

All information regarding future IHI Call topics is indicative and subject to change. Final information about future IHI Calls will be communicated after approval by the IHI Governing Board.

Topic 1: Accelerating the implementation of New Approach Methodologies and other innovative non-animal approaches for the development, testing and production of health technologies

Expected impacts to be achieved by this topic

The work supported under this topic seeks to pursue the aims of Directive 2010/63/EU¹ on the protection of animals used for scientific purposes. It also contributes to the implementation of the 3Rs principles “Replace, Reduce and Refine the use of animals”, and ultimately help progress towards no use of animals or animal-sourced materials in research, innovation and development which is an expectation of society.

The following impacts are expected:

- Break down silos between technological areas and disciplines, as well as bring together different stakeholders (e.g., health industry, academia, small and medium enterprises (SMEs), patients, regulators, NGOs and policy makers) to foster the use of New Approach Methodologies² (NAMs) and other non-animal approaches in the efficient development, testing and production of safe and effective innovative health technologies³ (e.g., medicinal products, medical devices, biopharmaceuticals, vaccines, *in vitro* diagnostics) and their combinations.
- Improve public health as patients will benefit faster from safe and effective health technologies developed using NAMs and other non-animal approaches that provide more human-relevant data and are more predictive than current approaches.
- Foster the development of health policies and standards on the use of NAMs and other non-animal approaches in health technologies which will positively affect public health.
- Enhance the competitiveness of the European health industry that will benefit from high quality innovative approaches and methodologies for the development and production of new health technologies, which can reduce the time and costs of processes while significantly reducing the use of animals or animal-sourced biomaterials.
- Help to make the EU more sustainable/autonomous by achieving regulatory validation and uptake of NAMs and other non-animal approaches for the development, testing and production of health technologies that are not dependent on shortages/issues with animal supply.

Expected outcomes

R&I actions (projects) to be supported under this topic must contribute to all the following outcomes:

- Researchers will benefit from the implementation of NAMs and other innovative non-animal approaches which have been assessed and validated for their performance and found to be relevant, reproducible, predictive, and standardised, ultimately leading, as relevant, to their regulatory acceptance for the use in

¹ [Directive 2010/63/EU](#)

² New approach methodologies, as defined in <https://www.frontiersin.org/articles/10.3389/ftox.2022.964553/full>

³ Health technology, as defined in the [IHI Strategic Research and Innovation Agenda](#), means a medicinal product, a medical device, or medical and surgical procedures, as well as measures for disease prevention, diagnosis or treatment used in healthcare.

infectious and/or non-communicable disease applications. The new approaches should lead to an improvement of animal to human translation and/or production processes, and to a significant reduction in the number of animals used. In addition, these approaches may answer questions that current methods cannot and improve the predictability and robustness of evidence generated for regulatory decision-making.

- European industry will benefit from the establishment and availability of NAMs and other innovative non-animal approaches for the testing, development and/or production of health technologies that are fit-for-purpose to support regulatory decision making.
- Researchers and developers of innovative healthcare solutions will have access to high-quality data, new recommendations and best practices to incentivise the use of NAMs and other non-animal approaches and their integration in industrial processes. This should be supported by an appropriate digital repository to ensure both sustainability and scalability of the knowledge base.
- Regulators and policy makers will gain knowledge and have access to high-quality data on the characteristics and use of NAMs and other innovative non-animal approaches in the production and development of health technologies to foster the development of harmonised guidance and requirements, as well as uptake or translation into health policies.

Scope

Animals and animal-derived materials are widely used in biomedical research and in the production and development of health technologies. This raises serious ethical concerns, and there is growing societal pressure to move towards alternative approaches and methods. Besides major ethical concerns, there is also scientific evidence that supports moving away from animal-based approaches and finding more human-relevant methods and strategies for both the assessment of safety and efficacy of new health technologies and for manufacturing. Animal testing requires time-consuming protocols, high costs for animal supply, and the results are not always reproducible and applicable to humans. In addition, for the development and production of health technologies (e.g., *in vitro* diagnostics) as well as in biomedical research in general, materials of animal origin are required (e.g., biomolecules, sera). These animal-derived products require large amounts of animals for their production. Therefore, also in this context, there is a need to foster progress towards new alternatives (e.g., synthetic matrix, recombinant proteins) to reduce the overall number of animals that are bred for these purposes.

NAMs and other innovative non-animal approaches have high potential to improve the development and/or the production of health technologies, while contributing to the reduction and replacement of the use of animals. Recent improved biological knowledge, technological advances, computer simulations and innovative non-animal approaches and methods (e.g., organoids, complex 3D cell models, microphysiological systems⁴, *in silico* models, non-animal derived antibodies and other biomolecules⁵) provide the opportunity to move forward with safer and more effective tools for protecting human health and preventing/treating diseases that would in parallel entail an improvement of animal to human translation or better production processes, as well as help progress towards the replacement of animals used in biomedical research in general.

