Please note: the substantive content of the 2026 NRI Roadmap Survey begins at Question 20 (with prior questions dealing with administrative and other information).

As such all submissions that are published include the responses submitted from Question 20 onwards only.

Q20.

Part 2: Research themes

2.1 NRI comprises the assets, facilities and associated expertise to support leading-edge research and innovation in Australia and is accessible to publicly and privately funded users across Australia and internationally. We are seeking your input on possible directions for future national-level investment - i.e., where the requirements are of such scale and importance that national-level collaboration and coordination are essential.

The 2021 Roadmap used a challenge framework to support NRI planning and investment. With this in mind, consider likely future research trends in the next 5 - 10 years, and with respect to one or more of the 8 challenge areas identified in the 2021 Roadmap as listed below:

- describe emerging research directions and the associated critical research infrastructure requirements that are either not currently available at all, or not at sufficient scale and
- describe current national infrastructure requirements that you anticipate will no longer fit the definition of NRI in 5-10 years.

Do not limit your commentary to NCRIS funded capabilities.

Q21.

Resources Technology and Critical Minerals Processing

Q22.

Food and Beverage

Q23.
Medical Products

Here are the emerging research directions and associated critical research infrastructure requirements for Australia's small molecule drug discovery landscape: AI-DRIVEN HIT DISCOVERY: The integration of AI/ML into hit identification processes is rapidly evolving. Australia needs to invest in advanced AI/ML infrastructure and expertise to remain competitive. This includes high-performance computing clusters and interdisciplinary teams of data scientists and drug discovery experts to enhance virtual screening capabilities and predict drug-like properties more accurately. ACCESS TO DIVERSITY-BASED HIGH-THROUGHPUT SCREENING (HTS): Maintaining and expanding access to HTS capabilities is crucial for early-stage drug discovery in Australia. This technology remains a cornerstone of hit identification. Ensuring continued access to state-of-the-art HTS facilities, including advanced robotics, large and diverse compound libraries, and expertise in assay development and data analysis, is essential. Without sustained investment in these capabilities, Australian researchers risk losing a critical tool in the drug discovery process, slowing the translation of basic research into potential therapies. INTEGRATED TRANSLATIONAL RESEARCH NETWORKS: Establishing a nationwide network of interconnected translational research capabilities would streamline the progression from fundamental research to clinical translation. A distributed model could leverage existing expertise across Australia, growing critical masses of specialised knowledge and resources. Connecting diverse centres of excellence in areas such as fragment screening, HTS, and preclinical testing, this network would maximise the use of existing infrastructure and provide researchers across the country with access to a comprehensive suite of translational research tools and expertise. To address these needs and ensure Australia's competitiveness in early-stage drug discovery, several key points should be considered: LONG-TERM FUNDING FOR EARLY-STAGE TRANSLATION: Recognising hit identification and early-stage translation as long-term, high-risk/high-reward processes is crucial. Consistent, long-term funding mechanisms are needed to see projects through from initial screening to lead optimisation and beyond. LONG-TERM VIEW ON INFRASTRUCTURE INVESTMENT: Early translation infrastructure should be viewed as a long-term investment rather than a cost. Short-term investments often don't provide sufficient runway to demonstrate their full value. A commitment to sustained funding and support is necessary to realise the full potential of research infrastructure investments in this critical stage of drug discovery. Implementing a system of Persistent Identifiers (PIDs) would help track the impact of investments in hit discovery infrastructure, linking activities to outcomes and impacts. This would provide valuable data for future funding decisions and demonstrate the value of research infrastructure investments.

Q24.
Defence

Q25.
Recycling and Clean Energy

Q26.
Space

Q27.

Environment and Climate

Q28.

Frontier Technologies and Modern Manufacturing

Q29.

2.2 The 2024 statement of National Science and Research Priorities (NSRPs) includes outcomes linked to each priority to assist in identifying critical research needed in the next 5 to 10 years.
Consider the priority statements and, with respect to one or more of the 5 priority areas as listed below:

- describe emerging research directions and the associated critical research infrastructure requirements that are either not currently available at all, or
- not at sufficient scale and describe current national infrastructure requirements that you anticipate will no longer fit the definition of NRI in 5-10 years.

Do not limit your commentary to NCRIS funded capabilities, and where relevant, refer to the underpinning outcomes and research identified in the NSRPs document.

Q30.

Transitioning to a net zero future

Q31.

