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Transitions between spatiotemporal patterns in cell culture

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Cardiac monolayers undergo transitions between different spatiotemporal states as experimental conditions are varied. Monolayers display periodic target pattern waves, stable spiral waves, spirals that spontaneously initiate and terminate, multiple interacting wavefronts, and quiescence. Transitions between these spatiotemporal states are observed during washout of beta-glycyrrhetic acid, a pharmacological agent that reduces cell-cell coupling. Simple excitable media models undergo the same transitions as local connectivity is continuously varied. Similar mechanisms may be responsible for transitions between healthy and unhealthy rhythms in whole hearts.