Self-organisation and pattern formation in bacterial communities: biological finding versus mathematical models

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Bacterial communities (bacterial mats) are aggregates of proliferating, nonproliferating and dead cells, organized in specific layers and patterns. They have existed for 3,500 million years and are among the oldest life forms. The composition and organization of mats was investigated by many researchers and inspired a number of mathematical models, sometimes including detailed biochemical considerations. In this communication, we review some of these models, and propose a simple model, based on diffusion of growth factor and proliferation kinetics. We investigate patterns generated by this model and compare them to experimental findings.

References

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