

WAMSI Conference 2011

Node 5: biodiscovery, biotechnology and aquaculture

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Why Node 5 ?

- *Promote establishment of a **WA marine bio-resources library (WAMBL)***
- *Encourage introduction of **legislation***
- ***Proof of concept** - demonstrate viability*
- *adjacent land-based and marine-based biodiversity hot spots 40 percent of the world sponges are present in Western Australian waters*



Key Actions

- *Node 5 Synergies with **WA Biotechnology Industry Development Strategy 2006-2010***
- ***Continuous dialogue-parallel process***
- *45 govt, industry and academia stakeholders 2008-2010*
- *Node 5 Leaders and WAMSI partners instrumental in developing a WA Bioprospecting Act*
- *Cabinet Approval for the drafting of a WA Bioprospecting Bill*

What Strategy?

- *platform for integrating **multidisciplinary** research*
- *marine organisms interaction with environments at **microbial and molecular levels***
- *re-definition of biodiscovery policy in Western Australia*
- *current absence of a specific policy system Node 5 provided a robust scientific program*

Node 5 Projects

***5.1 Western Australia
Marine Bioresources
Library (WAMBL)***

***5.2 Biomolecular
Diversity and
Partnered
Biodiscovery***



***5.4 Microbial
Quorum Sensing***



Research Findings

- *development of full ‘operational procedures’ for users of WAMBL-guidelines, material transfer agreements*
- *Successful collaboration between WAMBL and WAIMR*
- *Successful completion of **PhD project in 5.4***



The So What of the Matter

- *Influencing beneficial review and enactment of new policy governing marine bioprospecting in the State*
- *Create a marine bioresources repository*
- *Develop industrial partnerships for ongoing research*

WAM WAIMR UWA Curtin Murdoch ECU ChemCentreWA

Departments of Commerce and Fisheries DEC SEWPaC AIMS

- *Develop products for medicine, agriculture, industrial and environmental sectors*
- *Revenue streams for R&D and royalty opportunity downstream*
- *Patents and papers*

Interim Measures

- *alternative strategy for access to marine samples based around the use of **Regulation 179** of the **Fish Resources Management Regulations 1995***
- *Regulation 179 of the Fish Resources Management Regulations 1995 prohibits the taking or handling of fish for the purposes of genetic or chemical extraction or analysis unless approved or authorised to do so by the CEO of the Department of Fisheries*
- *Heads of Agreement with UWA*



Capacity ! What Capacity?

- *PhD thesis development Project 5.4*
- *key collaborations with AIMS and the US National Cancer Institute for Project 5.2*
- *WAMBL infrastructure includes marine invertebrates collections database*
- *access and benefit sharing agreement process*

Benefits



- **Environmental:** species identification, and georeferencing of locations and depths
- **Technical:** Material Transfer Agreements global players
- **Commercial:** sponge analysis anti-cancer drugs
- *novel natural products from marine bacteria to address important industrial and medical issues, including antibiotic resistance*



Future Research

- *bioresources are the “bio” in biodiscovery and biodiscovery is the “bio” in biotechnology*
- *Approximately 50% of all drugs in use come from natural products or synthetic copies of natural products*
- *high levels of investment, long lead times, high financial risk*
- *4 main objectives for enhanced WA marine biodiscovery*
 - *a funding model for WAMBL*
 - *implementation of the WA Bioprospecting Act in 2012*
 - *subsequent downstream research activities*
 - *industry engagement*



Thank You and please Welcome

