

Safer Medicines Trust

Safer Medicines Campaign

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Welcome to our newsletter!



Kathy Archibald
Director

Kathy Archibald

Dr Margaret
Clotworthy
Science
Director



Margaret Clotworthy

Safer Medicines Campaign is an independent organisation of scientists and doctors whose aim is to ensure the best methods are used to assess the safety of medicines. We campaign for sophisticated human biology-based tests to be compared with the animal tests currently required by law. A million Britons are hospitalised by medicines every year, costing the NHS £2 billion. We believe 21st Century science can do better.

Our educational wing, Safer Medicines Trust, is a registered charity: Number 1039411

Help us put patient safety first

Safer Medicines Campaign/
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OUR PATRONS

Tony Benn

Mat Fraser

Dr Caroline Lucas MP

Safety of Medicines Bill

Senior Conservative MP David Amess presented the Safety of Medicines Bill on 20th July with an eloquent ten minute speech to the House of Commons, which can be viewed via our website.

The Bill calls for a comparison of the ability of currently-required animal tests to predict side effects in people with the ability of a suite of the latest human biology-based tests to do so.

Mr Amess declared: 'A combination of these approaches promises to predict the effects of new drugs in humans more accurately than animals ever could'.

The Bill received unanimous approval from the MPs present and is due for its second reading on 22nd October. It has cross-party support from 12 co-sponsors:

Conservative: David Amess, Peter Bone, Peter Bottomley, Karen Bradley, Jackie Doyle-Price, Mark Pawsey

Liberal Democrat: Mike Hancock, Dr Julian Huppert, Bob Russell

Labour: Paul Flynn, Grahame Morris

Green: Dr Caroline Lucas.

We are very grateful to all of the co-sponsors for their support.

Early Day Motion 475

Bob Russell MP, supported by 5 co-sponsors (David Amess, Paul Flynn, Mike Hancock, Dr Julian Huppert and Dr Caroline Lucas) has tabled an MPs'

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petition, **EDM 475: Safety of Medicines**, in support of the Bill.

MPs are strongly in favour of this proposal: similar EDMs in previous parliamentary sessions have attracted as many as 250 MPs' signatures! Please help us to achieve the same phenomenal level of support by urging your MP to sign EDM 475.

ACTION

Please

- send the enclosed postcard to your MP*
- request further copies for your friends, family and GP
- if your MP has questions or concerns, contact us for an information sheet to send to them
- write a letter to your local paper in support of the Bill (see our website for a sample letter).

*You can check our website or call us to find out if they have already signed – if so, you could change the wording to thank them instead!



David Amess MP

Human Tissues Working Party

Following the phenomenally successful Human Tissues conference at the House of Lords last October, we established a Working Party, chaired by our Science Director Dr Margaret Clotworthy. The Working Party members include eminent pathologists, tissue bank staff, academic scientists, researchers from pharma, drug safety test developers and patient representatives.

We are united by a desire to see ethically sourced human tissues take their rightful place at the centre of medical research and drug development and safety testing. Our aim is to find ways of overcoming the hurdles which stand in the way of conducting the kind of ground-breaking research which leads to improved diagnostic tests, a better understanding of human-specific disease mechanisms and the discovery of new therapies.

We have recently made submissions to two important public consultations: the Academy of Medical Sciences consultation on the Regulation and Governance of Medical Research, and the Nuffield Council on Bioethics consultation on Human Bodies in Medicine and Research. You can read our submissions on our website (www.safermedicines.org/humantissues).

House of Commons debate

In June Margaret attended a very interesting debate in the House of Commons to discuss access to human tissues for medical research. The debate was hosted by Jo Swinson, Liberal Democrat MP for East Dunbartonshire and Parliamentary Private Secretary to Vince Cable, the Minister for Business, Innovation and Skills. Ms Swinson is very supportive of this issue and opened the debate with a plea for increased use of surplus human tissues in research. Several MPs spoke eloquently about the importance of human tissue-based research for conditions such as Parkinson's disease.

