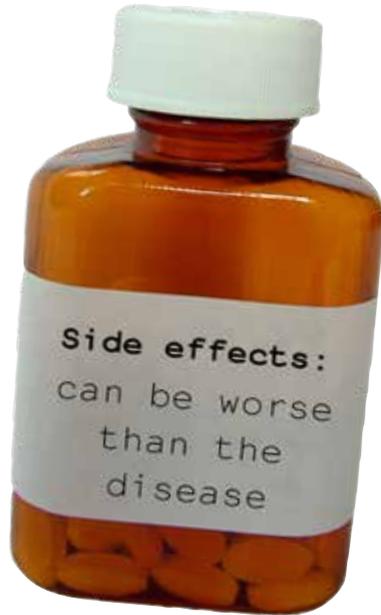


# Medical research is broken

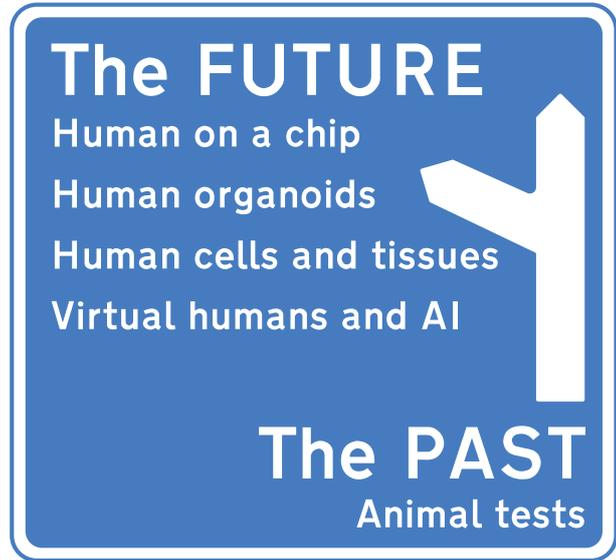


- Side effects kill more than 10,000 people in the UK each year, 100,000 in the US and 200,000 in the EU (BMJ 329:15, 2004; Institute for Safe Medication Practices, QuarterWatch September 2015; European Commission MEMO/08/782)
- Clearly, safety testing is failing – but why?
- Medicines are tested on animals before humans – but 9 out of 10 that appear safe and effective in animals prove unsafe or ineffective in human trials (Biotechnology Innovation Organization 2016: “Clinical Development Success Rates 2006-2015”)
- New **human-relevant** tests can predict subtle or rare side effects that even human clinical trials cannot (Nature Scientific Reports 11, 6403, 2021) – ***but there is no legal requirement to use them!***

Help us replace unreliable animal tests with human relevant science

## Better science for safer medicines

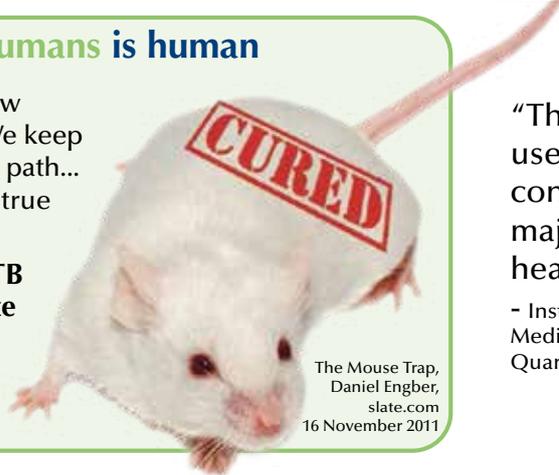
- Medicines help many of us. But they also send more than a million people to hospital in the UK each year and kill more than 10,000.
- Many diseases have no treatments, despite decades of research on animal 'models'. Often a new drug works well in animals but then has no effect when tested in humans. £Billions are wasted on research that does not translate to humans.
- New methods based on **human** biology *transform* our ability to understand disease and develop new medicines. Investment in human relevant research offers a golden opportunity for the UK to save money, create wealth and improve public health.



