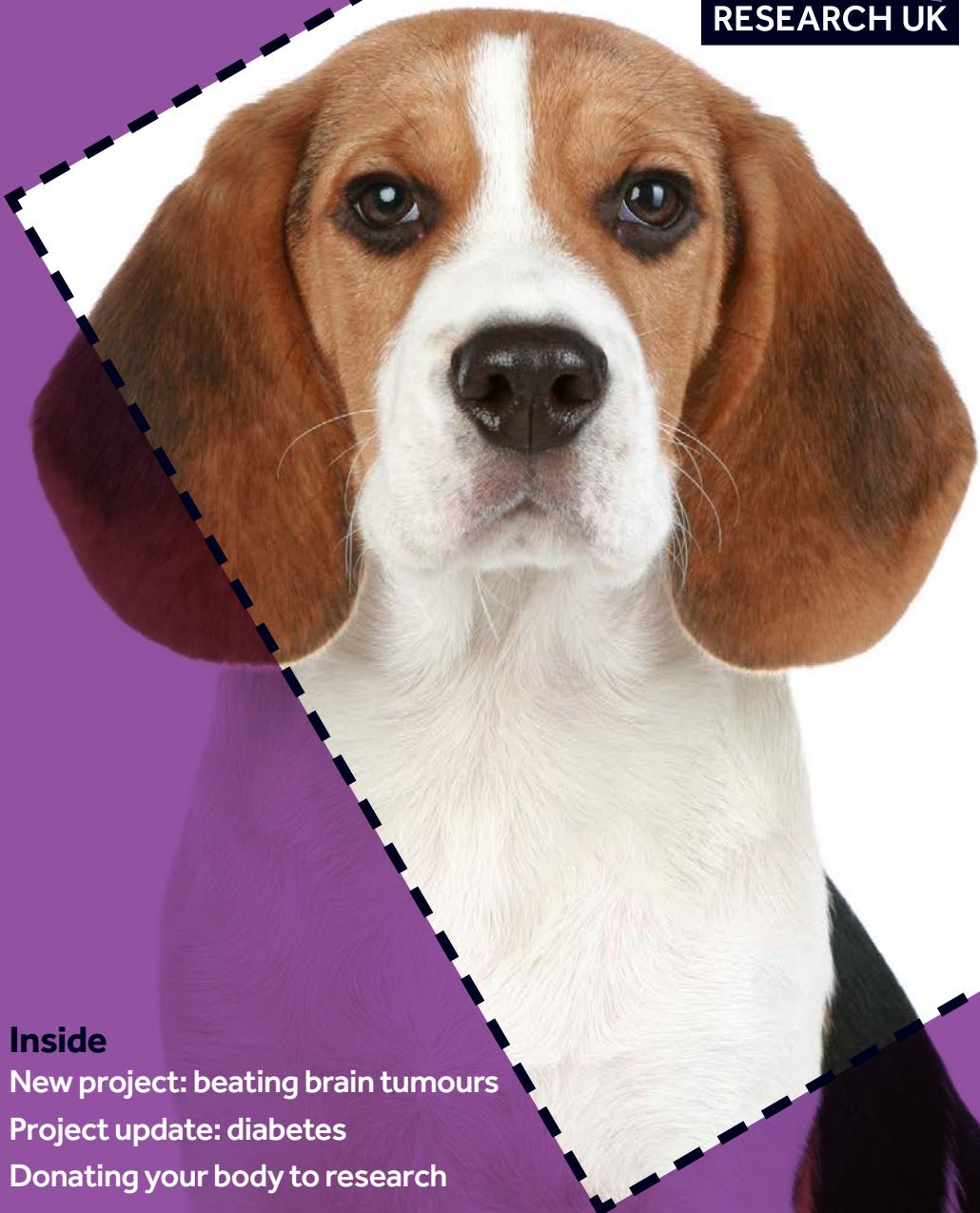
REPLACEMENT NEWS

March 2019: Issue 121

ANIMAL FREE RESEARCH UK



Inside

Contents

Animal Free Research UK

Formerly Dr Hadwen Trust
Portmill House, Portmill Lane,
Hitchin, Hertfordshire, SG5 1DJ

Tel: 01462 436 819
info@animalfreeresearchuk.org
www.animalfreeresearchuk.org

Welcome to the future of medical research

Thank you for helping to drive medical research in the right direction – to a future where all animal experiments have been replaced by human-relevant, animal free research.

