SEX AMONG DIATOMS: LOOKING FOR PHEROMONES IN THE WATER

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Many diatom species are capable of both sexual and asexual reproduction, making them a good study subject for the question of why species engage in sexual reproduction. Species that are capable of asexual reproduction often have periods of sexual reproduction, so there must be a reason for it (Card and Carra, 2009). The goal of this research is to add to a growing body of work concerning the methods of and reasons for sexual reproduction in diatoms.

Most of the time, when diatoms want to reproduce, they divide. Every time that they divide, one is the same size as the parent cell, and one is slightly smaller. This in turn gradually decreases the size of the diatom over time. It's thought that they eventually reach a size that is too small to divide again, so they have to turn to sexual reproduction to increase the size of the cell back to the size of the large initial cell. Diatoms can make a special cell called an auxospore that regenerates the maximum size of the original cell. There are different signals that diatoms may use to inform other diatoms that it is time to reproduce sexually and create auxospores. Many researchers believe that a lack of light is a signal for sexual reproduction to begin (D.H.Jewson, 1992).

Pheromones are described as "substances secreted to the outside of an individual and received by a second individual of the same species in which they release a specific reaction," (Lüscher, 1959). We are looking for a cascade effect of increasing size in diatoms downstream compared to those upstream, supporting the idea of pheromones in the water. We believe that diatom pheromones will travel downstream and will cause diatoms there to have larger average size due to the fact that there will be a greater number of diatoms reproducing sexually from coming in contact with the pheromones.

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