Chemotaxis of the Slime Mold Physarum polycephalum and the Interaction with Different Molds

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Slime molds are single-celled organisms that combine interesting properties. We tested this organism’s reaction to a basic and anacidic environment. The slime mold Physarum polycephalum was cultured on carrageenan, which included bases or acids. We noticed a better growth on the alkaline environment, than on the acid. But all in all the Physarum polycephalum prefers a neutral soil. In addition we monitored his chemotaxis to test if the slime mold is able to decide between different food concentrations. In connection to this we examined if the nutrient uptake is carried out via the gaseous phase. Therefore we used specially designed experimental bowls, which are divided into three chambers, to prevent a nutrient exchange of the hotbed. To analyze the mold growth we have a specially designed computer science program. After scanning pictures of the mold, we receive growth diagrams of the size of the slime mold Physarum polycephalum. The results show, that the slime mold follows the concentration gradient and the nutrients are partly perceived via the gas phase. In the following steps we paid attention to the observation that the slime mold can receive nutrients from a mold in order to confirm our hypothesis. The results indicate the confirmation of the hypothesis. In order to observe and document the growth of the slime molds, our experimental bowls needs to be photographed optimally in our photographic box, making it possible to place the experimental bowls always in the same place under the cameras.

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