

Children's Hand

- 14:00 – 14:10 Embryology - JA
- 14:10– 14:20 – Nomenclature/classification - JA
- 14:20 – 15:30 Syndactyly, Hypoplastic Thumb, Radial Club hands, Polydactyly, Constriction Ring syndrome – Brid Crowley
- 15:30 – 15:50 Coffee
- 15:50-16:30 Paediatric hand injuries – Brid Crowley
- 16:30 – 17:00 Madelung, Diaphyseal Eclasia, PRUS - JA



Embryology

Jeff Auyeung





ANNE GEDDES
P U R E

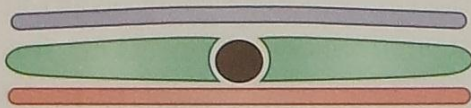


Figure 15.1
Early neurulation

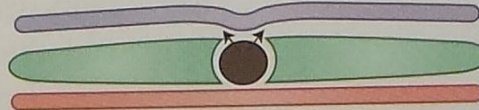


Figure 15.2
Signals from the notochord start off the processes of neurulation in the ectoderm

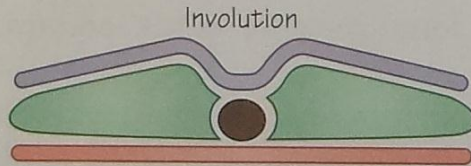


Figure 15.3
Ectoderm involutes, starts to form a tube

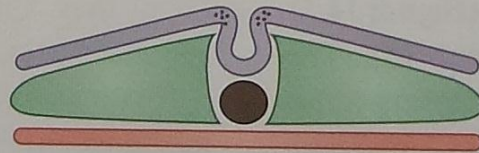


Figure 15.4
Neural crest cells appear in the crests of the waves of the ectoderm that are moving towards each other

