

Interdisciplinary Research in the School of Dental Science, Faculty of Medicine, Dentistry and Health Sciences, The University of Melbourne

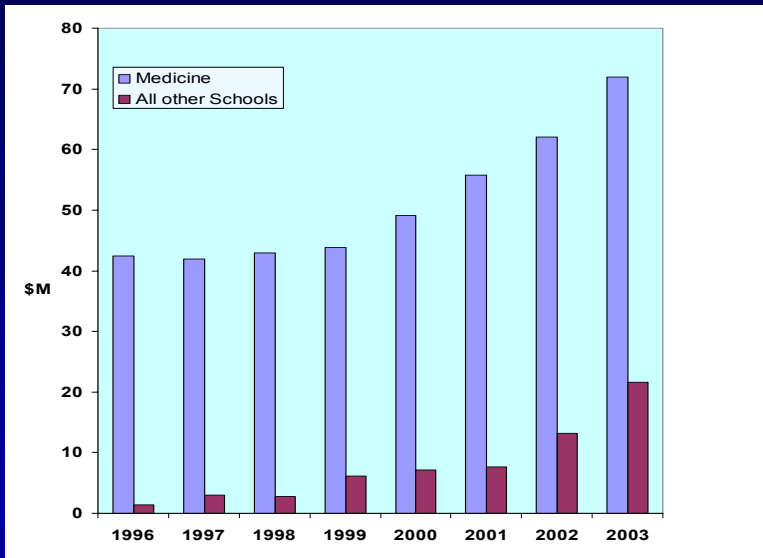


**Eric Reynolds
Head, School of Dental Science**

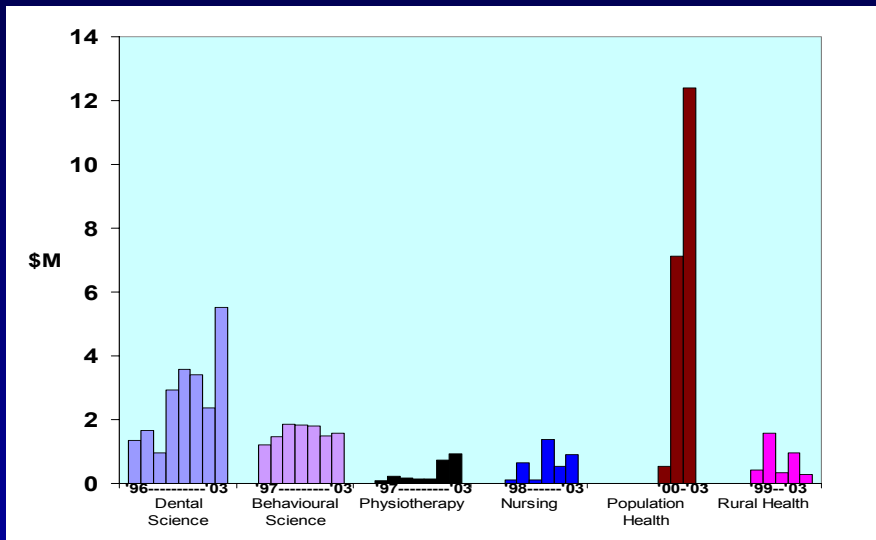
Schools in the Faculty of Medicine, Dentistry and Health Sciences

- **Behavioural Science**
- **Dental Science**
- **Medicine**
- **Nursing**
- **Physiotherapy**
- **Population Health**
- **Rural Health**

