

Abstract Submitted  
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**Effects of Chaos in Peristaltic Flows: Towards Biological Applications** PAUL W. WAKELEY, JOHN R. BLAKE, School of Mathematics, University of Birmingham, DAVID J. SMITH, Reproductive Biology and Genetics, School of Medicine, University of Birmingham, EAMONN A. GAFFNEY, Centre for Mathematical Biology, University of Oxford — One in seven couples in the Western World will have problems conceiving naturally and with the cost of state provided fertility treatment in the United Kingdom being over USD 3Million per annum and a round of treatment paid for privately costing around USD 6000, the desire to understand the mechanisms of infertility is leading to a renewed interest in collaborations between mathematicians and reproductive biologists. Hydrosalpinx is a condition in which the oviduct becomes blocked, fluid filled and dilated. Many women with this condition are infertile and the primary method of treatment is *in vitro fertilisation*, however, it is found that despite the embryo being implanted into the uterus, the hydrosalpinx adversely affects the implantation rate. We shall consider a mathematical model for peristaltic flow with an emphasis towards modelling the fluid flow in the oviducts and the uterus of humans. We shall consider the effects of chaotic behavior on the system and demonstrate that under certain initial conditions trapping regions can be formed and discuss our results with a view towards understanding the effects of hydrosalpinx.

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