Two thick, fresh salmon fillets are shown against a light blue background. The fillets are cut into a thick, irregular shape, showing the characteristic orange-pink color of the flesh and the darker skin on the bottom. The top fillet is slightly larger and more rounded, while the bottom one is more rectangular and has a small piece missing from its top edge.

Protein Chemistry

A detailed image of a fish head, likely a salmon, is positioned in the lower half of the slide. The fish has a silvery, metallic sheen on its scales and a large, prominent eye. The head is shown in profile, facing left, with the mouth slightly open. The background is a solid light blue.

Ph.D & Msc Students

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2019 -2020

Lecture 3

PROTEIN COMPOSITION OF FISH

➤ The protein of fish muscle tissue can be divided into the following three groups based on solubility.

1) Myofibrillar protein

2) Sarcoplasmic protein

3) Stroma protein

➤ A similar composition is found in fish and livestock meat.

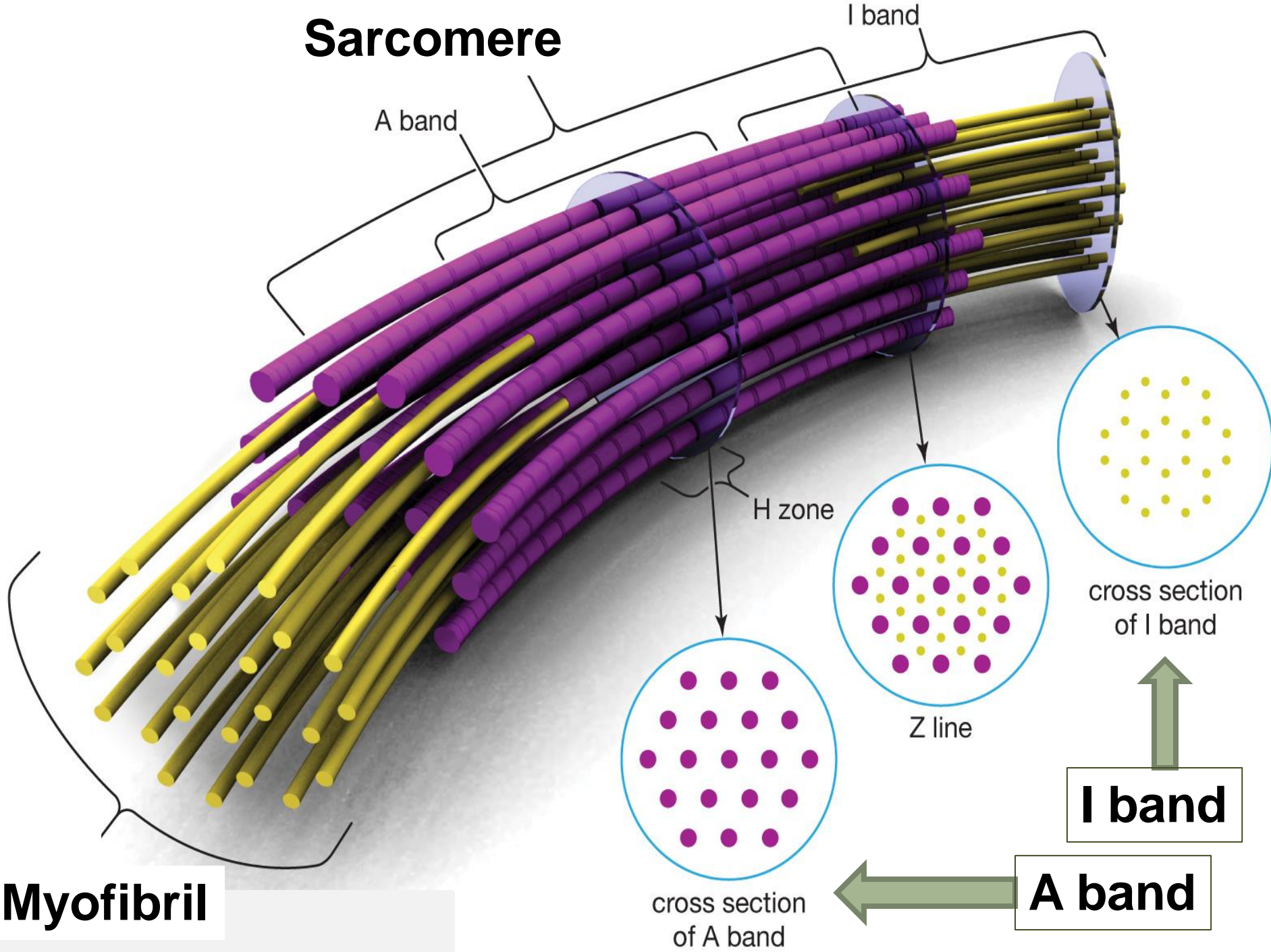
➤ The live stock meat contains more stroma than fish meat.

