

Why is it itchy even if we scratch a mosquito bite?

김기완 정세현





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Mosquitos



nerve system



Why does it itch the more even if I scratch it?



What we should not do



To prevent itch



Mosquitos



Why?

How?



Mosquitos

Why mosquitos bite?

For nutritions which will be used to lay eggs
= only female mosquitos bite

How do they bite and draw out blood?

Find CO_2 , lactic acid or so with feeler (cpA neurons)

Detect cyclohexane and 1-octane-3-ol (Labella)

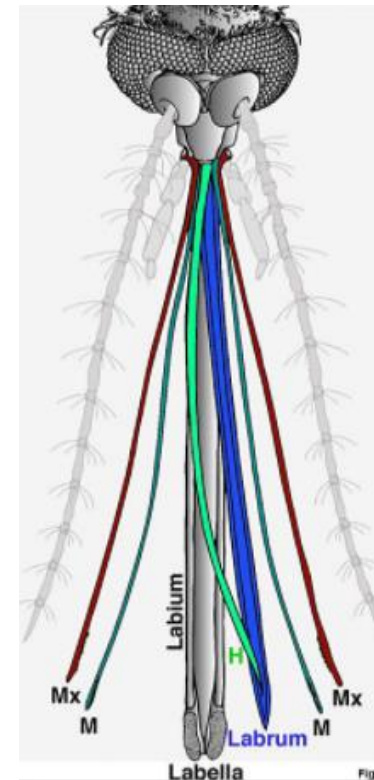
Saw through skin (Maxillae)

Hold the tissues apart (Mandibles)

Spit saliva (Hypopharynx)

Pierce blood vessel and suck blood (Labrum)

These works does not touch nerve cells



Total 6 stylet

Labrum

Labium (Labella at end)

Hypopharynx (on Labrum)

Maxillae *2

Mandibles *2



Mosquitos

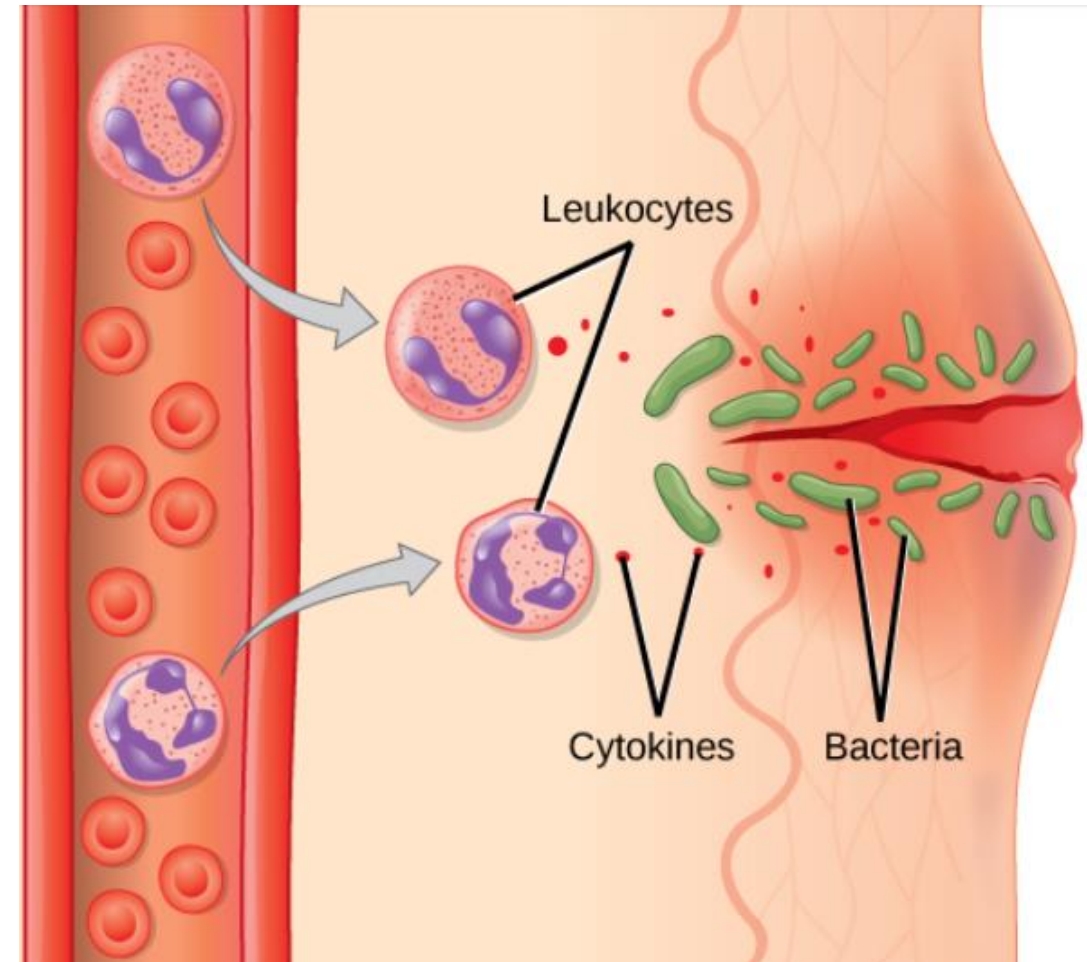
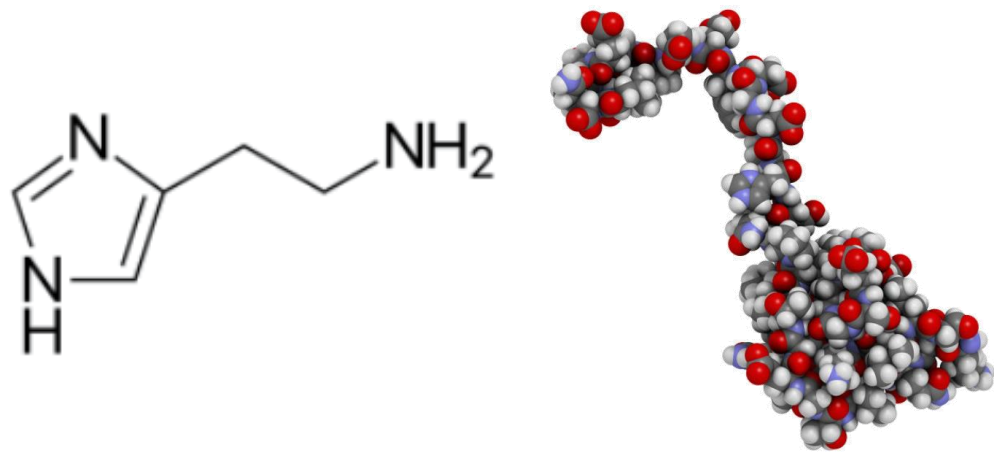
Mosquito saliva

