

CAAT-Europe: Promoting alternative humane approaches to animal testing

The use of animals in research is a highly controversial area of science. The Center for Alternatives to Animal Testing–Europe (CAAT-Europe) sources the knowledge of forward-thinking scientists from industry, regulatory bodies and academia, to generate synergy regarding the overdue implementation of 3Rs (Replacement, Reduction and Refinement) methodologies and framework for humane animal research across sectors and institutions. We at *Research Features* spoke to **Dr Mardas Daneshian**, the CEO of CAAT-Europe at the University of Konstanz, to discuss this and more.

Animals have long been used within scientific practice. Without the use of laboratory mice, dogs or monkeys, many drugs available against diseases would either cease to exist entirely, or would still be in their testing stage now.

However, using animals in research is highly controversial, with many believing it to be an unethical, unnecessary and inefficient method for progressing science. This is where the work of The Johns Hopkins Center for Alternatives to Animal Testing (CAAT) comes in.

Founded in 1981, CAAT was set up to promote humane science by supporting the creation, development, validation, and use of alternatives to animals in research. 28 years later saw the establishment of CAAT-Europe – the collaborative European subsidiary of the USA-based centre. Based at the University of Konstanz, CAAT-

Europe is responsible for coordinating transatlantic activities to promote education in humane science. We spoke to their CEO, Dr Mardas Daneshian to discuss what more needs to be done to prevent any further unethical practice to animals, highlighting which alternative methods could, and should, be used instead.

Hi Mardas! How would you define your role as CEO for the Centre for Alternatives to Animal Testing (CAAT-Europe)?

I am responsible for the scientific coordination and co-directorate of a scientific centre, the management of project applications, and the organisation of conferences. I am also responsible for the creation of expert think tanks, networking, financial management, public relations, dissemination and training.

Could you tell us about the CAAT-Europe background and heritage, and give us some examples of the important research ▶

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it has been involved in over the years?

CAAT was founded in 1981 at The Johns Hopkins University in Baltimore, as one of the first 3Rs (driving scientific and technological developments that replace, reduce or refine the use of animals in research) centres worldwide. CAAT-Europe was founded in 2009 and inaugurated in 2010 as a joint venture between Johns Hopkins University and the University of Konstanz in Germany. CAAT-Europe is not involved directly in research, but the centre organises think tanks with experts from academia, governmental/regulatory authorities and industry to evaluate the performance of alternatives currently available. They also evaluate the stage of knowledge to address the proper biomarkers for non-animal methodologies.

Since 2010, the centre has produced over 51 scientific publications, published in peer-review journals, involving 387 individual co-authors from academia (42%), industry (30%), regulatory authorities (22%) and NGOs (6%). Moreover, since 2014, CAAT-Europe has been an official external expertise service provider in the areas of science and technology options assessment (STOA) for the European Parliament in "Life sciences for human well-being" (IP/G/STOA/FWC/2013-1 Lot 6).

How has CAAT-Europe defined alternative methods which reduce, refine or replace whole animal methods of testing? How did you become interested in this?

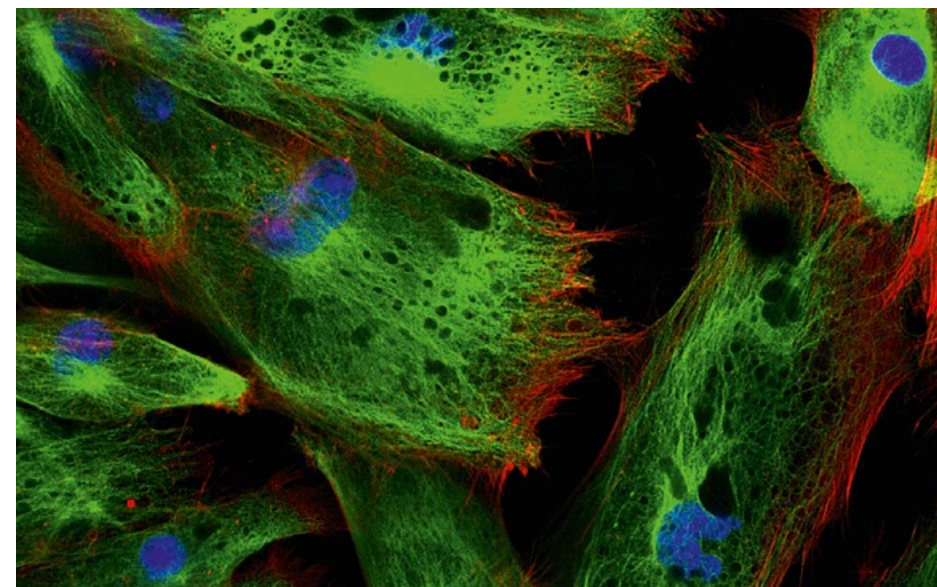
I myself am one of the co-founders of CAAT-Europe and my interest in non-animal sciences goes back to the time I was a student at school. It is about the promotion of 3Rs as the sole ethical value sets which is independent of any cultural background and any religious belief. The 3Rs pose an ethical code of conduct for life sciences. On the other hand, my interest is about the implementation of the 3Rs philosophy in society, as it would implement the sense of responsibility for the helpless, the vulnerable and the defenceless.

