

People have rights too

ANIMALS have been used in medical research since the turn of the century. Then, as now, there was strong criticism from the antivivisection movement. Its campaign almost prevented the Prince of Wales, in 1902, from becoming the inaugural President of the Imperial Cancer Research Fund (ICRF), one of the first institutions in the world specifically devoted to cancer research.

Today, it is impossible to underestimate the value of this early animal work. It laid the foundations for many of the advances we now take for granted, including the basis of modern understanding of the immune nature of graft rejection. To this we now owe the success of kidney transplantation and bone marrow grafts for certain types of leukaemias.

It is important to stress that these pioneering discoveries emerged from basic animal research, important because it appears easy to argue against research done simply for the acquisition of knowledge. Such research continues to underpin the fundamental scientific advances that lead to life-saving treatment. Promoting non-animal based research might have led to the greater refinement of the iron lung for the treatment of polio, but without, or with the delayed discovery of, the preventive approach of vaccination.

It is often said by the antivivisectionists that animal experiments are, in any case, only directed at improving treatment when the primary problem is

prevention. But we have to treat and cure what cannot be prevented. Patterns of cancer incidence and research show that as much as 80 per cent of cancer is in some sense caused by environmental factors. In principle, this much may, therefore, be preventable if the factors can be identified and controlled. Even if that were achieved, however, a significant fraction of cancers due to inheritance would be left.

Moreover, the length of time it took to identify cigarette smoking as a major cause of lung cancer and the difficulty of implementing a truly effective anti-smoking policy show that preventability and actual prevention are not one and the same. The first priority in dealing with cancer must be to prevent all that one can, and to treat and cure the rest. The key is prevention and cure, not prevention versus cure.

What of the inherited cancers? Work with cancer-causing viruses in animals has provided some of the most striking evidence through the discovery of oncogenes (cancer genes) for the genetic basis of cancer. The discovery of specific genetic changes in cancers — one of the most dramatic advances in cancer research this century — started with mice experiments in the late 1920s showing that heat-killed pneumococci could transfer virulence to living, non-virulent bacteria. This led through a series of discoveries to the demonstration that DNA was the chemical substance of the gene. The rest is history: Watson and Crick's discov-

The recent attacks on scientists involved in animal experiments have reawakened a long-standing debate. Sir Walter Bodmer spells out the scientific and moral case for vivisection.

ery of the structure of DNA, the elucidation of the genetic code, and the development of recombinant DNA techniques allowing any stretch of human DNA to be isolated, multiplied up in the test tube and "read".

These techniques have shown that the oncogenes discovered in viruses which cause cancers in mice and chickens are also oncogenes in human tumours.

Research has since shown that the same gene is involved in almost half of all bowel cancers. About 25,000 people a year in the UK are diagnosed as having bowel cancer. The disease kills 19,000 people each year.

Finding the function of the gene which we believe controls cell growth may lead us to screening methods to detect the disease at an early stage, when most people can be cured. When we have discovered the gene, we will be able to insert it into the genetic structure of a mouse to recreate the exact situation affecting people. This will allow us to study the effects of diets or other treatments that may inhibit the development of the cancer.

Work with these so-called "transgenic mice" shows that the use of animals is as important as ever in research. However, work with animals is going down. At most 3 to 5 per cent of our budget goes on it, though a great deal more depends on it in various ways. Our overall use of animals — 95 per cent of which are rats and mice, all specially bred stocks — has halved, while we have three times as many scientists. The trend is probably towards a continuing decline in animal use, but an increasing complexity in experiments.

At the same time there will be further developments of alternative approaches that will not depend on animals. The more we learn about basic cellular functions and their evolution, the more often it becomes possible to study

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What this means is that we have identified a class of genes whose particular role seems to be in the control of cell growth. This can involve the genes triggering the production of so-called "growth factors". The first growth factor for cancer cells, EGF or Epidermal Growth Factor, was found as a substance that led to the early opening of eye-lids of newborn mice. Changes in EGF receptors are found in more aggressive breast and bladder tumours.

The new molecular techniques have also played a key role in localising the gene involved in an inherited form of bowel cancer.

key human functions in another organism, such as yeast.

But it is still impossible to be at the forefront of research without doing some animal work. The moral issue that must be faced is whether the achievements of medical research — aimed at saving human life and alleviating human suffering — justify the use of animals. For those who believe that the lives of people take precedence over those of animals the answer is clear.

It is essential for scientists to justify what they are doing and to discuss the issues openly with those who have a genuine concern with animal experimentation. Supporters of the anti-vivisection campaign who say "animal experiments have not and never can make any significant contribution in the fight against cancer" must be answered. Such statements are patently untrue. If those making them know what they are saying, they are spreading misinformation. If they do not, they are peddling ignorance, often behind a front of apparent scientific respectability.

Our concern as scientists must be to ensure that the facts are presented as dispassionately and as objectively as possible. The case justifying the use of animals in research is overwhelming.

Sir Walter Bodmer is research director of the Imperial Cancer Research Fund. This is an edited version of the lecture he presented for the Animals in Medicine Research Information Centre.

OBITUARY: Elsie Waters

Old-style Eastender

By Denis Gifford

Cannibalism is taboo

FROM the point of view of television and radio, our perception of the world about us is confident to

drum. Trap, buy some other method, five or six live rats and put them in the drum adding suffi-

Of more immediate interest are the problems developing from the