Supporting healthy and thriving communities

Proactive preparedness for future pandemics and infectious disease outbreaks is crucial, requiring strategic investment in drug discovery infrastructure well in advance. Emerging research directions include: PRE-EMPTIVE SCREENING PROGRAMS: Continuously testing compounds against known high-risk pathogens and supporting their development. AI-DRIVEN THREAT PREDICTION: Utilising machine learning to identify potential pandemic threats before they emerge. Critical research infrastructure requirements include: HIGH-THROUGHPUT SCREENING that is accessible to basic researchers who specialise in infectious pathogens. BIOSAFETY LEVEL 3 (BSL-3) TESTING FACILITIES to enable ongoing work with high-risk pathogens. ADVANCED COMPUTATIONAL INFRASTRUCTURE to support predictive modeling and virtual screening. Long-term funding is needed to maximise the value of infrastructure investments. Most crucially, it is needed to allow the cultivation and retention of highly specialised personnel. By investing proactively in these areas, Australia can position itself to anticipate and address potential pandemic threats, rather than merely reacting to them.

Q32.

Elevating Aboriginal and Torres Strait Islanders knowledge systems

Q33.

Protecting and restoring Australia’s environment

Q34.

Building a secure and resilient nation

Q35.

2.3 The case for a new NRI capability, or enhancements to existing capabilities, typically emerges through advocacy from research communities clustering around rigorously identified needs and goals. Such a concept could respond to a requirement for novel or expanded capacity within a domain, or across domains, and must be such that it could only be made available with national-level investment.
If you have identified such a requirement, briefly describe the need, the proposed infrastructure capability, the medium-term goals, impacted research communities, and the timeframe over which you advocate its establishment. Your response can include links to relevant existing reports.

Australia's medical research sector consistently produces world-class discoveries, yet many fail to progress beyond early stages due to a lack of accessible translational infrastructure. This gap between fundamental research and clinical application represents a significant loss of potential health and economic benefits for the nation. We propose growing an enhanced nationwide network of interconnected translational research capabilities. This network would build upon existing facilities like the National Drug Discovery Centre (NDDC), MedChem Australia and the Queensland Drug Discovery Alliance (QDDA) and expand to create a comprehensive, accessible ecosystem for translational research. Key components would include high-throughput screening and fragment screening facilities, biophysical characterisation facilities, advanced computational infrastructure for AI-driven drug discovery, medicinal chemistry and lead optimisation laboratories, preclinical testing facilities, and regulatory affairs and clinical trial design support. These facilities would be strategically distributed across Australia to leverage regional expertise, with each site staffed by highly skilled specialists. Medium-term Goals: 1. Accelerate the translation of at least ten promising Australian discoveries into clinical candidates within ten years 2. Attract increased international investment in Australian biotech and pharmaceutical sectors 3. Create a sustainable pipeline of skilled professionals in translational research Impacted Research Communities: This infrastructure would benefit a wide range of research communities, including: • Academic researchers in life sciences and medicine • Medical Research Institutes • Biotechnology and pharmaceutical companies • Public health organizations • Clinical researchers and healthcare providers We advocate for a phased establishment over 3-5 years, commencing with planning, and initial funding allocation. TIA would be an appropriate coordinating body for this initiative, given its established role in overseeing national research infrastructure and its expertise in facilitating collaborative research across the therapeutic development pipeline. Long-term Funding and Accessibility: To ensure the success and sustainability of this initiative, we propose: 1. A dedicated long-term government funding mechanism with sufficient runway to establish sustainability (15+ years) 2. Merit-based access to facilities 3. Subsidised access for high-potential projects from academic and early-stage biotech sectors 4. Implementation of a revenue-sharing mechanism that ensures a portion of the commercial success derived from the network's resources is reinvested into the infrastructure. By investing in this enhanced translational research network, Australia can significantly improve its capacity to convert scientific discoveries into real-world health and economic benefits, positioning the nation as a global leader in medical innovation and pandemic preparedness.

Q36.

Part 3: Industry perspectives

This section is seeking input specifically from industry-based respondents. Other respondents can skip this section.

Recommendation 6 of the 2021 Roadmap related to improvements in industry engagement with NRI. To complement work on this topic that has occurred since then, we are seeking additional advice on NRI

requirements as perceived by current or potential industry-based users.

Q37.
3.1 Have you (or your organisation) interreacted with or used Australia's NRI?

- ◯ Yes
- ◯ No

Q38.
3.2 If so, please briefly outline the NRI capabilities you (or your organisation) have interacted with or used. Do not limit your response to NCRIS capabilities.

This question was not displayed to the respondent.

Q39.
3.3 Please indicate your (one or more) primary reasons for interacting with NRI:

This question was not displayed to the respondent.

Q40.
3.4 If you answered no, please indicate your (one or more) primary reasons:

This question was not displayed to the respondent.

Q41.
Part 4: Other comments
4.1 Please elaborate on any of your above responses or add any other comments relevant to the development of the 2026 Roadmap. Your response can include reference or links to existing reports that you recommend be considered during the 2026 Roadmap development process.

Q49.
4.2 Optional Document Attachment.
Note: Our strong preference is that answers are provided against the relevant questions in the survey. However, this file upload option is available for submissions in file format, where needed. Please ensure the document includes your name or organisation.