As reported in our Autumn 2008 newsletter, the Parkinson's Disease Society Tissue Bank at Imperial College, London is appealing for more brain donations – particularly from people *without* neurological disease. Just one donated brain can be used in up to 50 different research studies. For more information on becoming a donor, contact the Tissue Bank: 0207 594 9732, pdbank@imperial.ac.uk or visit www.parkinsons.org.uk.

'Because only humans get Parkinson's, we can't use animals for research' – Dr Kieran Breen, Director of Research and Development, Parkinson's Disease Society.

Early Day Motion 380 to promote human tissue availability



'Human tissue is vital to the development of safe and effective medicines. Its availability must be improved' – **Dr Julian Huppert MP**

It was a great pleasure to meet with newly-elected Liberal Democrat MP for Cambridge, scientist Dr Julian Huppert, who agreed to table **EDM 380: Availability of Human Tissues for Medical Research:**

That this House recognises the immense value of human tissue to medical research and the development of safe and effective medicines; regrets that researchers, both academic and commercial, struggle to obtain the tissues they need; and calls on the Government to facilitate the donation, retrieval and supply of this life-saving and life-enhancing resource through a number of measures, including the provision of the necessary infrastructure in hospitals, reducing the level of bureaucracy involved, working to increase awareness amongst the public and the health professions of the overwhelming need for tissues and giving all patients the opportunity to donate for research surplus tissues from surgery, which would otherwise be incinerated, if they wish to do so.

How you can help

If pharmaceutical companies switch to using human tissues in preference to animals and their tissues, as we believe they should, ethically obtained human tissue will need to be made more accessible.

The enclosed postcard requests that MPs sign EDM 380 in addition to supporting EDM 475: Safety of Medicines. Please help us to ensure that researchers can access the tissues they need, by sending the postcard to your MP.

If you have to undergo a surgical procedure, you may wish to consider asking whether your 'waste' tissues will be made available for research. This would help to demonstrate the strength of patients' desire to contribute to medical progress in this way.

Introducing our new Science Advisors

We are very proud and delighted to welcome and introduce our new Science Advisors, who bring a wealth of expertise from their vast experience across academia and industry!



Dr Bob Coleman MIBiol PhD DSc

Bob is a pharmacologist who has long appreciated the value of human tissues in drug discovery and development. After 30 years at the Glaxo group of companies, in 1996 he co-founded Pharmagene, the first drug discovery company to work exclusively on human biology. In 2006, Pharmagene merged with and became Asterand, a leading global supplier of human tissue and associated services to drug discovery scientists. In 2003 Dr Coleman was awarded a DSc for his contribution to the use of donated human tissues in drug research. He is now an independent consultant in drug discovery.



Professor Chris Foster BSc MB BS MRCS PhD DSc MD FRCPath

Chris is the George Holt Professor of Pathology at the University of Liverpool, where he specialises in cancer and neurological research. He trained in medicine and research in the UK, USA and Germany, and was awarded a DSc for his contribution to understanding how cancers spread. As well as publishing in scientific journals, he has authored several pathology books, and is leading the galvanisation of pathology-based research and careers. Professor Foster is much sought-after as a speaker at international conferences, and is passionate about engaging patient support for the research process.



Professor Gerry Thomas BSc PhD

Gerry is an energetic proponent of harnessing 'patient power' when it comes to overcoming bureaucratic or political hurdles hindering medical research using human tissues. She was instrumental in the establishment of the Chernobyl Tissue Bank, Wales Cancer Bank and Imperial Tissue Bank and describes herself as a serial biobanker. Professor Thomas is Chair of Molecular Pathology at Imperial College London, where she researches thyroid and breast cancer, and is also actively involved in British and international studies to translate laboratory findings into clinical progress.



Dr Kelly BéruBé BSc PhD

Kelly is Director of the Lung & Particle Research Group at Cardiff University. She has built an international reputation in the field of air pollution and human health and holds numerous appointments in the USA and UK on funding bodies, advisory councils, professional societies and journal editorial boards that focus on environmental health. Dr BéruBé is a prolific science writer and popular invited-speaker. Her research, including exciting advances with human 'microlungs', has been recognised with a number of awards and keen interest from pharmaceutical companies.



