Sensory receptors

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pecialized structures detect changes in external
internal environment.

ectable change is stimulus

cess of Transduction –

Specific type of energy is converted

into electrical.

specific type of energy to receptor

↓

ters permeability of the cell membrane

↓

Current flow

↓

Changed membrane potential

↓

Generator potential

nition:

Specialized nerve endings or specialized c

More sensitive to specific type of stimulus

Are able to convert stimulus energy into

electrical energy which is called as

Receptor potential

Bare nerve endings - specialized part of neuron.

Capsulated nerve endings - connective tissue lamella

Sense organs – Specialized cells located

- Application of stimulus to receptors

- Changes in permeability of membrane

Graded depolarization / hyperpolarizatio

- Generator or receptor potentials

- Local currents - electrotonic

Stronger stimulus.

Greater G.P.

Higher frequency of A.P. in nerve fiber

I. Depending upon source of stimulus

II. Depending upon type of stimulus

III. Anatomical

epending upon source of stimulus

(Sherrington's)

A. Telereceptors

B. Exteroceptors

C. Enteroceptors / Visceroceptors

D. Proprioceptors

1. Mechanoreceptors- special sense, mus
   skin, visceral, vascular
2. Thermoreceptors- skin, hypothal.
3. Chemoreceptors- olfactory, gustatory.,
4. Nociceptors
5. Electromagnetic receptors - retina

Anatomical

2. Special sensory

Ability to adapt – 1.Phasic – fast adaptin

2.Tonic - slow adaptin

receptor carrying sensations to the level of consciousness

Produces Generator potential (not A.P.)

Specificity

Graded response

Perception and discrimination of intensit

Muller’s law of specific nerve energy

Law of projection

Adaptation

erator Potential –

ionary depolarization of a receptor that
rs in response to a stimulus ,

aded according to its intensity and that
lts in an action potential when the
ropriate threshold is reached.

I. Receptors ⟶ Generator Potential - Graded response

Initial segment ⟶ A.P.

Specificity :

Adequate stimulus – low threshold for specific type of stimulus

Depend upon type of **adequate stimulus** for receptor involved.

Intensity detection :

by → change in frequency of A.P.

→ number of receptors activated

2 types of receptors

r sensory

eptors

α S

logarithmic sen

receptors

Weber Fechner's Law -- **R** α **lo**

esponse – no. of A.P.s = magnitude of sensatio

ength of stimulus

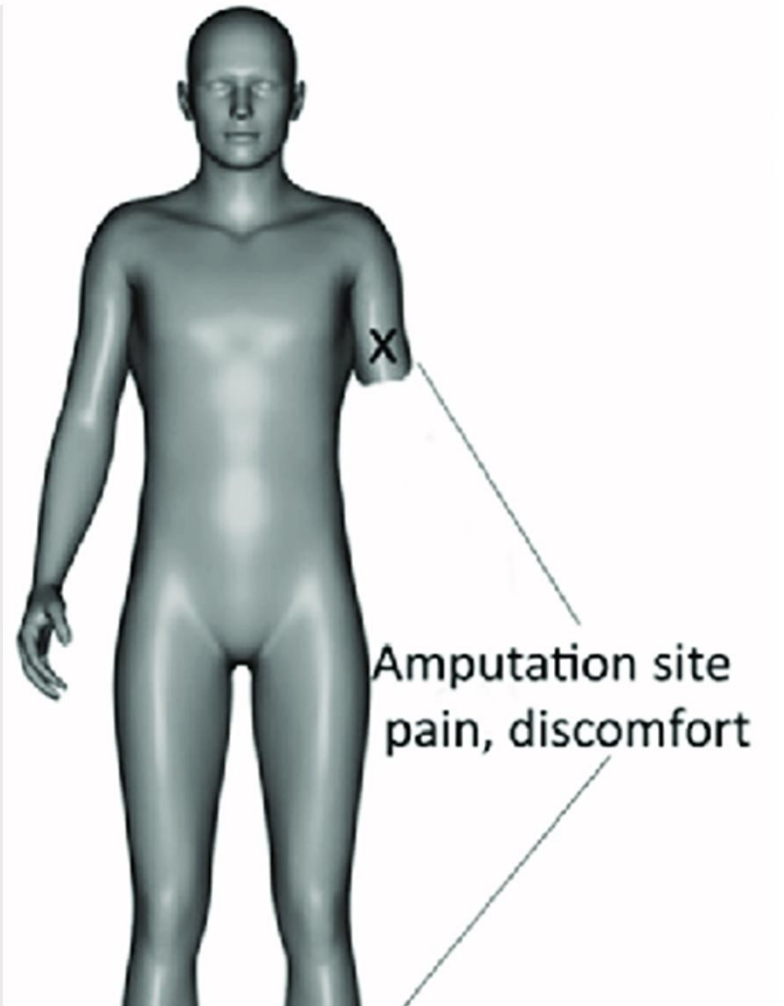
pe of sensation felt depends upon type of
eptor and stimulus energy