Protein Composition of Fish and Meat

% of total proteins

Type of Meat	Myofibrillar proteins	Sarcoplasmic proteins	Stroma protein
Cod	76	21	3
Carp	71	24	5
Flatfish	75	22	3
Mackerel	58	32	7
Meat	54	22	22

Sarcomere



A band

I band

H zone

Z line

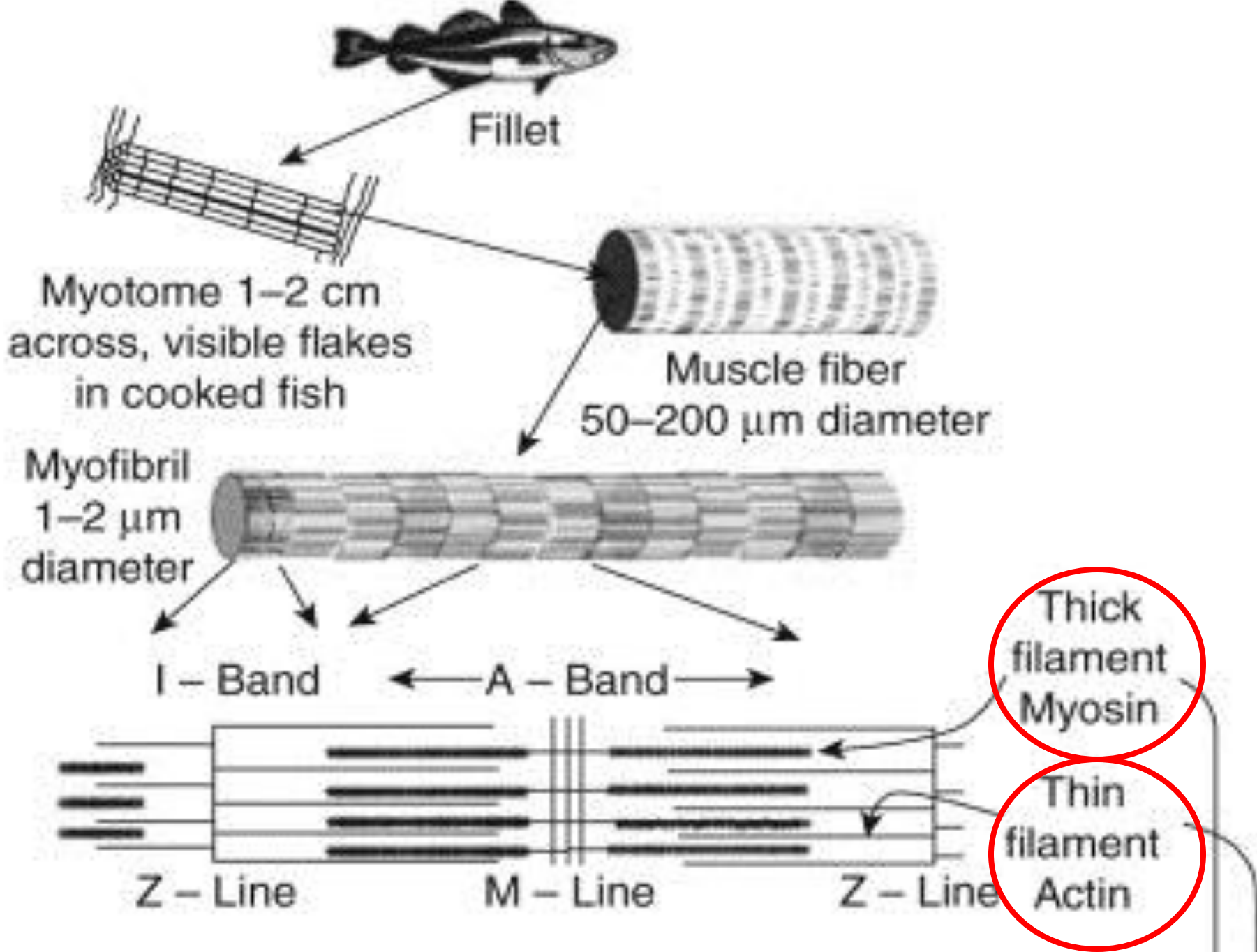
cross section of I band

I band

A band

cross section of A band

Myofibril



Structure of skeletal muscle of fish

