welcome everyone.

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Second year subject zoology Semester

3 course code 0C103 Coast title

anatomi of animal body systems.

This module is a part of Unit 8 sense organs.

Module name is classification

of receptors Part 2.

This module consists of mechanoreceptors.

Photoreceptors and thermoreceptors.

By the end of the module,

students will be able to list

different types of mechanoreceptors,

describe the structure and functions

of mechanoreceptors and describe

photoreceptors and thermoreceptors.

So in this module we are going to

learn about detailed structures

and types of mechanoreceptors,

photoreceptors, and thermoreceptors.

So receptors are classified into

chemoreceptors, mechanoreceptors,

photoreceptors, and thermoreceptors,

based on their stimuli.

mechanoreceptors are sensory cells

which are responsive to small changes

in mechanical force and their

responsive to sensations such as touch,

pressure, pain, heat and cold.

They are placed mainly in the skin and

therefore they are known as cutaneous

mechano receptors and this cutaneous

mechano receptors are different from

mechano receptors of internal organs.

mechanoreceptors can be classified

into cutaneous receptors

proprioceptors and rheoreceptors.

Cutaneous receptors consist of

free nerve ending receptors.

Merkel's disc encapsulated nerve

endings and receptors with associated

nerve endings receptors are present

in tendons and joint receptors.

Muscle spindles and Rheo receptors

include hair cells, lateral line system,

and ampullae of Lorenzini.

When the terminus of a sensory process

lacks any specialized association,

it is termed as a free nerve

ending or free sensory receptor.

They respond to sensations of pain,

which are also known as nociception.

Extreme heat or cold that is

thermoception pressure and touch.

More receptors are present in

highly sensitive areas such as skin,

cornea, oral cavity and intestines.

Low frequency vibrations are

sensed by mechanoreceptors,

which are known as Merkel's

disk or Merkel cells.

Also known as Type One

cutaneous mechano receptors.

Merkel cells are located in the

stratum basale of the epidermis.

So basically,

the Merkel's disk or Merkel cells.

They respond to low frequency

vibrations such as.

Textile textures or wall textures

or floor textures etc.

When the terminus is enclosed

in a specialized structure,

the receptor is known as

encapsulated sensory receptor.

Examples include business corpuscle,

pacinian corpuscles, and Ruffini corpuscles.

Meissner's corpuscle is located in dermis

of the skin and responds to light touch.

Best Indian corpuscles

are limited corpuscles,

which are located in skin joints and

deep tissues of the body and the transducer.

Deep pressure and vibration,

which can be felt on the body.

Ruffini corpuscles,

also known as bulk bulbous corpuscles,

are stretch receptors that

transduce stretching of the skin.

So in this picture we can see a free

nerve ending receptor, whereas here there

is a encapsulated nerve ending receptor

with some encapsulation around it.

When the terminus of a sensory process

is wrapped around another organ,

it is called as an associated sensory

receptor or basket nerve ending.

For example, receptors present

at the base of hair follicles,

follicles of hair are wrapped in

a plexus of nerve endings that is.

Well. A conjunction of nerve endings

known as the hair follicle plexus,

this nerve endings detect the movement

of hair at the surface of the skin,

such as when an insect is walking

along the skin.

So when an insect moves on the skin,

we can feel its presence on the skin

so that we can react to it because

of associated sensory receptors

at the base of her.

This diagram shows presence

of hair receptors at the base.

The pacinian corpuscles,

which are encapsulated,

Ruffini corpuscles,

Merkel's receptor free nerve endings,

and the Meissner corpuscles.

These are all the cutaneous receptors.

Proprioception is the sense of the

relative position of neighboring

parts of the body and the strength of

effort which is being employed in movement.

For example,

when we're sitting,

we know that the lakes are folded and

our hands are in a particular position.

That sense is known as proprioception,

which is which is possible because

of receptors known as proprioceptors

Muscle spindles are the sensory

receptors within the muscle that

detect changes in muscle length,

and this information is processed

by the brain to determine the

position of body parts,

the Golgi organ complex is a

proprioceptive sensory receptor

organ located at the insertion

point of skeletal muscle fibers

onto the tendons of skeletal muscle

and this receptor forms a sensory

component of the Golgi tendon.

Netflix.

So basically the Golgi tendon reflex

is a negative feedback reflects,

which tells us that the muscle

is being overstretched,

so we have to come back to

the original position.