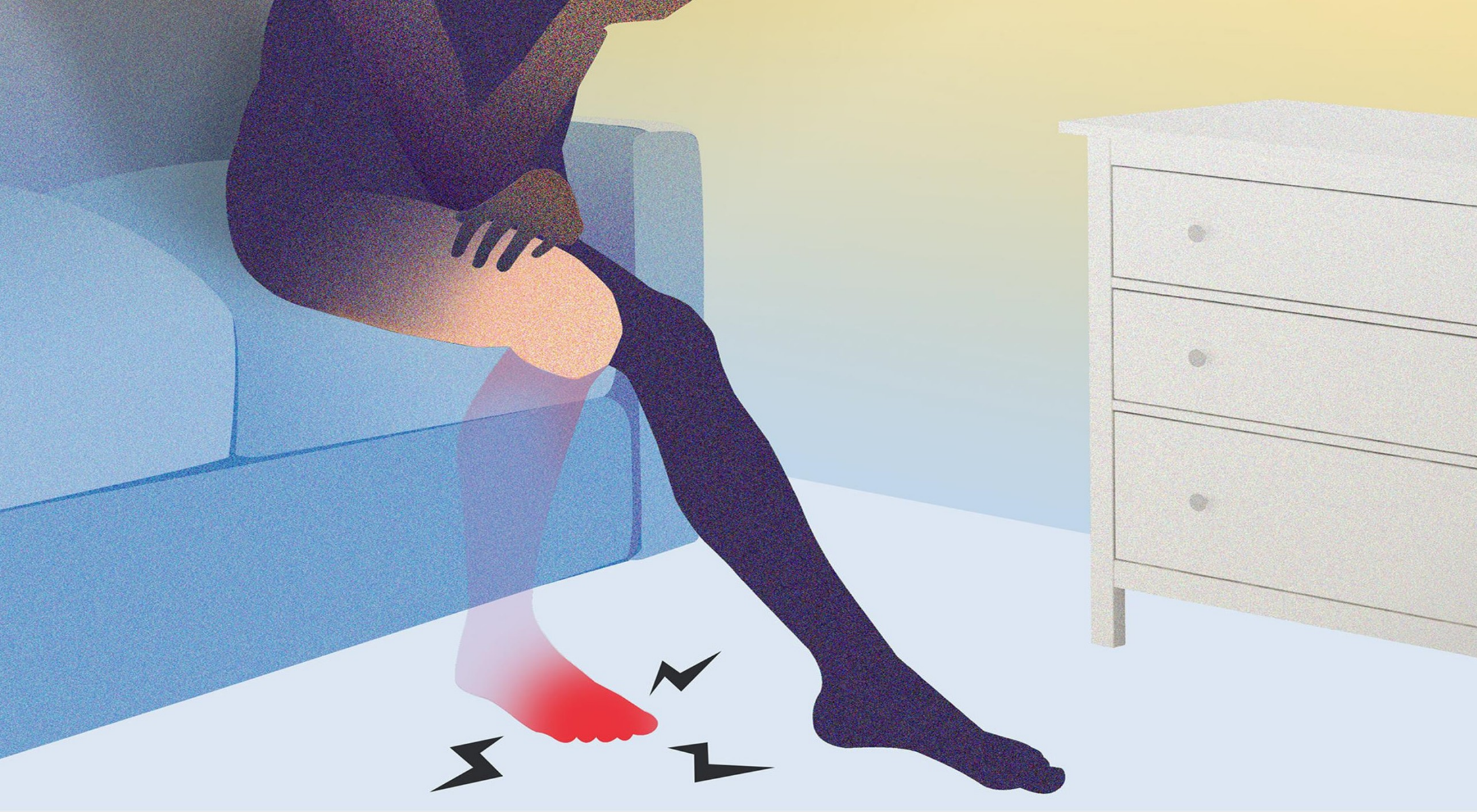
.Law of projection :

