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Anthony Suen* (acksuen@ied.edu.hk), Department of Mathematics and I.T., The Hong Kong Institute of Education, 10, Lo Ping Road, Tai Po, New Territories, Hong Kong, Hong Kong, and **Tong Li**. *Existence of intermediate weak solution to the equations of multidimensional chemotaxis systems.*

We prove the global-in-time existence of intermediate weak solutions of the equations of chemotaxis system in a bounded domain of \mathbb{R}^2 or \mathbb{R}^3 with initial chemical concentration small in H^1 . No smallness assumption is imposed on the initial cell density which is in L^2 . We first show that when the initial chemical concentration c_0 is small only in H^1 and $(n_0 - n_\infty, c_0)$ is smooth, the classical solution exists for all time. Then we construct weak solutions as limits of smooth solutions corresponding to mollified initial data. Finally we determine the asymptotic behavior of the global solutions. (Received February 23, 2015)