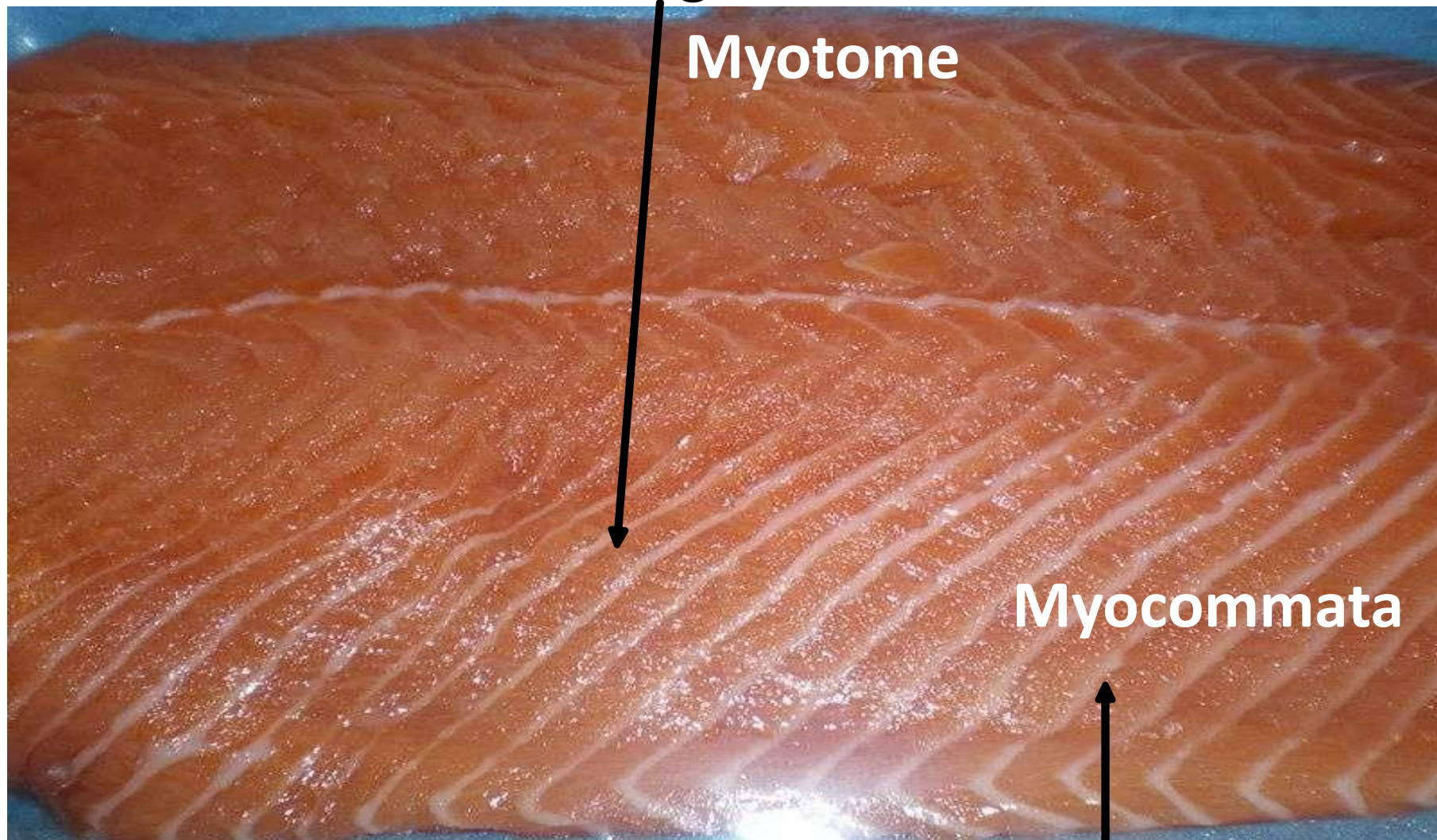
There are three types of muscles: (i) striated muscles (ii) smooth muscles and (iii) the heart muscle.

Striated muscles constitute the fish meat. Smooth muscles constitute viscera and the tissue of mollusks.

The heart muscle is an intermediate structure between the other two. Fish meat are basically striated muscles which are formed by groups of muscle fibers with striations.

