

# Networking Australian Collections of Microorganisms within the Atlas of Living Australia

*enabling advances in biodiversity, biodiscovery,  
biotechnology, industry and education*

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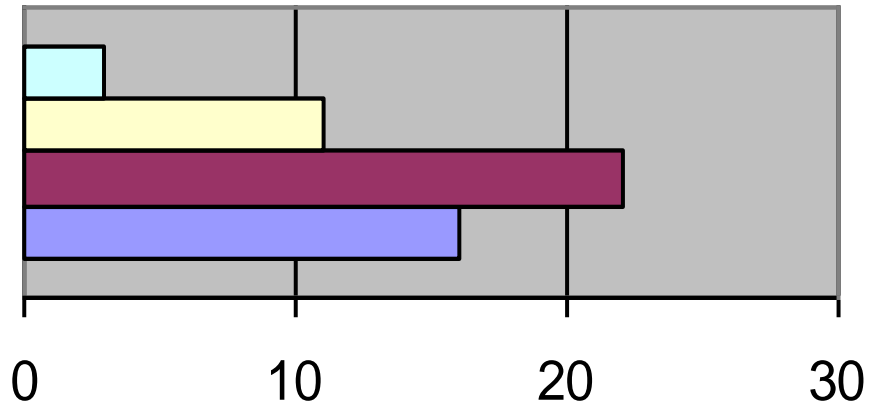
# Networking Initiatives in Australia

- 2003 - Formation of the Australian Microbial Resources Research Network (AMRRN)
- 2004 – Established the Australian Microbial Resources Information Network website AMRiN [<http://www.amrin.org/>]
- 2006 – *Atlas of Living Australia* project funded by NCRIS to electronically integrate animal, plant and microbial collection databases
- 2009 – Council of Heads of Australian Collections of Microorganisms (CHACM) established to coordinate collections and create an integrated ACM Database in the ALA

# Culture Collections in Australia

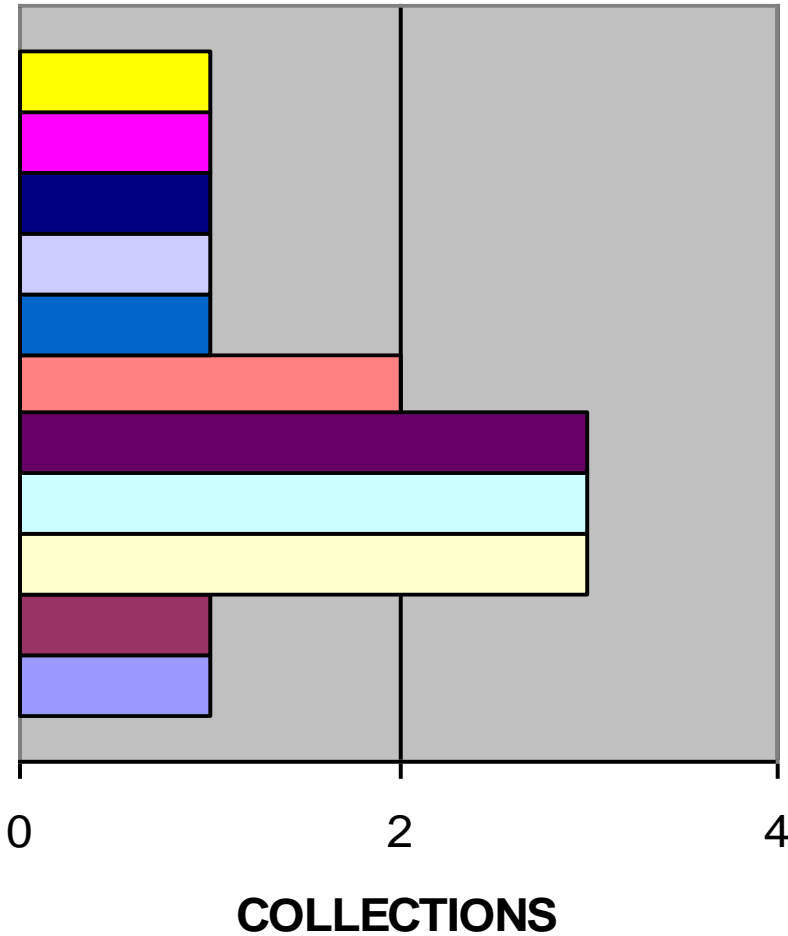
- Long history of collection data documentation
  - establishment of WDCM 1972-1986
- Approximately 30 active “permanent” collections
  - Institutional collection model in place
  - No national government coordination/support for maintenance as in many other countries
- Need to create a ‘virtual’ **Australian Collections of Microorganisms** by networking
  - Improve access to information and quality cultures
- Previous networking initiatives were not sustainable
  - wide diversity of collections did not coincide with scientific discipline meetings

