

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

• Emerging Research Directions: o Increased capacity to conduct data analyses and predictive modelling through AI will increase capacity and scale of virtual drug screening to discover new targeted agents. • Critical Infrastructure Needs: o As more biomedical research adopts precision medicine approaches, more Australian researchers will need access to biospecimens with linked genomic, phenotypic, clinical and pre-analytic data, to support increasingly specific and translation-focussed research questions. o Biospecimens and data will increasingly need to be sourced across multiple biobanks or collections or sourced de novo, driving the need for integrated biobanks and collections to avoid further sector fragmentation Obsolete or Diminishing Infrastructure Needs • As researcher requirements will be increasingly met by working with samples and data from multiple biobanks or collections, fragmented, siloed biobanks that lack visibility within research communities will become increasingly irrelevant.

Q24.

Defence

• Critical Infrastructure Needs: o National biobanks for storing pathogen samples and genetically modified organisms for biodefense research. o Secure sample and data storage and sharing capacities that remain resistant to cyberattacks

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

- Emerging Research Directions: o Precision health approaches will be accelerated by integrating genomic information with other health data, enabling more targeted drug discovery including new gene and cell therapy approaches, and improving disease prevention. o Biobanks will play crucial roles in collecting biospecimens and data from diverse populations, enabling disease biomarker discovery and improving the efficacy of new personalized treatments.
- Critical Infrastructure Needs: o National biobanks storing diverse genetic, phenotypic, and environmental data will be essential to advance precision medicine through drug discovery capabilities and subsequent clinical trials.

Q32.

Elevating Aboriginal and Torres Strait Islanders knowledge systems

Q33.

Protecting and restoring Australia’s environment

Q34.

Building a secure and resilient nation

• Emerging Research Directions: o Emerging and changing patterns of infectious disease, through international mobility and climate change o Future pandemic preparedness • Critical Infrastructure Needs: o National biobanks to integrate samples and data across human, environmental and pathogen sample types o Secure storage of increasingly complex datasets, with robust systems to safeguard stored samples and associated sensitive data that also permit scaled, secure sample and data sharing

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.

Need for New Biobanking Infrastructure Through successive Research Infrastructure Roadmaps, Australia's research community has identified a growing need for a national co-ordination of biobanks and research collections. Millions of health samples are stored in Australian biobanks, yet most collections remain fragmented and siloed within different institutions. Australia needs a centralized, well-coordinated effort with national leadership to integrate existing collections such that they can be accessed by more researchers, to support to biomedical, precision medicine, and environmental health research. A co-ordinated national approach for collections and biobanks would also enable more comprehensive research studies, by consolidating existing and new biological samples with linked genomic, phenotypic and clinical data, to drive future breakthroughs in medicine and public health.

Proposed Infrastructure Capability The proposed national infrastructure would act as a centralized platform for existing and future biobanks, to allow research and industry access to more biological samples with associated genomic, phenotypic, environmental and preanalytical data. This infrastructure would:

- Integrate samples and data from multiple biobanks across research fields and institutions, ensuring that more samples and data are accessible for scaled research efforts by more research users.
- Improve research capacity for drug discovery, precision medicine, public health, and responses to climate change, through comprehensive, unified datasets that facilitate research translation.
- Create comprehensive longitudinal datasets by progressively adding new samples and data, enabling studies on chronic diseases, treatment efficacy and side effects, and environmental impacts on health and disease.
- Provide a responsive network of biobanking capabilities that could be rapidly and effectively realigned to new or emerging research priority areas. National biobank infrastructure would maximize the use of critical new sample and data collections that will be required to address new health challenges.
- Create synergies with complementary NRI capabilities, by providing scaled access to samples and data that can be analysed by other NRI. By incorporating samples and data already held in Australia's biobanks (e.g., those in the Australian Diabetes, Cancer, or Indigenous Health biobanks), this infrastructure would enhance research breadth and depth and ensure that past investments in biospecimen and data collection can be reutilized for new research.

Impacted Research Communities

- Applied genomics and precision medicine research will benefit from comprehensive collections of biospecimens with annotated genetic and environmental data, allowing the validation of predictions from in silico research powered by AI, and enabling the development of personalized health strategies for Australian populations.
- Public health research will benefit from scaled, more representative health datasets for studying disease prevention, risk factors, and health outcomes across Australia's diverse populations.
- Environmental researchers will benefit from access to more comprehensive biospecimen and data cohorts linked with environmental exposure data, enabling the study of environmental change on human and animal health and biodiversity.

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.

Despite the research importance of biobanks and research collections being recognised by successive NRI Roadmaps, these areas have been persistently neglected by Roadmap responses. The deferral of the Collections step change opportunity by the 2021 Roadmap response indicates that biobanks and collections will once again fail to be supported through the Roadmap process. Biobanks and collections represent vital infrastructure for Australia's biomedical, clinical and environmental research efforts. Health and environmental biobanks collectively curate many millions of unique and irreplaceable samples that reflect local human populations and our unique biodiversity. In the absence of national biobanking infrastructure, many institutions and states have made significant investments in scaled and co-ordinated biobanking capacities, including the South Australian Biobanking Technical Reference Group, the Victorian Cancer Biobank and Biobanking Victoria, and the NSW Health Statewide Biobank. National coordination of biobank infrastructure will allow existing resources to be discovered, accessed, repurposed and reused by more researchers across both public and industry settings. Leveraging the biospecimen and data resources of collective biobanks will therefore position Australia's research workforce to generate new insights to improve healthcare and disease prevention and inform responses to growing environmental challenges. Many countries (Europe through the BBMRI-ERIC, Canada, South Korea) have benefited from the successful coordination of national biobank infrastructure to improve biobank visibility. These and other international examples demonstrate the value of co-ordinating the collective assets within biobanks and collections, at a fraction of the cost of building new infrastructure. An integrated national framework for biobanks and collections is now highly overdue in Australia, and promises to unlock the rich biospecimen and data resources already housed within Australian biobanks.

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.