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# Human Tissue Research

## Introduction

Animal Aid – February 2006



It is a poor reflection on the scientific community that every year hundreds of thousands of animals are bred and killed, to be used in test tube experiments, when an enormous quantity of human material is thrown away. It is not only the destruction of animals that is to be condemned. **The overwhelming advantage of human**

**tissue is its direct relevance to human medicine, and so the continued use of animals must be regarded as bad science.**

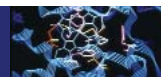
## History of the Animal Aid campaign for humane research

Animal Aid has been promoting the use of human tissue for medical research since 1991 when we launched our *Humane Research Donor Card (HRDC)*. Those carrying the card signified that they were willing, after their death, for part or all of their body to be used for research. More than 400,000 cards were distributed to the general public.

In addition, a 200,000-signature petition was presented to the Health Secretary, endorsing our call for the use of donated human tissue. The petition signatories also urged the government to 'establish and co-ordinate a national network of human tissue banks to overcome the shortage of suitable human material' (see page 5 for current list of research tissue banks as compiled by FOA – [www.focusonalternatives.org.uk](http://www.focusonalternatives.org.uk)).

The use of the HRDC has since been discontinued, having achieved its major aim of raising public awareness and encouraging government action, with respect to the replacement of animal tissues with donated human tissues. But more campaigning needs to be done, given that half a million animals are still being produced and killed every year in the UK simply so that their body parts can be used for test tube research.

Furthermore, unlike animals used for experiments while they are still alive, these 'body-part animals' don't even turn up in any official statistics. At present, the much-touted National Centre for the Replacement, Refinement and Reduction of Animals in Research (NC3Rs), which is funded by the Home Office, the MRC, the BBSRC, the ABPI and The Wellcome Trust, does not even bother to collect such data.



## Advantages of using human tissue



Aside from any animal welfare issues, the clear scientific advantage of using human tissue is that the data it provides is directly relevant to humans, unlike experiments on animals, where there is always the risk of misleading predictions.

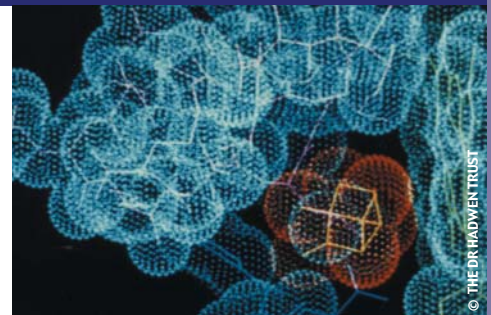
Human tissue research plays a vital role in developing a deeper understanding of human disease processes and their underlying mechanisms. This point is made absolutely clear in the following statement by a major pharmaceutical company:

*'Studying changes at the molecular and cellular level in human tissue makes it possible to relate the patient's symptoms to the disease processes (pathology). This in turn increases the likelihood of effective new medicines being developed to treat diseases that currently are either poorly treated (such as osteoarthritis) or do not have suitable treatments (such as multiple sclerosis).*

*'Human tissue is used to predict the likely effectiveness of a potential new medicine and to identify some of the possible unwanted effects. It is valuable, therefore, in the drug discovery process by enabling earlier and better predictions about the effectiveness and safety of a new compound' (1).*

## Sources of donated human tissue

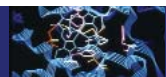
Human tissue can be removed from living persons in the course of medical treatment, from healthy volunteers and from cadavers. In each instance, prior consent must be obtained. Some tissues are readily available, e.g. blood, placenta and umbilical cord; others are available as waste from surgical operations (e.g. cosmetic surgery, mastectomy, circumcision) or from biopsies for the diagnosis of disease (e.g. from liver and kidney).



Post mortem tissues may be removed from cadavers for immediate use or to be frozen for future use. These post mortem tissues could include almost any part of the body – brain, heart, lung and other organs, skin, blood vessels and bone. They should be removed as soon as possible after death, as certain tissues will lose their viability very quickly.

The Human Tissue Act 2004 provides the legal framework for the 'removal, storage and use of human organs and tissues' for research and other defined purposes. Professor Sir James Underwood, past President of the Royal College of Pathologists, declared in the light of this development, that 'now is the time to restate the importance of post mortem examinations as a means of improving the health and welfare of future patients.'

With research continuing to show that certified causes of death are significantly wrong or incomplete in up to 30% of cases, post mortem examinations can reveal unexpected disease or unsuspected complications of medical and surgical interventions.



