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Current Research:	Cellular ethological dynamics in complex situation	

Ethological dynamics of an amoeba in diorama environments

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Protists, which are eukaryotes, are generally unicellular and have many things in common with cells that constitute multicellular organisms. For example, regarding motility, the mode of cell movement is similar, such as ciliary movement and amoeboid movement. Since the outdoor environments in which protists inhabit are believed to be diverse and highly variable, they appear to have some potential ability to respond well to such environments. However, it's hard to imagine how it could react to any environment. Therefore, in order to draw out their hidden abilities, it is effective to design an experimental environment that actively incorporates moderate complexity while referring to the outdoor environment. I would like to call such an experimental environment 'a diorama environment'. Here we like to show you a typical example of smart behavior in a diorama environment: a giant amoeboid organism of *Physarum* (plasmodial slime mold) can construct a network structure of amoeboid body that connects multiple food-pellets in a complex shape of space. Based on a simple mathematical model for the network formation, we discuss how the *Physarum* amoeba can find a smart solution of network shape under the diorama environment.