The centre defines all approaches, including those that are not related to animal use as a 3Rs method (alternative method). Meanwhile, the centre prefers the OECD's terminology "New Approach Methods" (NAMs) which describes all *in silico*, *ex vivo*, *in vitro* methods as non-animal and hence as alternative methods.



Dr Mardas
Daneshian, CEO
and coordinator of
CAAT-Europe

CAAT-Europe is a scientific centre concerned with the quality and the performance of New Approach Methods, providing a stage for molecular and biochemical knowledge

*Could you tell us about the relationship and collaboration between CAAT-Europe and CAAT at Johns-Hopkins University in Baltimore (CAAT-US)?*

Both centres are programmatically coordinated. Due to the transatlantic work of CAAT-Europe and the performance in Europe, there is synergy in every action the centres take. Though the centres act in a coordinated way, the finances are separate, so no US funds will ever be used for CAAT-Europe activities and vice versa.

Can you define and discuss the importance of the Transatlantic Think Tank for Toxicology (t4) along with CAAT-Europe's involvement?

The Transatlantic Think Tank for Toxicology (t4) complements the transatlantic work of CAAT-Europe, and is regularly involved in CAAT-Europe's decision finding process. t4 is usually present at the board meetings of CAAT-Europe and is regularly invited to actively take part in the centre's think tanks and workshops.

CAAT-Europe is also regularly involved in t4 publications and workshops. This mutual relationship is characteristic of CAAT-Europe's relationships with the relevant entities, institutions, consortia and projects. The centre intends to fully collaborate in an inclusive manner, actively avoiding any kind of competitive behaviour.

What reception has CAAT-Europe received from both industry and the academic community?

CAAT-Europe's approach is quite unique, as it does not pose as an animal protection

centre. Instead, it is a scientific centre concerned with the quality and the performance of NAMs, providing a stage for molecular and biochemical knowledge. The centre's activities also aim to continuously evaluate the knowledge around processes relevant to human physiology on a cellular level, an organ level, and also on a whole system level – as this information has to be recruited for biomarker identification. Once the approach of the centre was successfully communicated, the reception of CAAT-Europe by the industry – as well as academia, and also by regulatory authorities (across Europe and also the USA) – were overwhelmingly positive.

Do you believe CAAT-Europe's contribution to alternative research methods will change research methods and perhaps eradicate animal testing altogether?

The centre propagates that our tools are advanced enough to allow combinations of a variety of valid NAMs to replace animals in research and testing. The centre also promotes the ideology that there is no room anymore to promote any animal or non-animal method as the gold standard.

Moreover, there are vast possibilities from the field of NAMs that could lead to personalised medicine, to multi-organ chip testing, to organ engineering and other sophisticated approaches. These developments will undergo multiple optimisation stages until their performance becomes acceptable. NAMs, and approaches including NAMs, must stay open for continuous refinement, optimisation and replacement by other upcoming sophisticated methodologies.

AT-Europe's main contribution to advancing testing and research. Taken together, the centre's mid-term and long-term impact will lead to replacing animals in testing and research aimed at implementing the spirit of continuous optimisation and refinement of knowledge.

What career achievement are you most proud of?

Being a co-founder of CAAT-Europe is the achievement I am most proud of.

What does the future hold for CAAT-Europe? What's your vision for future developments at CAAT-Europe?

CAAT-Europe proposes a network of open-minded experts from all life science fields, which also includes experts on *in vivo* studies working in academia, industry and regulatory authorities. Until now, the scientific world seems to have appreciated the synergy resulting from mono- and multi-disciplinary networks and think tanks. The future of CAAT-Europe may be related to this appreciation. If scientists can fully recognise the power of non-competitive knowledge exchange through specialised think tanks, then there might be an active future to be foretold for the Centre for Alternatives to Animal Testing-Europe.

• For further information on how you can get involved with CAAT-Europe's research, please visit their website at CAAT-Europe at www.cms.uni-konstanz.de/leist/caat-europe.



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