COLLOQUIUM
UNIVERSITY OF PITTSBURGH
TUESDAY, NOVEMBER 22, 2005
704 THACKERAY HALL
3:00 P.M.

SPEAKER: PROFESSOR MARY F. WHEELER
INSTITUTE FOR COMPUTATIONAL ENGINEERING & SCIENCES
UNIVERSITY OF TEXAS AT AUSTIN

TITLE: MULTISCALE ANGIOGENESIS MODELING

ABSTRACT: In this presentation we describe a deterministic two-scale tissue-cellular approach for modeling growth factor-induced angiogenesis. The bioreaction-diffusion of chemotactic growth factors (CGF) is modeled at a tissue scale, whereas cell proliferation, capillary extension, branching and anastomosis are modeled at a cellular scale. The capillary indicator function is used to bridge these two scales. The system of resulting equations consists of parabolic partial differential equations coupled nonlinearly with a varying number of ordinary differential and algebraic equations. Both computational and theoretical results will be presented. This work is a joint collaboration with Shuyu Sun of The University of Texas at Austin and Mandri Obeyesekere and Charles W. Patrick, Jr. of M.D. Anderson Cancer Center.

Refreshments served at 2:30 p.m.
in the Math Dept. COMMON ROOM, Thackeray 705