# Collecting and distributing human tissues

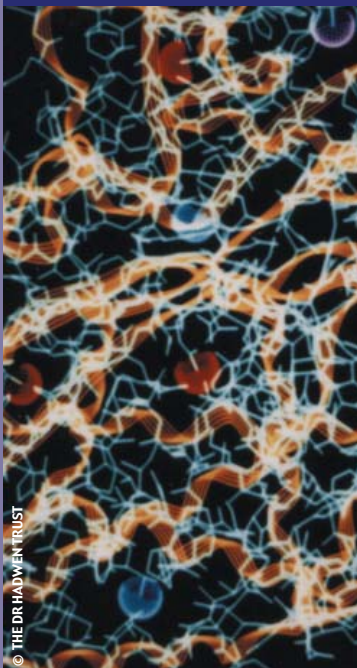
The donation of human organs and other tissues is subject to the provisions of the Human Tissue Act of 2004. This legislation allows for human tissue to be used in medical research and training purposes, provided informed consent has been given, either by the donors themselves, prior to death, or by the next-of-kin, after death.

Most laboratories say that research with human tissue is limited by availability, and certainly many hospitals do not have the facilities in place to collect, process, store and distribute human material. Although there are some specialised tissue banks, there is no national infrastructure as there is when human organs are needed for transplantation.



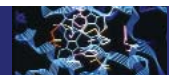
Furthermore, there seems to be confusion about who potential donors should contact for advice on leaving body tissues for research, with some hospitals having no protocol in place at all. Individual researchers and laboratories have to make strenuous efforts to forge links with hospital staff to secure the necessary supplies, which may be irregular. In these circumstances many scientists obviously feel it is easier to use animal tissues obtained from specialist companies, which can be supplied on demand.

## The future



The Animal Aid campaign has demonstrated a clear willingness on the part of the public to donate tissues for research. Now the government and the relevant scientific bodies must work together to set up a system by which its collection, storage and distribution is made possible.

After we die, our bodies are potentially an invaluable resource for medical research. Even without public education, research shows that 50% of the time, relatives would be willing to give consent for a post mortem examination to be made, at which time tissues could be taken for research purposes (2). Clearly, even more human tissue would be made available if the government invested resources in explaining to the wider public the benefits of consenting for tissues to be donated. The greatest need is for brain tissue because this is rarely obtainable during life (unlike, for example, intestine, which is in plentiful supply from surgical resections).



The Medical Research Council (MRC), medical research charities and other funding agencies should give preference to human rather than animal tissue for in vitro experiments. In the competitive search for grants, this would soon switch the emphasis to human tissue. At present, the MRC has shown little interest in actively promoting this idea, or indeed in providing funding to train researchers exclusively in the use of human tissue, rather than animal tissue. In addition, the government's Animal Procedures Committee should openly advocate the wider use of human tissue as a humane alternative.

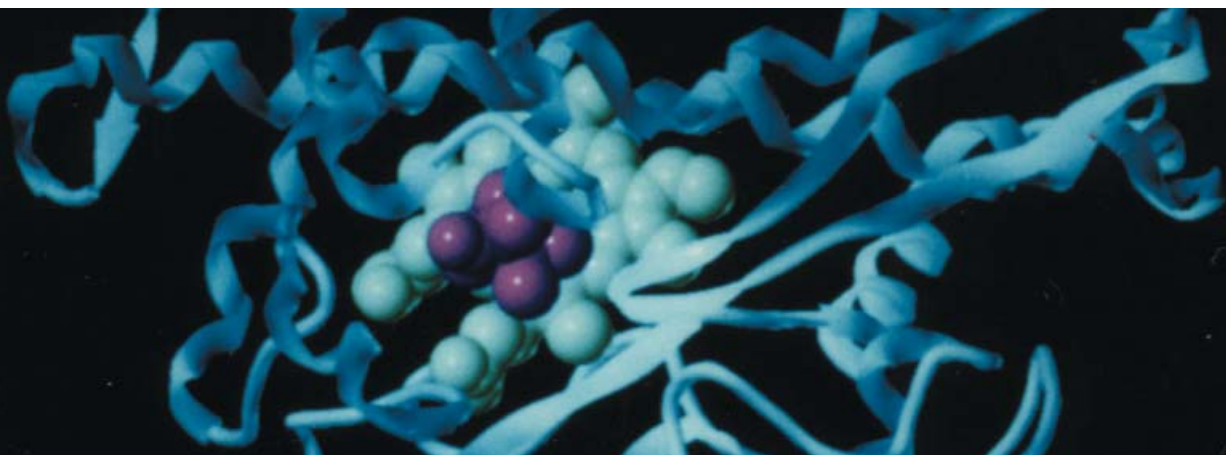
**For as long as animals continue to be bred and killed as tissue 'donors' their numbers should feature in published government statistics. At present, they are science's forgotten victims.**