Dr Katya Tsaïoun BSc PhD

Katya is Chief Scientific Officer of Cyprotex, the world's largest provider of preclinical ADME tox services. Cyprotex's wide range of *in vitro* technologies provides rapid assessment of medicines' properties, including likely adverse drug reactions, early in drug development. Dr Tsaïoun studied at Tufts University and conducted neurochemical research at Harvard's prestigious Medical School. She has co-founded many local and international professional and business societies including WEALTH (Women Executives Advancing Life Sciences, Technology and Health) and Pharma Launcher, a consortium of pharmaceutical Contract Research Organisations.

Assuring Safety without Animal Testing



It was a great pleasure to meet with Dr Bart Sangster, the founder and Chair of the ASAT (Assuring Safety without Animal Testing) Foundation.

Dr Sangster's illustrious career has included positions as Vice Chair of the Management Board of the European Food Safety Agency, Senior Vice President of Safety & Environmental Assurance at Unilever, Professor of Clinical Toxicology at the University of Utrecht, Director of Public Health at the National Institute for Public Health & the Environment, Head of Intensive Care at the University Hospital Utrecht and Director General for Health at the Ministry of Health, Welfare and Sports in the Netherlands.

The aim of the ASAT Foundation is to enable safety decisions regarding environmental and consumer products to be based on *human* health risks. These risks should be determined from an understanding of human biology, rather than from the extrapolation of animal data of unknowable relevance.

We are delighted that Dr Sangster, on behalf of the ASAT Foundation, has endorsed our proposal to compare animal tests with human biology-based methods for predicting the safety of new medicines. Such influential support is a valuable addition to the swelling ranks of politicians and scientists calling for this urgently needed evaluation.

A big THANK YOU to all our supporters

We are deeply grateful to all of our wonderful supporters for helping to spread the word and for your generous donations: we couldn't do what we do without you!

Heartfelt thanks in particular to:

Diana Marshall and Sandy MacGowen, who held two bric-a-brac stalls in Woodbridge and raised £335!

Kaye Wotherspoon, who ran a tombola at her local fayre in Ealing and raised £200!

Katherine Howard, who displayed our literature at an exhibition of her stunning paintings and gave us a percentage of the sales!

Derek Paton, who requested a lump sum in lieu of a gold watch as a long-service award from his company and donated it to us!

If you feel inspired to fundraise for us in any way, we would be extremely grateful, and more than happy to provide collecting tins and literature for the event.

One of the best ways to reach people with our message is through our new leaflet (enclosed). If you can help by distributing leaflets door-to-door, in the street, or at an event, we would be delighted. Just let us know how many you would like.

Medical Research in the News



Pharma & EPA unite to move toxicology into the 21st century

The US Environmental Protection Agency (EPA) has been developing ToxCast, a set of 500 *in vitro* tests to predict the effects on humans of chemicals that may be released into the environment. Since the programme started in 2008, the results have been compared with existing animal data, which had been viewed as the 'gold standard' in the past.

Now, in a drive to improve the ability to predict toxicity in humans, the EPA has joined forces with several pharmaceutical companies to test over 100 drugs that failed in human clinical trials because they were dangerous, despite passing the standard tests in animals. This will provide a new 'gold standard' on which to build prediction models from ToxCast data.

'There's still a lot of work to do, but I think it has a lot of promise to move toxicology into the 21st century' – Dr George Gray, expert in risk & public health at George Washington University & former science advisor in the EPA's office of research & development

A related initiative is Tox21: a joint programme of the EPA and US National Institutes of Health, which is also focused on improving risk assessments for environmental chemicals. In an exciting development, which mirrors that at ToxCast, the Food and Drug Administration (FDA) has joined the programme to add much-needed human data (on pharmaceuticals) that the other agencies don't possess. This allows researchers to better predict human outcomes.

The collaboration is built around a database that will include 3,000 pharmaceutical and 7,000 environmental chemicals. Testing chemicals using the new system, based on automated high-throughput screening of human cells, takes between one and five days, which contrasts favourably with animal tests lasting a month. Longer-term animal studies, such as those used to assess cancer risk, take two years and use 800 mice and rats. The average cost of a longer-term animal test was \$5.2 million in 2000, according to the Journal of Health Economics.

