functional group of neurons in gray matter called neuron pools

because the processing in nuclei

incoming info from different sources as sense organs

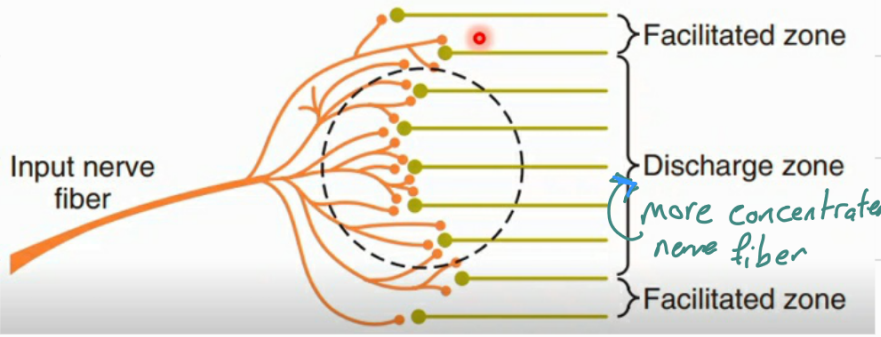
group of neuron with certain organization

Allow each pool to process in own unique way

integrate and process these info

transmit these processed info for other destinations

Stimulatory feild: neuronal Area stimulated by each nerve fiber

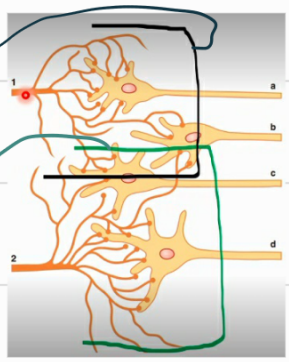


more concentrated nerve fiber

stimulatory feild

Another one

more spatial summation
more role of this neuron



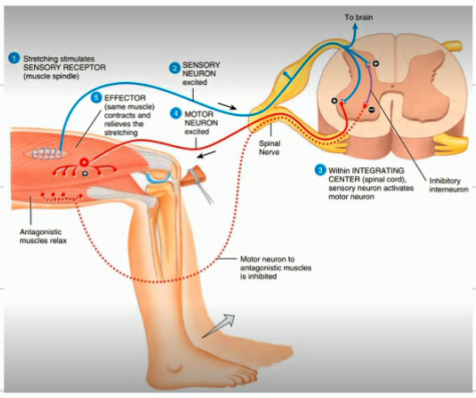
* And vise versa for inhibition but we don't have sub threshold in inhibition

only center inhibition or peripheral.

* example of neuron pool:

we hit the tendon by the hammer

strech in tendon



detection By muscle spindle

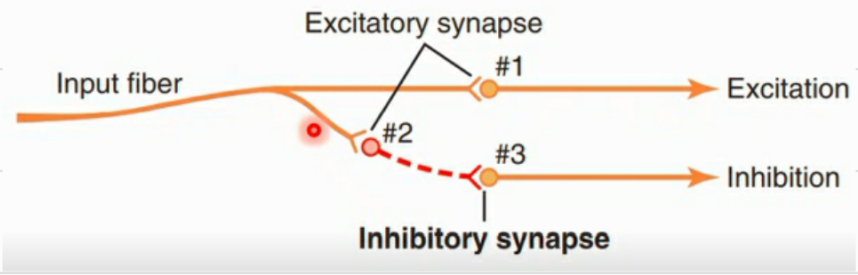
By unipolar neuron the signal transmitted

we need fast descision to protect the tendon so the processing happen in Spinal cord reflexes not the brain

direct synaps senseroy neuron with moto neuron in spinal cord cause excitatory signal

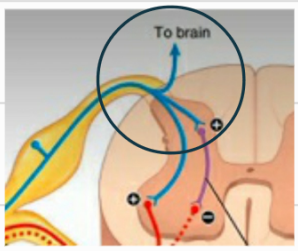
But we need also inhibition to the opposite muscle ⇒ the sensory neuron also synaps with inter neuron which release inhibitor transmitter to the Antagnostic muscle (opposite)

between sensory and motor neuron



* last thing

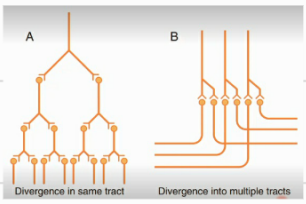
we need to tell the Big Bose (the brain so we need this



$\boxed{\text{Sum up}}$

Sensery neuron → to the Brain
→ synaps with motor (excitatory)
→ synaps with interneuron → synaps with motor neuron (inhibitory)

* these divitions called diversions



→ multiple tracts (B)
→ in one tracts (A)

as example: head rotations need diversion to

- Spinal tracts (movement of body)
- eyes
- muscle of the neck (accessory N.)

