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*Suppression of chemotactic explosion by mixing.*

Chemotaxis plays a crucial role in a variety of processes in biology and ecology. One of the most studied PDE models of chemotaxis is given by Keller-Segel equation, which describes a population density of bacteria or mold which attract chemically to substance they secrete. However, solution of Keller-Segel equation can exhibit dramatic collapsing behavior. In other words, there exist initial data leading to finite time blow up. In this talk, we will discuss the possible effects resulting from interaction of chemotactic and fluid transport processes, namely we will consider the Keller-Segel equation with additional advection term modeling ambient fluid flow. We will prove that the presence of fluid can prevent the singularity formation. We will discuss two classes of flows that have the explosion arresting property. Both classes are known as very efficient mixers. (Received January 03, 2016)