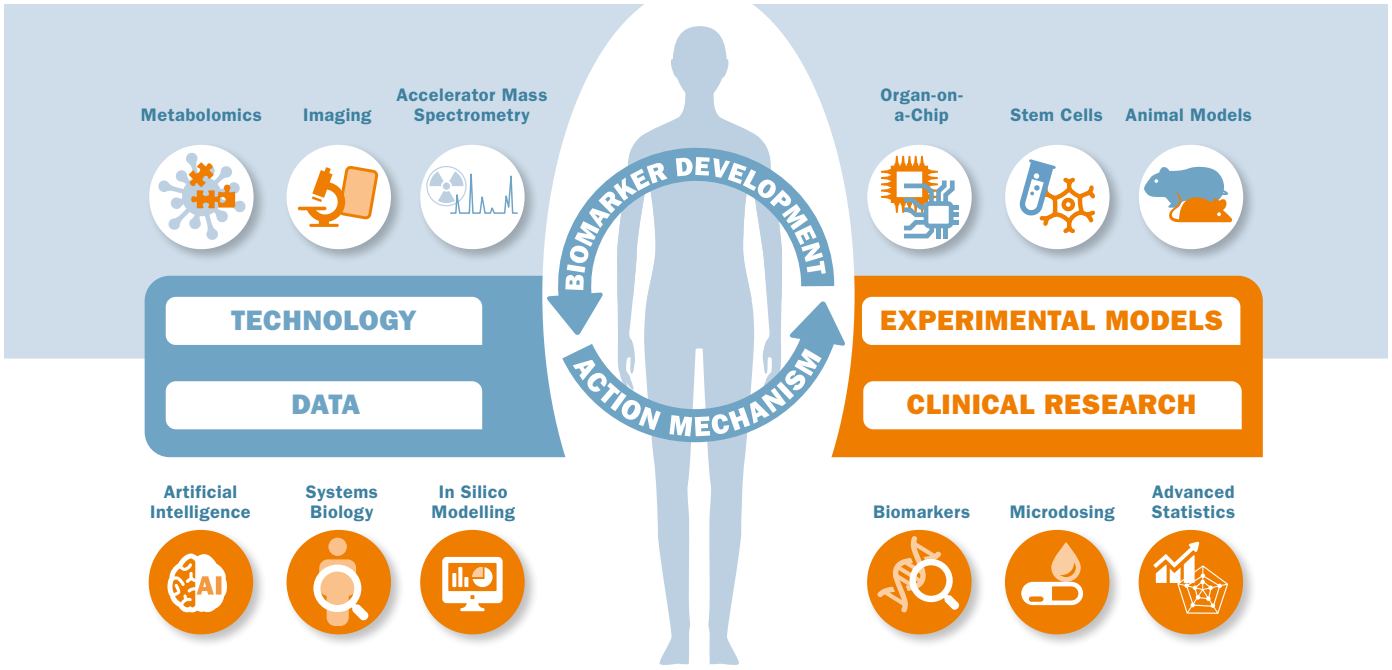
ANIMAL TESTING AND DEVELOPMENT OF NON-ANIMAL INNOVATIONS



TNO innovation for life

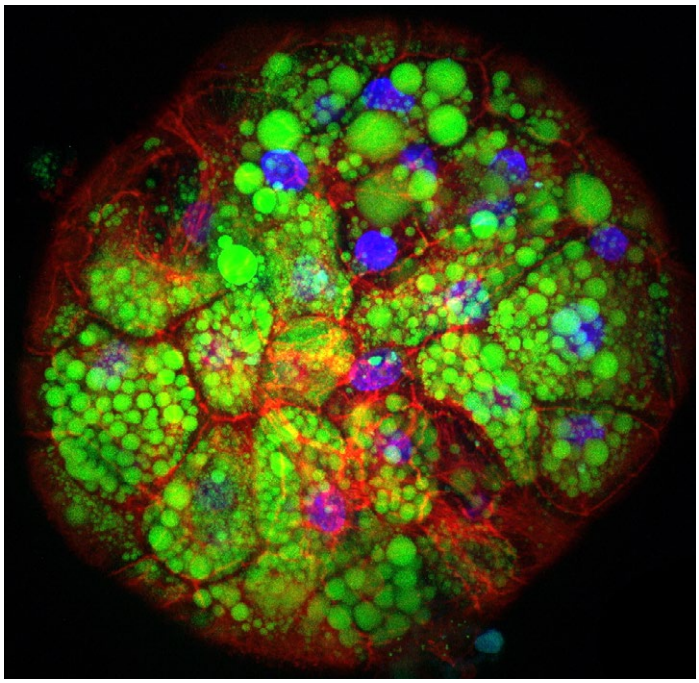
TNO stands for excellent biomedical research, focusing on the efficacy and safety of medicines. In some cases, animal testing is needed to understand the processes involved in disease development and progression and to study the effects of interventions on these diseases. In doing so, the laboratory animal is seen as a model for humans, allowing research to be done that cannot be done safely on humans. At the same time, we have been actively contributing to the development and implementation of non-animal innovations for many years.

OVERVIEW OF THE FULL PLAYING FIELD

In the field of reducing, refining, and replacing (3R) animal testing, TNO has proven to be a relevant player over the past decades. Large-scale research projects have been initiated and new methods and techniques have been developed, and they are still being applied in companies today. Examples include TNO Intestinal Models, in vitro skin absorption and skin irritation, Isolated Chicken Eye Test (ICE), accelerator mass spectrometry (AMS)/microtracing), InTESTine, and Target Tree platform.
Our role is to look beyond the hype and to develop science-based innovations. Through our many contacts within industry, we match the supply of possible innovations with industrial needs in order to achieve practical implementation. We have a clear view of the full playing field; we know what developments are taking place and have an overview of what is happening in adjacent areas. On the basis of this view, we look specifically at which technological innovations can add value and where.

TECHNOLOGICAL INNOVATIONS OFFER OPPORTUNITIES

Knowledge of the development of disease, in both humans and animals, is increasing at an enormous rate. The introduction of technological innovations such as genomics, systems biology, AMS, imaging, data science, and artificial intelligence (AI) plays an important role in this regard.



A micrograph of a liver spheroid (mini liver), with a diameter of approximately 0.2mm. The spheroid is highly saturated with fats (green spheres). In this way, the efficacy of experimental medication against fatty liver can be studied.

