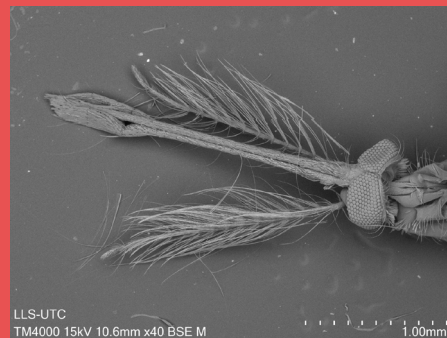
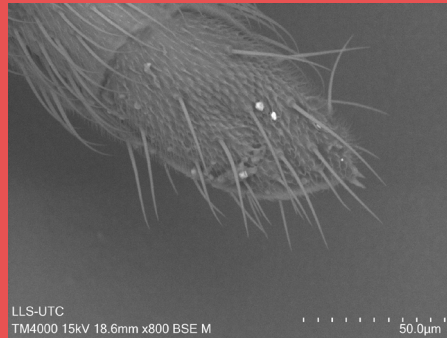


How Do Microbiota Affect Attraction In Mosquitoes?



The Mosquito; A Dangerous Vector!

Vector borne diseases account for more than 17% of all infectious diseases, with over 700,000 people dying each year due to these illnesses. A large portion of which is due to the mosquito, with the main disease carried by these being malaria which infects around 219 million people worldwide each year with over 400 of those people dying from it. So it is incredibly important that research continues to better understand this vector and what causes its attraction with humans.



The Scanning Electron Microscope- A Marvel Of Science

Thanks to HITACHI, The Natural History Museum and IRIS I was able to use a SEM which allowed me to deepen my understanding of the mosquito on the microscopic level. The photo above is a female Anopheles head which allowed for a unhindered view of the antennae as well as a very small maxillary palp. The antenna are used to detect the movement of air molecules and carbon dioxide, and the maxillary palp is used to detect volatile molecules which enter it.



Aim

Have you ever wondered why some people are covered in mosquito bites, while others don't even have a single scratch on them? This is exactly the question I asked and decided to investigate. In collaboration with the Liverpool School Of Tropical Medicine (LSTM) my aim was to see how bacterial microbiomes on the skin's surface affect the attraction of the common mosquito in hopes to better understand the importance that bacteria truly has on the mosquito.



Method:

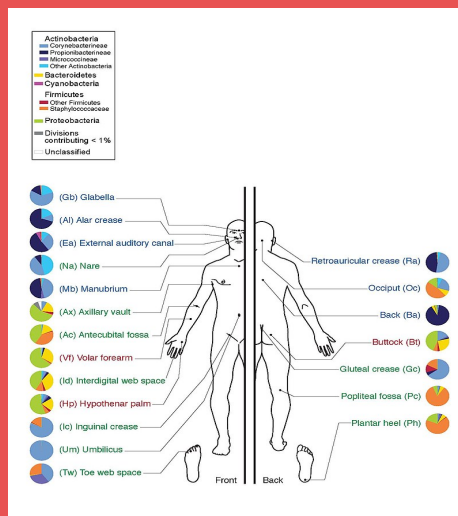
To conduct my study I am using a mixture of methods, this included secondary research of other studies into the mosquito vector, which I followed up by viewing different mosquito types under a scanning electron microscope. However the bulk of my research will be conducted through taking skin samples and viewing how mosquitoes react to the different bacterial colonies during choice chamber tests where different bacterial colonies are placed into different boxes and viewed too see which bacteria causes the highest attraction rates. These results can then be narrowed down to the major bacterial colonies that have the greatest effect on the attraction.

References

World Health Organization. "Vector-Borne Diseases." *Who.int*, World Health Organization: WHO, 2 Mar. 2020

Cansado-Utrilla, Cintia, et al. "The Microbiome and Mosquito Vectorial Capacity: Rich Potential for Discovery and Translation." *Microbiome*, vol. 9, no. 1, 18 May 2021, <https://doi.org/10.1186/s40168-021-01073-2>. Accessed 13 Feb. 2023.

Takken, Willem, and Niels O. Verhulst. "Chemical Signaling in Mosquito-Host Interactions: The Role of Human Skin Microbiota." *Current Opinion in Insect Science*, vol. 20, Apr. 2017, pp. 68-74, <https://doi.org/10.1016/j.cois.2017.03.011>. Accessed 3 Mar. 2020.



The above image is from the National Human Genome Research Institute and gives a great insight to how varied the bacteria on the human skin is.