# AUSTRALIAN COLLECTIONS



	COLLECTIONS
INDUSTRY	3
CSIRO	11
GOVERNMENT	22
UNIVERSITY	16

# SPECIALITIES



- ANTARCTIC
- BIODETERIORATION
- CELL BIOLOGY
- MYCORRHIZAE
- PLANT BREEDING
- INSECT
- MICROBIOLOGY
- FOREST
- MICROBIOLOGY
- FOOD SCIENCE
- ECOLOGY
- MARICULTURE
- MARINE BIOLOGY



## AUSTRALIAN MICROBIAL RESOURCES RESEARCH NETWORK

### Australian Collections of Microorganisms (ACM)

- Conservation of microbial resources
- Supply of microbial and cell cultures
- Reference and type cultures
- Quality control cultures
- Identification of microorganisms
- Genomic DNA
- DNA libraries

### Australian Microbial Resources Study (AMRS)

- Access to natural resources
- Microbial diversity research
- Microbial ecology
- Taxonomy
- Epidemiology
- Natural products discovery
- Environmental genomics

### Australian Microbial Resources Information Network (AMRIN)

- Internet site for Australian Microbial Resources
- Integrated electronic catalogue access
- Location of cultures
- Access to information
- Access to expertise
- Linkages to users

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## Welcome to AMRiN

Culture Collections of microorganisms maintained in Biological Resource Centres have a fundamental role in underpinning research and testing in many scientific disciplines and applications including human, animal and plant health, industry, biotechnology, biosecurity, quarantine, the environment, and education. AMRiN is an initiative of the Australian Microbial Resources Research Network. AMRiN aims to provide electronic access to information on the location and characteristics of microbial cultures and associated research expertise in Australia to facilitate scientific advances and efficiency through collaboration. Funds are being sought to support Australian culture collections to manage the information available on their cultures and to make this information available through AMRiN. The AMRiN website will provide electronic access to this information, promote exchange of information between participants, and communicate information relevant to those who research or use Australian microbial resources. The long term aim of AMRiN will be to provide an up-to-date inventory of the biogeographic distribution of Australian microorganisms and microbial genetic resources, a key element of the Convention on Biological Diversity and the Global Biodiversity Information Facility (GBIF).

We hope that both users and participants find AMRiN a useful facility and that it will continue to expand to meet the growing need for information on Australian microbial resources. We welcome your feedback and encourage you to alert us to new sources of information.

Lindsay Sly  
Network Coordinator

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## Quick Links

- [Participants](#)
- [Culture Collections](#)
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## Australian Culture Collections

Submit your suggestions for useful resources

*Acronym :* ACAM  
*Collection :* Australian Collection of Antarctic Microorganisms  
*Address :* Cooperative Research Centre for Antarctic And Southern Ocean Environment  
University of Tasmania  
GPO Box 252C  
Hobart Tas 7001  
Australia  
*Correspondent :* Dr John Bowman  
*Telephone :* (61 3) 6226 2776  
*Fax :* (61 3) 6226 2642  
*Email :* john.bowman@utas.edu.au  
*Web site :* ACAM

