An agent based simulation for the shape adaption of 'Coccus' type bacteria colonies

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Agent technology is one of the Artificial Intelligence techniques best suited to address a social or biological phenomenon which involves group dynamics. Moreover, computer simulations are used extensively for studying artificial intelligence applications. Hence, research paper presents a simulator that will be helpful for the researchers in medical laboratories and students in Biochemistry and Molecular Biology to find the shapes in bacterial colonies for their findings. This research focuses on applying the behavior of swarm of agents that interact upon each other to achieve a common goal for bacteria colony shape adaption for Coccus type. The research emerged a computer simulator using the *Pediococcus acidilactici* species as the sample. The simulator formed a circular shape as the final shape of the colony which is comparable with the laboratory results of given species. The resulted simulator which is developed using NetLogo agent simulation toolkit represents each bacterium as a programmable agent. Simulator allows bacteria to communicate with each other through environment which acts as the message agent to form the ultimate shape of the colony.

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