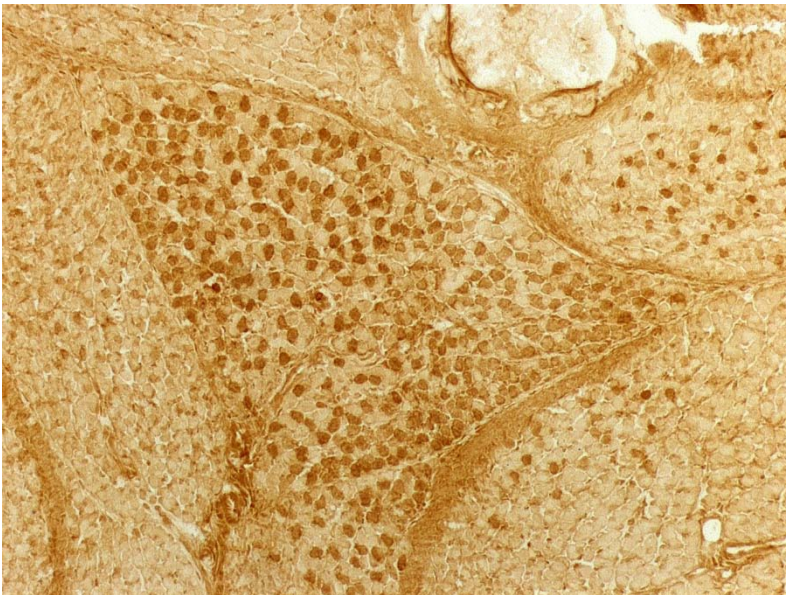


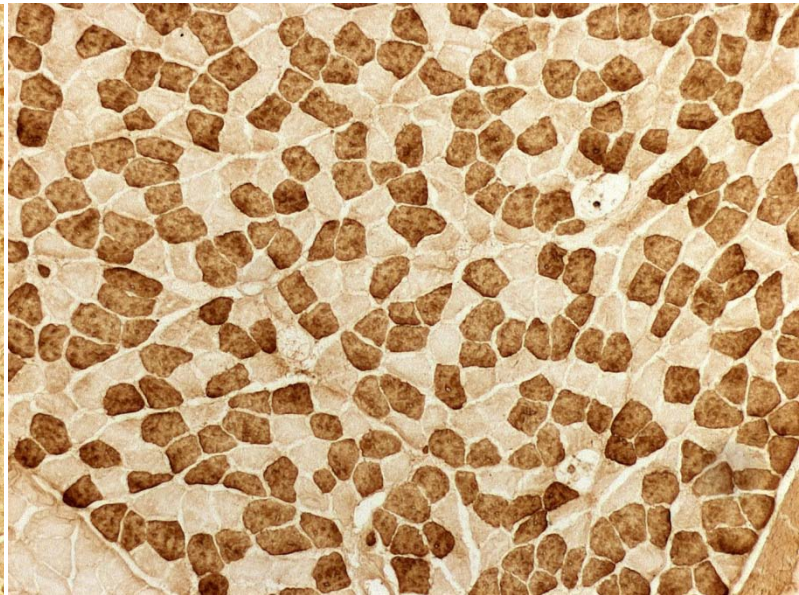
Exercise 1: Estimate the degree of MATURATION
HYPERTROPHY that occurs in mouse SOLEUS
muscle fibres between birth and adulthood