*Acronym :* ACH  
*Collection :* Mycology Culture Collection  
*Address :* Women's and Children's Hospital  
72 King William Street  
North Adelaide SA 5006  
Australia  
*Correspondent :* Dr D. H. Ellis  
*Telephone :* (61 8) 8161 6459  
*Fax :* (61 8) 8161 7589

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## Participants (in alphabetical order)

### Listing of Participants by Institution

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## Assoc Prof David Ellis

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Australia 5006

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Fax: (61 8) 8161 7589  
Email: [dellis@adelaide.edu.au](mailto:dellis@adelaide.edu.au)  
Website: [www.mycology.adelaide.edu.au](http://www.mycology.adelaide.edu.au)

## Fields of Interest

Medical, Veterinary, Pathology, Environmental, Quality Assurance, Pharmaceutical, Education, Biosecurity, Diagnostics, Systematics, Classification, Nomenclature

## Other Interests

Epidemiology ecology

## Microorganisms Cell Cultures

Fungi, Yeast

## Other Taxa

*Cryptococcus*, *Candida*, Dermatophytes, *Aspergillus*, *Scedosporium*, *Fusarium*, zygomycetes, other human and animal pathogenic fungi

## Environments

Terrestrial, Human, Animal

## Services

Culture Isolation, Culture Identification, Culture Collection, Culture

## Other Services

Antifungal susceptibility testing



## Welcome to the Atlas of Living Australia

The *Atlas of Living Australia* is a five-year project funded under the Australian Government's [National Collaborative Research Infrastructure Strategy](#) (NCRIS).

Its mission is to develop a **biodiversity data management system** which will link Australia's biological knowledge with its scientific and agricultural reference collections and other custodians of biological information.

This system should be:

- **Authoritative** – guiding users to the most relevant data resources and well-researched information for each species
- **Freely accessible** – delivering services, tools and content for free use by all
- **Distributed and federated** – integrating existing systems and networks to bring together the most current and complete content

The project aims:

- To integrate information on all Australian species, including data on **specimens** held by Australia's natural history collections and data from field **observations** of living organisms
- To support the management and integration of biological data from all areas of research (**molecular** to **ecological**)