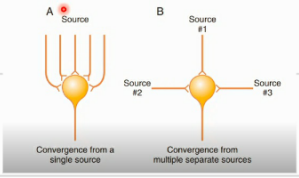
or the other type of diversions (single tract diversions as in A) is used for Amplification as motor function in skeletal muscle

* Convergence: multiple input signals excite single neuron

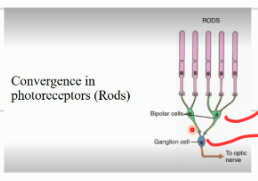
important for → Summation of AP

CNS to sort and correlates and summate different type of info

Convergance
- → from one source
- → from diferent source



as Rods in eye



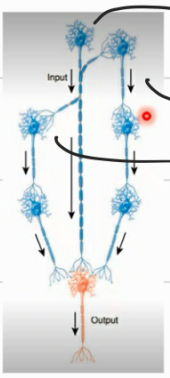
→ first order sensery neuron
→ second order sensery neuron

sensory neuron in eye is bi polar

* we want to go back to After discharge

How we can prolonged discharge ? in synaptic Afterdischarge we can change transmitters like neuropeptid but we want more prolonged!

By parrallel After discharge we increase no. of synaps by adding more parrallel neuron from same neuron why? to increase the delay in new neuron



→ 1 mSec delay

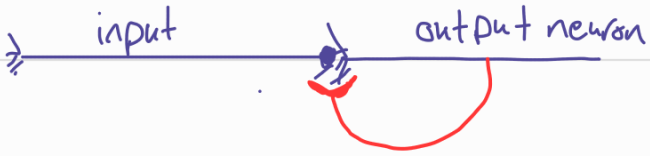
→ 3 mSec delay So we prolonged the stimulation

→ 2 mSec delay what did we do? input to several chain of neuron

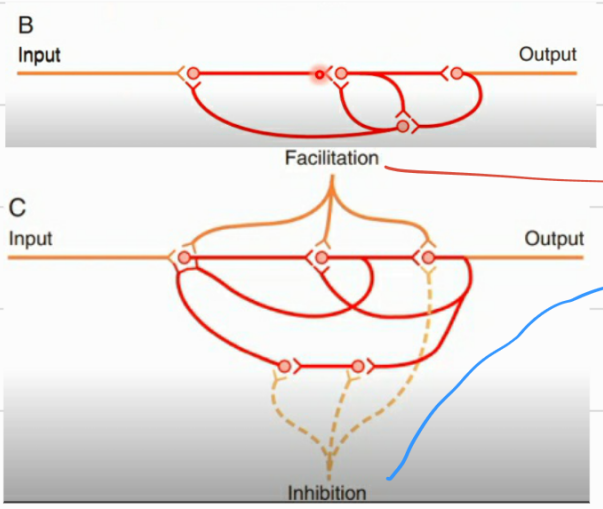
So output reach at varying time as eye blinking and no feed Back occur. (one direction)

* Reverberatory (oscillatory) circuits (most in NS)

So Caused By positive feedback that reexcite the same circuit.



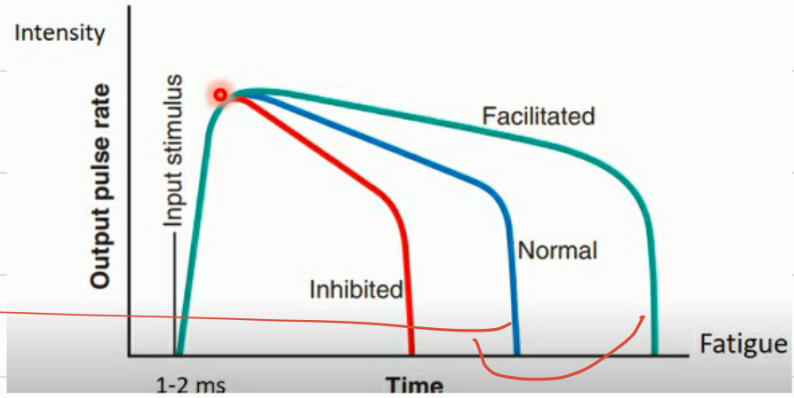
⇒ most simple example



⇒ mor complex ⇒ longer delay ⇒ longer dicharge

→ enhance the intensity and frequency

→ depressed the " " " or stop it



Until it has fatigue

*So if I want continous signal

Continous reveraberatory signal (we studyed it)

Continous intrinsic neural discharge

* Continous intrinsic neural discharge: Simply neuron that can stimulate them selves without any external stimuli (the RMP is near the threshold)

but also the Rate of generated impulses can be affected By

excitatory Signals

inhibitory Signals

where I can see this type of neuron? in Resparatory cells

* the Carotid body increase the intensity and frequency of the phrenic nerve signal to the diaphram to increase respiration

* we need some stability mechanism why?

