

# **Opportunities for the Advancement of the Biotechnology Industry in Australia over the next Decade**

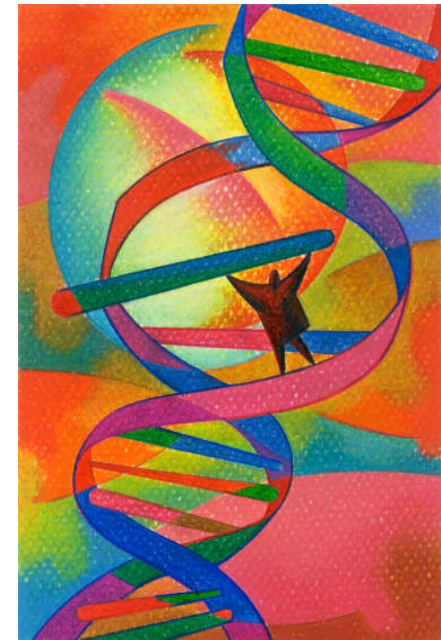
**John Ballard**  
**Chairman, BioAngels Inc**



Bioprocessing 2008

# The Australian Biotechnology Industry in 2008

- 3 multibillion dollar companies – CSL, Resmed and Cochlear
- 130 ASX-listed biotech, medical device, diagnostic and agbio companies – but with combined market cap only 25% of CSL
- About 800 unlisted companies
- Australian branches of multinational companies almost all focussed on sales rather than product development



# What can we Learn from the Successes of CSL, Resmed and Cochlear?

- None is a FIPCo nor has its base in drugs
- All have become #1 worldwide in their field (or close)
- They market worldwide and manufacture in several countries but retain much of their R&D in Australia
- They have different backgrounds – privatisation (CSL), company spin-out (COH) and growth from scratch (RMD)
- They have been active with acquisitions, especially CSL
- Excellent and consistent leadership
- Focus, focus focus!

# Overview of the other 130 ASX-listed Biotechs

## 1. Industry Sub-groups

- 56 drug discovery and development companies (43%), 12 of which have cancer therapies as their main business
- 36 equipment and device companies (28%); heart assist and syringes are the largest groups
- 13 diagnostic companies (10%)
- 9 pharmaceutical manufacturers and distributors
- 7 agbio or industrial biotech
- 9 service delivery or investment companies

**A mix that is not dissimilar to that in the US**

# Overview of the other 130 ASX-listed Biotechs

## 2. Financial Summary

- Current market capitalisations: mean \$39M, median \$16M
- 75 have listed since mid 2002
- Mean pre-money value at listing \$23.4M; average of \$10.0M raised

These statistics indicate that (1) biotechs listing on the ASX do so at about the same stage as a Series B VC round in the US and (2) the funds raised are hopelessly inadequate to get significant products to market

# Overview of the other 130 ASX-listed Biotechs

## 3. Why do Biotechs List so Early on the ASX?

- It's fairly easy and inexpensive
- Shells are available for backdoor listings
- Investors like the liquidity of a listed stock
- Getting further VC funding as an alternative is hard
- Once listed, raising funds through placements, rights issues and SPPs is reasonably straightforward if the company is doing OK
- Staff incentive packages are meaningful

# Overview of the other 130 ASX-listed Biotechs

## 4. What are the downsides of early listings?

- The company stage is too early to value meaningfully
- Continuous disclosure is tough on management
- ASX compliance costs are significant
- If the price falls, raising more equity cash requires a big discount that disadvantages existing shareholders
- Very few listed biotechs are monitored by analysts so shareholders need to rely on brokers who may be biased
- Poor liquidity creates a 10% or greater spread between bid and offer; it's thus hard to trade sensibly

# Overview of the other 130 ASX-listed Biotechs

## 5. Do we need to Work on Board Composition

Compared to the US situation, ASX-listed biotech boards:

- Have few directors with executive experience in the industry
- Have very few with biotech business development skills
- Have more accountants and fewer lawyers
- Meet twice as often
- Are paid 3 times as much at equivalent market capitalisation

Have we got this wrong with our emphasis on professional directors? If so, how can it be fixed?

# Overview of the other 130 ASX-listed Biotechs

## 6. Is there a Particular Australian Format?

Many Australian bioscience companies have a cash-generating business as well as their principal focus

- A drug development company may have a related diagnostic product that it brings to market early
- A platform company may have several partners that provide revenue for services
- Early-stage biotechs gain third party validation for their IP portfolio by doing contract research

**These activities provide downside protection for the business; an example of each follows**

# Pharmaxis

- Highest market cap (\$400M) outside the big 3 or drug wholesalers; listed in 2003 at \$29M pre-money; VC supported pre-listing (GBS)
- Therapeutics for lung diseases (CF, asthma, etc); bronchitol (aerosol mannitol powder) in multiple phase III trials
- Now marketing aridol as a diagnostic
- Always maintains a strong balance sheet with 2+ years cash
- Constructing its own manufacturing facility
- Niche focus and limited distribution sites allow company to control its business worldwide

