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Laudatio for Professor Mary-Claire King
Pronounced in Leuven on 2 February 2006 by Professor Dr. Gert Matthijs, promoter.

Your Eminence,
Rector,
Your Excellencies,
Colleagues,
Ladies and Gentlemen,

'Cancer is a genetic disease'. It is said that Mary-Claire King uses this phrase to begin her story whenever she gets the chance to explain her research. Any cancer results from a mutation in a cell's DNA, a minute alteration somewhere in or next to a gene that manages to escape the many control and repair mechanisms that we have in our cells.

Most cancers are sporadic, but in some cases, it is clear that these cancers occur repeatedly in the same families. Different members of these families thus have an innate susceptibility to develop a certain type of cancer, often at a relatively young age.

This is true for breast cancer, a devastating disease that affects nearly one in 10 women in our population. Of all these women with breast cancer, approximately 10 % have a family history of the disease, or of ovarian cancer, a cancer which often appears in the same families, and, unfortunately, even in the same patient.

Mary-Claire King has significantly contributed to the elucidation of the genetic and molecular basis of these familial forms of breast and ovary cancer. This is one of the reasons why we present her for the honorary doctoral degree of our University.

In the late seventies, Mary-Claire King started to collect clinical data and blood samples for DNA analysis from large families with breast and ovarian cancer, at time when these 'female' cancers were still a taboo for many. She applied her mathematical skills and statistical models to genetic theory. This led to a breakthrough, in the late eighties, with the identification of the first genetic defect for breast cancer in the human genome.

Some might ask: "Why would you call Professor King the top breast cancer researcher? Not because she located the first gene!" Surely not! She has done a lot more but, more importantly, she continuously and persuasively talks about breast cancer and thus raises awareness for this disease affecting thousands of women.

Her scientific achievements are also a nice illustration of the importance of multidisciplinarity for research. In genetics, and in biomedical research in general, we need close collaboration with other

scientists: mathematicians, statisticians, computer specialists, and engineers. This is vital in the era of 'genomics', 'proteomics' and, very soon, 'systems biology.' We acknowledge the efforts of our University to support such emerging collaborations. We equally acknowledge the increasing appreciation given to the non-medical staff in our university hospital.

Mary-Claire King was drawn to genetics by her aptitude for mathematics. But she did not start her career in cancer research, rather in population genetics. In the early seventies, Mary-Claire King surprised the scientific community with her studies on the genetic difference between humans and chimpanzees. She was the first to show that selected DNA sequences differ by less than 1 % between humans and chimpanzees. She also showed that different human races or geographically distinct populations hardly differ at the genetic level. These results have rejuvenated population genetics, and have significantly contributed to the current view on evolutionary genetics.

Her population studies and early work on breast cancer date from the seventies. Her breakthrough in breast cancer was realized at the end of the eighties and in the early nineties. Thus, there seems to be a gap in Mary-Claire King's scientific career …
In the early eighties, the DNA collected from the breast cancer families had been nearly used up without much progress, and she realized that with the available techniques, she would not be able to crack the problem. Thus she decided to suspend her breast cancer studies and wait for technical improvements that would revolutionize the field. In the mean time, Mary-Claire King did not sit still. She applied her own skills to yet another field of genetics, that of forensics.

This brings me to the most touching part of Mary-Claire King' life: her role in the story of the 'Abuelas', the grandmothers of the Plaza de Mayo in Buenos Aires, Argentina. After the military coup in Argentina and the elimination of Peron, several thousand opponents of the new regime disappeared - the '*desaparecidos*'. This happened in 1976, exactly 30 years ago, which explains why these stories are currently popping up in the news. Take, for instance, the story about the ESMA, the '*Escuela de Mecánica de la Armada*', the headquarters of the military junta, which is presently being turned into a museum. This ESMA is where, during the military occupation, the thousands of arrestees were interrogated and tortured, after which most disappeared for ever. Among the arrested were pregnant women, who were locked up until it was time to give birth to their children. But immediately after birth, these children were confiscated by the guards and donated or sold to the military. A few months after these atrocities had started, the mothers of the men and women who disappeared, and thus the grandmothers of these 'lost' babies, started to demonstrate in front of the ESMA, in the Plaza de Mayo. They did this for years, every Thursday. People called them the 'mothers of the Plaza de Mayo'. Eventually, these mothers got in touch with Mary-Claire King, and in the following years, Mary-Claire King succeeded in identifying more than 50 children, and had them returned to their families.
It is not a coincidence that Mary-Claire King responded to the call of these desperate women. She happened to live in Santiago in Chili, back in 1973 when the military coup took place at the time of Allende. She had to leave the country, and only afterward heard that several of her colleagues and students had disappeared, just like the '*desaparecidos*' in Argentina.
We can hardly imagine how hard and emotionally challenging these times must have been for Mary-Claire King. It takes courage for a person to dedicate part of her life to go to an oppressed country and to stand on the side of the opposed. It takes courage for a scientist to risk her career and apply her skills to fight for justice. Later, Mary-Claire King was asked to contribute to other international forensic cases. She has done this with incredible dedication and remarkable integrity.

