

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

Q24.
Defence

Q25.
Recycling and Clean Energy

Q26.
Space

Q27.
Environment and Climate

Q28.
Frontier Technologies and Modern Manufacturing

Light microscopy plays a vital role in biomedical research. Acquiring the data is not enough, but it needs to be analyzed scientifically to derive key insights. The technologies have gotten complex, so much that specialized training and skillsets are required to process them. This has resulted in a relatively new discipline: bioimage analysis (BIA). Australia is far behind other countries as there is very little support at universities and research institutions in recognizing and supporting this. The common answers from university administrators are that either microscopists or bioinformaticians can handle the data. Unfortunately, neither have the required skillsets. To be competitive in the world stage, we need to establish dedicated bioimage analysis facilities, as this can improve research quality, efficiency and boost scientific discovery. For example, WEHI has recognized this and established a dedicated bioimage analysis core recently. Europe established NEUBIAS (Network of European Bioimage Analysts) and has now taken it globally as an organization, GLOBias. In the US, we have COBA (Center for Open Bioimage Analysis). - NEUBIAS: <https://eubias.org/NEUBIAS/> - GloBIAS: <https://www.globias.org/> - COBA: <https://openbioimageanalysis.org/> In Australia, we have AusBIAS (<https://ausbias.github.io/>), but it's relatively new and we lack the resources the global organizations have. WEHI BIA core: <https://www.wehi.edu.au/collaborative-centre/centre-for-dynamic-imaging/bioimage-analysis-core/> Reference: Cimini, B. A., Bankhead, P., D'Antuono, R., Fazeli, E., Fernandez-Rodriguez, J., Fuster-Barceló, C., Haase, R., Jambor, H. K., Jones, M. L., Jug, F., Klemm, A. H., Kreshuk, A., Marcotti, S., Martins, G. G., McArdle, S., Miura, K., Muñoz-Barrutia, A., Murphy, L. C., Nelson, M. S., Nørrelykke, S. F., ... Eliceiri, K. W. (2024). The crucial role of bioimage analysts in scientific research and publication. *Journal of cell science*, 137(20), jcs262322. <https://doi.org/10.1242/jcs.262322>

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

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.

Establishing bioimage analysis capabilities and infrastructure. Training, upskilling, funding of positions within institutes. Training could be in the form of small training programs to postdoctoral programs, such as in the Broad Institute (<https://cimini-lab.broadinstitute.org/training-program>). Impact will be on biomedical research that use microscopy within Australia. Timeframe: over next 5 years

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:

Q40.

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

- ☐ I did not know about it
- ☒ Other facilities suit my needs better
- ☐ I would like to, but cannot get access due to geographical location
- ☐ I would like to, but believed that access was only available to academic researchers
- ☐ I am not aware of any capability that meets my needs
- ☐ Other (please specify)

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.