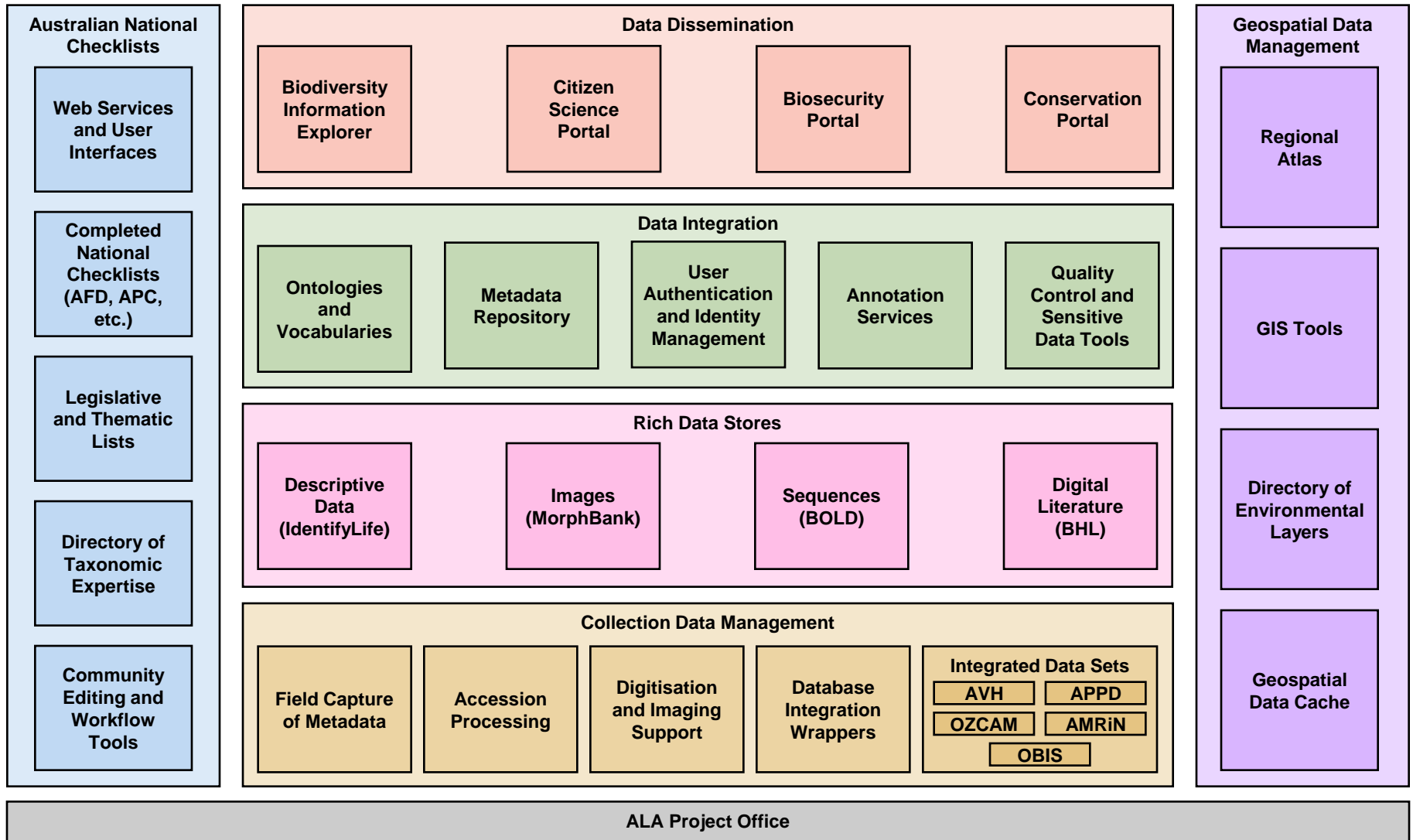
*Grevillea magnifica*, South Australia –  
Photograph © M.Fagg, ANBG