Images taken at same magnification – low power

BIRTH



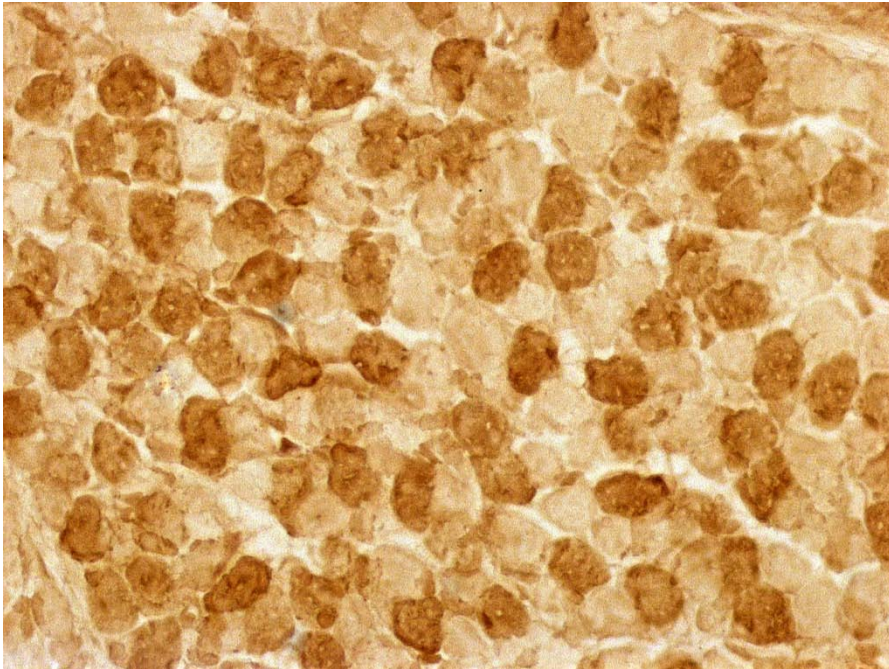
ADULT



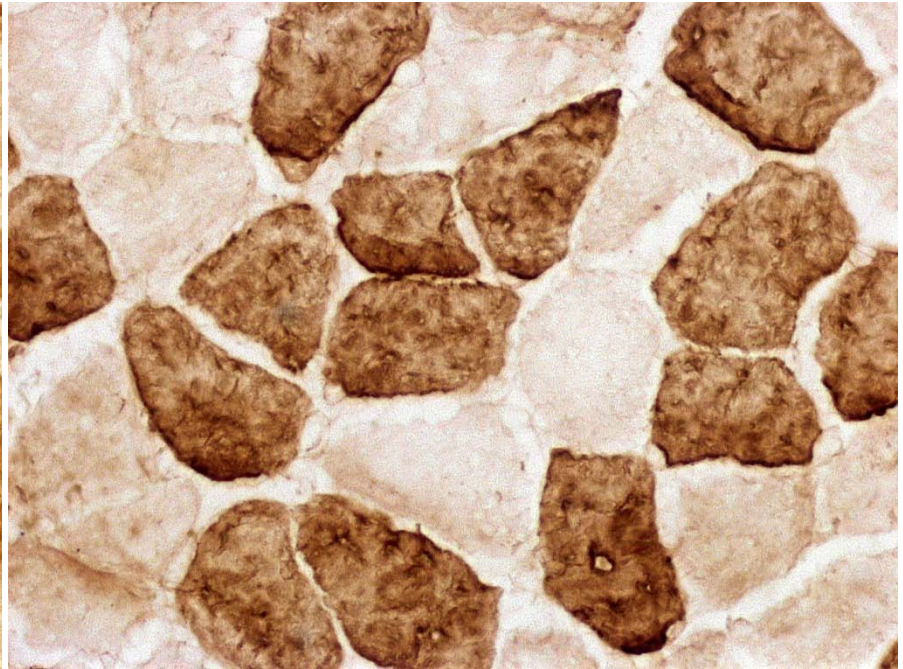
Exercise 1: Estimate the degree of MATURATION
HYPERTROPHY that occurs in mouse SOLEUS
muscle fibres between birth and adulthood

