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

N/A

Q22.

Food and Beverage

The research infrastructure around food and beverage research and innovation is concentrated with CSIRO, product-specific research groups (e.g. Australian Wine Research Institute) and the recently established Food and Beverage Accelerator (FaBA). It would be great to see cross-disciplinary efforts for bringing together research synergies that benefit each other. In particular, connecting the agricultural sector with highly value-added manufacture of pharmaceuticals and health products. A recent example is the case study of looking at sovereign manufacture of heparin (with current medicine shortages affecting Australia) and connecting manufacturing processes with the domestic pork industry who could supply raw materials. This approach of connecting research groups and infrastructure with industry has been highy successful for the nutritional and supplement industry in Australia and should be further encouraged with high value-added opportunities. Currently, the two fields of pharmaceutical development and food and beverage research groups have minimal exposure to each other. Specialised research institutes that bridge that gap (i.e. Medicines Manufacturing) can bring these field closer together.

Q23.
Medical Products

Australia is ranked 7th for Biomedical Innovation and this type of research should be further encouraged. One of the main limitations for Australian research to optimise on this achievement is the very common instance of licensing and late-stage development occuring outside of Australia, due to a lack of capital and investment opportunities within Australia. One part of the issue is the absence of scalable manufacturing support in the sector (from preclinical to product release). Recent infrastructure has come online for batch manufacturing (CSIRO, BioCina, Noumed) but there is a gap between discovery and larger manufacturing that allows SME to de-risk scale up, particularly for the new wave of more complex discoveries coming through (biologics, peptide-drugs, biopolymers etc). Discovery research is well catered for within the Bioplatforms groups of facilities and investment should be continued. Further investment for the middle and later stages of health product development should be a focus including preclinical manufacturing support for the high-risk stages of translational research. Further funding to guide early stage discoveries into batch manufacture would be essential for the current issues Australia has around unreliable medicines supply. Essentially, manufacturing innovation is not at a sufficient scale relative to other areas of medical product research.

Q24.
Defence

N/A

Q25.
Recycling and Clean Energy

N/A

Q26.
Space

N/A

Q27.
Environment and Climate

N/A

Q28.

Frontier Technologies and Modern Manufacturing

Modern manufacturing is likely to be a highly translatable investment for the Australian research sector as it supports both research discovery and translation research, bringing products to Australian consumers (where they more directly benefit from research infrastructure). Technologies that automate and drive down the cost of research activities and advanced manufacturing are investments that could have a significant change for re-establishing manufacturing in Australia. AI driven manufacturing workflow and automation efforts are large scale activities that could transform biomedical research and the pharmaceutical sector in Australia. The cost of manufacture outside of Australia is driven by an expensive, local labour force, as opposed to know-how and interest in local manufacturing. Automation technologies are sporadic and underdeveloped for biomedical research.

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

N/A

Q31.

Supporting healthy and thriving communities

N/A

Q32.

Elevating Aboriginal and Torres Strait Islanders knowledge systems

N/A

Q33.

Protecting and restoring Australia's environment

N/A

Q34.

Building a secure and resilient nation

Sovereign manufacturing of medicines that are in current short supply should be an essential research direction for Australia. It has a larger impact on vulnerable population groups that are not proficient at navigating the health-care system. This was highlighted during the pandemic and has persisted to date. There is no cohesive system that is established to address the problem. There are minimal open-format facilities that have the technical experience to understand manufacturing methods, scale up product development and build a business case for co-supported or fully external manufacturing.

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.

There is a critical need for research infrastructure that can address shortages in the supply of medicines and sovereign manufacturing of medicinal products that are currently restricted. The TGA recently produced a report highlighting a range of products that are restriced in supply: Medicine Shortages Report 2024. The outcome of the report was that it disproportionately affects those that are not experienced with navigating the healthcare system - vulnerable groups including rural communities (limited product choice already), indigenous communities, English as a second language and older communities. The report found that there was no coordinated system to address the issue amongst suppliers, doctors and consumers. Following on from that, there are no mechanisms to investigate and address how to fix the issue from a production point of view. I would proposed a manufacturing research capabilitiy that can connect and support the investigation and establishment of a sovereign manufacturing framework that connects between suppliers of raw material, manufacturers, the pharmaceutical industry as partners (support supply through direct or co-supported manufacture), med and large scale manufacturing facilities and comsumers groups. A facility that can also support validating and providing guidance for pharmaceutical compounding to address very urgent and critical shortages, which can directly collaborate with the TGA to ensure best practice supply. A Medicines Manufacturing Centre that already has a pharmacetical industry connection would be an ideal research platform to provide targeted support to medicine shortages and provide a coordinated centre for facilitating sovergien manufacturing and supply for essential medicines. The medium term goals of this facility would be to build a framework for establishing manufacture of generic medicines in Australia, from supply to scaled manufacturing. The centre would partner with industry to identify candidates that could supply medicines based on a business case study (including when co-support would be essential for manufacture). The impacted research communities would be the healthy communities research sector, biomedical and pharmaceutical research sector and the secure and resilient research sector. The initiative could be established over the next five years and medicine supply shortages and the quality of overseas products (from low stringent regulatory authority locations) is an issue that is going to persist.

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.

Bioplatforms including the Monash Proteomics and Metabolomics Facility, Metabolomics Australia and Biomedical Imaging. The Melbourne Centre for Nanofabrication. Therapeutics Innovation Australia (TIA).

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

- [ ] For expertise or advice
- [x] Access to research resources or products
- [x] Access to equipment for research
- [ ] Access to equipment for operational reasons
- [x] Help in translating research
- [ ] Access to data
- [ ] Support for clinical trials
- [ ] Other (please specify)

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.

Bioplatforms and TIA have been highly valuable in product development. While they are valuable resources, only the TIA acts as a connecting facility that brings different groups together. Each facility tends to operate in isolation (for example the Melbourne Centre for Nanofabrication can be difficult to approach for holistic research activities - yet has very advanced instrumentation). The 2026 roadmap should really consider how to bridge and connect these facilities so that product development or technical support (translation) can flow across advanced facilities. There are very limited examples of expert positions across multiple facilities.