Your support is already making advances in laboratories up and down the country. I've been visiting projects from Portsmouth to Dundee on your behalf to see how your support is helping. It was so inspiring to meet the people behind our cutting-edge research, and you'll meet some of them in the following pages too. Their work can give us all great hope for the future – a future where all medical research is animal free.

You also inspire us by your kind acts – donating, fundraising or even deciding to donate your body to medical research to help save animals. It's not for everyone, but if this is something you are considering, our article on page 14 will help you.

I've been so moved by your warmth and generosity, I decided to take on the Vitality Big Half marathon in London to help raise more money for animal free research. If you would like to sponsor me, please visit my fundraising page at **uk.virginmoneygiving.com/CarlaOwenAFRUK.**

Thank you for your continued support. Your kindness and compassion make our vital work possible.

Carla Owen

Chief Executive

New project: beating brain tumours

Professor Geoff Pilkington and Dr Zaynah Maherally at Portsmouth University are tackling the blood-brain barrier so that they can find more effective ways of treating patients, including children, who suffer from brain tumours.

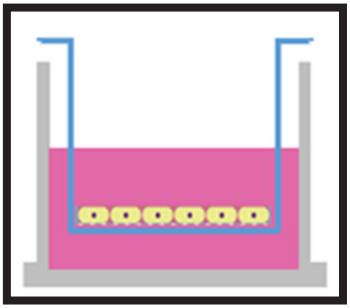
What's the problem?

Did you know that many brain tumour drugs that appear to work when tested on tumours cruelly implanted in animals, frequently do not work in the clinic in human patients?

Imagine the waste of time and resources, the suffering needlessly inflicted on animals, and the devastating consequences for patients and families.

Many drugs that could cure brain tumours can't get into the human brain because they are blocked by a protective layer, known as the 'blood-brain barrier'.

This barrier is made up of specially designed blood vessels that stop toxins from entering your brain and causing problems. However, while we want our brains to block out most harmful substances, there are some that we might want to get into our brains – such as drugs to treat brain tumours.



To represent the blood-brain barrier, different types of human brain cell are grown on either side of a membrane in a dish

> *"We have engineered the most sophisticated blood-brain barrier model reported to date and it is comprised wholly of human cells and proteins, thus reflecting the biological features of the human brain far more accurately than animal experiments."*
>
> **Professor Geoff Pilkington**

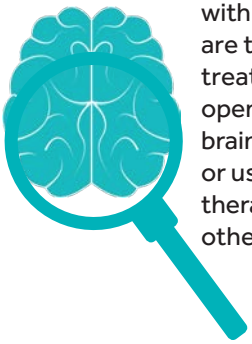
Dr Zaynah Maherally and Professor Geoff Pilkington

How you are helping

Thanks to the generosity of kind Animal Free Research UK supporters like you, brain tumour experts Professor Geoff Pilkington and Dr Zaynah Maherally are studying better ways to get drug treatments into the brain and into the clinic to cure human patients.

Geoff and Zaynah are using cutting-edge science to develop the first animal free, 3D model of the blood-brain barrier that incorporates real tumour and non-tumour human brain cells.

Their all-human model better reflects the real situation within the brain when patients are treated. To test potential treatments, they can briefly open their model of the blood-brain barrier to let drugs in, or use tiny particles to deliver therapies that wouldn't otherwise get into the brain.



What's the impact of the research?

By replacing animal experiments with their more human-like research tool, they aim to speed up the time it takes for an effective drug to reach brain tumour patients from the laboratory.

Geoff and Zaynah are also using their model to find ways to stop breast, lung and kidney cancer spreading into the brain – giving real hope to cancer patients.

If you've supported us for a while, you may remember that we were originally planning to partner with another charity to share the costs of this exciting project. Since then, there have been changes in the way some brain tumour research is funded in the UK which unfortunately put the project at risk. Animal Free Research UK is completely committed to this ground-breaking research so has stepped up to fund 100% of the costs.