Sensation is localized at the site where
receptor is located even when the stimulu
applied at any point on the sensory pathw

rience pain in the part of the limb that
nger there.

sensation is phantom limb pain.





tom limb sensation may be defined as **the**

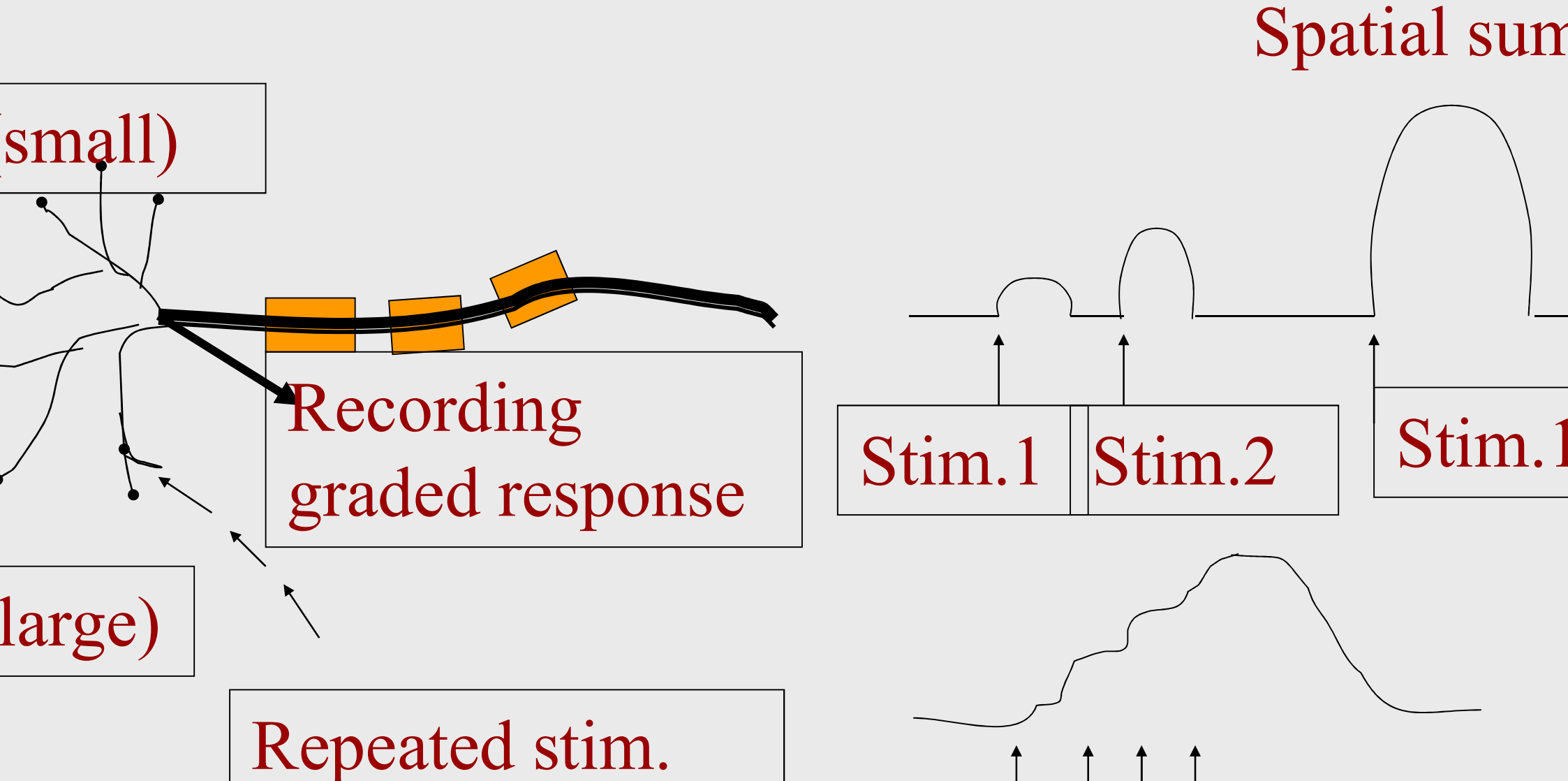
cious feeling that a limb is still present a

