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## ***UNSW Response to the NCRIS Capability Scoping Document***

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**1. *The Capability Scoping Document identifies a number of capabilities that may enhance Australia's research and innovation capacity and drive excellence across one or more strategically important fields of research. Please identify and comment on any gaps or omissions.***

(i) UNSW has identified one gap in the Scoping Document relating to cell therapies. Cell Therapies represent an emerging area that is relevant to clinical practice and covers many areas of medical and biomedical research. Emerging areas in which cell therapies are being developed include:

- Endocrinological disorders including Type 1 Diabetes;
- Neurological Disorders including Parkinson's Disease, strokes and blindness;
- Infectious Diseases;
- Liver Failure;
- Heart Disease;
- Burns and other skin conditions;
- Bone fractures; and
- Infertility

Cells being grown for use in these conditions are stem cells, both adult and embryonic in nature, mature cells such as lymphocytes taken from peripheral blood and chondrocytes from bone or islets isolated from donor pancreases, and cell lines and animal cells.

(ii) This capability fits clearly within the ***"Promoting and Maintaining Good Health"*** National Research Priority.

(iii) UNSW is firmly of the belief that while the Capability Scoping Document is comprehensive in nature, it must remain forward looking and have the inbuilt flexibility to take account of future developments in research.

**2. *The Capability Scoping Document includes suggestions for infrastructure that may help to deliver the identified capabilities. Please comment on other infrastructure that may also be relevant.***

(i) Growing cells for therapeutic purposes requires quality assurance and good manufacturing practice (GMP) under the guidelines being developed by the TGA. Manufacturing of the cells will need to be done in a Cell Facility, with every procedure licensed by the TGA. While there are a limited number of GMP cell therapy facilities, there are not enough to cater for the increasing needs of the Australian community and the emerging importance of research programs that depend upon a reliable source of cells.

(ii) There is a need to establish a "virtual cell therapy facility" in Australia, with multiple distributed nodes and at least one real time facility in each major capital city. The focus of the facility should be to concentrate on supporting emerging therapies, with links to facilities that support established therapies, namely bone marrow and cord blood transplantation. Australia now has the opportunity to co-ordinate and manage the expansion of cell production facilities in an effective national manner so that the cell therapeutic facilities can cater for the increasing needs of Australia.

(iii) UNSW believes that for NCRIS to succeed, it must recognize the importance of national networking of facilities, without duplication. The "multiple distributed

nodes" model is a good model for many major facilities with strong coordination and networking between the nodes. NCRIS must avoid creating monopolies which lead to inefficiencies.

**3. *The Capability Scoping Document groups capabilities according to the National Research Priority they are thought to contribute to most. You may wish to comment on the appropriateness of the identified groupings.***

- (i) While the National Research Priorities are broadly accepted, this is just one way of subdividing the national research sector. It must be recognized that when the National Research Priorities were established, they focused heavily on the Science and Technology-based disciplines and largely ignored the Humanities and Social Sciences. NCRIS will need to consider national infrastructure which does support the Humanities and Social Sciences eg. library databases, law databases, language and literature digital forms etc. These areas cannot be ignored in the development of the Capability Scoping Document and they are not adequately captured by the National Research Priorities.
- (ii) Many of the current Major National Research Facilities cannot be neatly assigned into a particular National Research Priority – most of the major facilities service many sectors of the national research community. There are also areas that do not meet the NRP framework, but clearly should be considered under NCRIS – any “operational structure” that is adopted by NCRIS must have sufficient flexibility to consider items which may emerge outside the structure.
- (iii) It must be recognized that not all NRP groupings are of equal size or rely equally on major facilities or infrastructure. If NCRIS is to consider projects categorized by National Research Priority, there needs to be a careful assessment of the magnitude and reliance of each National Research Priority area on major facilities and infrastructure.

**4. *Please identify any synergies or overlap between identified or newly suggested capabilities that you consider the Committee should be aware of.***

- (i) There are clearly broad areas of overlap in many of the capabilities identified. There appears to be an underlying theme of “genomics, proteomics, and phenomics” throughout the biological, environmental and medical sciences. There are two other “-omics” that are (or are emerging as) very important in international research – metabolomics and transcriptomics. These are fundamental and the need for them should be addressed in a way that can support research in the many areas that need them.
- (ii) Much of the capability infrastructure that is “enabling”, by necessity, spans many capabilities. - for example bandwidth and communications infrastructure underpins almost all other capabilities. There needs to be a balance between enabling infrastructure and other capabilities.