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**Jonathan J Wylie\*** ([mawylie@cityu.edu.hk](mailto:mawylie@cityu.edu.hk)), Dept of Mathematics, City University of Hong Kong, Kowloon Tong, Hong Kong. *Coupled reaction-diffusion models with degenerate sources.*

We consider a general system of coupled nonlinear diffusion equations that are characterized by having degenerate source terms and thereby not having isolated rest states. Such equations arise naturally in the study of ion propagation through biological cells and fluid transport through porous media with evaporation and condensation. Using a general form of physically relevant source terms, we derive conditions that are required to trigger traveling waves when a stable uniform steady-state solution is perturbed by a highly localized disturbance. We also discuss the implications for biological systems. (Received December 29, 2014)