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

Multicentre clinical trials are fundamental to translation from discovery/innovation to clinical implementation. In radiopharmaceutical research there are emerging novel molecules for imaging and therapy which require evaluation in clinical trials to ensure safety, efficacy and clinical impact. This is a requirement for adoption into clinical care guidelines and for funding through Medicare. For example, ARTnet has helped facilitate a network of Nuclear Medicine sites in Australia with standardised processes and quality activities to support multicentre clinical trials with radiopharmaceuticals. This network supported Ga68 PSMA imaging studies (ProPSMA clinical trial, Hofman et al Lancet 2020) and Lu177-PSMA theranostics (TheraP clinical trial, Hofman et al Lancet 2021, ENZAp trial Emmett et al, Lancet Oncol 2024). The collaborative approach across the ARTnet network of sites was fundamental to the success of these internationally impactful studies and demonstrates successful clinical translation. Australia has an ecosystem that is ideal for clinical trials with radiopharmaceuticals and provides the 'bench to bedside' translation from innovation/discovery to clinical implementation. This ecosystem however needs to be supported through funding opportunities that ensure sustainability of clinical trials networks in imaging and therapy with radiopharmaceuticals. This includes support for standardisation/harmonisation processes (camera credentialling programs / radiopharmaceutical production processes) to ensure high quality research, funding of imaging research site capabilities, development of imaging biorepositories to support clinical trials and facilitation of innovation partnerships, including with industry partners. Access to clinical trials with radiopharmaceuticals is also an important area to address, in particular with geographic challenges in Australia, and the inherent limitations with short-lived isotopes. Summary of opportunities - Clinical translation of novel radiopharmaceuticals - Theranostics clinical trials - Imaging capabilities to support clinical research Summary of priorities - Support for clinical trial networks with radiopharmaceuticals for imaging or therapy to ensure sustainability and international competitiveness. - Facilitation of radiopharmaceutical clinical trials standardisation / harmonisation programs to ensure high quality research and attract and grow translational research opportunities - Develop national infrastructure to support clinical trials in imaging, including through support for imaging biorepositories - Support opportunities for partnerships in biomedical innovation, to drive clinical translation from discovery to clinical implementation.

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

Medical research is fundamental to supporting the health and well-being of our community. Ensuring translation of discovery and innovative research through clinical trials provides the evidence for safety, efficacy and clinical impact that is required to ensure clinical adoption. In radiopharmaceutical research, access to new imaging and therapy (theranostic) techniques requires clinical trials to gain evidence to support clinical use. This has been demonstrated through multicentre clinical trials in prostate cancer with PSMA PET for imaging and Lu177 PSMA theranostics, both of which have been approved by MSAC in the last few years based on Australian multicentre clinical trial research. PSMA PET imaging is now Medicare funded for men with prostate cancer. Radiopharmaceutical imaging techniques, such as PET imaging, are providing breakthroughs in precision medicine and in directing better therapies for patients. This includes in oncology/cancer research, neurological disease including dementia, cardiovascular disease and inflammatory/infectious diseases. PET imaging is used to characterise disease pathology (for example – amyloid imaging for Alzheimer's dementia) which will direct appropriate treatment. PET imaging can also be used to identify targets for therapy, with theranostics combining both diagnostic imaging (to confirm target) and therapy (to treat disease). Australia has led internationally recognised clinical trials and has world-leading expertise to support precision research and therapeutic applications. New technologies in PET imaging, including total body PET, with improved sensitivity and reduced radiation dose, are providing new opportunities in preventative health, in particular for cardiovascular research and for 'in need' populations such as paediatric research. This technology combined with the strengths in Australia in radiopharmaceutical research and development and multicentre clinical trials, provides important future opportunities to improve health and well being of our community Priorities: - supporting an imaging translation pipeline from innovation/discovery to clinical application through clinical trials networks - prioritise nationally accessible training and expertise to support radiopharmaceutical research, including pathways for combined clinical and research career pathways, technical expertise in image standardisation/harmonisation, radiochemistry, and imaging data/analytics. - funding of national initiatives that will support and enable multicentre clinical trials, including imaging biorepositories and linking of imaging data to clinical and biological data in order to utilise precision data to improve health outcomes.

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.

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.

In radiopharmaceutical clinical research, pilot studies are important for early phase I/II development and are frequently single centre studies. Clinical implementation however requires multicentre trials, and the funding and expertise to support these studies. Previous practices of single centre retrospective studies will be increasingly replaced by prospective clinical trials, utilising advanced imaging techniques and high quality data. This however will be more expensive and may limit clinical translation. Networks of research sites, with harmonised capabilities, provide opportunities for rapid clinical translation. Multidisciplinary expertise and engagement to support networks will enhance collaboration and productivity Partnership with industry will be increasingly important as biopharma invests in new molecules and strong industry/academic/clinical partnerships will be required. Technology is rapidly changing, and aging infrastructure including imaging systems (PET, SPECT and CT) will become obsolete and will need to be upgraded to state-of-the-art technology to ensure high quality care. With technology changes, the importance of standardisation/harmonisation becomes a key factor for comparability across platforms.

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.