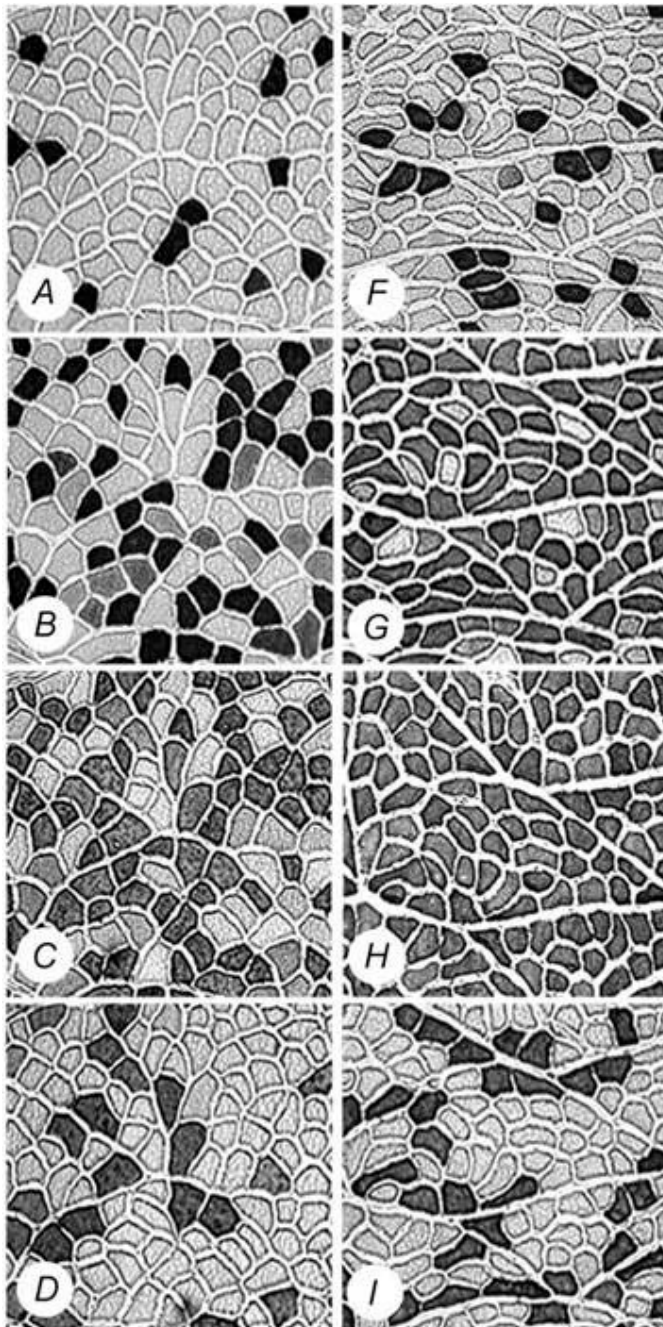
Images taken at same magnification – HIGH power

BIRTH



ADULT





Antibody

MyHC I

MyHC IIa

All MyHC
but not IIx

MyHC IIb

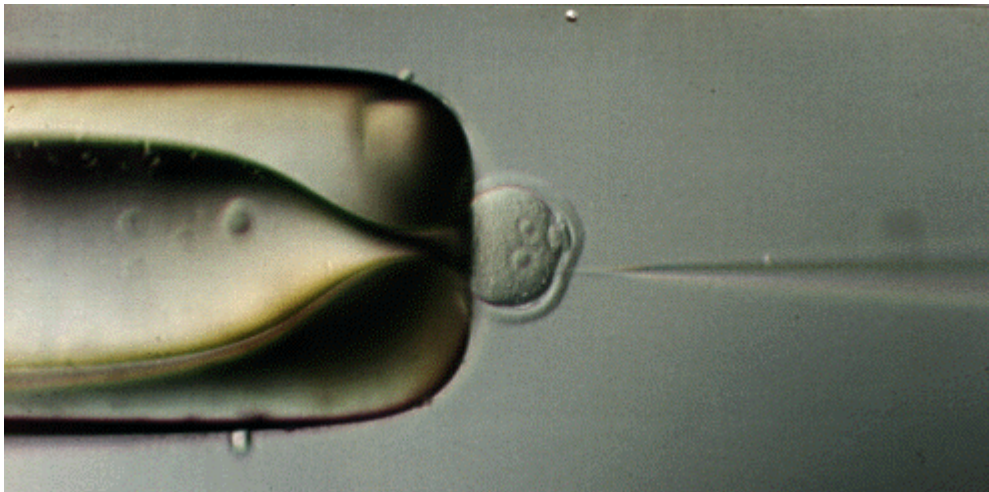
Exercise 2: Chronic Low Frequency Stimulation Experiment – Rat left common peroneal nerve stimulated 21 days with CLFS. Transverse sections of Tibialis Anterior muscle stained with Antibodies against the different MyHC protein isoforms (dark coloured fibres)

A,B,C,D – Control no CLFS
F,G,H,I – CLFS for 21 days

Count total number of fibres in field
Count number of fibres stained by each antibody
Express proportion of each fibre population as a percentage of total.
Discuss findings

Human skeletal actin promoter and enhancer combined – EXPRESSION ONLY IN MUSCLE FIBRES

Human *GTF2IRD1* gene encodes a nuclear DNA binding protein that controls other genes



DNA microinjected into a fertilized mouse embryo to make a transgenic mouse.

