Crayfish Lab

Crayfish Anatomy
Muscle Types
Muscle Receptor Organs (Stretch Receptors)
MRO Properties

Crayfish Escape Response

• Under the control of two Lateral Giant and two Medial Giant axons present in each segment.
• Large and Electrically coupled to motor neurons they generate rapid escape movements
• Escape movements include an upward movement and backward depending upon the # of segments with activated motor neurons.

Crayfish anatomy

Crayfish Musculature

Fast Flexor and Extensor Muscles involved in escape behavior fill the abdomen. These are the ones you will remove for this experiment

Slow Flexor and Extensor Muscles involved in postural movements are external to the fast muscles. These are the ones you will see lining the carapace after you have removed the fast flexor and extensor muscles.

Crayfish Musculature

2 Slow Extensor Muscles – 2 MROs each
Crayfish Musculature

2 Slow Extensor Muscles
– 2 MROs each

Crayfish Reflex Loop

2,4,5,6 are motor neurons

Crayfish Reflex Loop

2,4,5,6 are motor neurons

Example of MRO Output

Example of Phasic Spikes from an MRO

Crayfish Muscle Receptor Organs

\( \text{MRO}_1 \)

• Tonically Active
• Involved in postural movements
• Encodes intensity by altering frequency

\( \text{MRO}_2 \)

• Phasic
• Active during movement (signal rate change)
• May be difficult to see
• Larger in amplitude than responses from \( \text{MRO}_1 \)

Movement of abdomen
Example of Tonic Spikes from an MRO

Output Limits

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