



European science for health research needs and priorities

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Review

European science for health research needs and priorities[☆]Mareike Lutz^a, Tessa Moleman^b, Hubert G.M. Leufkens^{b,*} ^a Chalmers University of Technology, Sweden^b Utrecht Institute of Pharmaceutical Science (UIPS), The Netherlands

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ABSTRACT

The European research landscape for developing new diagnostic, preventive, and therapeutic interventions is fraught with challenges. Scarcity of qualified talent, limited funding for laboratories and research infrastructure, geopolitical competition, and increasing complexity of data systems all require creativity, leadership, and vision to advance science and translate research results into effective solutions.

This paper aimed to identify research priorities across the seven member organisations of the European Science for Health (EurSci4Health) community. The leadership of the membership organisations was surveyed, in total 150 individuals, yielding 38 valid responses (response rate of 21.7%). Three factors emerged as drivers of research: opportunities for collaboration, addressing unmet medical needs, and contributing to European excellence and competitiveness. In terms of disease areas, respondents identified neurological disorders (e.g., Alzheimer's disease, Parkinson's disease), cancer (e.g., brain, lung cancer), and global health threats (e.g., antimicrobial resistance, pandemics) as the highest priorities. Among scientific domains and enabling technologies, data science, artificial intelligence (AI), big data, and robotics emerged as the highest-priority areas for future research investment. There was also a plea for cross-disciplinary funding spanning fields such as data science and chemical biology, nanotechnology and clinical pharmacology, and regulatory science and health technology assessment (HTA).

The survey findings are discussed through the perspective of fostering trust, collaboration, and a shared vision within the EurSci4Health research communities. The results underscore a strong preference for enabling talented, independent researchers to pursue curiosity-driven basic science, while remaining responsive to compelling health questions on the horizon. This paper seeks to contribute constructively to the broader dialogue on future health research priorities and innovation policy. Ultimately, progress in the field will depend not on passive adaptation to external developments, but on proactive engagement and strategic advocacy.

1. Introduction

The role of research funding mechanisms and systems in shaping scientific development cannot be overstated. Funding structures not only determine the resources available for research but also exert a powerful influence on the direction, methodology, and outcomes of scientific activity (Okagaki and Dean, 2016; Pandurevic et al., 2025). Moreover, funding shapes which research questions are prioritized, and whether support is directed toward basic, curiosity-driven research or toward applied research aimed at addressing health-related research questions (Aagaard et al., 2021). These systems further reflect policy choices regarding the organization of research grant programmes, such as top-down strategic initiatives and bottom-up investigator-driven

schemes (EMA, 2021; Porta, 2020). They also define the criteria and processes by which individual researchers and institutions compete for and secure grant support (Wong et al., 2022).

The European landscape of research funding reflects these dynamics. Since their start in 1984, the Framework Programmes for Research and Innovation have fostered excellent science, technological development and innovation, and have thereby been contributing to Europe's competitiveness and resilience (Directorate-General for Research and Innovation of the European Commission, 2023). Scientific communities embraced these programmes, which are based on competitive, peer-reviewed funding mechanisms that promote excellence and support research mobility, career development, and ambitious international and cross-sectoral collaboration.

[☆] Parts of this study have been presented at the Joint EUEPS/ÖPhG Meeting 2025 in Vienna.

* Corresponding author.

E-mail address: H.G.M.Leufkens@uu.nl (H.G.M. Leufkens).

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While the US and Europe dominated the research output during the 20th century, the research landscape structurally changed during the past 20 years as analysed by Barr et al. (Barr et al., 2025). Across subjects, based on research papers and citations, China now is the largest contributor to research. With three dominating players (China, the European Union and the US) and with new emerging regions in the global south and middle east, the research landscape has widened. In this context, life science and medicine stands out, since the EU produces the highest number of publications. Due to the recent geopolitical developments, policy agendas have undergone redirections. In the EU this is expressed in an increased focus on competitiveness, resilience, and strategic autonomy as emphasized in the report on The Future of European Competitiveness (Draghi, 2024).

