



“ For me, Dedication to Science is ...

Prof. Dr. Hans Tanke

Living up to Life

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Our interview partner for the 'Dedication to Science' value, Prof. Dr. Hans Tanke, is Head of the Department of Molecular Cell Biology at the Leiden University Medical Center, Leiden, The Netherlands. He pioneered the development of novel fluorescent reporters and promoted the use of digital fluorescence microscopy for this purpose, one of the first Dutch programs awarded with a NWO Pioneer grant in 1989. In past decades his team has made many original contributions to the field of FISH and immuno-cytochemistry and automated microscopy.



... tracking down the building blocks of life with passionate curiosity, without losing sight of the ethical dimensions of this activity."

Before we talk about the significance dedication to science has for you personally, would you please tell us a little bit about your field of scientific activity?

In general, I try to perform “curiosity-driven basic research”. Firstly, to understand the molecular mechanisms that underlie the function and activity of cells and tissues; secondly, to unravel the molecular defects that form the basis of inherited and acquired disease; and finally, to make this knowledge and related technology available to others for improved diagnosis or to develop novel treatment modalities based on newly designed drugs.

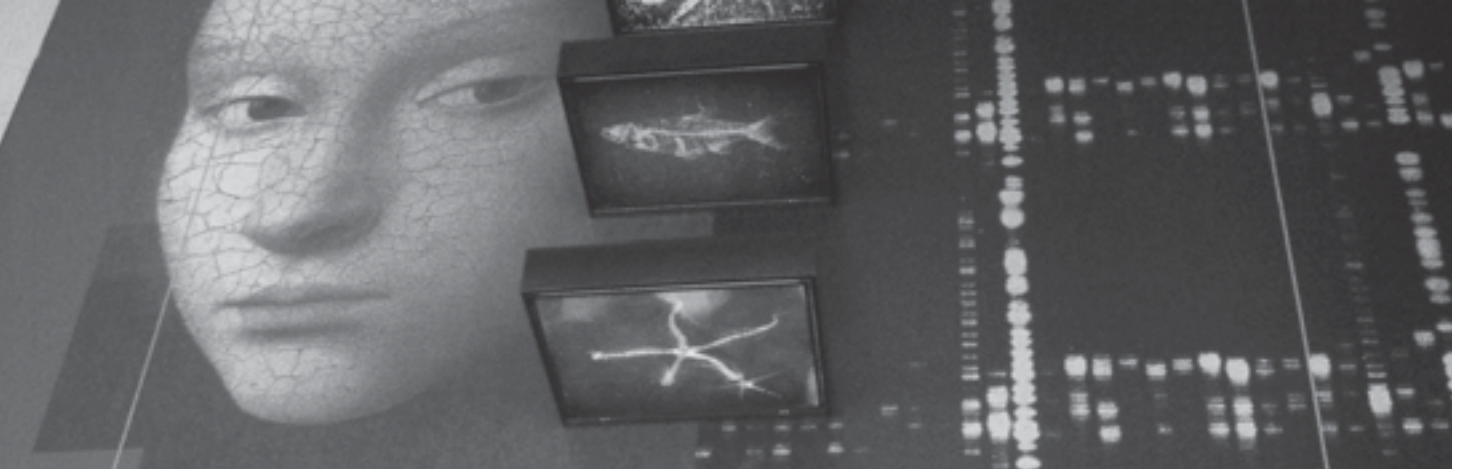
What are your studies focused on currently?

The Department that I chair is large – six sections with 150 employees, headed by full professors – and consequently there are many topics that are studied. The projects that I am involved in the most are studying gene regulation in living cells by applying FRAP, FLIM and FRET, developing point-of-care tests for infectious diseases using lab-on-a-chip technology, and two-photon *in vivo* imaging of live animals.

Could you give us a short biographical sketch, and how did you come across molecular cell biology? What triggered your decision to specialize in cytology?