FMDHS: research income in School of Medicine vs all other schools by year



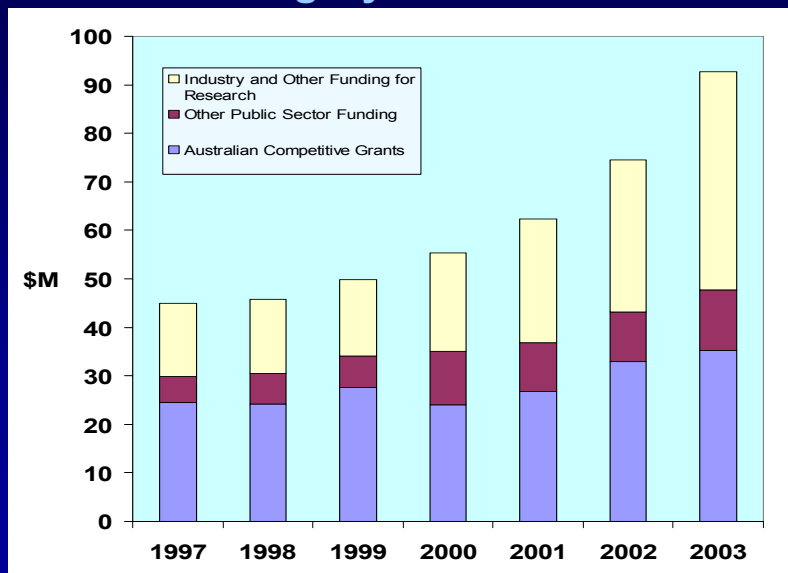
Research income by year in schools joining the Faculty since 1990



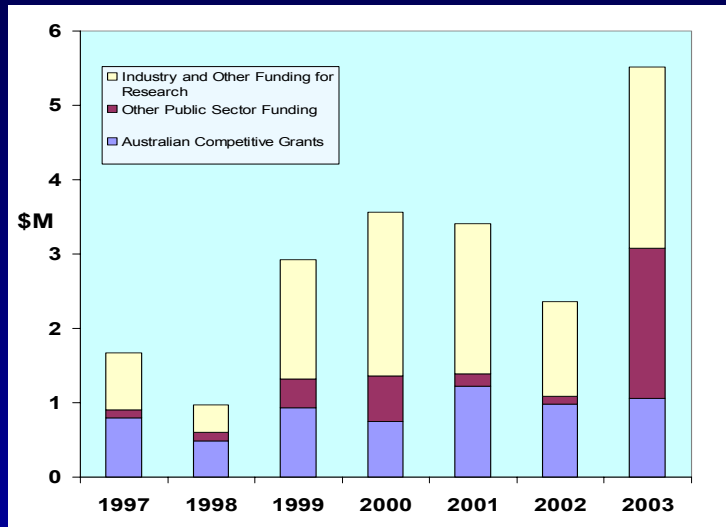
School of Dental Science Research Culture

- Staff recruitment
- Staff research time
- Undergraduate research projects
- All postgraduate courses involve research
- Research Committee
- Reward research performance

FMDHS: research income by DEST category 1997-2003



School of Dental Science: research income by DEST category 1997-2003



DEST Benchmark Data for School of Dental Science and the Faculty of Medicine, Dentistry and Health Sciences of The University of Melbourne compared with other Schools/Faculties in Australia

Department/Faculty	#	RO Staff (FTE)/ T&R	RHD Enrolments/ T&R	RHD Completions/ T&R	RHD Load (EFTSU)/ T&R	Research Income NCG/T&R	Research Income Total/T&R	Total DETYA Publications/ T&R
Dept - Rel. Perf.	5	341.3	112.2	170.8	125.4	281.7	298.2	118.9
Dept - Assess. Perf.	5	*AA*	*AA*	*AA*	*AA*	*AA*	*AA*	*AA*
Faculty - Rel. Perf	7	203.0	157.2	155.4	129.3	129.2	147.2	119.3
Faculty - Assess. Perf	7	*AA*	*AA*	*AA*	*AA*	*AA*	*AA*	*AA*

LEGEND

AA Above average (Greater than 110)%

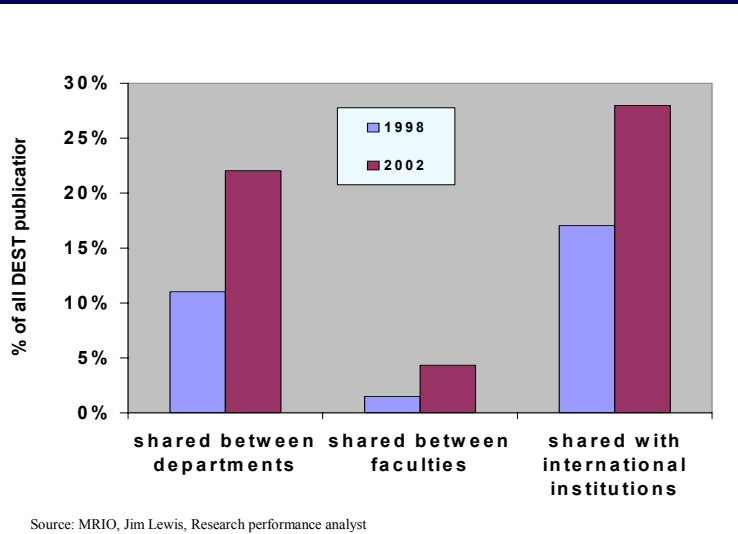
AV Average (Between 90% and 110%)