With the ending of the current Framework Programme for Research and Innovation in 2027, the European research communities and EU member states (Polish Presidency of the Council of the EU, 2025) clearly spoke up in favour of an independent programme as successor. In July 2025, the European Commission presented its proposal for the next Framework Programme for Research and Innovation (FP10) for the period 2028–2034, which will continue under the name Horizon Europe. In parallel, the existing European Research Area (ERA) framework largely focused on voluntary efforts may undergo a transformation. The European Commission is planning to propose an ERA Act in 2026 (Directorate-General for Research and Innovation of the European Commission, 2026). When adopted, the ERA Act will provide a legal framework for strengthening the ERA, including the introduction of a ‘fifth freedom’ referring to the free movement of knowledge, researchers, and technology. Together, FP10 and the ERA Act are intended to create an integrated ecosystem for research and innovation across Europe, reducing fragmentation and fostering transnational collaboration.

The European research community applauded von der Leyen’s announcement in May 2025 of an independent FP10 in the next multi-annual financial framework (MFF) (von der Leyen, 2025) and the European Commission’s proposal (European Commission, 2025 a) resonated well with the European research community. The pillar structure of the current Horizon Europe programme is maintained, see Fig. 1. It contains the three pillars: (1) Excellence, with its successful European Research Council (ERC) and Marie Skłodowska Curie Action (MSCA)-schemes, (2) Competitiveness and Society, and (3) Innovation. These are complemented with an additional, fourth pillar which comprises actions related to the European Research Area.

Furthermore, the European research community lauded the Commission’s proposal for a substantial budget increase (approximately €175 billion) with the aim to reinforce Europe’s global scientific and

technological position, which is in line with the spirit of the Draghi report on the future of EU competitiveness (Draghi, 2024).

The Draghi report has impacted the European research funding landscape in various ways. In addition to the FP10-proposal, the European Commission also proposed a European Competitiveness Fund (ECF) (European Commission, 2025 b). Governance of the FP10 and ECF programmes is under discussion, but may alter processes on how research priorities will be defined and how calls in the FP10 ‘Competitiveness & Society’ pillar will be drafted. The ECF-FP10 interlinkage in combination with the European Commission’s suggestion of increased budget flexibility may imply a significant change in the architecture of EU research funding.

Against this backdrop, European Science for Health (EurSci4Health) has mapped research priorities for the next generation of Pharmaceutical Sciences in Europe. EurSci4Health was founded in 2022 by the European Federation for Pharmaceutical Sciences (EUFEPS) uniting seven leading European life science societies (Table 1). The platform aims to identify shared priorities, strengthen collaboration among European life science societies, and align research strategies with evolving EU policy objectives. As a contribution to the on-going preparations of the upcoming European programmes and funds, this paper presents and discusses the outcome of a survey in the EurSci4Health community with the purpose of supporting prioritization of topics and enabling a long-term perspective.

2. Methods

In December 2024, an online survey with 10 questions on research

Table 1
The seven participating societies in the European Science for Health (EurSci4Health, www.eursci4health.eu).

Society	Abbreviation	website
International Association for Pharmaceutical Technology	APV	www.apv-mainz.de
European Federation for Medicinal Chemistry and Chemical Biology	EFMC	www.efmc.info
Federation of European Pharmacological Societies	EPHAR	www.ephar.eu
European Chemical Society	EuChemS	www.euchems.eu
European Federation for Pharmaceutical Sciences	EUFEPS	www.eufeps.org
Federation of European Toxicologists & European Societies of Toxicology	EUROTOX	www.eurotox.com
Federation of European Biochemical Societies	FEBS	www.febs.org