If you can, please make a donation today to help with the additional £60,000 we need to complete this pioneering animal free research. You can make a donation by visiting **animalfreeresearchuk.org/donations/braintumours,** by returning the enclosed donation form or giving us a call on 01462 436819.

Project update: diabetes

Thanks to the generosity of kind supporters like you, Professor Lorna Harries and Dr Nicola Jeffery at the University of Exeter Medical School are continuing their animal free research to look deeper into the mechanisms underlying type 2 diabetes.

What's the problem?

You may have heard lots of news in the media recently about how you can reverse type 2 diabetes with lifestyle changes, such as following a low-calorie diet and being more active. This is because type 2 diabetes is linked to obesity and an unhealthy lifestyle.

However, when lifestyle changes simply don't work to reduce blood sugar levels, many type 2 diabetes patients must take medication to keep their diabetes under control.

What they found would never have been discovered if they had been doing animal experiments.

Sadly, hundreds of thousands of animals are experimented on every year in an attempt to find treatments for diabetes. Many of the animals used in traditional diabetes research are mice and rats who are forced to suffer with the symptoms and painful complications of diabetes, such as excessive hunger and thirst, fatigue, and damage to their hearts, kidneys, eyes and nerves.

How you are helping

With over 4 million people living with diabetes in the UK and more cases of type 2 diabetes being reported because rates of obesity are rising, you'll agree that it's important now, more than ever, that we use human-relevant science to find a cure for this devastating disease.

What is diabetes?

Insulin is a hormone that regulates our blood sugar levels. Diabetes occurs when our bodies are not able to produce enough insulin or our tissues don't respond properly to that insulin, so that blood sugar levels remain high. Left untreated, diabetes can cause serious health conditions that can be life threatening including blindness, cardiovascular disease, kidney failure or nerve problems that can lead to leg amputation.

Our research has found that if you can control the environment that your cells are living in, either by keeping your weight under control or by keeping your blood sugars equal, you can protect the cells in your pancreas from turning into other types of cells and you can maintain the ability to secrete your own insulin.
Professor Lorna Harries

With your help, Professor Lorna Harries and Dr Nicola Jeffery have found that some cells in the pancreas that produce insulin aren't dying in diabetes patients as previously thought, but are changing into other types of cells. This process is unique to humans – it simply doesn't happen in mice. And most importantly, their research revealed that this process can be reversed, which could soon lead the way to a cure for diabetes.

Revolutionary treatments
Now, Lorna and Nicky are digging deeper into their understanding of why and how insulin-producing cells change to potentially develop a new generation of treatments for type 2 diabetes. They are investigating how the insulin-producing cells can be prevented from changing into cells that don't produce insulin, or how they can be persuaded to change back and start producing insulin again.

Their findings could lead to revolutionary treatments that give real hope to patients at risk of diabetes or who can't control their blood sugar levels with diet and exercise alone.

You can watch Lorna and Nicky discussing their ground-breaking research at animalfreeresearchuk.org/diabetes/research

Fabulous fundraisers

Thank you so much to the lovely people who have been busy raising funds and awareness for our work. Your incredible efforts are helping save animals from the laboratory and helping advance better science.

Dundee Vegan Festival

Liz Begg and Jennifer Cooper held a stall at Dundee Vegan Festival at the end of last year. They had a great time talking to lots of people about our work and raised a brilliant **£105** on the day. A few days later we received a donation of **£500** from a supporter who had met them there! Great work, ladies!

London group

The lovely folk in our London group – Pat, Jenny, Genevieve, Ellie and Jenny "number 2" – held an Animal Free Research UK stall at Animal Aid's Christmas Fayre. They raised a magnificent **£243** and talked to lots of people about our work replacing animals in medical research.

Rebecca Shepherd

Thank you so much to Community Ambassador, Rebecca Shepherd, who has been incredibly busy organising collections and stalls at events across the Midlands! After becoming a Community Ambassador only 6 months ago, Rebecca has raised nearly **£3,000!** Keep up the good work Rebecca. We're so glad to have you on our team!

Birmingham group

Jane McKears and the Birmingham group have again been busy fundraising. They've raised **£300** from craft sales and another **£1,200** at their Raving Pink Panto. *Oh yes they did!* Thank you so much, Jane and friends.

