P-gp transfer and acquired multi-drug resistance in tumour cells

Pierre Magal
Départment of Mathematics
Le Havre University, France
(email : pierre.magal@gmail.com)
Co-Authors: Frank Le Foll, LEMA, Le Havre University, France; Jennifer Pasquier, LEMA, Le Havre University, France; Glenn Webb, Vanderbilt University, USA; Peter Hinow, University of Minnesota, USA

Abstract- Multi-Drug resistance for cancer cells has been a serious issue since several decades. In the past, many models have been proposed to describe this problem. These models use a discrete structure for the cancer cell population, and they may include various classes of resistant, non-resistant, and acquired resistant cells. Recently, this problem has received a more detailed biological description, and it turns out that the resistance to treatments is due in 40% of cancers to a protein called P-glycoprotein (P-gp). Moreover it has been proved that P-gp can be transferred from cell to cell by an osmotic phenomenon. This transfer turns to be responsible for the acquired resistance of sensitive cells. The goal of this talk is to introduce this problem, and to present a cell population dynamic model with continuous P-gp structure.