



*Institute of Mathematical Research
Department of Mathematics*

WORKING SEMINAR

Professor Antoine Danchin

President, AMAbiotics SAS (a biotech company), France
Member of the French Academy of Sciences

November 21, 2016 (Monday), 10:00 – 11:00am

Rm 210, Run Run Shaw Building, HKU

What may define underlying rules of aging?

Abstract

Since Gompertz, back in 1825, proposed that human life followed a phenomenological law with constant increasing of mortality (after the first year of age, or so) nothing has changed much, despite a constant increase in life expectancy. For the best part of our lives we follow a Gompertz law, that shows that the probability of dying increases by a factor of two every 8 years or so. Several small modifications have been included to fit better with the actual data. Yet a problem arose for people of very old age (more than 100 years old) and it was proposed that the increase of mortality levelled off around 85, to remain constant. Because the number of people involved is small it was difficult to validate the observations and there is now a controversy with some doubting the plateau in mortality increase. We will take a stance that departs from phenomenology and explore the possible clocks that may control life in general, emphasizing the role of aspartate and asparagine cyclisation in proteins. From the point of view of mathematics it will be of interest to explore the role of redundancy in the entities that define clocks. If we depend ultimately from clocks then the levelling of is likely, and maximum longevity will behave as the decay of radioactive compounds.