Prevents blood from coagulation

Contains Hirudin and other complex.

Immune system tries to destroy pathogen

Increases Histamine density





Nerve system

Histamine

Reacts with H4R channel

Sensory neuron makes weak electric pulse.

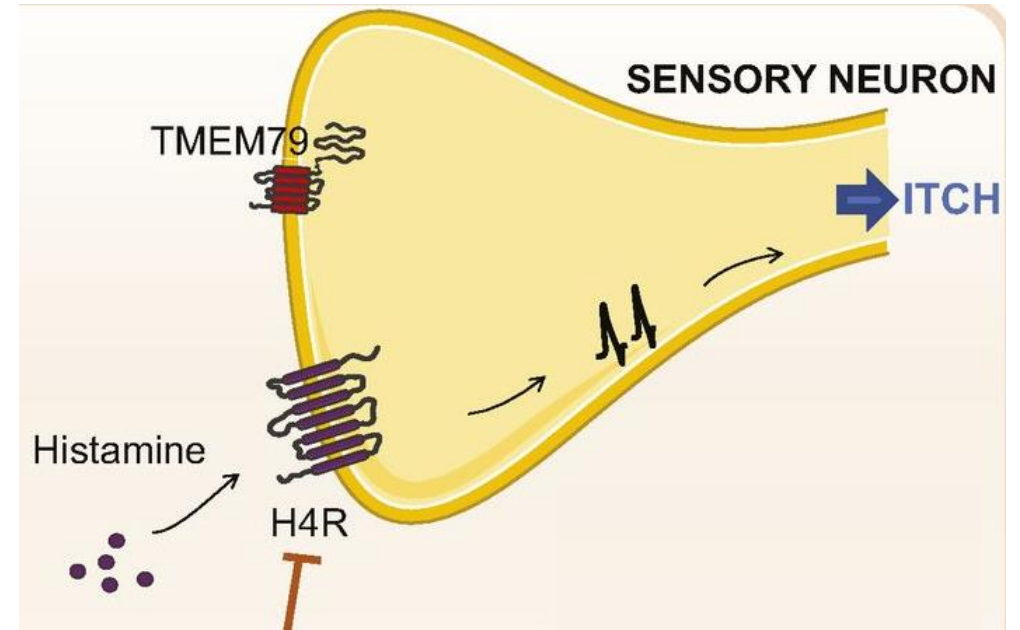
Releases naturiutic polypeptide B

Spinal nerve accepts and send to brain

Parietal lobe judges as itch

Other allegetic reaction are simillar

= reason why we use anti histamine to allergy



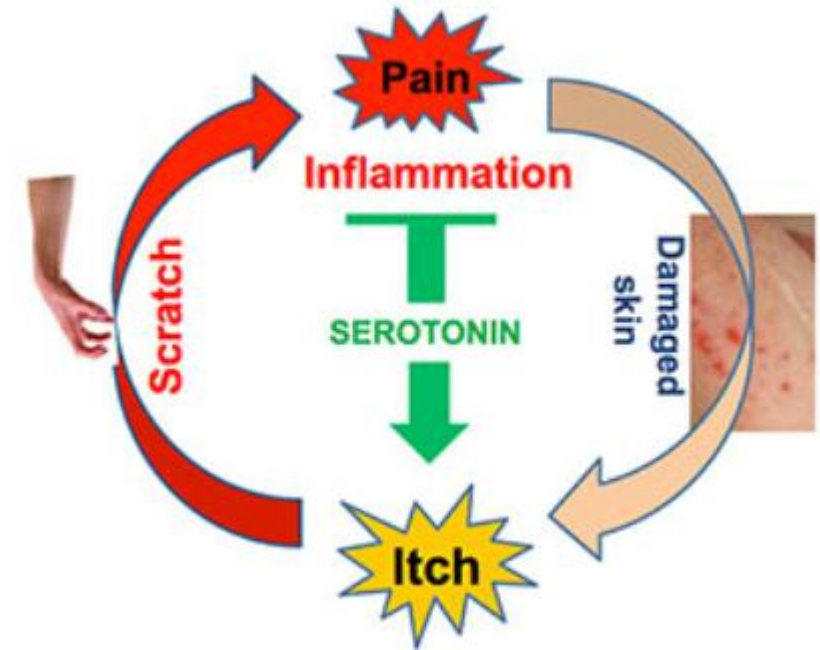


Why does it itch the more I scratch it?

- 1) Scratch
- 2) The nerve cells carry pain signals to the brain
→ Temporarily no itch
- 3) Serotonin is secreted.

Zhou-Feng Chen, PhD, director of Washington University's Center for the Study of Itch

- mice that have removed serotonin secretion genes showed relatively weak reactions.
- When serotonin was injected, it reacted violently like a normal mouse.

