

## The Dr A.H. Heineken Prize for Medicine 2006

*The work of Professor Mary-Claire King presented by Professor Jos W.M. van der Meer, Chairperson of the Jury of the Dr A.H. Heineken Prize for Medicine*

*Prize citation: for 'proving the existence of the first hereditary breast cancer gene'*

Professor King,

It is the dream of many researchers to discover something that revolutionises current scientific thinking. The risk is that the discovery will be met by disbelief and incomprehension, turning the dream into a nightmare.

Professor King, when you discovered that the BRCA1 gene, located on chromosome 17, is responsible for a large percentage of congenital breast cancer cases, it was both a dream and a nightmare. Your discovery ran counter to the prevailing belief that breast cancer is caused by different genes interacting with different environmental factors. Proving the existence of BRCA1 changed the way we think about complex diseases, genes and the causes of cancer. Your work has given us a better understanding of how breast cancer arises, and it has had a major impact on how we deal with familial tumours.

In addition to your pioneering research on breast cancer, you have made a number of other highly impressive discoveries. The first was your astonishing finding that the genomes of chimpanzees and human beings are 99% identical, in other words that there is only a 1% difference between them. It was possible to extrapolate from this observation that chimpanzees and human beings shared a common ancestor some 5 million years ago – much more recently than previously thought.

You showed great determination in developing a method to use the mitochondrial DNA in teeth to identify human remains and family relationships. This too turned out to be a significant breakthrough. You used your method to identify the children of men and women who had disappeared during the military dictatorship in Argentina. As a result, these children – who had been placed in orphanages or adopted illegally by military families – were reunited with their grandparents. You also used this technique to identify the human remains of war crimes victims found in mass graves in the former Yugoslavia.

Congenital deafness is another field in which you have conducted important research and continue to do so, for example through a partner project involving Israeli and Palestinian researchers.

Professor King, the jury has chosen you as this year's laureate from among a large number of world-class scientists. The main reason for our choice was your discovery of the breast cancer gene and the associated implications for this and other diseases, but the jury was also deeply impressed by the way you have used your genetic research for humanitarian purposes.

By awarding you the Dr A.H. Heineken Prize for Medicine, the Royal Netherlands Academy of Arts and Sciences is honouring an outstanding researcher. I consider it a great privilege to congratulate you on your award.