Microbiology assignment

Theodore Wilhelm Magellan was a German microbiologist whose 1882 experiment measured the effects of different colors of light on photosynthetic activity and showed that the conversion of light energy to chemical energy took place in the chloroplast. In 1881, he observed the movement of bacteria towards the chloroplasts in a strand of “ Spirogyra” algae. Magellan hypothesized that the bacteria were moving in response to oxygen generated by the photo synthetically active chloroplasts in the algae. This was one of the first documented observations of costive rare taxis in bacteria.

In 1882, he performed his famous action spectrum experiment using a device designed and built by Carl Sizes. The modified microscope had a prism which could produce a microscopic spectrum on a microscope slide. The device could also distinguish and measure different wavelengths of light making it a “ micro-spectroscope. ” Magellan used this device to illuminate a strand of Clavichord with light from the visible spectrum, exposing different sections to different wavelengths. He added the oxygen seeking bacteria B. Term to this setup ND noted where they accumulated.

Their clumping allowed him to see which regions had the highest concentration of oxygen. He concluded that the most photo synthetically active regions will have the highest concentrations of bacteria. The bacteria accumulated in the regions of red and blue light, showing that these wavelengths of light generated the most photosynthetic activity. However, his experiment was somewhat flawed because he used the sun as his light source. He failed to account for the fact that the sun does not emit all visible wavelengths of eight at the same intensity.

However, further analysis of plant pigments proved that his results were valid. A year later Magellan discovered that purple bacteria utilize ultraviolet light in the same way. In 1883, Thomas Magellan devised an experiment to learn which wavelengths of light were the most effective in carrying out photosynthesis in the green alga Spirogyra. Magellan illuminated a filamentous alga with light that had been passed through a prism, exposing different segments of the alga to different wavelengths.

He then used aerobic bacteria, which concentrate ear an oxygen source, to determine which segments of the alga were releasing the most oxygen and photosynthesis the most. He found that bacteria congregated in greatest numbers around the parts of the alga illuminated with violet-blue and red light. Therefore, these two colors were concluded to be the most effective in driving photosynthesis. A classic experiment reveals which wavelengths work best for photosynthesis. The pigment molecules in photosynthetic organisms absorb specific wavelengths of light. Microbiology By Temperamental