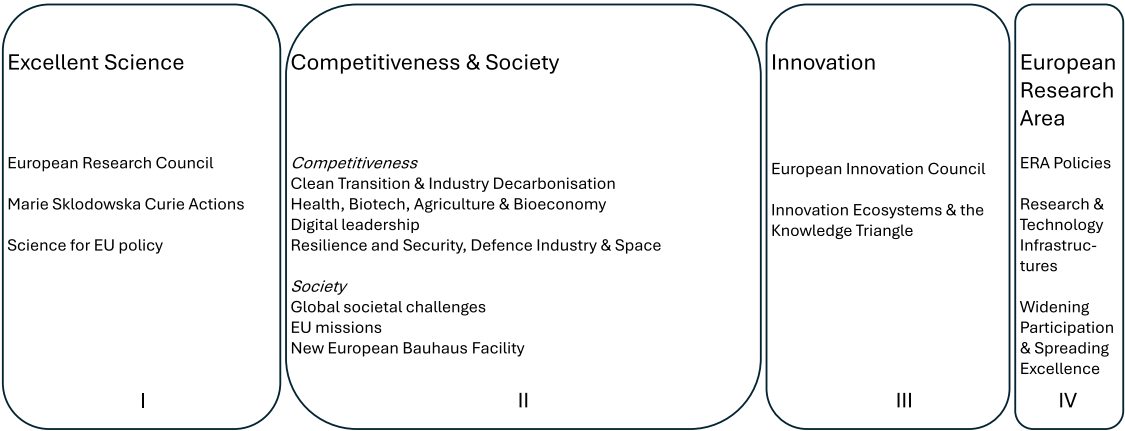


Fig. 1. Structure of the 10th European framework programme for research and innovation (FP10, Horizon Europe 2028–2034) as proposed by the European Commission in July 2025 (European Commission, 2025 a). Column widths reflect the proposed budget distribution across the four pillars based on the proposed total budget 175 billion Euros. Pillar II competitiveness aligns with the four policy windows defined in the European Competitiveness Fund (ECF).

needs and priorities was conducted on a sample of the EurSci4Health community using the Qualtrics platform (Qualtrics, 2026). The survey methodology has previously been used in other science of science studies (Kusynová Z et al., 2022; Kusynová Z et al., 2023). The Qualtrics platform enables to set up surveys, collect data and analyse responses in a responsible and fair way (e.g., privacy, governance). For each of the 7 EurSci4Health scientific societies, 25 members were selected ($N = 175$) in the public domain from various society leadership constituents (Society Board, Scientific Advisory Committee, Editorial Board, etc.). In the invitation, participants were also asked to forward the survey to early-career colleagues in their field in order to balance survey participants according to seniority in the field.

The decision to include 25 individuals per EurSci4Health society was driven by both feasibility and the exploratory aim of the study. As membership lists were not accessible, we relied on publicly available signatures and email addresses of key members from EurSci4Health societies. This identification process was time-consuming, and the choice of 25 participants reflects a balance between the effort required and the expected yield. Additionally, given the exploratory nature of the study, there was no requirement for statistical testing or formal sample size calculations.

The survey was determined to be exempt from formal ethics review as it involved no sensitive personal data and did not pose foreseeable risk to participants. All participants were informed of the study's purpose, voluntary nature, and anonymous handling of data on the first page of the survey prior to proceeding, constituting implied informed consent consistent with standard practice for low-risk survey research. Anonymity was preserved through Qualtrics' default settings, which do not record or store respondent identifiers or link responses to email addresses. Contact emails for the survey were sourced from professional networks and publicly available sources and were used solely for survey distribution purposes. No email addresses were stored or linked to individual survey responses, and no personal data was retained following data collection.

