

## **Analysis of blow-up in chemotaxis systems**

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In mathematical biology, chemotaxis terms partially oriented movement of individuals - usually of single cells - along gradients of a chemical signal substance. Experimental findings report striking effects of such chemotactic migration, inter alia phenomena of self-organization such as spatial aggregation. A prototypical model for the description of such chemotactic dynamics, consisting of two parabolic equations with a cross-diffusive term as its most characteristic ingredient, was proposed by Keller and Segel in 1970 already and intensively discussed since then in the mathematical literature. However, fundamental mathematical questions, particularly concerning the spontaneous emergence of large densities and cell aggregates, could only be answered satisfactorily for simplified systems up to now. The presentation aims at reporting on some classical and some more recent developments, with a particular focus on mathematical methods for describing blow-up behavior.