## What you can do

Anyone who wishes to leave their body to science after death, should consider the following options. It is imperative that you make your wishes known to your family, because the decision as to whether or not your tissues will be used ultimately depends upon their consent being given:

- **Try your local hospital first. Some hospital doctors are keen to use donated human tissues as part of their research work.**
- **Contact one of the specialist human tissue banks (*see list on page 5*).**
- **Sign up to the donor register at [www.uktransplant.org.uk](http://www.uktransplant.org.uk).**
- **It is important to let your relatives know your wishes, as they will be asked to provide consent in the event of your death.**
- **Contact funding bodies such as the MRC (Medical Research Council) and urge them to fund human tissue research instead of animal research ([www.mrc.ac.uk](http://www.mrc.ac.uk)).**

**Note:** If you sign up to UK Transplant (the NHS organ donor register), you should be aware that organ transplantation takes precedence over all other considerations. In other words, if you donate your body to UK Transplant, any organs that are useful for transplantation will first be used for that purpose. Relatives of the deceased can specifically give permission for organs or tissues to be used for research, where organs are either surplus to requirement or unsuitable for transplantation.



# List of UK human tissue banks

## London Neurodegenerative Brain Bank

Collects human brain tissue, both healthy and diseased, for research into neurological disorders. Donor information packs available. The Brain Bank, Department of Clinical Neuropathology, PO Box 76, Academic Neurosciences Centre, Institute of Psychiatry, London, SE5 9RS Tel: 020 7848 0290 Email: brainbank@iop.kcl.ac.uk

## Multiple Sclerosis Tissue Bank

Brain tissue can be bequeathed by donors with or without MS. Tissue from healthy non-MS brains needed. Information packs, donor cards and newsletter available. *The M.S. Tissue Bank, Division of Neuroscience & Psychological Medicine, Imperial College School of Medicine, Charing Cross Hospital, Fulham Palace Road, London, W6 8RF. Tel: 020 8846 7324. Email: msbank@ic.ac.uk* Emergency 24 hour donor line on 07693 300 300.

## Queen Square Brain Bank for Neurological Disorders

Collects post mortem brain for research into neurological disorders, including Parkinson's disease, dementia and others. Tissues are supplied to researchers worldwide. *Donation consent form available from: Susan Stoneham, Administrator, Queen Square Brain Bank, Institute of Neurology, 1 Wakefield Street, London WC1N 1PJ. Tel: 020 7837 8370. Email: s.stoneham@ion.ucl.ac.uk*

## Nottingham Tissue Bank

Collects brain and some other tissues for internal research. *Nottingham Brain Bank, Dept of Histopathology, Queens Medical Centre, University Hospital NHS Trust, Nottingham, NG7 2UH. Tel: 0115 970 9726.*

## Parkinson's Disease Society Tissue Bank

Accepts donations of brain tissue from patients with or without Parkinson's disease and other movement disorders. Tissue from healthy 'control' individuals is especially needed.

Donations accepted from across the UK. *Donor packs and cards available from PD Tissue Bank, Division of Neuroscience & Psychological Medicine, Imperial College Faculty of Medicine, Charing Cross Campus, Fulham Palace Road, London W6 8RF. Tel: 020 8383 4917. Email: pdbank@ic.ac.uk* Emergency bleep number 07693 554466.

## Sheffield Tissue Bank

Collects brain and spinal cord tissue from both healthy individuals and patients with brain disorders. *Academic Neurology Unit, Division of Genomic Medicine, E Floor, Medical school, University of Sheffield, Beech Hill Road, Sheffield S10 2RX. Tel: 0114 271 3579.*

## Newcastle Brain Tissue Resource

Collects post mortem brain from healthy older people and patients with neurological disease. No registration system yet in place and donations needed within 24 to 72 hours of death. *Newcastle Brain Tissue Resource MRC Building, Newcastle General Hospital, Newcastle upon Tyne, NE4 6BE. Tel: 0191 444 4412.*

## Bristol University

Bodies can be bequeathed specifically for research purposes or for training of student doctors. *Bequest Office, Dept of Anatomy, University of Bristol, Southwell Street, Bristol BS2 8EJ. Tel: 0117 928 7415.*

## South West Brain Bank

Collects brain tissue from dementia and non-dementia brains. *Donations possible. Dept of Care of the Elderly, John James Building, Frenchay Hospital, Bristol BS16 1LE. Tel: 0117 970 1212 ext 2270.*

## References

- (1) [www.astrazeneca.com/article/511620.aspx](http://www.astrazeneca.com/article/511620.aspx)
- (2) Burton JL, Underwood JCE. *J. Clin. Pathol.* 2003;56:537-541