'We want to migrate away from animal testing. We also want to see drug development become more efficient so that fewer resources are wasted' – David Jacobson-Kram, executive director for pharmacology and toxicology, FDA

Refs: ChemistryWorld.org, 18 May 2010, *Bloomberg News*, 5 August 2010

Motor Neurone Disease progress



Professor Stephen Hawking

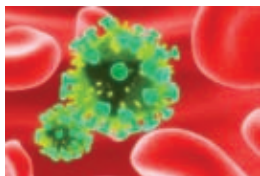
MND is a devastating disease, whose most famous sufferer is Cambridge astrophysicist Professor Stephen Hawking. The MND Association is funding an exciting international study involving teams from Edinburgh University, King's College, London and Columbia University in New York, based on human motor neurons created from MND patients' skin cells.

The skin cells are initially 'reprogrammed' to generate induced pluripotent stem cells (iPS cells) which are then induced to turn into the brain cells of interest. The ability to grow and programme human motor neurons in the laboratory has been a holy grail for MND researchers for many years.

'Bringing together the genetic revolution of the last decade with the spectacular progress in stem cell research means we can now model human disease in a dish' – Prof Siddharthan Chandran, principal investigator

Ref: MND Association news release 24 May 2010

AIDS yields secrets to human biology research



Researchers have discovered a mechanism that helps to explain why some HIV-infected people do not go on to develop AIDS. The discovery was made using a mathematical model, based on human clinical observations, which has provided deep and predictive

insights into the behaviour of the human immune system.

'Rarely does one read a paper that stretches the mind so surprisingly far' – Nobel Laureate Professor David Baltimore, Massachusetts Institute of Technology

Ref: TheScientist.com, 5 May 2010

Traumatic brain injury insights

'The failure of [clinical trials] suggests that we are obviously getting something wrong, so it was quite important to make the change' – Dr David Menon, Cambridge University researcher who no longer studies brain injury in lab animals, preferring to use human data

Every year 66,000 people are killed by traumatic brain injury (TBI) in Europe alone. Yet there are still no effective treatments, despite decades of trials based on animal studies.

Researchers studying patients realised that women frequently recover better than men with TBI. This has led to a clinical trial involving administering a female hormone, progesterone, to patients with TBI. Results so far have been encouraging and the outcome of the ongoing trial is eagerly anticipated.

Ref: The Scientist **24 (7): 37**

Artery-on-a-chip to study heart disease

Canadian scientists have developed microfluidics chips to enable fragile blood vessels to be studied easily and cheaply, without the highly skilled handling usually required to conduct such studies. The device will enable thousands of potential new drugs to be routinely screened for their effects on blood vessels, including changes in blood pressure, for example.

Ref: *Lab on a Chip* 2010, DOI: 10.1039/c004675b

Human monoclonal antibodies

Antibodies are one of the fastest-growing drug classes in human healthcare. They are also important in the diagnostics and research markets. AbD Serotec, based in Kidlington, uses *in vitro* technologies to create fully human antibodies as research tools, diagnostics and therapeutics.

Using the unique HuCAL® (Human Combinatorial Antibody Library), they offer a choice of more than 45 billion antibodies and a success rate of 98%, compared to the average success rate of around 75% for classic animal-based antibody generation methods.

Ref: *Drug Discovery & Development*, 18 March, 2010

Human artificial lymph node

German company ProBioGen has developed a novel technology which can be used to reliably assess human immune reactions to a given substance prior to its use in humans.

'By enabling the assessment of immune reactions in a fully human system... we circumvent the limitations associated with the use of animal models... enabling our customers to run a more efficient drug development process' – Dr Uwe Marx, co-founder of ProBioGen

Viennese company AFFiRiS is using the human artificial lymph node to test their vaccines (designed by the novel *in vitro* technique of molecular mimicry) before they enter into clinical trials.