The survey was distributed electronically, followed by two reminders in January 2025. Data collection was closed in February 2025. Responses were anonymized and analyzed using descriptive statistics in Qualtrics. Respondents answered questions about their career phase, their working sector affiliation, and scientific background. Moreover, they rated sources of research funding, research needs, gaps and drivers, and disease priorities on a five-point Likert scale (1: not at all relevant, 2: slightly relevant, 3: occasionally relevant, 4: fairly relevant, 5: very relevant, or when appropriate, 1: low priority, 2: fairly low priority, 3: neutral, 4: moderate priority, 5: high priority). The development of the research needs questions of the survey has been built on early work from the team and the NEED project (Kusynová Z et al., 2022; NEED, 2024). Regarding pre-selected disease areas this resulted in 2 chronic diseases (heart failure, low back pain), 2 major cancers (brain, lung), 2 rare diseases (cystic fibrosis, sickle cell disease), 2 neurodegenerative (Alzheimer disease, Parkinson's disease), 2 emerging threats (global health threats, Long Covid) and 2 wild card diseases (schizophrenia, amyotrophic lateral sclerosis, ALS).

For all questions with predefined response options, participants were also able to select an 'other' option and provide free-text responses. To close on the survey, we asked respondents in an open fashion how they would allocate a hypothetical €1 million grant. The full survey questionnaire is provided in Appendix 1.

3. Results

A total of 38 valid responses were received (response rate: 21,7%). From the respondents 31/38 were from academia, with a gender distribution of 16/38 females). Twenty-one were late-career researchers, and the remainder early-to-mid-career. The largest scientific fields represented were medicinal chemistry/biochemistry/analytical sciences (11/38 participants) and pharmaceuticals/nanosciences (11/38

participants). Other relevant fields were disease biology, target finding, toxicology, Health Technology Assessment (HTA) and regulatory sciences. All EurSci4Health scientific field communities were represented among the responses. In total 31/38 of respondents declared that they had been involved in at least one European funded consortium during the 5 years preceding the survey (i.e., consortia funded by Horizon 2020, Horizon Europe, Innovative Medicines Initiative (IMI) or Innovative Health Initiative (IHI)).

When respondents were asked about research drivers, three emerged as most relevant: 'opportunities for collaboration', 'unmet medical needs' and 'contributing to European excellence and competitiveness'. In total 32/38 of respondents viewed 'opportunities for collaboration' as important (fairly/very important) enablers, while 30/38 respondents indicated that research should be prioritized (fairly/very important) for diseases for which no satisfactory solutions currently exist. Contributions to European excellence and competitiveness were seen by 24/38 respondents as fairly/very important. In contrast, respondents showed only little explicit emphasis on research criteria such as 'Open Science', 'social values', 'animal free science' or 'ethics', i.e., 15/38 scored these fairly/very important, with 4/38 respondents scoring them as very important. Regarding the question of whether and how the institute's research policy and strategy influence research priorities, survey participants showed considerable variability in their responses.

As a follow-up to identifying unmet medical needs as a priority area, we asked respondents to prioritize predefined disease areas, covering both chronic and acute conditions, as well as common and rare diseases, toward which research funding should be directed. Neurological conditions, such as 'Alzheimer's' and 'Parkinson's' diseases, ranked highest (mean score: both 4.6 on a 1–5 scale), followed by several cancers (e.g., 'brain cancer' and 'lung cancer', mean scores 4.2, respectively 4.0), and thirdly, global health threats such as 'antimicrobial resistance' and 'pandemics' (mean score 4.1). Intriguingly, conditions such as high-burden 'low back pain' (mean score: 3.1), 'Long COVID' (mean score 3.4), or the relatively rare in Europe 'sickle cell disease' (mean score 3.3) seem to have less priority for investing resources or securing grants.

A key component of the survey focused on the scientific domains in which respondents felt resources should be directed (Fig. 2). By a clear margin, 'data science', 'artificial intelligence (AI)', 'big data', and 'robotics' were identified as the highest-priority areas (mean score: 4.4 on a 1–5 scale). These were followed by building 'clinical evidence', 'clinical pharmacology', and 'precision medicine' (mean score: 4.2). Areas perceived as less urgent included 'veterinary sciences'/'One Health' and 'green science' (mean scores below 4). Underpinning and enabling fields for the pharmaceutical sciences—such as 'nanotechnology', 'medicinal chemistry', and 'safety sciences'—received more average priority ratings (mean scores 3.9, 4.0 and 4.0).