### The best model for humans is human

“The mouse has cost us a new generation of medicines... We keep getting led down the garden path... This isn't just true for TB: It's true for virtually every disease.”

**Dr Clifton Barry, Chief of TB Research, National Institute of Allergy and Infectious Diseases, USA**



The Mouse Trap,  
Daniel Engber,  
slate.com  
16 November 2011

“Therapeutic use of drugs constitutes a major public health risk”

- Institute for Safe Medication Practices, QuarterWatch July 2017



## State of the art approaches include:

- **Human cells and tissues** can be grown into mini 'organoids', interconnected in 'organs on a chip', and their genes, proteins and other 'biomarkers' can be studied. 3D 'organs on a chip' can predict adverse drug reactions that were missed by animal tests (Skardal et al, Biofabrication 2020, 12 025017; Jang et al, Science Translational Medicine 2019, 11(517) eaax5516).
- **Computer models** can use 'big data' and 'machine learning' to create virtual organs, virtual patients, and even virtual clinical trials. A virtual heart predicts the safety and effectiveness of heart drugs more accurately than animal tests (Passini et al, Frontiers in Physiology 2017, 8:1).
- **Human volunteers** can take a tiny, safe 'microdose' of a new medicine, which can be monitored with imaging devices, to reveal how and where it is processed in the human body and help calculate a safe starting dose for subsequent clinical trials (Burt et al, Alternatives To Laboratory Animals 2018, 46:335).



## Outdated regulations cost lives

Scientists around the world agree that governments need to take urgent action to speed the use of these new technologies. Patients are being injured and killed because regulations have not kept pace with scientific advances.

**It is time for the government to insist that medicines are tested by the most up-to-date and relevant methods.**

Our petition calls for this. With the Alliance for Human Relevant Science, we call for support for human relevant science.

### Safer Medicines Trust

is a patient safety charity whose mission is to change the way medicines are tested, to a system based on *human* biology: the only way to ensure safety for patients.

### Safer Medicines Campaign

exists to challenge the regulations that still require animal-based safety tests when superior methods exist.

We are a founder member of the Alliance for Human Relevant Science

[www.HumanRelevantScience.org](http://www.HumanRelevantScience.org)



## A message from our Patrons



Mat Fraser  
Actor and  
thalidomider



Caroline Lucas MP  
Green Party



Dr James Le Fanu  
Doctor and writer



Carol Royle  
Actress



Grahame Morris MP  
Labour

# “ What other area of science still relies on the flawed methods of 50 years ago? We *must* move safety testing into the 21st century – for all our sakes ”

Safer Medicines Trust speaks regularly at international conferences on drug safety and new technologies. We publish in scientific and medical journals and in books, newspapers and reports for the public, scientists and politicians. We have hosted conferences at the Royal Society and the House of Lords and instigated several highly supported parliamentary motions. We have ambitious plans to accelerate the transition to human relevant science – **the time for action is now!**

### YOU can help:

- Order free copies of this leaflet to distribute as widely as possible
- Sign and share our petition at [www.SaferMedicines.org](http://www.SaferMedicines.org) and download/order petition sheets to collect more signatures
- Write to your MP – see our website for details
- Please donate online or below – our success depends on your support

## I would like to help Safer Medicines Trust continue this vital work

I enclose  £5  £10  £20 £\_\_\_\_\_ to support your vital work

Please tick if you are a UK taxpayer and would like to **gift aid** your donation

We can keep costs to a minimum by not sending receipts. Please tick if you **would** like a receipt

Please send \_\_\_\_\_ more of these leaflets



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Please tick if you wish to receive our annual newsletter by post

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Please tick if you wish to receive occasional (biannual) communications by email

Email address: \_\_\_\_\_

Please make cheques payable to 'Safer Medicines Trust' and send to: **Safer Medicines, PO Box 122, Kingsbridge TQ7 9AX**

With no corporate or government funding, we rely completely on your generosity. We don't have expensive overheads: all our office space is donated without charge.

Thank you for your invaluable support – we simply can't do this without you. Your details are safe with us. Check out our Privacy Policy at [SaferMedicines.org](http://SaferMedicines.org) for more information.