
Physarum polycephalum: the many-headed slime

Slime molds are a group of microorganisms, which despite their rather unappealing name, are not moulds at all, and are in fact one of microbiology's most intriguing and beautiful life forms. They inhabit cool, shady and moist environments such as decaying leaves and logs, and because of this they are often overlooked. Nevertheless, they are surprisingly common and should you choose to spend time looking for them, in a damp section of a wood or in a moist area of the garden covered in bark mulch for example, they are not difficult to find (Fig. 1.).



Figure 1. The slime mold *Physarum polycephalum*, photographed in its natural habitat of rotting leaves and vegetation.

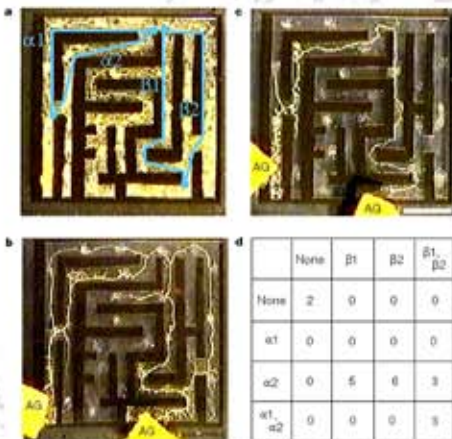


Figure 2. The slime mold *Physarum polycephalum* calculates and adopts the shortest route through a maze to connect to sources of food.

Physarum polycephalum, often referred to as the “many-headed slime,” is a slime mold that takes the form of a giant spreading amoeba-like cell that can spread out to envelop everything in its path, in its search for food (bacteria, oats, and decaying organic matter). The giant cell moves, but as its top speed is 1 cm per hour, this movement is not readily visible upon casual inspection. When viewed by time lapse photography, however, it moves around with apparent intelligence, creeping along by forming finger-like projections, moving towards food and away from harm. Indeed, for something that is often, and together with other microorganisms, perceived as one of the lowliest creatures on the planet, it demonstrates a remarkable **intelligence** in that it will calculate and adopt the shortest route possible through a maze in its search for food (Figure 2.).

Even more remarkable is the fact that when the slime mold is subjected to a series of shocks at regular intervals, it learns the pattern and changes its behaviour in anticipation of the next one to come, suggesting that it also possesses a form of **memory**.

Heather Barnett & Simon Park:

Creative Collaborations with Unruly Natural Forms: The *Physarum* Experiments

www.heatherbarnett.co.uk

www.surrey.ac.uk/SBMS/ACADEMICS_homepage/park_simon/