Bude group

A huge thank you to our support group in Bude, Cornwall, who managed to raise an astounding **£5,650** in 2018! Led by our Community Ambassador Steph, they hosted events and participated in challenges throughout the year. The group is becoming a force of nature in Bude, so we can't wait to see what they achieve in 2019 in aid of our diabetes research!

Supermarket Collections

Our Community Ambassadors have also had great success coordinating supermarket collections up and down the country last year. They raised an amazing **£8,781**!

Thanks to all our supporters who raise awareness of our work and collect vital donations to fund our research.

Q&A with Nicola Jeffery, diabetes researcher

With your support, Dr Nicola Jeffery was awarded her PhD in December by studying diabetes using animal free techniques. We caught up with her over a cup of coffee to see how she is settling in to her new research project.

Congratulations on achieving your doctorate degree! How does it feel to have made such a big breakthrough in diabetes research?

Thank you! It is very exciting and I feel very privileged to have been able to contribute to furthering diabetes research using animal free techniques.

What's your next ambition?

As we identified how changes to the cells that make insulin contribute to the development of type 2 diabetes in our last project, we now aim to investigate this in much more detail. We hope to discover ways in which we could reverse or intervene in this process that could then be taken forward as future treatments.

This research is important because it explains the importance of lifestyle factors in the development of type 2 diabetes. This can potentially benefit patients by providing people with information so they can make informed lifestyle choices and by finding novel therapies for treating type 2 diabetes.

Nicola in her laboratory

> *Using effective human models for studying human disease makes good scientific sense.*

Nicola with Elsa

Why is animal free research so important to you?

One of our key findings showed that using human models of type 2 diabetes resulted in an entirely different response to what has been reported using mouse experiments. We know that there are many differences between mice and humans that are particularly relevant to type 2 diabetes and so using human models is essential to fully understand the disease.

What motivates you?

I love science and I really want to understand how lifestyle factors associated with type 2 diabetes affect the cells that make insulin, because this might make a real difference to the lives of people with this disease. Using effective human models for studying human disease makes good scientific sense and I also advocate this approach from an ethical point of view.

Where do you like to be when you're not working?

When I'm not working, I'm usually planning my next adventure to the mountains. I'm a very keen cyclist, runner and skier and I love to head for the hills with my three dogs, Elsa, Nano and Colin.

The final word...

I would love to thank the Animal Free Research UK supporters who are contributing to some very exciting, cutting-edge science and enabling scientists like me to remove animals from research.

Find out more about Nicky's work on our website:
animalfreeresearchuk.org/diabetes

Project update: human cadavers

Experts Professor Graeme Houston and research assistant Helen Donald-Simpson at Dundee University are using a special human embalming technique that can save people and animals from suffering in the testing of medical treatments and training of our doctors.

Professor Graeme Houston

What's the problem?

With life-threatening cardiovascular conditions such as heart attacks and strokes affecting more and more families in the UK, medical devices such as stents offer a less invasive alternative to stressful complex surgery. Stents are inserted inside blood vessels to hold them open and are widely used to treat narrowed arteries in the heart and rest of the body.

However, testing new medical devices often involves experiments on live pigs, dogs, rabbits and sheep.

After being cut open and having devices that they don't need implanted into their arteries, these otherwise healthy animals are killed.

Yet medical devices for humans simply cannot be accurately tested in animals – who have a different anatomy to humans and lack diseased blood vessels that have lived the wear-and-tear of human life.

How you are helping

Thanks to donations from compassionate people like you, Graeme and Helen have developed a novel model of the human body using Thiel embalming, to test medical device treatments for diseases and train doctors in how to carry out procedures.

What is Thiel embalming?
Instead of using traditional formaldehyde to embalm a body, a special mixture of salts is used in Thiel embalming, which embalms the body in a more realistic way – leaving it softer and more flexible than traditional embalming.

"We need our doctors to be skilled and confident and absolutely excellent in what they do and know that our medical devices are safe before they go near any human. We simply cannot do this as effectively or ethically by experimenting on animals."
Helen Donald-Simpson

Due to the flexibility of the Thiel embalmed cadavers, a special fluid that simulates blood can be pumped around the body which can then be used to test medical devices to treat patients suffering with cardiovascular diseases.

Currently halfway through their five year project, Thiel embalming allows Graeme and Helen to conduct research on the human body and get results that are more comparable to the living body than experiments on animals.

