Special Issue on “Mathematical Modelling and Simulation of Aspects of Cancer Growth”

Preface to Special Issue

Over the past 10–15 years, there has been a notable increase in the attention paid by the mathematical biology community to modelling all aspects of tumour growth—from the earliest stages of genetic mutations through to solid tumour growth, invasion and metastasis. The mathematical modelling of tumour growth, like its subject, is definitely growing, expanding and “invading”! Indeed, the area of modelling tumour growth has reached such a stage that it is almost a well-established research field of mathematical biology in its own right. The upsurge in research has also been underpinned by several important minisymposia on the subject at major international mathematical biology and applied mathematics conferences during the 1990s.

In addition to the increase in research articles *per se* on the subject of tumour growth modelling, there have also appeared two special issues of other journals:

- (1) “Modelling and Simulation Problems on Tumor-immune System Dynamics”, *Mathematical and Computer Modelling* Volume 23, Number 6, March 1996, Guest Editor: Nicola Bellomo.
- (2) “Mathematical Models for the Growth, Development and Treatment of Tumours”, *Mathematical Models and Methods in Applied Sciences*, Volume 9, Number 4, June 1999.

The current special issue of the Journal of Theoretical Medicine may therefore be seen as the third in the above “series”.

This particular special issue, devoted to modelling all aspects of tumour growth and development, represents a collection of articles from members of the recently funded European Union Research Training Network “Using Mathematical Modelling and Computer Simulation to Improve Cancer Therapy”. The Network consists of eight member departments (experimental and theoretical) in the following institutions: Politecnico di Torino, Italy; University of Oxford, UK; Université J. Fourier, Grenoble, France; University of Magdeburg, Germany; Institute for Medical Bio-Mechanics, Israel; University of Warsaw, Poland; University of Dundee, UK. The articles themselves reflect the breadth and depth of approaches (experimental and theoretical) that are being used to gain deeper insight into a complex medical condition that still causes many millions of deaths worldwide each year.

Finally, and most importantly, I would like to thank all the authors for their contributions to this special issue and hope that the field continues to grow and attract other talented modellers who can interact with clinicians and one day make a real impact in improving the treatment of cancer through their mathematical models.

Mark Chaplain
Guest Editor