

Rabies virus

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I find the rabies virus fascinating because it is not carried in the blood or other body fluids (except saliva, which I will get to soon), but must be injected into a muscle. From there it enters a peripheral nerve and then the central nervous system. To be transmitted this way it must cause profound behavioral changes in the infected animal.

Towards the end stage of the disease it enters the salivary glands and stimulates them to produce vast quantities of saliva into which the virus is shed. At the same time it causes painful throat spasms, which prevent the animal from swallowing and make it drool—the classic foaming at the mouth. It causes normally tame animals to become fearful and vicious so that they will bite and inject the infected saliva into the virus's next victim. It will also cause normally timid animals to become bold so that they will get close enough to other animals to bite them.

These complex behavioral changes are exactly the ones needed for rabies virus to be transmitted. They are all caused by a molecule of RNA only 14 thousand nucleotides long. I have listed some websites below for you to learn more about rabies if you are curious.

Activity

1. Research a pathogen, viral or bacterial, that causes symptoms that aid in its own transmission.
2. Describe the symptoms in detail and explain how and why they do this. Try to find out as much as you can about how the pathogen causes these symptoms.
3. See if you can find out details of its interaction with the host cell at the DNA level.
4. From what you have learned about your pathogen, write a paragraph arguing which, in your opinion, came first—the symptom or the disease that exploits it. Make sure that you have clear, well-stated evidence to support your point of view.

<http://www.ship.edu/~lhelli/rabies/>

<http://www.urmc.rochester.edu/smd/mbi/grad2/nns01A.html>

<http://bioresearch.ac.uk/whatsnew/detail/1099348.html>

www.cdc.gov/

www.ncbi.nlm.nih.gov/ICTVdb/Images/Murphy/rabies.htm

<http://www.pasteur.fr/recherche/rage/init-eng.html>

http://www.cdc.gov/ncidod/dvrd/rabies/the_virus/virus.htm

<http://members.aol.com/drshors/mel/Gen.html>

<http://www.med.sc.edu:85/virol/rabies.htm>

[http://jhhs.client.web-health.com/web-](http://jhhs.client.web-health.com/web-health/topics/GeneralHealth/generalhealthsub/generalhealth/neurological/rabiessymp.html)

[health/topics/GeneralHealth/generalhealthsub/generalhealth/neurological/rabiessymp.html](http://jhhs.client.web-health.com/web-health/topics/GeneralHealth/generalhealthsub/generalhealth/neurological/rabiessymp.html)