So this prevents a tendon

as well as a muscle damage.

Neuromast system of receptors

include neuromast's,

which are also known as Rio receptors.

There's a small epithelial

receptor organs and consist of a

centrally located hair cells that

are surrounded by support cells.

Unieuro Mast organ is a small

collection of hair cells covered by

a flexible and Jelly like cupula

supporting cells and sensory nerve fibers.

This neuromast organ detects water

current changes and maintains

balance of Organism,

especially the aquatic organisms.

Hair cells are the transducer

cells that transform mechanical

stimuli into electrical signals

to be carried to the brain.

Mechanical stimulus of the hair

bundle triggers ionic changes

in the hair cells which are.

Karidis novem pulses.

The lateral line system in many

of the aquatic vertebrates is

a system of sensory organs.

Used to detect movement,

vibration and pressure gradients in

the surrounding water ecosystem.

The lateral line system in aquatic

vertebrates is a system of sensory

organs used to detect movement,

vibration, and pressure gradients

in the surrounding water.

Neuromast organs are the sensory receptors

of the lateral line system and they

serve an important role in schooling,

behavior, prediction and

orientation of fish is schooling.

Behavior is a behavior of fish is where

they move in Shoals in the water.

This diagram shows a lateral line

canal which has external opening for

entrance of stimuli and which is.

Received by the sensory cell

known as Neuromast,

so the neuro must contain hair

bundles and the cupula with

a Jelly filled fluid medium.

Lateral line systems detect

frequency oscillations produced

by the prey in the water,

thus aiding in predation by the fishes.

They also help in navigation.

For example in blind cavefish which

can navigate around obstacles

in their environment because

of the lateral line system.

This is a blind cavefish which

can navigate very easily because

of presence of lateral line.

If the lateral line nerve is cut off

cut or if it screws are covered.

An affected fish loses its ability to

navigate or perform schooling behavior.

So in this particular picture,

the schooling behavior,

proper schooling behavior is shown.

But if the lateral line is affected,

they can just bump into each other,

and the schooling behavior is lost.

Ampullae of Lorenzini are modified

parts of lateral line system,

which are sensitive to electrical fields

and form a network of mucus field poles.

MP Lorenzini are mostly found in

cartilaginous fishes such as shark

and their concentrated on the head on

the ventral and dorsal surfaces of

the snout and posterior to the eye.

They allow the fish to detect

changes in water temperature and

predation by detecting electrical

fields generated by the prey.

Each ambula is a bundle of sensory

cells that contain multiple nerve

fibers and a Jelly filled canal

opening that acts as a fluid medium

for transduction of signals.

Oh yeah,

you can see the snout of a tiger shark

which is showing presence of Lorenzini pores.

This black dots which are seen are

the pores of employer florentini.

Photoreceptors are the light

sensitive cells that provide a

crucial role in visual transduction.

They are responsible for the detection

and transduction of light signals.

Photoreceptors are composed of

specialized and unique structures,

including inner and outer segments,

as well as synaptic ends that

allow for the processing of

light information invertebrates.

The photoreceptors are all

ciliary photoreceptors.

Namely, the retinal rods and cones Siri.

Photoreceptors have single,

highly folded selyem,

and the folds form disks

that contain photopigments.

Rods are extremely sensitive to light

and they are known as rods because

they have a rod shaped outer segment

and because they're extremely sensitive

to light they help in dim light vision.

Where is Kohl's have a cone

shaped outer segment and they're

much less sensitive to light,

that is their highly sensitive

to bright light and are

responsible for bright light vision.

So you can see rods and cone rod is having

or outer segment which is rod shaped and

this is a cone shaped outer segment.

Autumn receptor is a non

specialized sense receptor.

Or more accurately,

it can be known as a receptive portion

of a sensory neuron that codes absolute

and relative changes in temperature.

For example, pit organs in some snakes,

some specifically the pit Vipers.

They have pit organs,

the facial pits on the side of the

head between eyes and nostrils they

act as thermoreceptors and a highly

sensitive to thermal radiation.

The pits are very efficient in

sensing warm blooded prey and

those help in prediction by snakes.

This picture shows in,

marked in red is a pit organ

between the eye and the nostril.

Nostril is marked in black,

so between the eye and the nozzle

on either side of the nostrils,

the puppet organist present.

These are the references.

Thank you.