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**Mary Lou Zeeman\*** (mzeeman@utsa.edu), Dept. of Applied Mathematics, U. T. San Antonio, San Antonio, TX 78249, and **Danielle Lyles, Joseph H. Tien** and **David McCobb**. *How does estradiol initiate the LH surge? A modeling approach*. Preliminary report.

In vertebrates, ovulation is triggered by a surge of luteinizing hormone (LH) from the pituitary. The precise mechanism by which rising estradiol (E2) from the ovaries initiates the LH surge in the human menstrual cycle remains a mystery. We will describe a differential equations model of pituitary LH release, in which the dramatic LH surge arises from gradual changes in the electrical connectivity of the pituitary network of folliculo-stellate cells. The mathematical model is based as closely as possible on current experimental data, and is being used to design and conduct new experiments. No biological background will be assumed. (Received September 28, 2005)