Christian de Duve **The joy of discovery**

The Nobel Prize in Physiology or Medicine 1974 was awarded to Christian de Duve, Albert Claude and George E. Palade for their discoveries concerning the organization of the cell.

How important is an interdisciplinary approach in addressing urgent scientific questions, and how can we foster such collaborations?

In biomedical research, multidisciplinary collaboration has become mandatory. The best — I would say only — way to foster it is by grouping together experts of all relevant disciplines in the same geographical location, as was done when the International Institute of Cellular and Molecular Pathology (ICP), now the de Duve Institute, was founded in Brussels in 1974.

How can the public be convinced of the importance of fundamental research with no applications in sight?

Using simple logic: application presupposes discovery, and discovery requires research, and research implies exploring the unknown, with, by definition, the inability to predict how useful or profitable whatever will be found could turn out to be.

Independent of socio-economic considerations, fundamental research deserves to be supported for its own cultural value. The search for truth is, together with the quest for beauty, goodness, meaning and love, a major pillar of human civilization.

As an aside, before trying to convince the public of these basic truths, one should perhaps start with the administrators who too frequently tend to ignore them.

Many people consider the peer-review system broken. Do you share their view, and do you have a solution?

I believe peer review is an essential component of the scientific endeavour, and vitally dependent on ethical integrity. Regarding this latter attribute, the system seems to me to be under threat because of what I perceive — perhaps wrongly — as an increase in scientific misconduct and because of the growing involvement of academic investigators in profitdirected research.

What advice would you give all young researchers who are starting their research life, so as to become a good scientist?

First, whatever you do, seek

excellence, both intellectually and technically. Science is one field of human endeavour that must be unashamedly elitist. You cannot seek the truth with poor thinking or sloppy techniques.

In conducting your research, observe total rigour and intellectual honesty in the analysis of facts, consider all possible hypotheses, plan

"Good research is not learned in books, but at the bench, like the crafts in the Middle Ages." your approach to test those hypotheses, and submit your conclusions to the verdict of observation and experimentation without preconceived ideas. Never conduct research with the aim

of proving a theory, but, rather, to invalidate it if it should be wrong. The best proof is failure to disprove.

In the experimental sciences, pay special attention to the quality and reliability of the



PROFILE

• Emeritus professor at both the Catholic University of Louvain and the Rockefeller University, New York

- Born in Thames-Ditton, near London,
- 2 October 1917 to Belgian parents

 Returned to Belgium (Antwerp) in 1920
Entered Catholic University of Louvain in 1934

• Had a short stint in the army, concluded with an escape from a prisoners' column

• Married Janine Herman in September 1943 (Janine died in 2008). They have four children

• Has collaborated with four Nobel laureates (Hugo Theorell, Carl & Gerty Cori and Earl Sutherland) during his career

instruments and techniques you use — and to your own ability to handle them. Good research sometimes depends on manual skill. Here I have a tip: separate planning and execution. Once you have planned an experiment, concentrate on its correct performance. The

two activities are to some extent mutually exclusive. Of course, you must watch for any unusual or unexpected occurrence; if something like that occurs, keep it in mind but don't change horses midstream. Next, follow your intuition — your curiosity, which is the

strongest motivation for a scientist. Don't hesitate to be adventurous. Be self-confident and don't fear being ambitious. This is not always possible within the constraints imposed on research from the outside, but do your best.

Finally, I have two more recommendations. The first is: enjoy it. Science is fun. Exercising your brain and your fingers at the same time provides immense satisfaction. The joy of discovery is unmatchable.

My second recommendation is to the younger generation just entering research. Choose your mentors well. Good research is not learned in books, but at the bench, like the crafts in the Middle Ages, under the supervision of a master.

Aside from as a Nobel laureate, how do you want the world to be remember you? I have no such ambition. In the history of science, my contributions are minor and would have been made by someone else had I not stumbled on them first. They already appear in textbooks without mention of my name. I am no Galileo, Newton, Darwin, Einstein or Watson and Crick. But I have had fun and have been rewarded beyond my deserts. So be it.