## Partners

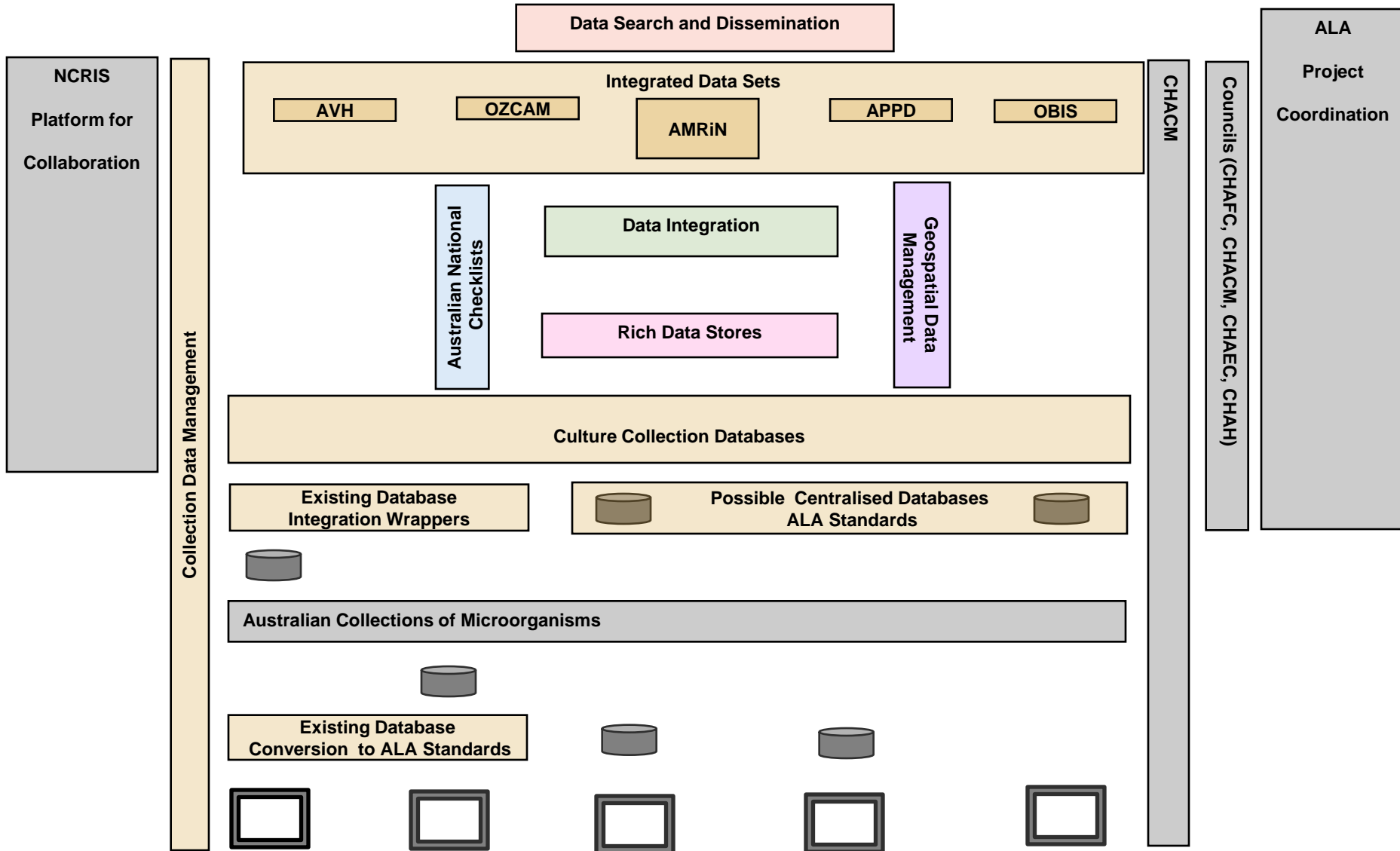
The *Atlas of Living Australia* is a partnership between:

- CSIRO
- The Australian Museum
- Museum Victoria
- Queensland Museum
- The Tasmanian Museum and Art Gallery
- Southern Cross University
- The University of Adelaide
- The Council of Heads of Australian