rts believe phantom pain results from **a m**
nervous system signals, specifically
een the spinal cord and brain.

n a body part is amputated, the nerve
ections from the periphery to the brain rer
ce.

nation of stimuli applied simultaneously on the

tor or of stimuli applied repeatedly at the same

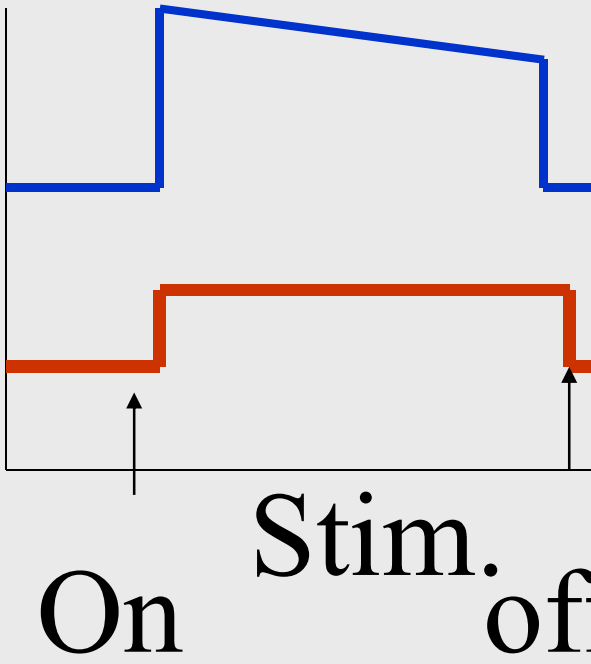


...e in responsiveness on prolonged stimulation

...t adapting – phasic –

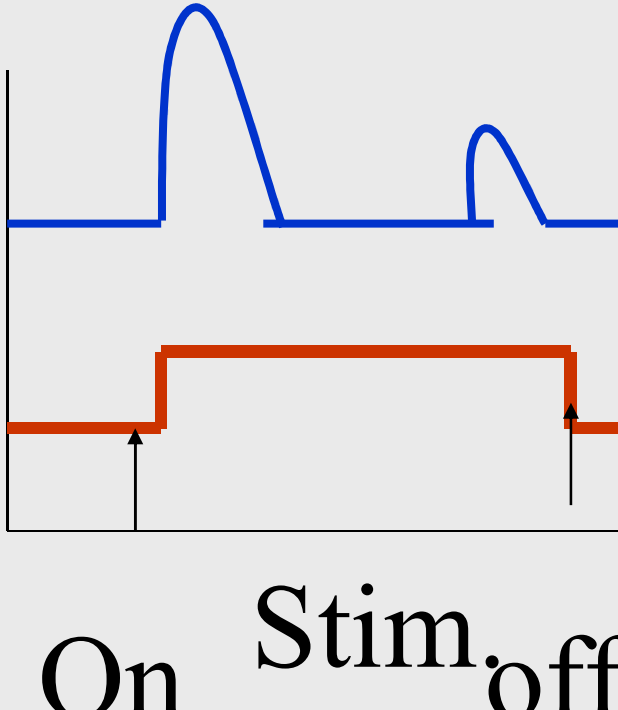
...e.g. tactile receptors,

... olfactory receptors



...w adapting – Tonic –

... e.g. proprioceptive receptors



erator potential

lized

nitude decreases with and space

ed response

for 1-2 msec.

fractory period

nation possible