BA Below Average (Less than 90%)

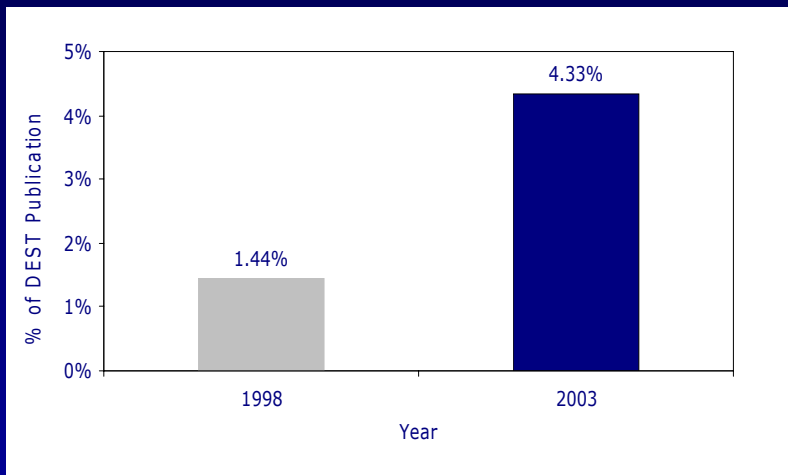
* GO7 Average is 100

Number of Comparator Universities

FMDHS: DEST publications as an index of collaboration

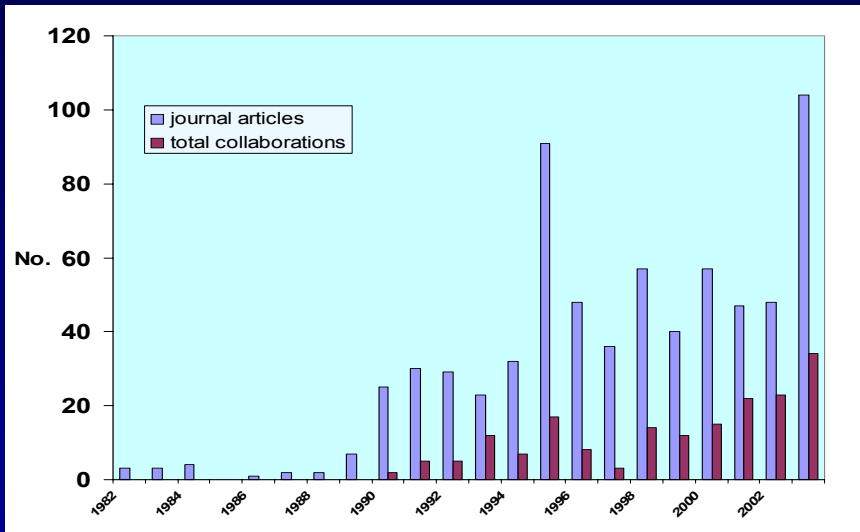


Collaborative DEST Publications between MDHS Schools



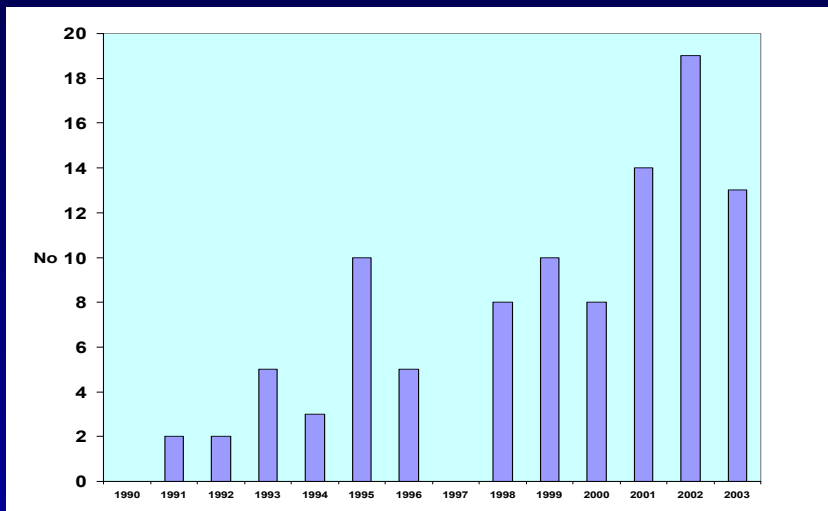
Source: Melbourne Research and Innovation Office (August 2004)