Well, let's see, that's two questions at once... I was born on Feb. 26, 1952 and obtained my Masters degree in Chemistry (biochemistry, clinical chemistry and immunology) from Utrecht University in 1976 and received my PhD from Leiden University in 1982. Other training occurred at Lawrence Livermore Laboratories, Livermore CA, USA (in 1979) and at the University of Innsbruck (in 1982). In 1988 I was appointed associate professor at the University of Leiden, and fulfilled visiting professorships in Bologna, Brussels and Hanover. Appointment as full professor occurred in Leiden in 1993. Since 1997 I'm Head of the Department of Molecular Cell Biology at the Leiden University Medical Center.

Why cytology, hmm... Microscopy was the driving force to come across molecular cell biology. Particularly, the ability to see how living cells behave, how molecules diffuse and act. The GFP labeling technology has had an enormous impact on the study of living cells and allowed many people (including me) to become fascinated by it.



You are Head of the Department of Molecular Cell Biology at the Leiden University Medical Center.

What are the main projects you are promoting there?

My present research field relates to the development of novel fluorescence-based technology including advanced imaging to study the molecular composition of cells and chromosomes. My aim is to unravel the molecular mechanisms that determine normal and abnormal cell function, as well as to understand the cause of inherited and acquired disease. There are four scientific research fields in my department:

1. Signal transduction in aging-related diseases (mainly cancer and diabetes)
2. Gene regulation and cell differentiation; including stem cell research as part of regenerative medicine
3. Neurobiology of *Drosophila* and mice, including circadian rhythm studies
4. Microscopic imaging (LM and EM) and fluorescence technology

Dedication to Science isn't just a major part of the mission of Leica Microsystems. It is probably also a core value of your own scientific work at your department. What do you think characterizes a scientist?

Difficult! A scientist is continuously looking around to search for new knowledge, novel technologies that exist or are being generated in any field of science or technology, in order to apply this to his/her research questions. In the field of molecular cell biology/life sciences, nature itself (simply look around!) is the most inspiring factor.

Often enough scientific work means suffering reverses on the road to success. How do you deal with that? Does your dedication to the object of your research help you to manage a setback?

Reverses on the road to success are unavoidable, in fact it is important that they occur. In fact, they force one to think whether the approach is still okay, whether one should continue to work on the topic in question, or whether it is perhaps time to switch and do something else. Scientists that work on one topic for their entire life are becoming rare. Dedication helps to overcome setbacks, but there is no problem in switching topics. Switching is not seen as "giving up" or as a defeat. Flexibility is the key word.



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How close to or distant from life must science be to be successful? Does it need a kind of intellectual distance? Or does dedication enable one to reduce the distance to the object of research?

That is something that every scientist should fill in for him/herself. I feel that in the area of life sciences, science is so close to daily life, that it is virtually impossible to keep an intellectual distance. See my comment above: nature itself is very inspiring!

Is a real dedication to science possible at all – during these days of an efficiency-minded, often anonymous academic establishment which is under time and cost constraints?

Real dedication is absolutely possible, also under the conditions mentioned. I feel that in academia more degrees of freedom are possible compared to industry. Of course, academic research is also efficiency-minded and sometimes under time and cost constraints. The field of life sciences is a nice mix of academic freedom, obligation to valorization of knowledge, and responsibility to society. That is different from industry “where making money is the main goal.” Funding nowadays, with extra money made available for genomics, bioinformatics and proteomics is not that bad at all.

On one hand, you yourself are a scientist of outstanding reputation. On the other hand, you are responsible for your personnel. How do you motivate your staff members? Is dedication to science 'contagious'?

The important thing in a research group is enthusiasm expressed by the leaders. Particularly young scientists must be stimulated to become excited about research. They should not be bothered by too many bureaucratic actions or anything that ruins their dedication. I try to keep them out of the bureaucratic winds, try to be optimistic that "the glass is always half full and never half empty." I never talk about financial constraints of the department with junior scientists (smiles). Financial awareness comes later, after enthusiasm and dedication.

Dedication to science is a highly time-consuming pleasure. If you do invest so much energy into scientific research as it seems, how do you work round to your private life? Do you have one? How do you relax?

I do have a private life and protect it. I am not the scientist that reads email 365 days a year (four times per day). I am also not the scientist that calls the office every vacation day. Creativity is an important issue in science, and creativity is stimulated by breaking out now and then. So I relax doing sports, hiking and running, and by listening to music. Cooking is also a fantastic hobby – (big grin) not just molecular cooking!