Their cutting-edge Thiel embalmed cadaver model can also be used to conduct a simulation of a patient getting a medical procedure – imagine an operating room, with a draped patient, a doctor and a radiographer – to train doctors in new medical techniques.

What's the impact of the research?

The special way the cadavers are embalmed means that procedures can be carried out multiple times by doctors for training purposes or for testing the effectiveness of new devices in treating diseases.

This unique feature means that this cutting-edge research is saving the lives of an estimated 4000 animals per year. Isn't it amazing that so many animals can be saved simply by testing new medical devices in a small number of human cadavers kindly donated for medical research?


Helen at work in the laboratory

"Using the wonderful gift that people make by donating their bodies at death, rather than using animals, allows us to test and develop new healthcare technologies and train doctors in advanced techniques. Our work is really gaining momentum, and our testing model is more accurate than animals, providing scientific results that are more relevant to the human diseases we need to treat."
Professor Graeme Houston

Donating your body to medical research

It's certainly not everyone's choice, but if you have decided to leave your body to medical research, you could be helping advance scientific knowledge of human health and replacing experiments on animals.

The bodies of humans and other animal species work in subtly different ways, right down to the cellular level. Research on human cells and tissues is providing valuable new insights into the processes that underlie human health and disease that would never have been found in animals.

By choosing to donate your body or your organs for transplantation after death, not only could you be helping save the lives of those who receive your organs, you could also be helping to save animals. That's because a severe shortage of human organs has resulted in extensive research to attempt to use animal organs (you may have read about pigs' hearts being used) for this purpose instead. This can involve severe animal suffering.

If donated organs prove unsuitable for transplant, they may instead be used for research purposes, with the permission of the donor or next-of-kin. The health care system prioritises organs for transplantation first, before research.

Of course, there is no 100% guarantee that your body or organs would ultimately be used in research, as this would depend on a number of factors including where, when and how you die.

Please note that you cannot donate your body to Animal Free Research UK as we do not have the facilities for this.

If you are interested in donating your body to research, please contact:

The Human Tissue Authority
020 7269 1900
hta.gov.uk

Animals used in research

The scale of animal experiments in Great Britain is worse than we knew.

As you may already know, every year the Home Office publishes data on the number of animals used in experiments and the number of genetically altered animals who are bred but not used.

Now, for the first time, the Home Office has published some new statistics that show the level of animal experiments in the UK is considerably worse than we knew.

These new statistics show that in 2017 an additional 1.81 million animals who were not genetically altered were bred for research but were killed or died without being used. 85% of these animals may have been killed solely so their tissues could be used in experiments, killed at a breeding establishment, or were going to be experimented on but died beforehand. The other 15% of these animals were bred in the process of creating or maintaining genetically altered animals, but were found to not be genetically altered so haven't been counted up until now.

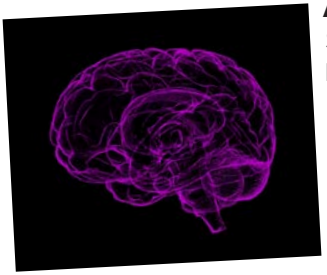
That means over 5.5 million animals suffered in British laboratories in 2017 – a huge increase on the already appalling 3.7 million animals previously counted.

Some of the reasons given for the huge number of additional animals needlessly killed include that the animals were breeding animals, the wrong gender for a particular purpose or they were a 'necessary' surplus.

These animals have never been included in the yearly statistical release, published every year since 1986, but their numbers will now be collected and published every 5 years.

You can find out more about the animal experiments conducted in Britain in 2017 on our website: **animalfreeresearchuk.org/animal-experiment-statistics.**

Global replacement news



Advances in human "brain-on-a-chip"

Scientists have been busy developing and refining the latest models of the human brain that can be used to replace animal experiments.

One research group has developed a human 3D brain model created from human stem cells.

Other researchers have announced that their human brain model, for the first time, produces human-like brain waves and the electrical patterns look similar to those seen in premature babies.

We hope these exciting developments lead to an increase in the number of scientists using this novel method instead of experimenting on animals.