Ref: ProBioGen news releases 2 June 2010 and 12 December 2007

Corneas made from stem cells



The cornea is the clear covering at the front of the eye. It is crucial to test the cornea for sensitivity to any drugs or chemicals that the eye may be exposed to.

International Stem Cell Corporation in California has succeeded in growing corneas from human 'parthenogenetic' stem cells, using unfertilised eggs, rather than embryos; thus obviating ethical concerns about embryonic stem cells. They have demonstrated that the lab-grown corneal tissue closely mimics the drug absorption and metabolism characteristics found in normal corneal tissue; thus offering a superior means than live animals to test the safety of ophthalmic drugs and consumer products.

Researchers hope that in the future it may also be possible to use the tissue for corneal transplants, an area of acute unmet need, particularly in India and Asia, where millions of people suffer from corneal blindness that now goes untreated.

Ref: www.internationalstemcell.com news release 10 May 2010

3D cell cultures reveal how cancer spreads

Researchers studying cancer cells in 3 dimensional cultures have discovered key differences between cancer cells moving in 3D, as they would in the body, and those moving in 2D, as is most often the case when cells are grown in the lab. They have used their culture systems to investigate key enzymes involved in regulating cell movement. This avenue of research is crucial, since it is metastasis – cancer spreading to other organs – which usually kills patients.

Ref: ScienceDaily.com 22 June 2010

3D cultures made easy

Good news for scientists wishing to conduct more of their research in 3D (see story above): researchers have discovered that by impregnating filter paper sheets with collagen, it is possible to build up a 3D system to support cell growth. Then, when you need to test a sample of your cell culture, you simply peel off a sheet!

Ref: The Scientist **24 (6)**: 27

International cancer collaboration

Organisations in 10 countries have launched a collaboration to decode the genomes from 25,000 samples of cancer cells. The resulting comprehensive catalogues of abnormalities for 50 different types of cancer will pinpoint new cancer genes, which will eventually lead to tailored treatments.

'This project will have a great impact on cancer treatment' – Professor Mike Stratton, leader of the project in the UK

In 2000 Professor Stratton and colleagues discovered the BRAF gene mutation often found in malignant melanomas. Now, phase 3 clinical trials are under way on a treatment, the outcomes of which, he says, are looking positive.

Professor Stratton said, *'70% of patients with malignant melanoma who have this mutation respond to this new inhibitor. We're full of optimism about it. It took 10 years from us finding the gene to getting to a phase 3 clinical trial. That sort of story will be replicated multiple times.'*

Ref: *British Medical Journal* 2010; **340**: c2149

Cancer in mice depends on laboratory caging

Neuroscientists at The Ohio State University College of Medicine conducted a 5 year study of 1,500 mice to compare the growth of induced tumours in mice living in enriched environments versus those in normal barren cages.

The results were dramatic: tumours of mice living in enriched environments before inoculation with cancer cells were 77% smaller than those in control mice, or even absent altogether.

The researchers, of course, believe their findings will have implications for cancer prevention and treatment in humans. Another obvious implication is that drugs being tested in mice will show entirely different effects, depending on the housing conditions. One company or lab may conclude that a new drug prevents or treats cancer, while another may conclude that the same drug causes cancer.

Ref: L Cao *et al*, *Cell* **142**: 52, 2010.

Fat rats skew results



In a similar vein, a group at the US National Institute on Aging in Maryland discovered that many rats and mice used in experiments are so overweight that they are glucose intolerant and heading for an early death. As a result, data from the animals — about, for example, the effects of an anti-cancer drug — may not apply to normal-weight animals — and, of course, still less to humans.

‘Failure to recognize that many standard control rats and mice used in biomedical research are sedentary, obese, glucose intolerant, and on a trajectory to premature death may confound data interpretation and outcomes of human studies’ — Bronwen Martin and colleagues, National Institute on Aging, Maryland

Ref: PNAS 2010 **107**(14): 6127

Animal studies mislead by omission

Published animal trials overestimate by about 30% the likelihood that a treatment works because negative results often go unpublished, a study suggests.