While the potential for using non-animal approaches for the production, development and testing of new health technologies is enormous, more evidence and high-quality data for their performance evaluation in comparison with established animal-based approaches for a specific application (such as a production process, primary pharmacology, or next-generation-risk-assessment - NGRA) and for their validation are required by the industry and regulators to implement these alternative approaches in R&D and decision-

⁴ [Microphysiological Systems : Stakeholder Challenges to Adoption in Drug Development - PMC \(nih.gov\)](#)

⁵ [EURL ECVAM Recommendation on Non-Animal-Derived Antibodies](#)

making processes. In addition, policy makers require a large body of up-to date high-quality knowledge to inform relevant health policies and ensure the long-term goal of full transition to non-animal approaches.

The current topic seeks to address these challenges by exploiting the latest relevant scientific advancements to develop NAMs and other non-animal approaches, which could be more readily available and more efficient than the ones involving animals, and which should improve either the development, including efficacy and safety assessment, of new health technologies for infectious/non-communicable diseases or the production processes of such technologies.

The projects funded under this topic should aim to:

- Develop new NAM/s or other non-animal approach/es (or a combination of those) or use existing ones in an innovative way to improve animal to human translation in (early stage) assessment of new health technologies or to improve production processes of health technologies (such as bio/pharmaceuticals, vaccines, medical devices including *in vitro* diagnostics, and radio-chemicals).
- Specify the context of use (e.g., primary pharmacology, toxicology, safety, quality control, production processes) of the novel approach/es, how it/they can be integrated efficiently in the relevant workflows and propose and implement a plan to carry out their performance evaluation and validation, as well as demonstrate their added value in comparison with relevant established animal-based approaches.
- Make a comparative evaluation of the different approaches to replace, reduce and refine animal use, including the identification and assessment of parameters that influence their usefulness.
- Generate evidence on the robustness, reliability, and applicability of these novel approaches in an industrial R&D context and to support regulatory decision making in testing, development or production of health technologies, as relevant. Accordingly, applicants should develop a strategy/plan for generating appropriate evidence to support regulatory acceptance as well as engage with regulators in a timely manner (e.g., through the EMA Innovation Task Force, qualification advice).
- Gather and produce high quality datasets to generate a solid knowledge base for supporting the use of NAMs and other non-animal approaches in the field of health technology and drive 3Rs implementation. To ensure sustainability of the results and foster future development and validation of innovative non-animal approaches, applicants should develop a fit-for-purpose scalable digital data repository. Applicants should consider and leverage as much as possible existing infrastructures.
- Establish a collaboration platform between all relevant stakeholders from public and private sides, including regulatory agencies and policy makers, to exchange information, prepare white papers and guidelines to foster uptake or translation into health policies supporting an adequately reflected transition to full implementation of non-animal approaches in health technology development and manufacturing. Patients and/or patient organisations may be included and actively contribute to such activities by providing, for example, their insight on the use of human-derived samples, as relevant.
- Accelerate the broad implementation of the NAMs and other non-animal approaches in research through a strong communication and dissemination plan, fostering also exchanges and cross fertilisation with other projects funded in this area.

Projects funded under this topic are expected to contribute to relevant EU health policy initiatives such as the new Industrial Strategy for Europe, the European Health Emergency and Response Authority (HERA) and the European Health Data Space (EHDS).

Furthermore, applicants are expected to explore and/or implement synergies and complementarities with relevant initiatives/projects, at national, European and international level. They should also consider, as relevant, the activities of the 3Rs Working Party of EMA⁶.

Why the expected outcomes can only be achieved by an IHI project

Animals and animal-derived materials are widely used by several industry sectors (pharmaceutical, medical devices, *in vitro* diagnostics, vaccines), academia, as well as SMEs for their R&D or manufacturing activities. There is a need to move towards alternatives and accelerate the development and use of NAMs and other non-animal approaches in health technologies.

The exchange of data, expertise and knowledge is currently limited, for example, between the chemical and the pharmaceutical sectors concerning toxicological testing or between different areas of basic and applied research. Therefore, there is a need to generate, compile and share data and knowledge, as well as expertise, across biomedical and health technology sectors.

This topic requires cross-sectorial multidisciplinary private-public partnership to help address the scientific challenges and accelerate the development and use of effective NAMs and other non-animal approaches in the testing, development, and production of health technologies.

The involvement of patients, regulators and policy makers is also needed to guide and advise on regulatory acceptance criteria, foster acceptance, and to facilitate the uptake or translation into health policies.

Indicative budget

Applicant consortia will be competing for a maximum financial contribution from IHI up to EUR 30 000 000.

NB: this amount is indicative and subject to change, pending approval by the IHI Governing Board.

IHI estimates that an IHI financial contribution of between EUR 12 000 000 and EUR 15 000 000 would allow a proposal to address these outcomes appropriately. **NB: this amount is indicative and subject to change, pending approval by the IHI Governing Board.** Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.

Applicant consortia must ensure that at least 45% of the action's eligible costs are provided by contributions from industry members, their constituent or affiliated entities, and contributing partners.

Additional activities from industry members and their constituent or affiliated entities may also contribute towards this 45% threshold, providing these activities are related to the project. Contributing partners do not contribute additional activities.

Indicative duration of the actions

Applicants should propose a project duration that matches the project's activities and expected outcomes and impacts.

Dissemination and exploitation obligations

[To be determined: The specific obligations described in the Conditions of the calls and calls management rules under "Specific conditions on availability, accessibility and affordability" [apply][do not apply]

⁶ [3Rs Working Party \(3RsWP\) plenary meeting - Public session on the 2023 work plan](#)