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**Localized structure of Euglena bioconvection** MAKOTO IIMA, ERIKA SHOJI, AKINORI AWAZU, HIRAKU NISHIMORI, SHUNSUKE IZUMI, Hiroshima University, HIROSHIMA UNIVERSITY COLLABORATION — Bioconvection of a suspension of *Euglena gracilis*, a photosensitive flagellate whose body length is approximately 50 micrometers, was experimentally studied. Under strong light intensity, *Euglena* has a negative phototaxis; they tend to go away from the light source. When the bright illumination is given from the bottom, a large scale spatio-temporal pattern is generated as a result of interaction between *Euglena* and surrounding flow. Recently, localized convection pattern had been reported, however, the generation process and interaction of the localized convection cells has not been analyzed. We performed experimental study to understand the localization mechanism, in particular, the onset of bioconvection and lateral localization behavior due to phototaxis. Experiments started from different initial condition suggests a bistability near the onset of the convection as binary fluid convection that also shows localized convection cells. Dynamics of localized convections cells, which is similar to the binary fluid convection case although the basic equations are not the same, is also reported.

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