The team, led by Professor Malcolm Macleod, studied a stroke database called the Collaborative Approach to

Meta Analysis and Review of Animal Data from Experimental Stroke (CAMARADES), established in response to poor translation of animal findings to clinical trials. They found that as many as 1 in 6 experiments remain unpublished.

Professor Macleod asserts that not reporting the negative results of animal trials is unethical, because it squanders animals and leads to premature human trials.

‘Participants in clinical trials may be put at unnecessary risk if efficacy in animals has been overstated’ — Professor Malcolm Macleod and colleagues, Centre for Clinical Brain Sciences, University of Edinburgh

Of course, this biased reporting should be addressed. There should be a registration system for animal studies, as there is for human studies. But publication bias cannot explain why more than 150 stroke treatments successful in animals have failed in humans! Clearly there is a more fundamental problem; namely that animals simply do not predict human responses.

‘The repeated failures of laboratory proven stroke therapies in humans can be due only to the inapplicability of animal models to human cerebral vascular disease’ — neurosurgeon Dr Samuel Neff, New England Medical Centre, *Stroke*, **20**: 699 (1989)

Ref: PLoS Biol **8**(3): e1000344

Five out of six new drugs don't work

‘Drugs get approved without anyone being able to know how effective they really are or how much serious harm they will cause’ — Donald Light, Professor of comparative health policy, University of Medicine & Dentistry, New Jersey

Prof Light's study includes data from independent reviewers suggesting that 85% of new drugs provide few, if any, new benefits. Yet they consume four-fifths of all drug costs!

He calls for basic improvements in the way drugs are tested and approved in order to address the ‘risk proliferation syndrome’ and increase the percentage of new drugs that are actually better for patients. His new book, *The Risk of Prescription Drugs*, is due to be published this autumn by Columbia University Press.

We agree that Professor Light's proposed reforms are necessary to save lives. Moreover, we believe that a shift of focus from animal studies towards human biology would make a major contribution to that end.

Ref: *Daily Telegraph* 17 August 2010

ACTION

Leaflets

If you can help by distributing our leaflets we will be delighted. Donations to help with postage and printing costs will be greatly appreciated.



Newsletters

Please order further copies of this newsletter to distribute if you can.

DVDs

Watch *Safer Medicines* on our website or buy a copy: **only £5!** If you know any secondary school teachers or lecturers please encourage them to ask us for a free copy. An order form is on our website.

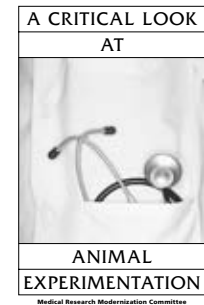


Information for MPs

This A3 sheet is designed for MPs and is also excellent to display on stalls.

Donate

Please make a donation to help us cover the costs of producing these resources and distributing them free of charge to teachers, lecturers and MPs.



Booklets

Order *A Critical Look at Animal Experimentation*: a booklet examining the impact of animal experimentation on research into cancer, AIDS, neurological disorders and others, as well as outlining more valid human-based methods of research.

You can donate to the Trust on our website or to the Campaign or the Trust by post – please see below.

Regular gifts by standing order help us to plan ahead with confidence – if you would like to help us in this way, we will be delighted to send you a standing order form: please contact us for one or download one from our website.

We rely completely on your generosity. We receive no corporate or government funding and have no expensive overheads: all of our office space is donated without charge. 100% of your donation will go directly towards our vital work.

If you want to see real progress towards a future where medical research is based on studying humans rather than animals, please give generously today.

Please copy this section or cut it off and return to us – thank you



Please send Leaflets Postcards DVDs
 Newsletters Booklets A3 sheets for MPs/displays
 I enclose £10 £20 £50 £ to support your vital work

Please make cheques payable to either Safer Medicines Campaign **OR** Safer Medicines Trust.

We can keep costs to a minimum by not sending receipts.
 Please tick if you would like a receipt.
 Please tick if you would like a standing order form for the Campaign or the Trust - please state preference:

Name: _____

Address: _____

Email: _____

Please tick if you are eligible and wish to **gift aid** your donation to the Trust (*donations to the Campaign are not eligible for gift aid*).

Thank you for your invaluable support – none of the progress we are making would be possible without it.