Microbiology

Microbiology Essay In 1835 Bassi showed that a fungus caused silkworm disease, and in 1865 Pasteur discovered that a protozoan caused another silkworm disease. Why do we use Koch’s postulates instead of “ Bassi’s” or “ Pasteur’s” postulates? Bassi and Pasteur both worked on silkworm diseases. Bassi in the year 1835, established that a microscopic organism, a fungus, caused disease in the silk worm. Around 30 years later, in the year 1865, Pasteur established that another microbe, a protozoan, cause infection in silkworms. These findings established an association between the “ questioning” microbes and disease. Indicating that disease is caused due to the attack by tiny micro-organisms. This formed the basis for further research. Whereas, Robert Koch in 1890, physician and bacteriologist further, confirmed this microbial association with the disease. Based on his constant research he established that: a. The bacteria must be present in every disease. b. The bacteria must be isolated from the host suffering from the disease and should be grown in the pure culture. c. The disease must be repeated and reproduced if organism from the pure culture is inoculated into a healthy host. d. Again the same bacteria should be revered from the infected host. All these systematic postulation were not laid by Bassi and Pasteur. Although these postulates do not work when there is no animal model available to test a specific bacteria. Moreover a few bacteria cannot be grown in pure culture in the laboratory conditions, e. g. Mycobacterium laprae the causal organism of leprosy cannot be grown in pure culture. In certain cases virulence or disease causing ability is acquired, so the postulate does not hold true. In certain cases the microbe gains access via trauma, injury or through surgery, then also Koch's postulate are not valid. Moreover, in immunocompromised patients the postulates cannot be true

and if the immunity of an individual is excellent the individual may not reproduce the disease (Definition of Koch's postulates). 2) Describe how the properties of phospholipids makes these molecules well suited for plasma membranes. Phospholipids are present in the plasma-membrane or cell membrane. Phospholipids have a hydrophilic (water loving) head and a hydrophobic (water hating) tail. In plasma membrane, phospholipids are arranged as bi-layer, the hydrophobic tails face each other while the hydrophilic heads are on opposite side. Head of one of the layers of phospholipids face the exterior while the other head face the interior of the cell. Various protein molecules are arranged in this phospholipids bilayer. The association of the phospholipids with the protein molecule helps these protein molecules to act as transporters of the all the major molecules which are secreted by the cell and which are taken in by the cell. Such proteins are called transmembrane proteins, e. g. proton pump, G- protein coupled receptors etc. Some of the proteins are lipid anchored proteins e. g. G-protein. Some are peripheral proteins, e. g. enzymes and hormones. These proteins are vital for the survival of cell and hence the organism may it be a single cellular organism or a multi-cellular organism. They aid in transporting chemicals and information to and fro in the cellular atmosphere. Thus phospholipids play a vital role in cellular morphology and physiology, without these anchoring molecules proteins cannot function properly. They play an imperative role in cellular communication (Phospholipids). References

Definition of Koch's postulate. Available at http://www. medterms. com/script/main/art. asp? articlekey= 7105. [Accessed on 9th March 2011].

Phospholipids. Available at http://www. web-books. com/MoBio/Free/Ch1B2. htm. [Accessed on 9th March 2011].