because every parts of brain Connected which each other.

two Basic of mechanism

- fatigue of synaps (we learned it)
- inhibitory circuits (wide spread in Brain to prevent excessive spread of signals)
  - inhibitory feedback Circuits
    * in the same pathway
  - Some neural pools inhibit widespread Area of the brain as Basel ganglia $\xrightarrow{\text{inhibite}}$ muscle control system

*or we can do up-regulation (long term) in under activity

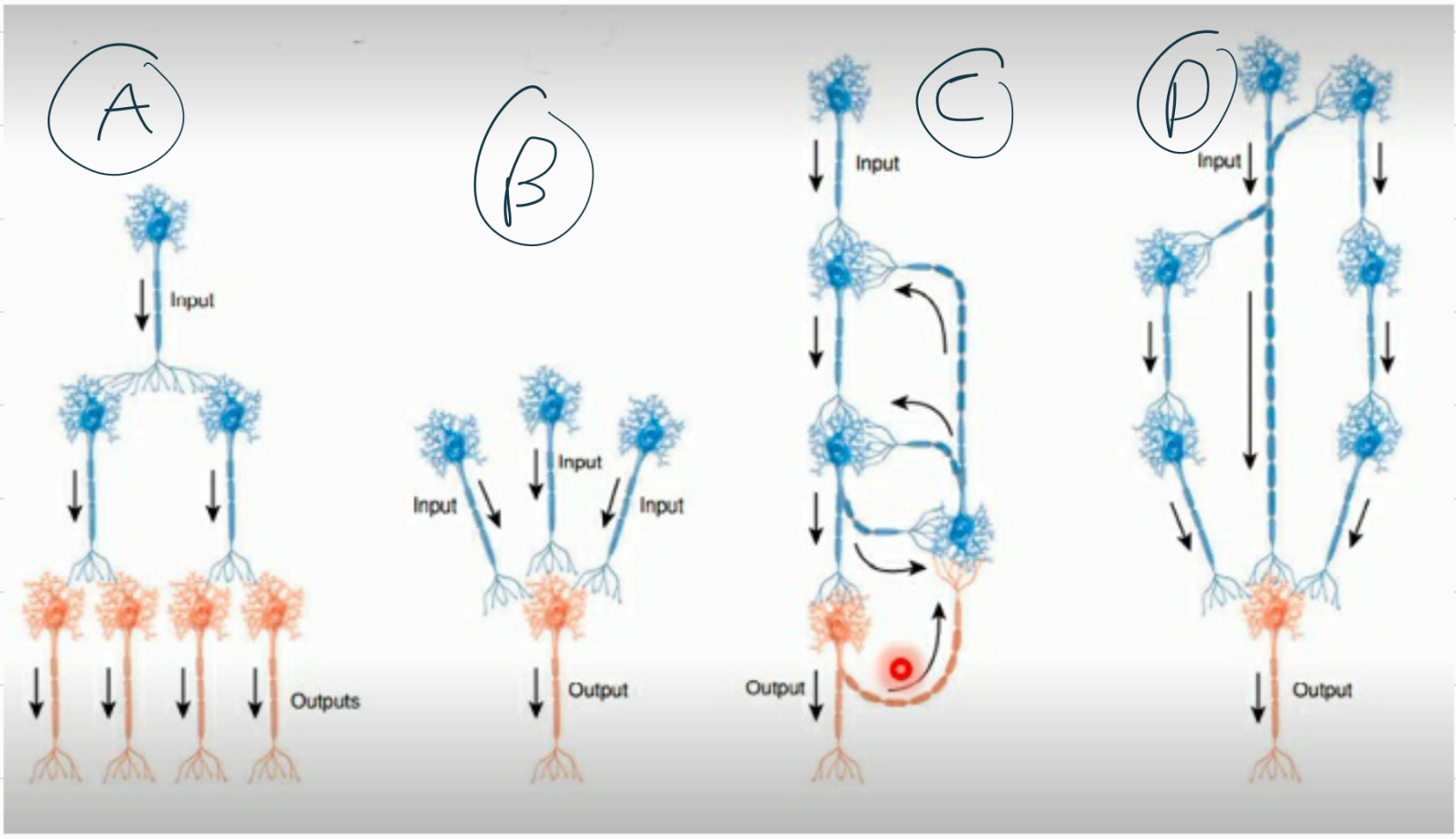
$\boxed{\text{SUM UP}}$

Stability → down-regulation (long-term)

- up-regulation ← long-term
  up regulating the number of receptor protein at synaps
- inhibitory circuits
  - return from termini (negative feed back) (some pathway)
  - neural pools inhibite widespread of Brain as skeletal muscle
- Synaps fatigue

name these circuits.

answers is below.



(a) divergence (B) convergence (C) reverberating (has feedback)

(D) parallel after discharge