Large group size promotes the evolution of cooperation in the mutual-aid game

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Highlights

- Group cooperation is a foundation of our society.
- Previous studies show that cooperation evolves in small groups when the public goods game is played.
- We analyzed the mutual-aid game, in which one member is chosen as a recipient, and others decide whether to help that member, by means of replicator equations and agent-based simulations.
- We found that, if members decide to help based on past behavior and reputation, cooperation can evolve even in a large group in a finite population occupied by defectors.