Some would consider these actions as a left-over from her 'flower-power' time. Indeed, she was a student in the turbulent sixties, and a fierce protester against the Vietnam war.

But I would like to suggest that her natural rebellion has been channeled over the years into a strong social and political commitment. She puts her scientific skills at the service of the community, and preferably for those who get few or no chances, and no justice in life. I would like to call upon today's student generation to look up to people like King, and to not only experience the joy and luxury of the modern student and his or her night life, but to combine their studies with a political, and more importantly, a social engagement.

I contacted Mary-Claire King a few years ago, when the discussion emerged concerning the patenting of breast cancer genes. The 2 breast cancer genes, BRCA1 and BRCA2, were patented by an American company in 2001. This company decided to exploit fully the monopoly conferred upon them by the patents: they would not allow other laboratories, even those that had been involved in breast cancer testing for years, to continue testing. As a result, we would have been obliged to send patients' samples to Utah. Of course we didn't! Rather, we've been fighting back, and I have felt comfortable in this action because important people like Mary-Claire King have been standing by us.

This is another reason why we honour her here today in Leuven: our university, my colleagues and I myself, not to mention a large majority of the European and the American geneticists and scientists share the same concerns about the patient's rights in the face of a commercial monopoly on genetic testing. I would like, at this occasion, to thank our academic council sincerely for its support in our opposition to the patenting of breast cancer genes.

Why did we call for action? Because we believe in the public health care system, and because we are defending a well-organized and very social genetic service in Belgium. Our genetic centres offer state-of-the-art clinical and diagnostic services. But most importantly, our system provides for easy access to genetic services without putting any financial burden on patients and their families. Our international colleagues envy us for this excellent service. In addition, the system is very efficient and surprisingly economical: genetic diagnostic testing in Belgium costs about 5 Euro per inhabitant per year. Of course, we anticipate that the expenses will increase due to the increased demand for testing, and we would welcome more funds to keep the pace with development. I sincerely hope that the Belgian government is convinced that our public health system does a wonderful job, in genetics as well as in other disciplines, and I hope that the government will be capable and willing to oppose and turn back the European tendency to privatize health care, because this tendency is not good.

Permit me a moment longer before I draw to a close, because, on behalf of my colleagues and all those at the Department for Human Genetics, I would like to dedicate the honour reflecting upon our Department today to Prof. Em. Herman van den Berghe. He was the pioneer of human genetics in Belgium, and we owe to him both the success of own genetic centre here in Leuven, and the well-organized genetic service in Belgium.

Finally, there are many more aspects to the life and work of Mary-Claire King. I need to mention one more. If we would ask Mary-Claire King: "What is the most important achievement in your life?," she would most likely answer: "Emily, my daughter". Mary-Claire King has given all she could to raise her daughter on her own and combine that task with her career. Once more is she a non-conformist and a fighter, and she has gone a long way to make sure that women are able to care for their families without loosing chances in their careers, and to be able to have successful careers without having to give up their families. It is a lesson that men also could take.

Mary-Claire King is a fantastic women with a great career who has made a tremendous contribution to science and society.

For all these reasons, I ask you, honored Rector, on the recommendation of the Academic Council, to grant the honorary doctorate of the 'Katholieke Universiteit Leuven' to Professor Mary-Claire King.