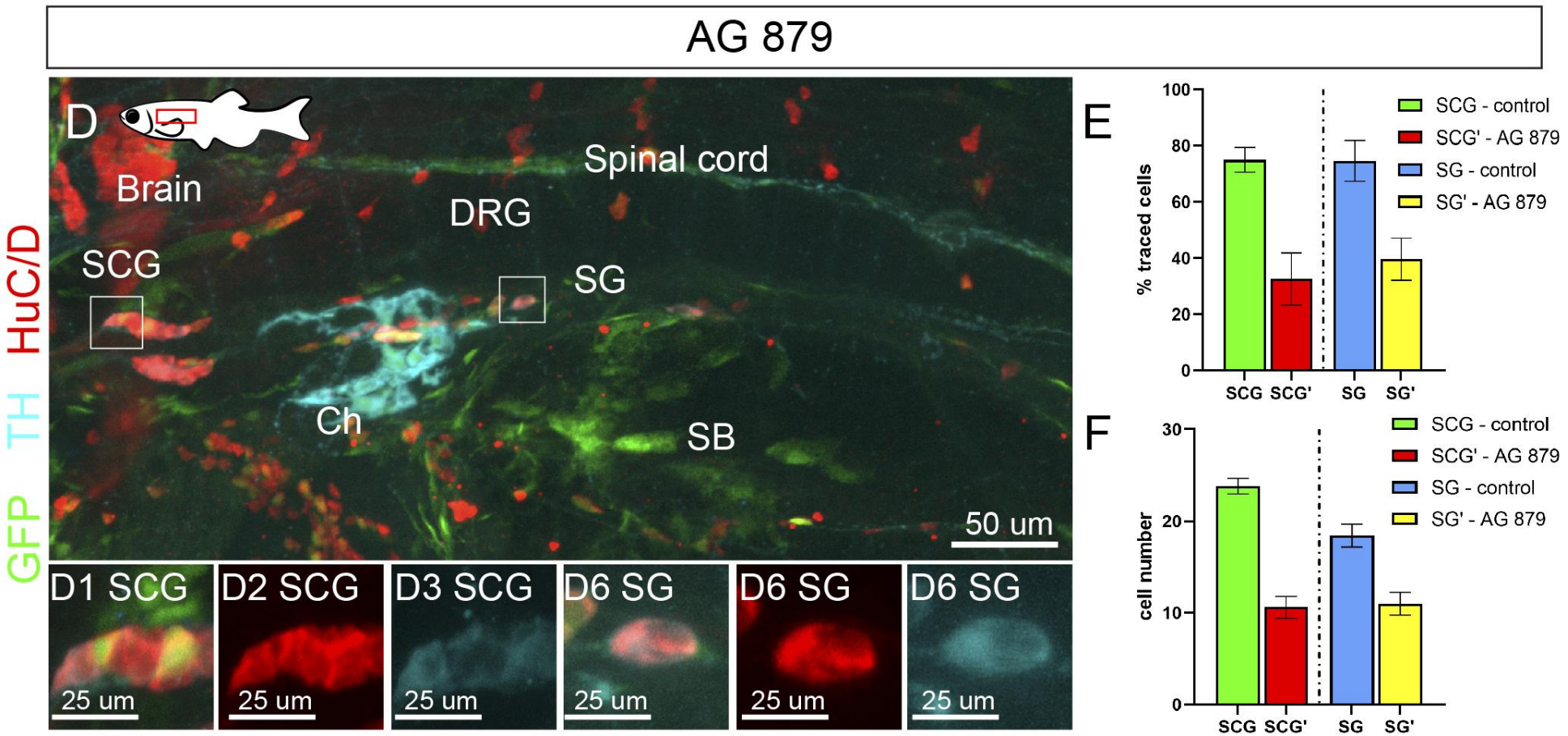




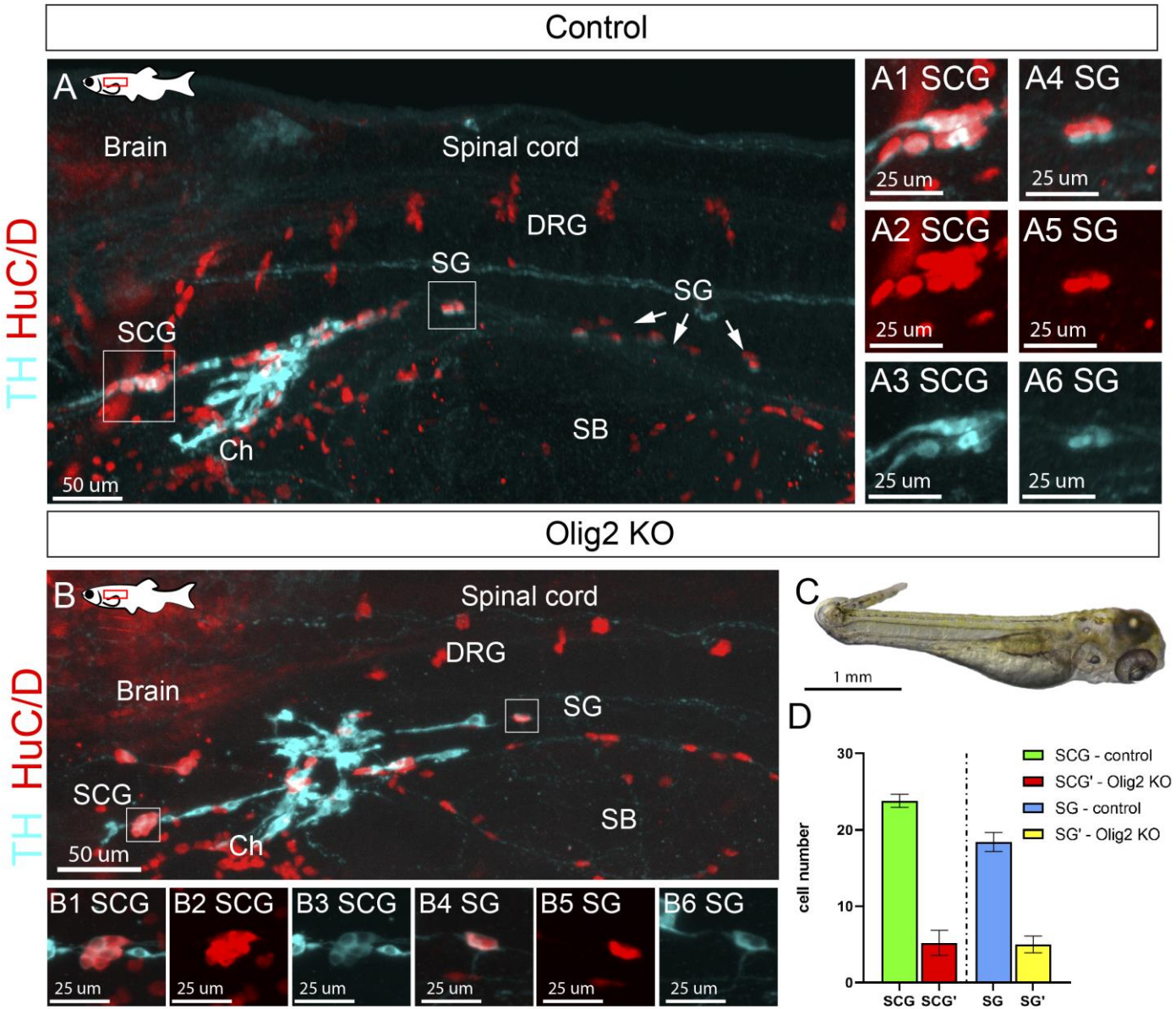




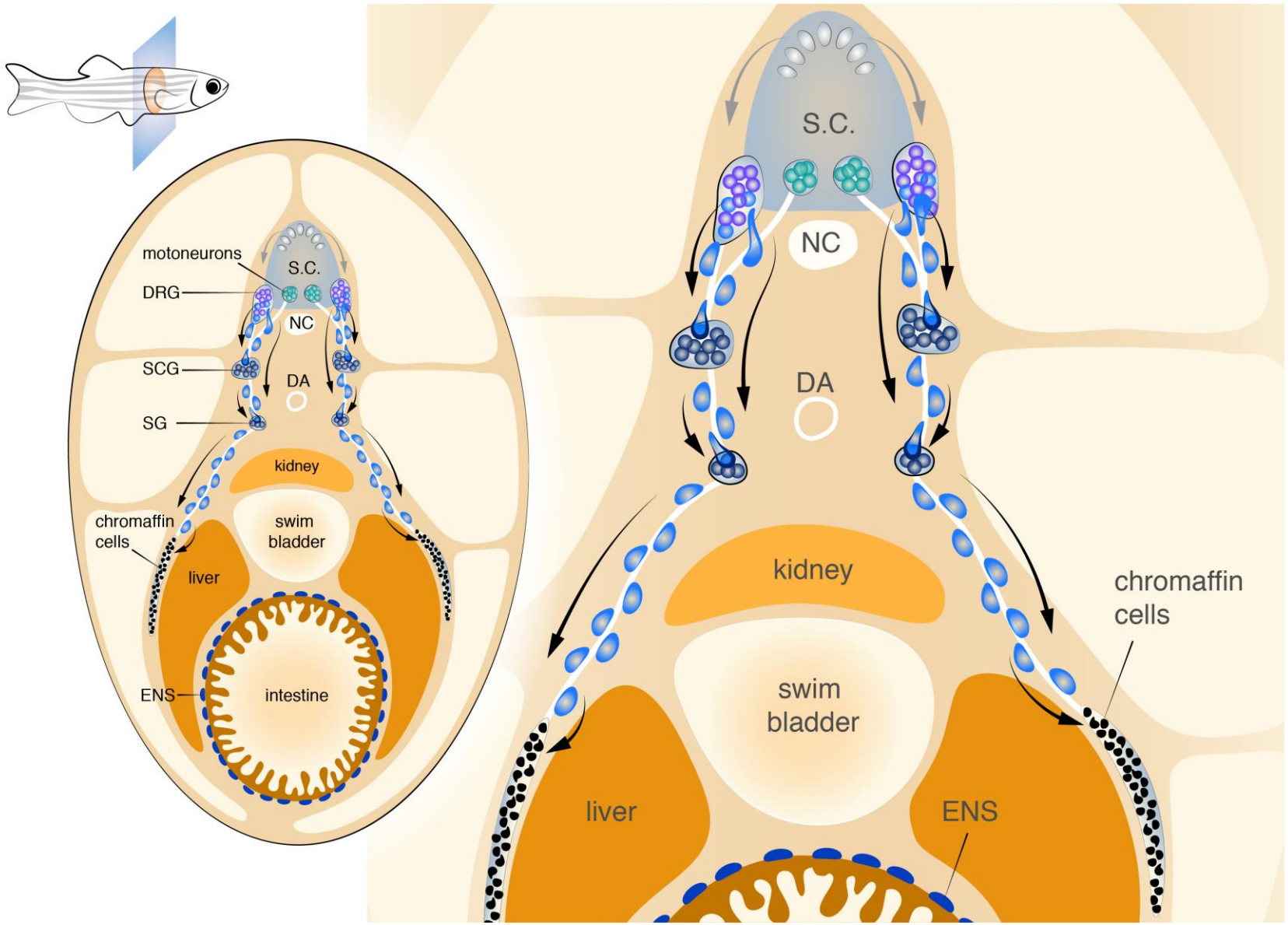
Development of peripheral neurons and chromaffin cells after ERBB2 inhibition with AG-879



Disruption of motoneuron progenitor-specific *Olig2* by CRISPR/CAS9 results in the abnormal development of sympathetic ganglia and chromaffin cells



Schematic illustration of the origin of sympathetic neurons and chromaffin cells from nerve-associated SCPs during zebrafish development



ACKNOWLEDGEMENTS

Collaborators:

Karolinska Institutet

Igor Adameyko

Kaj Fried

Andey Chagin

Sunadome Kazunori

Max-Planck-Institut

Christiane Nüsslein-Volhard

Ajeet Pratap Singh

Irion Uwe

National Scientific Center of Marine Biology

Dmitrii Kamenev

Max Shirokov

Российский научный фонд

РФФИ

Vetenskapsrådet