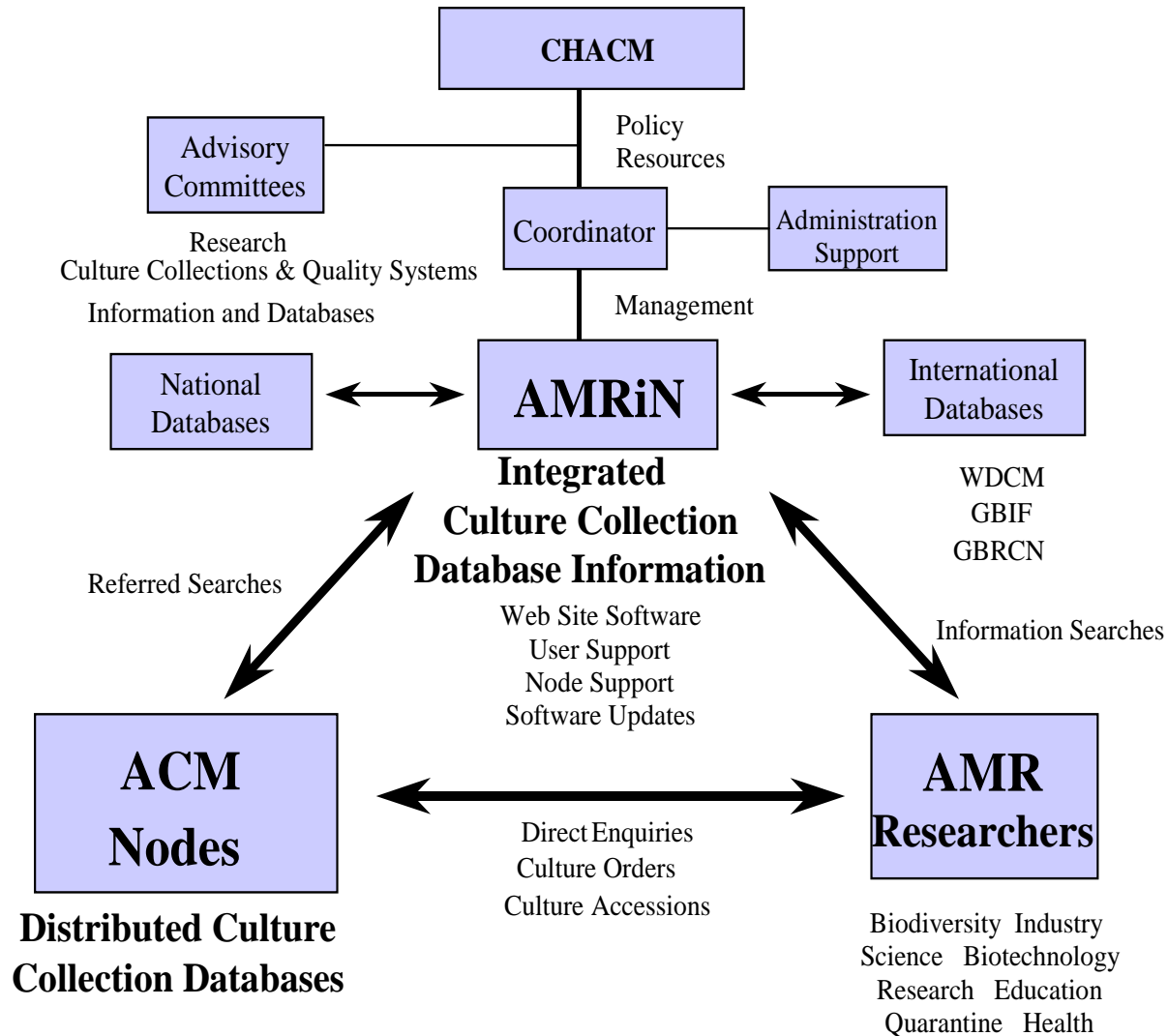
# Project components

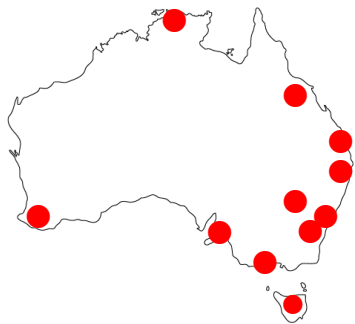


# AMRiN Integrated Data Set within the ALA



# ACM Network





# ACM Nodes

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Australian Wine Research Institute, Adelaide

AIMS Marine Microbial Collection, Australian Institute of Marine Science, Townsville

Plant Pathology Herbarium, Queensland Primary Industries & Fisheries, Brisbane

CSIRO Culture Collection of Microalgae, CSIRO Marine and Atmospheric Research, Hobart

CSIRO Food and Nutritional Sciences, Sydney

IMVS Culture Collection, Institute of Medical and Veterinary Science, Adelaide

Mycology Culture Collection, Womens and Childrens Hospital, Adelaide

Department of Agriculture & Food Western Australia Plant Pathogen Collection, Perth

IFM Quality Services Pty. Ltd, Ingleburn

Phytoplasma DNA Collection, Charles Darwin University, Darwin

CIDM Public Health Culture Collection, Westmead Hospital, Sydney

Australian Legume Inoculants Research Unit, NSW Department of Primary Industries, Gosford