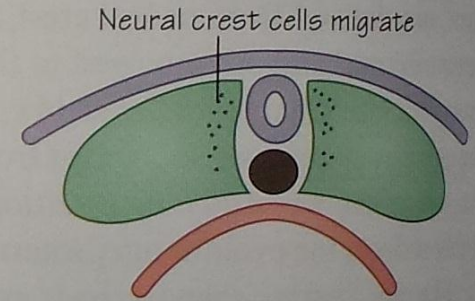
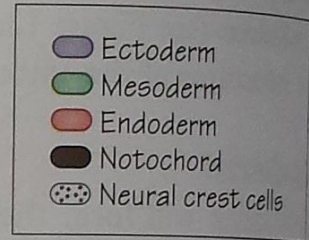
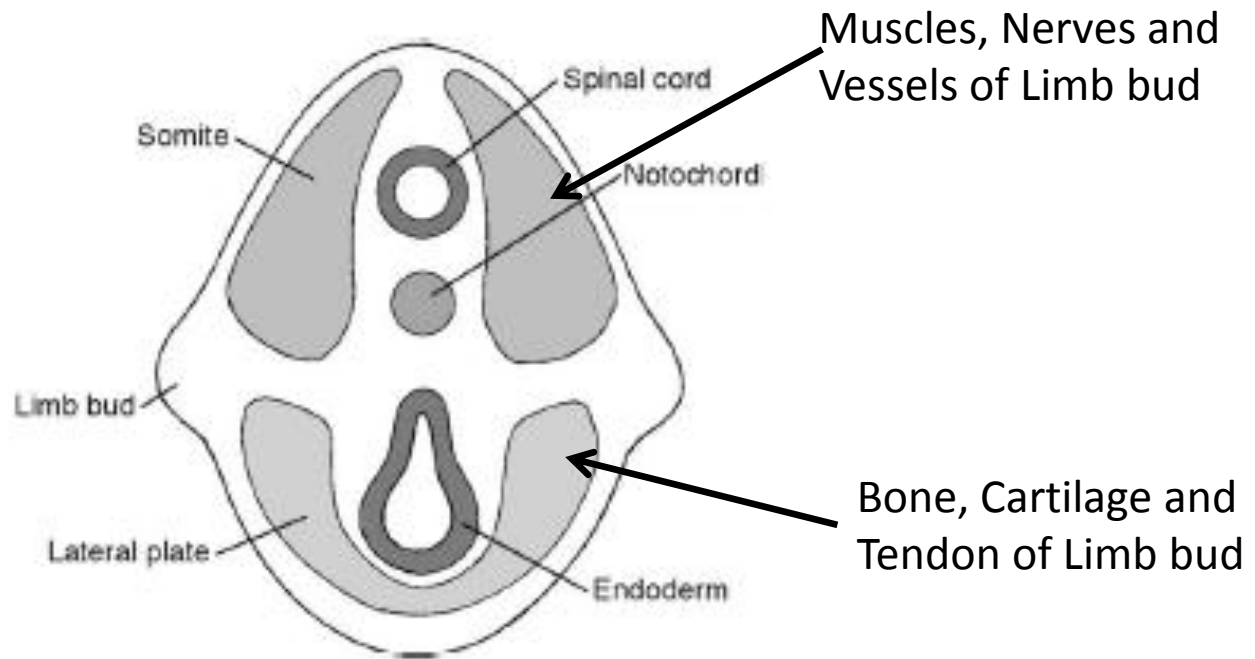
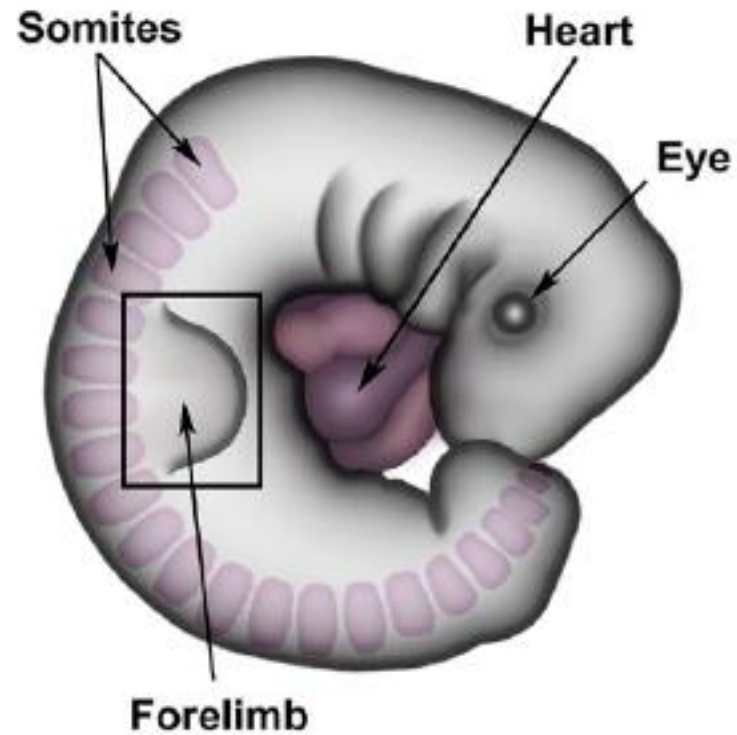


Figure 15.5
The neural tube has formed, and neural crest cells move away





Day 26

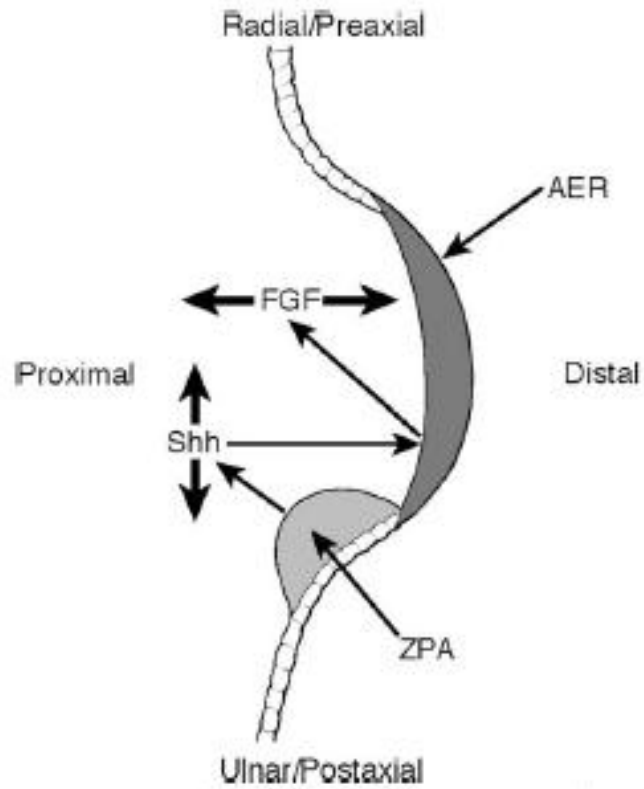


8 weeks

- Embryogenesis complete
- 4-8 weeks period of rapid and fragile limb development



