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Sze-Bi Hsu (sbhsu@math.nthu.edu.tw), Hsinchu, 300, Taiwan, and **Lih-Ing W Roeger*** (lih-ing.roeger@ttu.edu), Department of Mathematics and Statistics, Texas Tech University, Lubbock, TX 79409. *Heteroclinic Cycles in the Chemostat Models and the Winnerless Competition Principle*. Preliminary report.

We consider a chemostat model of n species of microorganisms competing for k essential, growth-limiting nutrients. Sufficient conditions for the model to possess stable heteroclinic cycles in the limit sets in this model are given. We construct stable heteroclinic cycles that connect the n one-species equilibria in the following manner: $E_1 \rightarrow E_2 \rightarrow E_3 \rightarrow \dots \rightarrow E_n \rightarrow E_1$ and therefore the competition among the n species for k resources is a winnerless competition. Our results show that three essential nutrients may support any finite number of species. (Received January 22, 2007)