Interaction: environment and organism

Literature, Russian Literature

Interaction: Environment and organism Table of Contents: I. INTEGRATED SCIENCE II. COURSE PAPER: CASE STUDY III. SOURCE/REFERENCES IV. CONTENT A. BRIEF PRESENTATION OF THE CASE B. POINT OF VIEW I. INTEGRATED SCIENCE(Interaction: Environment and organism) II. COURSE PAPER: CASE STUDY Bacteria constitute a

large domain of prokaryotic microorganisms. Typically a few micrometres in length, bacteria have a wide range of shapes, ranging from spheres to rods and spirals. Bacteria were among the first life forms to appear onEarth, and are present in most habitats on the planet, growing in soil, water, acidic hot springs, radioactive waste, and deep in the Earth's crust, as well as in organic matter and the live bodies of plants and animals, providing outstanding examples of mutualism in the digestive tracts of humans, termites and cockroaches. On February 6, 2013, scientists reported that bacteria were found living in the cold and dark in a lake buried a half-mile deep under the ice in Antarctica. There are typically 40 million

bacterial cells in a gram of soil and a million bacterial cells in a millilitre of fresh water; in all, there are approximately five nonillion (5Ã—1030) bacteria on Earth, forming a biomass that exceeds that of all plants and animals. Bacteria are vital in recycling nutrients, with many steps in nutrient cycles depending on these organisms, such as the fixation of nitrogen from the atmosphere andputrefaction. In the biological communities surrounding hydrothermal vents and cold seeps, bacteria provide the nutrients needed to sustain life by converting dissolved compounds such as hydrogen sulphide and methane. Most bacteria have not been characterised, and only about half of the phyla of bacteria have species that

can be grown in the laboratory. The study of bacteria is known as bacteriology, a branch ofmicrobiology. Most bacteria secrete a covering for themselves which we call a cell wall, However, bacterial cell walls are a totally different thing than the cell walls we talk about plants having. Bacterial cell walls do NOT contain cellulose like plant cell walls do. Bacterial cell walls are made mostly of a chemical called peptidoglycan (made of polypeptides bonded to modified sugars), but the amount and location of the peptidoglycan are different in the two possible types of cell walls, depending on the species of bacterium. Some antibiotics, like penicillin, inhibit the formation of the chemical cross linkages needed to make peptidoglycan. These antibiotics don’t outright kill the bacteria, but just stop them from being able to make more cell wall so they can grow. That’s why antibiotics must typically be taken for ten days until the bacteria, unable to grow, die of “ old age". If a person stops taking the antibiotic sooner, any living bacteria could start making peptidoglycan, grow, and reproduce. Bacteria were the most prominent creatures in the early stages of life's history almost 4000 million years until 600 million years ago. Fossils called stromatolites can still be found and were made by Cyanobacteria. III. SOURCE/REFERENCES * http://en. wikipedia. org/wiki/Bacteria * http://biology. clc. uc. edu/courses/bio106/bacteria. htm * http://bacteriamuseum. org/cms/Bacteria/what-are-bacteria. html * http://www. microscopy-uk. org. uk/mag/indexmag. html? http://www. microscopy-uk. org. uk/mag/wimsmall/bacdr. html * http://www. microscopy-uk. org. uk/mag/indexmag. html? http://www. microscopy-uk. org. uk/mag/wimsmall/bacdr. html IV. CONTENT A. BRIEF PRESENTATION OF THE

CASE Endogenous endophthalmitis is a potentially blinding ocular infection resulting from hematogenous spread from a remote primary source. The condition is relatively rare but may become more common as the number of chronically debilitated patients and the use of invasive procedures increase. Many etiologic organisms (gram-positive, gram-negative and fungal) have been reported to cause endogenous endophthalmitis. Risk factors are well defined and include most reasons for immune suppression. A high clinical suspicion is needed for early diagnosis and treatment. Early intravenous antibiotic therapy remains the cornerstone of treatment. The roles of intravitreal antibiotics and vitrectomy are evolving and may become more widely accepted as therapeutic modalities. The authors report a case of endogenous endophthalmitis and provide a brief review of the literature. Endogenous endophthalmitis is defined as an intraocular infection resulting from hematogenous bacterial spread. It is relatively rare, accounting for 2 to 8 percent of all cases of endophthalmitis, and is associated with immunocompromised states, debilitating diseases and invasive procedures. 1 Because of the rapid advance of medical technology, a longer life span of patients with chronic diseases and a rising prevalence of long-term intravenous access, the disease may become more common in clinical practice. It is important that the family physician be aware of endogenous endophthalmitis because early diagnosis and prompt aggressive treatment are imperative if vision loss is to be avoided. B. POINT OF VIEW Banana bacterial (Xanthomonas) wilt, first detected in Uganda in 2001, has since spread rapidly. Approximately one third of Uganda's banana growing land is now affected by the disease, which renders fruit inedible and ultimately kills

the plant. The Ugandan government has been praised for its promptness in attempting to control the spread, but despite these efforts, and the encouraging success of control in some areas, the risk of further spread, both within and beyond Uganda, remains. Strengthening and refining the control effort is now clearly essential, but how should this be done, where are the research priorities, and what action should be taken by Uganda's neighbours? In July this year an expert consultation of senior stakeholders from policy, research and disease control, was convened at the UK's Central Science Laboratory near York. They offered New Agriculturist their points of view on the current status of the disease and the ways forward for control.