These developments make it possible to safely conduct applied scientific research in humans. This will also increase knowledge of the translational value of animal and non-animal models. We expect this to result in an increasing integration of different types of non-animal innovations (in vitro, in silico, in vivo human), with animal models only being used if they are well characterised and include disease processes relevant to humans.

ACCELERATING THIS TRANSITION

TNO follows a two-track policy: 1) development and application of non-animal innovations, thus accelerating the transition, and 2) further optimisation of our current animal research according to 3R policies. We will continue to develop our technologies – such as AMS, biomarkers, organ-on-a-chip, and ex vivo models – and apply them to issues that companies are facing. With the application of AMS in humans, we expect that pharmacokinetic studies in experimental animals will become largely unnecessary. TNO will implement technological innovations on the various individual in vitro, ex vivo, and in silico methodologies. In addition, we will actively work on the integration of these technologies to increase their translatability and applicability.

ACCEPTANCE AND IMPLEMENTATION

It is not only our ambition to develop or help develop new innovative 3R methods, but also to gain faster acceptance for the application of these methods. We are, therefore, engaging and collaborating with all relevant parties including companies, academics, legislators and regulators, governments, and patient and advocacy groups. For society, the topic of animal testing remains emotionally charged. Supporters and opponents are regularly diametrically opposed. TNO wants to actively contribute to a balanced discussion, nationally and internationally, based on its knowledge of technological possibilities and the practical application of animal testing and non-animal innovations.

WILL YOU JOIN US?

Would you like to know more about what we are doing in the field of 3R and non-animal innovation? Or would you like to work with us on further development and implementation? Please feel free to contact us.

More information about TNO's Animal Testing Policy.

TNO.NL

HEALTHY LIVING

Are you interested or do you want to know more?
Please feel free to contact us.

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