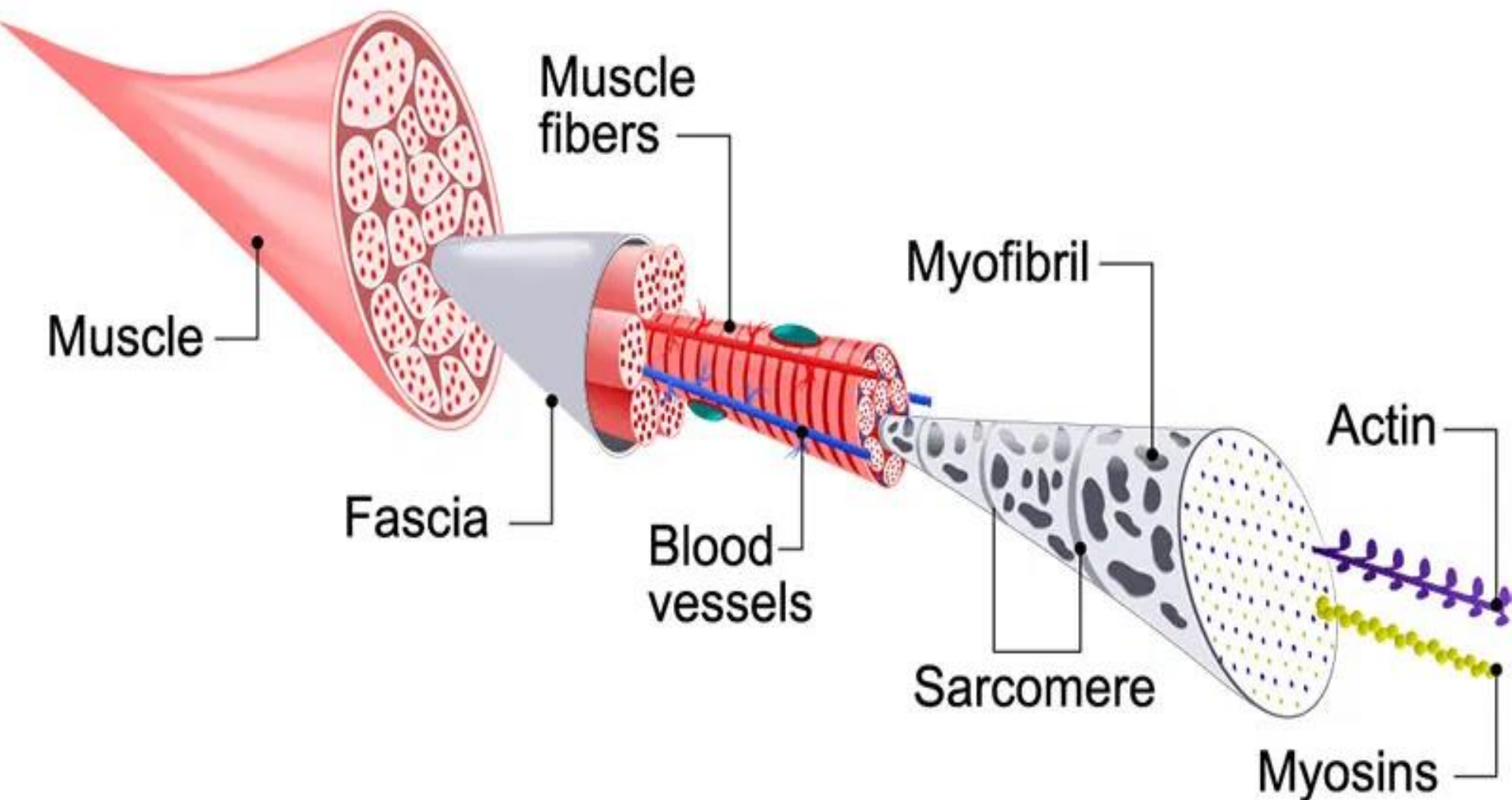
Individual skeletal muscles vary greatly in size and morphology. They consist of a parallel arrangement of elongated, multinucleated cells called myofibrils or muscle fibers.

Fish muscle has segments of short fibres



These segments are separated by sheets of fine connective tissue, which are fragile and easily converted to gelatine.

SKELETAL MUSCLE



Myosin

- Myosin is the protein which forms the **thick filaments**.
- A molecular weight is about **500,000** daltons.
- It is most abundant myofibrillar component, constituting approximately 40-60% of total protein content.