Limb bud formation



Summary of pathways and substances

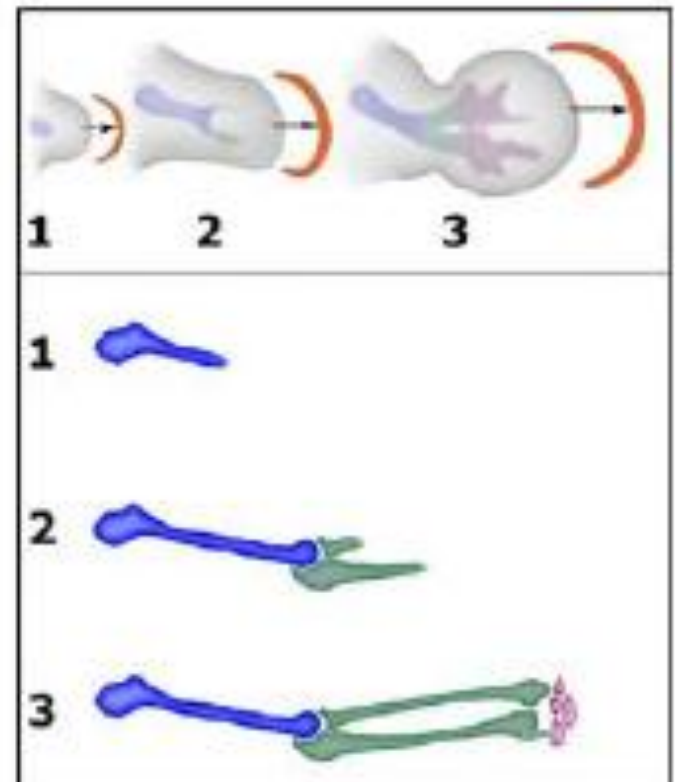
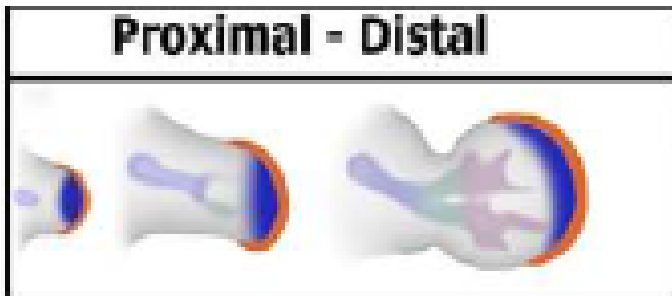
Signalling Pathway	Responsible substance	Action
Apical Ectodermal Ridge	FGF	Proximo-distal limb development and interdigital necrosis
Zone of Polarising Activity	Shh	Radio-ulnar limb formation
Wnt Pathway	LMX1	Dorsalisation of limb