On the question to the respondents on how they would allocate a hypothetical €1 million grant, the answers on the expressed research priorities could be structured into five key areas of interest: (i) disease areas and unmet medical needs; (ii) cellular and mechanistic pathways; (iii) medicinal chemistry and discovery; (iv) technology platforms, including nanotechnology, drug delivery, and data science/AI; and (v) the broader societal context, encompassing issues such as the Draghi report and the new EU pharmaceutical legislation. The expressed research priorities were consistent with the findings of Fig. 2 on pertinent research gaps, with a clear emphasis on mechanism directed research, e.g., neuroscience models, mechanistic toxicology, protein chemistry, and promising technology platforms, e.g., nanotechnology, imaging guided interventions, biomarkers. Once more, less emphasis was given for societal developments and demands on Open Science or green science. Respondents clearly expressed a desire for more unrestricted and unearmarked funding.

4. Discussion

The EurSci4Health priorities as expressed in this paper resonate

Priority areas based on expressed pertinent needs and gaps in life sciences research (N=38)

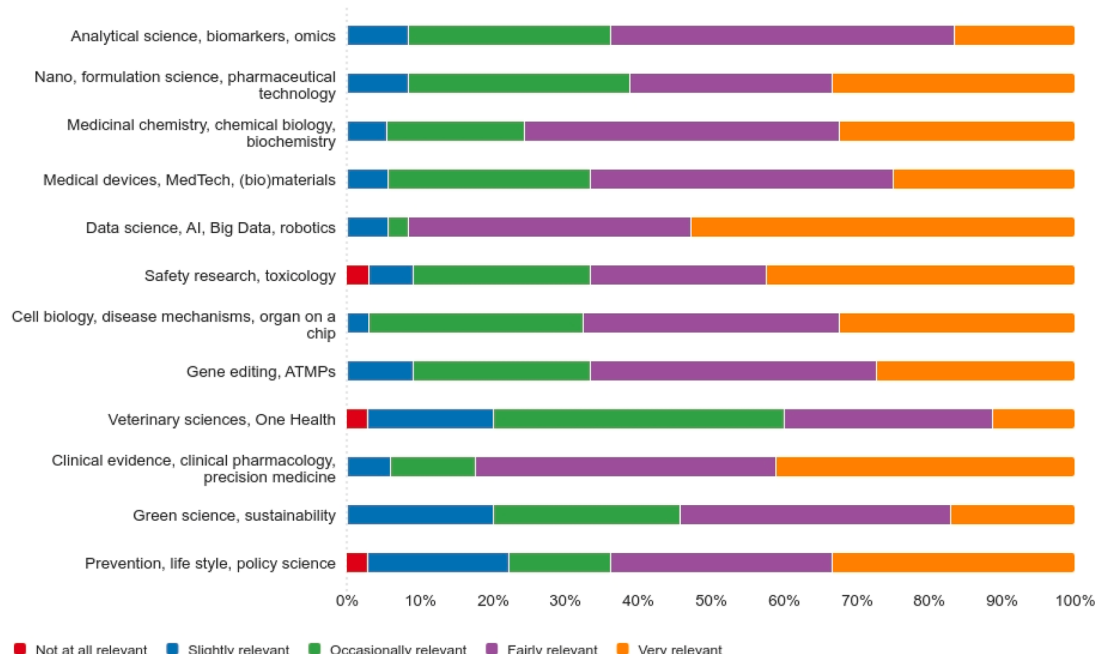


Fig. 2. Priority areas based on expressed pertinent needs and gaps in life sciences research (N = 38).