• Action potential

- Propogated
- Magnitude remains same

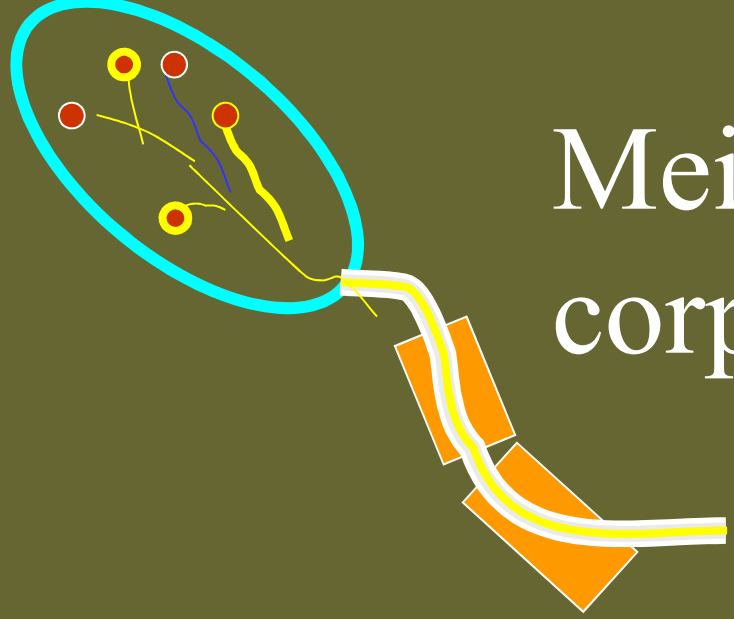
- All or none phenom
- Lasts for 0.1-0.2 ms
- Refractory period present

1. Control of output :- for homeostasis
    - Motor activity
    - Visceral
2. Stimulation of RAS
3. Understanding the world
4. Storage in memory
5. Impact on emotions

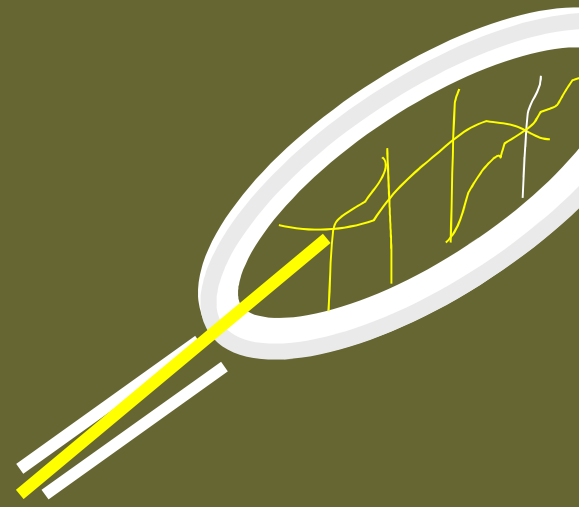
	(eponymous) name	Location(s)	S
endings	*	Dermis, cornea, tongue, joint capsules	Pain, te mecha deform
ceptors	**Merkel's discs**	Epidermal–dermal junction, mucosal membranes	**Low fr vibrat** Hz)
rpuscle	**Ruffini's corpuscle**	Dermis, joint capsules	**Stretc**
	Meissner's	Papillary dermis,	**Light**