School of Dental Science: ISI journal articles as index of collaboration



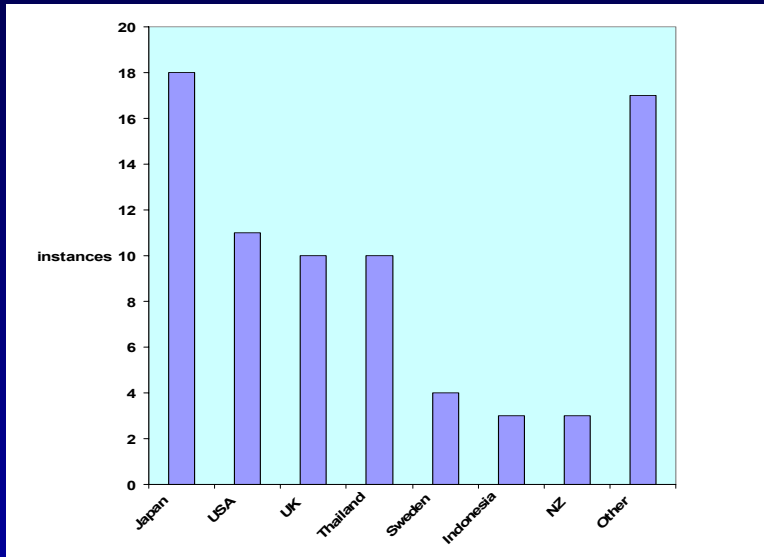
Source: ISI Web of Science

School of Dental Science: numbers of international collaborations in ISI journal articles by year



Source: ISI Web of Science

International collaborations 1998-2003 School of Dental Science (ISI journal articles)



School of Dental Science: interdisciplinary collaborations 1998-2003

- Anatomy
- Anthropology
- Biochemistry inc endocrinology
- Cell biology
- Computer science
- Engineering
- General Practice
- Genomics
- Health program evaluation
- Human movement
- Immunology
- Medicine
- Microbiology
- Otolaryngology
- Pharmacology
- Physiology
- Physiotherapy
- Political Science
- Public Health
- Paediatrics
- Physics
- Psychiatry
- Zoology

School of Dental Science Collaborations

**University of Melbourne Departments other than
Faculty of Medicine, Dentistry and Health Sciences**

- **Mechanical and Manufacturing Engineering**
- **Chemical Engineering**
- **Organic Chemistry**
- **Physics**
- **Geomatics**

School of Dental Science Collaborations

**Faculty of Medicine, Dentistry and Health
Sciences Departments**

- **Biochemistry and Molecular Biology**
- **Microbiology and Immunology**
- **Medicine (Royal Melbourne Hospital)**
- **Surgery (Royal Melbourne Hospital)**
- **Physiotherapy**
- **Paediatrics/Murdoch Childrens Research Institute**
- **Behavioral Science**
- **Anatomy and Cell Biology**
- **Population Health**

School of Dental Science International Collaborations

- **JAPAN (Biomaterials, Nanotechnology, Molecular Biology of Oral Microbes, Structural Biology/Forensic Odontology)**
- **UK (Bone Biology, Oral Microbiology, Biomaterials)**
- **USA (Bone Biology, Oral Biology, Biomaterials)**
- **CANADA (Population Health, Behavioural Science)**

University of Melbourne: encouraging interdisciplinary research

- **Bio21 Institute/Bio21 Australia**
- **full access of all staff to ISI Current Contents databases**
- **Research expertise/international linkages database being established by AsiaLink with MRIO**
- **University of Melbourne–CSIRO grants with preference for interdisciplinary research**
- **University of Melbourne–international linkages grants**
- **University funding for multidisciplinary Centres**