strongly with Europe's evolving research agenda. FP10's emphasis on strategic technologies and health resilience mirrors the survey's top domains—AI, data-driven discovery, and precision pharmacology. In a broader policy context, the ERA Act's vision of open knowledge mobility aligns with EurSci4Health's call for interdisciplinary collaboration and capacity building across research sectors. The convergence between digital/data science and life sciences is poised to redefine pharmaceutical research (Zhang et al., 2025). These areas align with the European Commission's growing emphasis on digital health, real-world data, and integration of AI-tools and -technologies, as seen in the Horizon Europe Health Work Programme for 2026–2027 and the European Health Data Space (EHDS) regulation which entered into force in 2025 (European Commission, 2025 c, 2025 d).

The alignment between academic motivations—addressing unmet needs, fostering collaboration, and pursuing excellence—and policy priorities such as competitiveness, sovereignty, and societal impact provides a strong foundation for a more coherent science–policy interface in health innovation, also confirmed by other studies (Kusynová et al., 2022). The relatively low prioritization of 'Open Science', 'ethics', and 'green science' by respondents was unexpected. One plausible explanation is their limited proximity to day-to-day laboratory work. Such concepts are often perceived as abstract, policy-level considerations, and are therefore from a research funding perspective, deprioritized relative to factors that directly shape daily research activities.

Our findings also suggest a growing convergence between individual researcher motivations and the strategic objectives of European policy frameworks. Nearly all respondents reported active participation in EU-funded research consortia—including Horizon 2020, Horizon Europe, IMI, and IHI—demonstrating a robust and well-established culture of European cooperation.

Neurodegenerative diseases, particularly Alzheimer's and Parkinson's, emerged as the highest-rated research priorities by the survey respondents, followed by cancers and global health threats such as antimicrobial resistance (AMR) and pandemics. These findings are in line with Europe's population continuing to age, with neurodegenerative disorders representing a substantial and growing health and

economic burden, while infectious threats persistently testing the resilience of healthcare systems. These priorities also reflect the presence of emerging scientific opportunities that could enable meaningful progress. At the same time, Alzheimer's disease remains a particularly challenging area, given ongoing debates around molecular disease models and lingering uncertainties surrounding recently approved therapies.

The surveyed 'wish list' reveals several notable insights, including the strong demand for anticipating future health needs, sustained investment in technology platforms, and a balanced approach between basic and applied research. Although open science and ethics were not highlighted as explicit prioritization criteria, respondents expressed overwhelming support for investing in a healthy and supportive European research ecosystem. This confirms the need for improved career planning, access to resources, and social security for both early-career and established researchers as reported previously in this Journal (Kusynová et al., 2023). In parallel, the survey underscores persistent structural challenges, such as limited funding for translational infrastructure, uneven integration of regulatory science, and ethical complexities related to artificial intelligence. Addressing these gaps will require more harmonized research policies and interoperable open data ecosystems across the European Research Area (ERA).

Reading between the lines, the results also suggest a strong alignment between EurSci4Health communities and the European policy shift toward strategic integration as to address European competitiveness. The survey findings resonate with current European Commission efforts to streamline research funding mechanisms and reduce disciplinary silos. Initiatives such as the proposed European Competitiveness Fund and the forthcoming Life Sciences Strategy aim to consolidate innovation ecosystems across Member States by bridging fundamental research, clinical translation, and industrial application. These proposals signal a move beyond pure science funding toward embedding innovation, regulatory science, competitiveness, and strategic technologies more explicitly into the EU research agenda (Cambell et al., 2018; Vass et al., 2023). This direction aligns well with the EurSci4Health communities, whose activities span the full life sciences and medtech value chain. It also echoes the Draghi Report, which emphasizes that