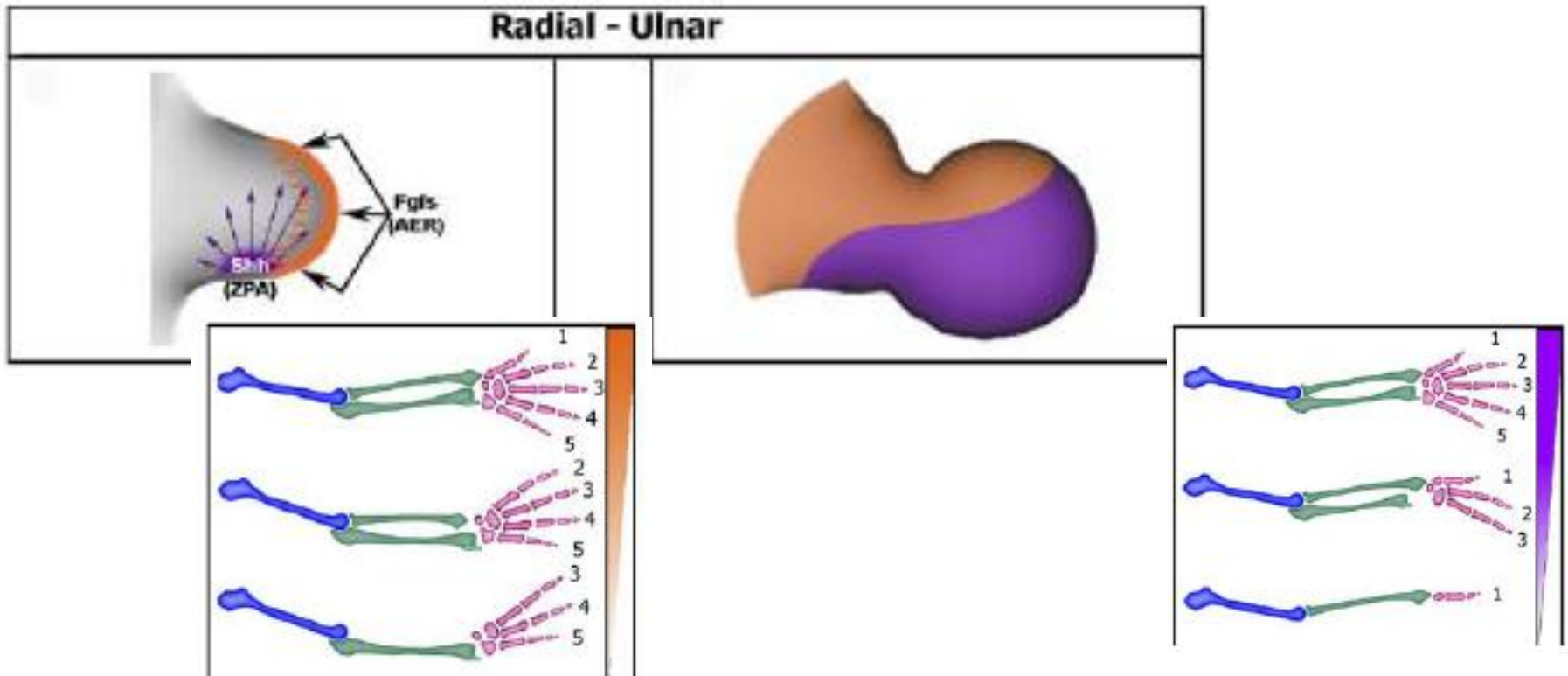
Proximo-distal growth

- Apical Ectodermal Ridge
- Growth Factor is FGF
- Activates HOX genes



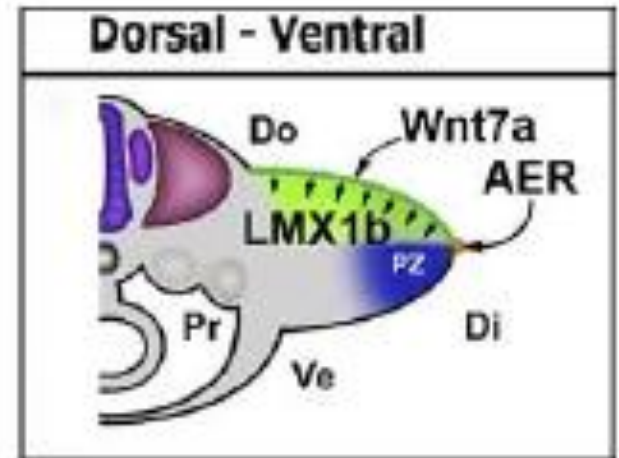
Radio-ulnar

- Zone Polarising Activity
- Growth Factor – Sonic hedgehog (Shh) protein
- Ulnarisation dependent on gradient

