María A. Blasco y Manuel Serrano, Group Leaders of the Telomeres and Telomerase Group and of the Tumour Suppressor Group, respectively, at the Spanish National Cancer Research Centre (CNIO), together with Toren Finkel, Principal Investigator at the National Institutes (of Health in Bethesda (USA), present today in a review article published in the journal Nature a historical perspective on the decisive impact that the studies on the capability of cells to divide outside the context of an organism have had on cancer and ageing research.

**CNIO researchers review in the journal *Nature* the biology of cancer and ageing**

**Madrid, 16 August 2007.** - Cancer and ageing would not appear to be related at first glance. Nevertheless, mounting key observations have revealed the existence of a complex but growing convergence between our current knowledge of the biology of ageing and the mechanisms underlying cancer. As the CNIO investigators Manuel Serrano and María A. Blasco point out, together with Toren Finkel, in a review article published today in the journal Nature, it would not be possible to discuss a common biology to cancer and ageing had not George and Martha Gey succeeded in growing human cells continuously in the laboratory, thanks to the generosity of the family of Henrietta Lacks (in whose honour these cells were named HeLa cells), a revolutionary milestone that took place in 1951.

The Gey’s found a human cell line that was able of growing indefinitely in laboratory culture conditions, which they derived from a biopsy sample obtained from Henrietta Lacks, a patient later confirmed to have cancer of the uterus. As stated in the mentioned article, a series of landmarks followed that event, such as the *in vitro* growing of non-cancerous cells and the later finding that, contrary to cancer cells (which are immortal), cultured non-cancerous cells are mortal; and also the discovery that telomerase can confer immortal growth to non-cancerous cells without altering their otherwise normal features.

The review article by the CNIO scientists focus on five aspects of cancer biology that seem to be highly informative about normal ageing: the link between cellular senescence and tumour formation; the common role of genomic instability; the biology of telomeres; the importance of autophagy on cancer and ageing; and the key roles of mitochondrial metabolism in the two processes. The review article also highlights that because of the complexity of ageing and the biology of cancer it is advisable not to draw easy generalizations. In some instances those strategies that protect us from cancer might accelerate our rate of ageing, while in some other cases cancer and ageing seem to share common aetiologies. The article also enumerates some of the challenges that wait ahead.