corpuscle	**Pacinian corpuscle**	Deep dermis, subcutaneous tissue, joint capsules	**Deep** high-f vibrat (arour
plexus	*	Wrapped around hair follicles in the dermis	Move hair
dle	*	In line with skeletal muscle fibers	Muscl contra stretch
tch organ	**Golgi tendon**	In line with	**Stretc**

bulb



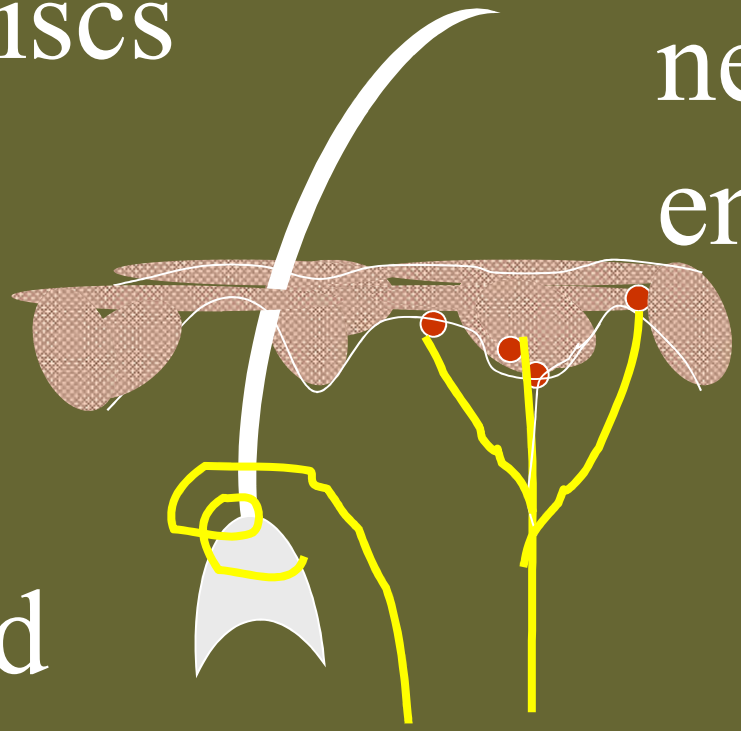
Meissners corpuscles

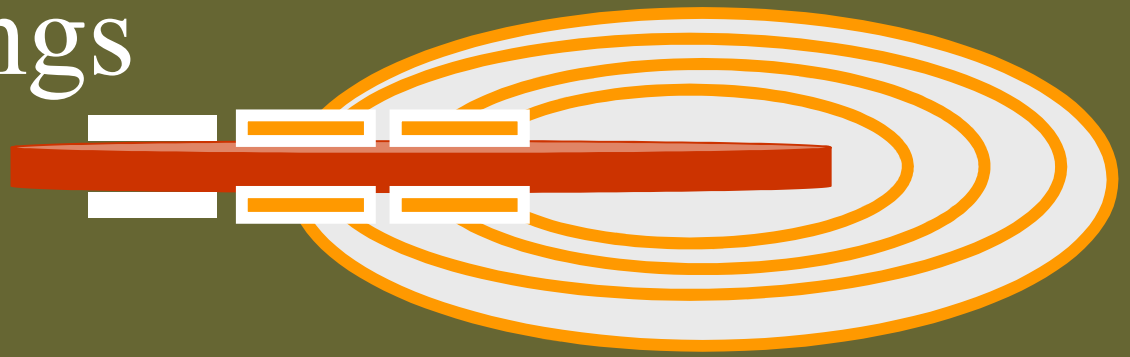


s discs

Free nerve endings

Pacinian corpus





end

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