Microbiological Diagnostic Unit Public Health Laboratory, University of Melbourne, Melbourne

University of Sunshine Coast Microbial Library, Maroochydore

CSIRO Livestock Industries, Brisbane

CIDM Medical Mycology Collection, Westmead Hospital, Sydney

Microbiology Culture Collection, University of New South Wales, Sydney

Microbial Gene Research and Resources Facility, Griffith University, Brisbane

Australian Collection of Plant Pathogenic Bacteria, Orange

Plant Pathology Herbarium, New South Wales Agriculture, Orange

University of Western Australia Microbiology Culture Collection, Perth

Queensland Microalgae Collection, University of Queensland, Brisbane

Plant Pathology Culture Collection, Queensland Primary Industries & Fisheries, Brisbane

Australian Collection of Microorganisms, University of Queensland, Brisbane

Centre for Reference and Research on Leptospirosis, Queensland Health, Brisbane

Australian Medical Reference Mycology Laboratory, Royal North Shore Hospital, Sydney

Western Australian Collection, Western Australian Centre for Pathology and Medical Research, Perth

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# Current Development Tasks

- Investigating data field standards
  - eg CABRI, ABCD, Darwin Core, MCL .....
- Evaluating collection and user needs
- Evaluating network architecture model
  - Distributed databases
  - Data harvesting for integration, searching and analysis through AMRiN hub within the ALA
- Convert and connect distributed databases
- Completion of current project by 2012
- Beyond 2012??

# Infrastructure Funding Needed

enable implementation of government recommendations on microbial collections, taxonomy, funding and taxonomic training

- National Strategy on the Conservation of Australia's Biological Diversity (1992)
- House of Representatives Standing Committee on Primary Industries and Regional Services report *Bioprospecting: Discoveries changing the future* (2001)
- Report on the Review of the National Innovation System (2008)
- Meet international OECD GBRCN best practice standards and NATA Reference Material Provider accreditation



# Summary

- Considerable progress has been made in networking Australian Collections of Microorganisms
- The Atlas of Living Australia will provide on-line access to integrated Australian microbial resources in collections for the first time
- Future progress towards implementation of OECD best practice will depend on new infrastructure funding models for support of collections

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# National Recognition

From The National Strategy on the Conservation of Australia's Biological Diversity, 1992

“Strengthen ex-situ conservation, including the provision of adequate resources to relevant institutions and organizations, by:

(a) establishing or strengthening networks of culture collections of microbial species, including those of medicinal, agricultural and industrial importance”

## From The National Strategy on the Conservation of Australia's Biological Diversity, 1992

“Accelerate research into taxonomy, geographic distribution and evolutionary relationships of Australian terrestrial, marine and other aquatic plants, animals and **microorganisms**, priority being given to the least known groups, including non-vascular plants, invertebrates and **microorganisms** .....

- From Bioprospecting: Discoveries changing the future (House of Representatives Standing Committee on Primary Industries and Regional Services, August 2001)

“Overcoming impediments in establishing Australian bioindustries

**Recommendation 1.** The committee recommends that the Commonwealth government:

- Increase funding for baseline studies of the Australian biota;
- Target additional funds for collecting activities in bioactive hot spots;
- **Fund a larger volume of taxonomic work than at present and ensure sufficient young taxonomists are being trained to undertake this work;**
- **Provide more funding to maintain and expand existing collections so that they provide comprehensive coverage of Australian biota, including microorganisms;**

# From Bioprospecting: Discoveries changing the future (House of Representatives Standing Committee on Primary Industries and Regional Services, August 2001)

## Recommendation 2

- The committee recommends that the Commonwealth government provide additional **funding for digitizing and networking information** about all of Australia's biological resources.

## Recommendation 3

- The committee recommends that the Commonwealth government, in consultation with state and territory governments, industry and research community:
  - Develop a national strategy for bioinformatics; and
  - Assist in funding its implementation so that the necessary infrastructure and skills are available to provide efficient access to information about Australia's biota.”