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**Jeffrey R Anderson\*** (andersjr@ipfw.edu). *Global estimates of solutions of the porous medium equation with boundary flux governed by memory.*

Motivated by a previously introduced model of tumor-induced angiogenesis, we investigate global solvability and blow up in finite time for nonlinear diffusion equations with boundary flux governed by memory. The present study is also in the spirit of extending results for models incorporating local, nonlocal, and delay nonlinearities. Specifically, we establish necessary and sufficient conditions for blow-up in finite time which are identical to those in the parallel result for the case of local flux conditions at the boundary. Key steps for the analysis are obtaining global  $L^p$  estimates and converting these to  $L^\infty$  estimates. The memory condition, in the form of a time integral at the boundary, and resulting constants which do not permit simply letting  $p \rightarrow \infty$  complicate the process. We discuss how these can be addressed and extensions to related models under current study. (Received August 11, 2015)