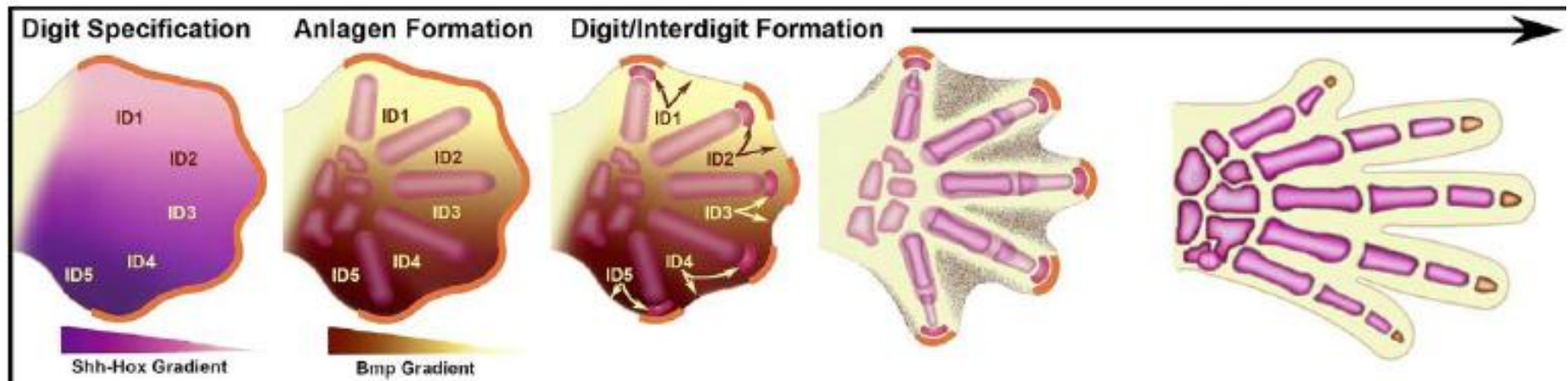


Dorso-Ventral

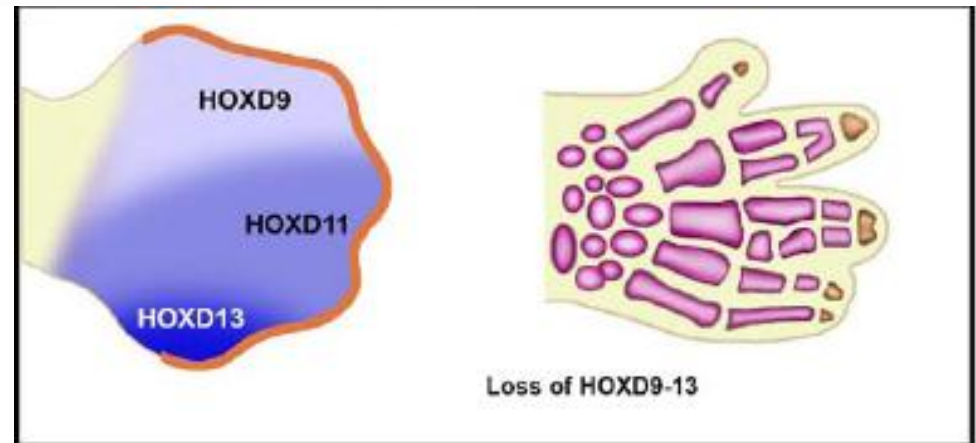
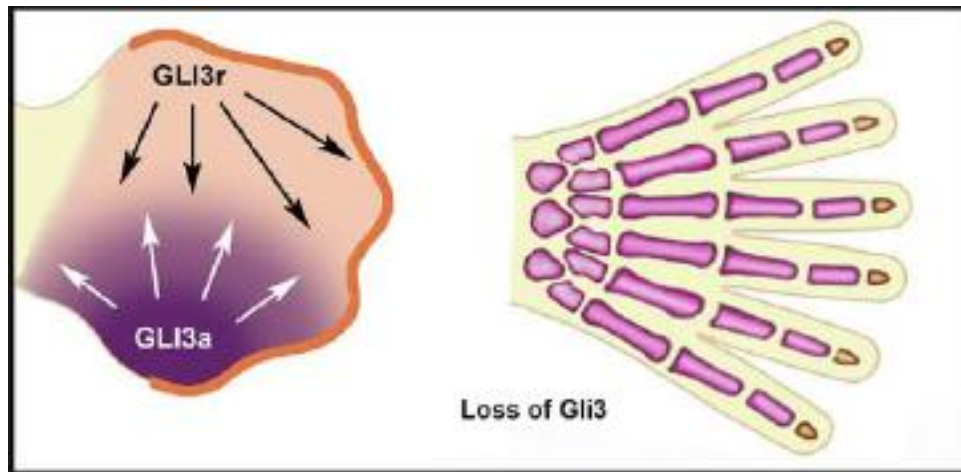
- Less clear cut
- Wnt Pathway with LMX1b protein dorsalisation
- En1 Pathway Ventralisation



Hand Plate formation



Hand Plate formation



Summary of pathways and substances

Signalling Pathway	Responsible substance	Action
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