Better science for human medicines

A new scientific report has identified the urgent need to 'retool' drug discovery in order to make the early stages of research more predictive of how drugs are likely to work in humans. The authors call on researchers to investigate human-relevant research technologies as the tools that could help result in better drugs entering human trials.

Swiss Government rules are protecting animals from experiments

The Swiss Government is making it more difficult for scientists in the country to continue experimenting on animals, as well as get approval to conduct new animal experiments.

Switzerland has some of the strictest animal protection laws in the world and as a result, the number of animals used in research has steadily declined over the years – dropping more than 100,000 per year in the last ten years.

Swiss researchers must show how their proposed animal experiments benefit humans. This is becoming the main barrier for scientists, preventing more animals from unnecessarily suffering.

A step backwards

Cloning monkeys is a step backwards for medical research

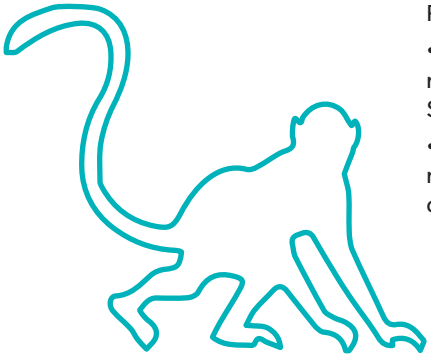
You will be disappointed to learn that more monkeys are being needlessly cloned for medical experiments. Researchers in China have caused severe suffering to monkeys by genetically removing some of their healthy genes to cause them sleep deprivation, anxiety, depression and behaviours resembling schizophrenia. The most traumatised monkeys could then be cloned to create more distressed animals to be experimented on.

Human diseases like schizophrenia and depression are caused by a multitude of complex factors, not the single genetic alteration that has been inflicted on these monkeys.

> *"Cloning monkeys is a step backwards for medical research. It is ludicrous to imagine that monkeys who have been artificially inflicted with the basic symptoms of complex human diseases, and then experimented on, will respond in the same way as human patients. There is no justification for deliberately causing a life of suffering to these monkeys who feel pain, just as we do."*
> Carla, Chief Executive

There are many forward-thinking ways of conducting medical research rather than experimenting on intelligent monkeys. The best way to improve treatments for human patients is with human-relevant research. Animal Free Research UK funds scientists who are pioneering research into human diseases and making ground-breaking discoveries for human patients because they do not experiment on animals.

You can read and share this article from our website **animalfreeresearchuk.org/cloning-monkeys-step-backwards-medical-research/**



References

- Zhen Liu et al.; Cloning of a Gene-edited macaque monkey by somatic cell nuclear transfer, National Science Review. 2019
- Peiyuan Qiu et al.; BMAL1 knockout macaque monkeys display reduced sleep and psychiatric disorders, National Science Review. 2019

Get involved

Could you help by raising vital funds to support our life-saving research? Here are a few ideas to get you started...

Animal Free Afternoon Tea

Support animal free research by hosting an afternoon tea party!

You can host an afternoon tea whenever and wherever you like. Make your friends comfortable in your home or work-place and host an afternoon of tea, cakes and chatter!

Visit **animalfreeresearchuk.org/afternoon-tea** to download your FREE pack which includes an event planner, cut-out bunting, recipe cards, invitations and more!

Amazon Smile

If you shop on Amazon, use the AmazonSmile link below and select Animal Free Research UK as your charity to support. We will then receive a donation every time you shop – at no extra cost to you!

All these small donations on your purchases really do add up. We have raised an incredible **£18,000** so far, so please ask your friends and family to sign up too! This is a great way to raise funds from the comfort of your home. Thank you!

Use this link for your online shopping from now on!
smile.amazon.co.uk/ch/1146896-0

Penny collection boxes

Have you got one of our penny collection boxes? They are a great way to help raise funds. Pop your box in a place where people like to drop off their loose change, such as a reception desk at work or your hallway at home and it'll soon be full.

Email us at **info@animalfreeresearchuk.org** or give us a call on 01462 436819 if you would like us to send you one – we've got limited stock, so please hurry!

Large or small, leaving a gift in your will can make a **big difference.**

If the time is right, please consider leaving us a gift in your will. **Thank you.**

ANIMAL FREE
RESEARCH UK

Download your free legacy guide at animalfreeresearchuk.org/leave-a-legacy/