WILD-TYPE

TRANSGENIC

Antibody
MyHC I



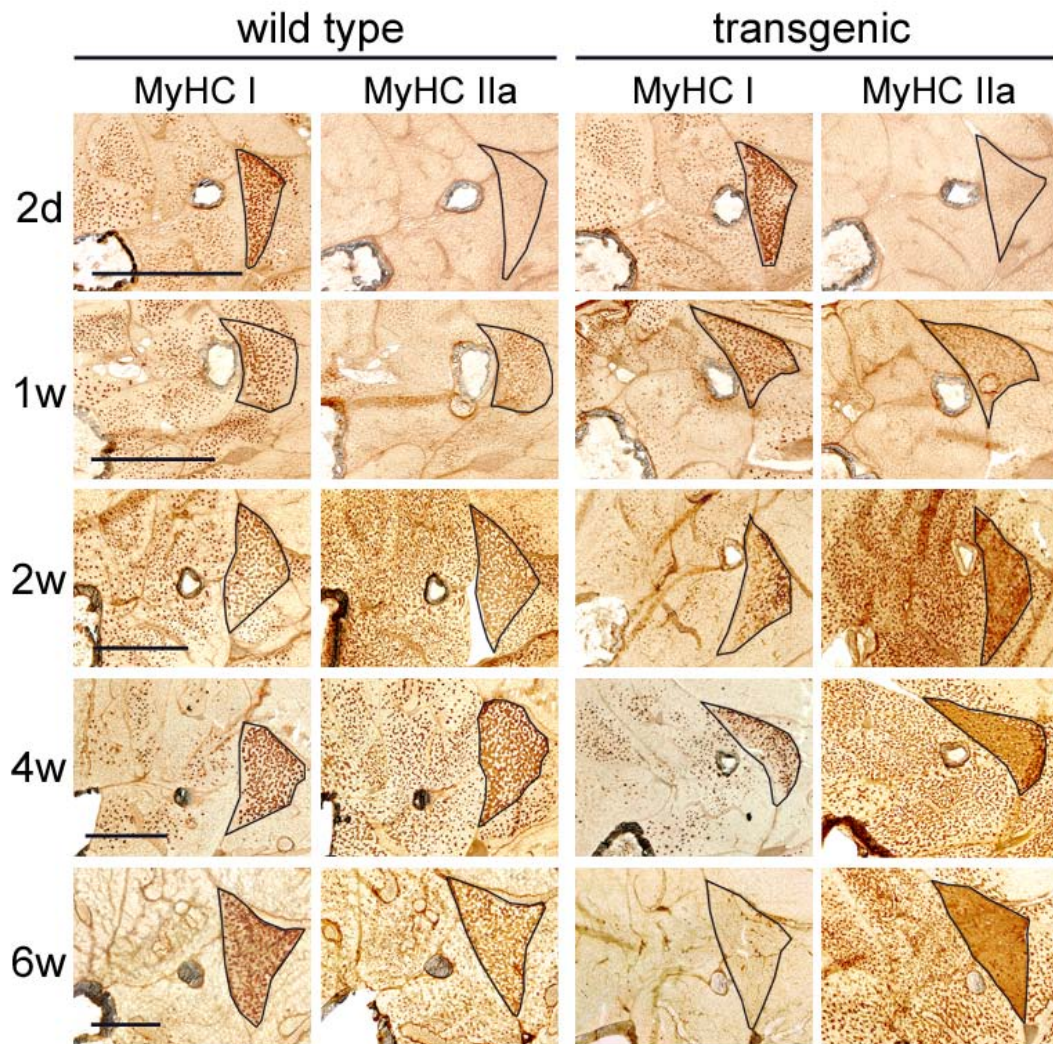
Antibody
MyHC IIa



Transverse sections through the lower hind-limb of adult GTF2IRD1-transgenic and wild type mice - stained for MyHC type I/slow and MyHC2A.

1. Describe what has happened to the muscle fibre types
2. Propose a theory for what might have caused the observed effect. Is there more than one possibility?

Examining the developing fibre types in *Gtf2ird1*-transgenic mice.



Transverse sections through the lower hind limb of transgenic and wild type mice from 2 days after birth to 6 weeks.

Questions

1. Has embryonic fibre type patterning been affected by the expression of the transgene?
2. What process would describe what is happening?
3. Refine the theory concerning the effect of *Gtf2ird1* on muscle development.
4. How would you prove that *Gtf2ird1* has an important role in fibre type differentiation?

Questions

1. Briefly; what is a myotube and how is it formed?

2. What changes would I expect to see in the muscle fibre types in my legs if I:
 - a) Suffered a spinal cord injury
 - b) Took up marathon running