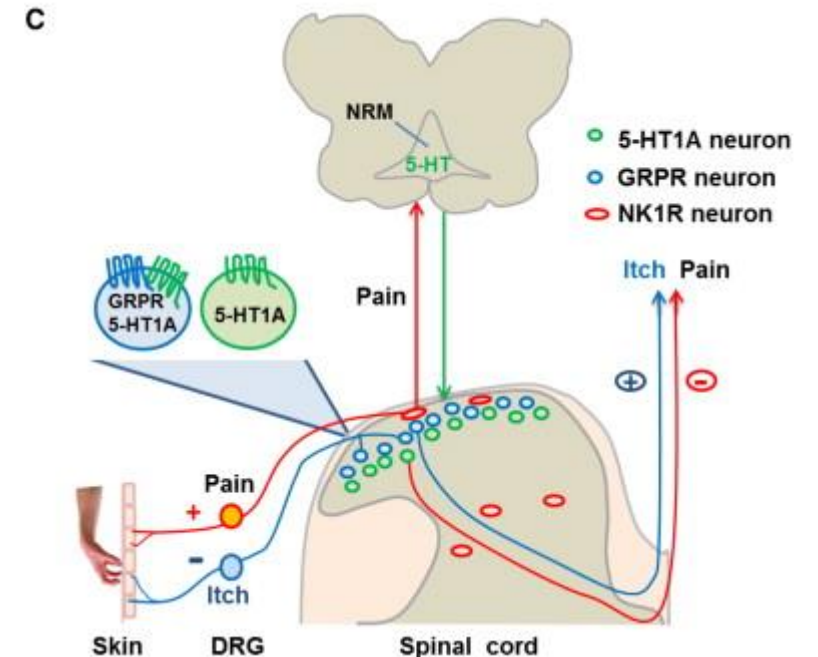




Why does it itch the more I scratch it?

5-HT_{1A} known as receptor combines with serotonin
→ activates and itch-inducing nerve cell called GRPR

Injection of an itch-inducing substance, compound that blocked that receptor
→ those mice scratched much less.



GRPR : Gastrin Releasing Peptide Receptor



What we should not do

1. No touch/saliva



Your hand/mouth is not so clean...



What we should not do

2. Warm water/alcohol neither



Can make histamine density higher



What we should not do

3. Something we eat



Lemon - pH increase



Oatmeal... Really?



Meat tenderizer... Serious?

DO NOT yield to skin. Just eat it.



To prevent itch

1. apply medicines



2. Kill mosquitos before it bites.



Reference

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Inagaki, Hidehiko K. et al.

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Thank you~