Europe's competitiveness depends on revitalizing its science and technology base—particularly in health and life sciences—through regulatory agility, strategic coordination, and cross-sectoral alignment. Public-private partnerships continue to play an important role in discussions about building a sustainable and effective research ecosystem (Balling et al., 2025; De Vruhe and Crommelin, 2017)

However, maintaining an appropriate balance between research and innovation remains critical, and increasing complexity in Europe's research funding landscape must be avoided. The survey results mirror the proliferation of new funding instruments, combined with shorter planning horizons and increasingly annualized work programmes, risks making the system harder for the surveyed researchers to navigate. This contrasts sharply with ongoing discussions on simplification, which often focus on administrative mechanisms (e.g. lump-sum funding or two-stage proposals) rather than the lived realities of applicants and project participants. As priorities for the next Multiannual Financial Framework (MFF) are negotiated, European research communities must continue to advocate for FP10, clearly articulating why sustained investment in Europe's science and technology base is essential for long-term competitiveness. To put the survey results in context, during 2026 and 2027, EU member states and the European Parliament are negotiating the FP10 proposal; while initial amendments have already been tabled (CESAER, Coimbra Group, EUA, EU-LIFE, The Guild, LERU, and YERUN, 2025), further changes are expected before the programme's formal adoption by the end of 2027.

This study has certain limitations. The survey revealed directions where a sample of life scientists in Europe feel priorities and funding should go. While a response rate of about 20% is reasonable for an open invite survey, selection and response bias, leadership-weighted sampling of the survey participants and lack of precision due to the small numbers call for cautionary interpretation of the results. Nevertheless, priorities expressed by the survey respondents seem to mirror current EU funding priorities and context, and provide also clues for navigating toward a healthy new future ecosystem of life science research. In this context, it is important to highlight the rapid changes in the geopolitical landscape.

The design of the survey was also directed to include more junior members in the field. Based on the responses, only 5/38 could be qualified as early career, this attempt was not very successful.

Since the survey was conducted, the global environment has shifted considerably, with increased political prioritization of defense research (ScienceBusiness, 2026). This will undoubtedly have implications for European life sciences research space as well.

To conclude, based on our survey findings and complemented by insights on the broader policy developments, several recommendations emerge for the European life sciences community:

- Strengthen cross-disciplinary funding and training at the intersection of data science, chemical biology, nanotechnology and clinical pharmacology.
- Foster European-scale infrastructures for open data sharing and reproducibility.
- Promote regulatory science and health technology assessment (HTA) as integral research domains.
- Invest in societal trust and ethical frameworks to guide responsible AI and data use.
- Leverage EurSci4Health as a foresight hub to provide structured input into European policymaking.

While EU policy objectives are inevitably shaped by political agendas, stakeholder interests, and geopolitical dynamics, research agendas operate on much longer time horizons and address global challenges. Predictable and coherent funding mechanisms, aligned with the research community's foresight on emerging needs, are essential for life sciences research and innovation to meaningfully contribute to Europe's competitiveness. This paper aims to contribute constructively

to that ongoing dialogue by calling on life science communities to proactively inform and advocate for targeted funding aligned with identified needs and priorities. The future of the field depends not on passively awaiting developments, but on active engagement and strategic advocacy.

Declaration of generative AI use

No AI was used in the methodology, survey and analysis. During the writing of this paper, the authors used OpenAI ChatGPT in order to improve readability and language. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

CRediT authorship contribution statement

Mareike Lutz: Writing – review & editing, Writing – original draft, Visualization, Conceptualization. **Tessa Moleman:** Writing – review & editing, Methodology, Investigation, Formal analysis, Data curation. **Hubert G.M. Leufkens:** Writing – review & editing, Writing – original draft, Visualization, Supervision, Project administration, Methodology, Formal analysis, Conceptualization.

Declaration of competing interest

None declared.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.ejps.2026.107570](https://doi.org/10.1016/j.ejps.2026.107570).

Appendix

Questions for EurSci4Health survey.

Data availability

Data will be made available on request.

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