University of Melbourne: impediments to interdisciplinary research

- **not a strong culture of interdisciplinary research; hence limited inter-faculty and university–institute communications**
- **University database of research grants—the Research Grants Portal:**
 - **cross-faculty access not available for research managers in faculties**
 - **affiliations of external collaborators not recorded in database**
- **no co-location of major different research disciplines on the main university campus**
- **no seed funding across faculties of the university for interdisciplinary projects within the university**

Faculty of Medicine, Dentistry and Health Sciences encouraging interdisciplinary research

- **\$2000 incentive to faculty researchers for applications submitted for collaborative grants with researchers in affiliated institutes**
- **Faculty researchers encouraged to engage substantially with Bio21**
- **Faculty funding support for multidisciplinary Centres**

Bio21 Institute

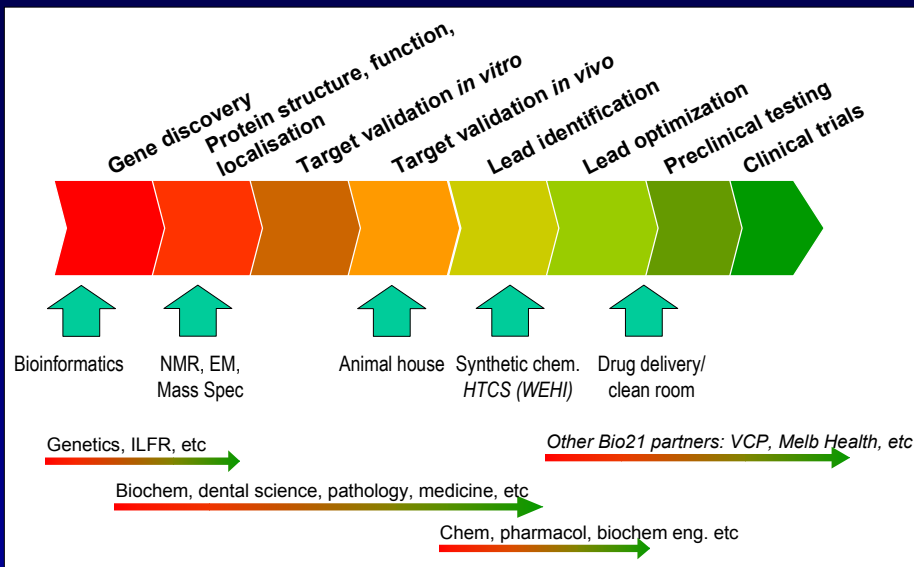


University of Melbourne's new multidisciplinary initiative

The Bio21 Institute: “Flagship” multidisciplinary research centre of excellence and business incubator, specialising in medical, dental, veterinary and agricultural biotechnology.

Mission: Whole-of-Institute approach to biotechnology research excellence and innovation in frontier areas, the creation of new businesses and community outreach.

Bio21 Institute drug development pathway



Source: P Goss, Bio21 Institute, Sept 2004

Bio21's priority research areas

- **Bio-prospecting and drug discovery, particularly anti-infectives targeting human and veterinary diseases**
- **Drug targets for age-related diseases/health maintenance**
- **Agricultural and Environmental Biotech:**
 - healthier crops/allergen vaccines
 - safe pesticides
 - metal ion toxicities
- **Nanobiotechnology: biosensors & nanoparticle-based medicines**

Source: P Goss Bio21 Institute Sept 2004

NHMRC encourages interdisciplinary/collaborative research through:

- **Australia-European research collaboration**
- **Centres of Clinical Research Excellence**
- **Development grants**
- **Health Research Partnerships**
- **Program Grants**

ARC encourages interdisciplinary research through:

- **Centres of Excellence**
- **Research networks**
- **Linkage-International grants**

International bodies: NIH

- Enhancing the vitality of the NIH: organisational change to meet new challenges.

Committee on the organisational structure of the NIH, National Research Council (2003)

“The NIH is advised to devote more resources to innovative interdisciplinary research that reflects its strategic objectives and cuts across all agency’s institutes and centers.”

Conclusion

Interdisciplinary research has expanded the research culture of the school and made it more internationally competitive