# Evogenix

- Spin-out from CRC for Diagnostics with solid IP; VC backed
- Core technology is a platform for in vitro evolution of antibodies and other proteins
- Attracted several commissioned projects that generated cash and provided third party validation (Domantis, Viventia, Absalus, etc)
- Developing internal antibody products
- Plan to license the company's IP to non competitors
- Listed on ASX in 2005 at pre-money \$23M; raised \$9M
- Merged with Peptech at valuation of \$100M in 2007 to become Arana

# Applimex Systems

- Spin-out from Macquarie University in 2006; angel backed
- Experienced CEO/MD; key staff transferred from MU
- Core technology: enzyme optimisation; access to thermophiles; improved protein manufacture
- IP validated through contract and partner services
- Services allow company to decide best internal product
- Focus is on industrial enzymes not pharma
- Lab scale manufacturing; scale-up with partners
- Breakeven financials; growth mostly through revenues

# What do we Know about the Unlisted Firms?

2008 Hopper/Thorburn BioIndustry Review lists:

- 388 unlisted core biotechs and 580 medical device firms
- 25% of biotechs are in agbio or foodbio – much more than ASX-listed ratios (owners choose to keep them private?)
- Half of device firms are lab or hospital equipment suppliers
- Australian branches of multinational firms are included
- 30 new companies in 2006/07; numbers falling yearly

But it is nearly impossible to monitor those that cease operating so overall numbers may be overestimated

# Stretching Shareholders Funds

Shareholders want company management to go as far as possible towards provitability without dilution through raising additional equity, eg:

- Commercial Ready provided rebate of 50% of R&D costs
- BIF supported early-stage biotech company growth

**But both have been discontinued; Innovation Review proposes:**

- R&D Tax Credit would refund 50% for tax-loss SMEs
- Repayable grants (“soft loans”) for proof of concept R&D

Also NCRIS provides bioprocessing subsidies and EMDG supports international marketing

# What's the Future for Australian Biotech?



Let's try first to  
evaluate our  
advantages and  
disadvantages

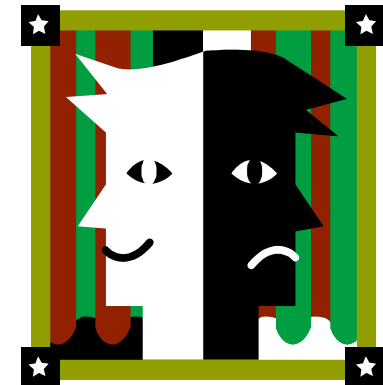
# Advantages for a Biotech Industry Here (1)

- Quality R&D staff available
- Relatively low cost of R&D
- Government incentives for R&D
- Small cultural gap between public and private sectors, eg CRC program
- A high proportion of Australians own shares
- Companies can list early and raise finance
- Small local market forces us to think global



## Advantages for a Biotech Industry Here (2)

- Many successful independent medical research institutes
- World leading agriculture research – opportunities for an agbio thrust
- Biodiversity – perhaps new drugs
- Strong mining industry – industrial biotech opportunities

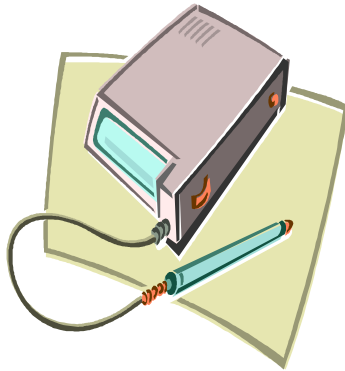


# Disadvantages for a Biotech Industry Here

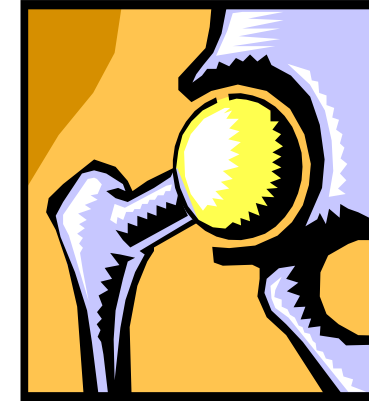
- Loss of Commercial Ready grants
- No tax incentives for investors – cf Hawaii
- Competition for risk-taking \$ - mining exploration, gambling
- Investors don't like repeat capital raisings
- No FIPCo, therefore limited (non-R&D) staff
- No bioprocessing capability at scale
- Lack of Board members with industry experience



# Some Choices for the Future?



**Drugs ?**  
**Diagnostics?**  
**Devices?**  
**Agbio?**  
**Industrial Biotech?**



**Something else?**



# Drug Discovery & Development

- Scientists think it is the most exciting
- Likely NH&MRC bias in favour
- VCs support it

**BUT**

- Costs of development very high, \$??\$??
- Limited experience in Australia for later aspects
- Still only 1 drug fully developed here
- Worldwide significance waning



# Drug Discovery & Development- What Areas?

- Emphasis will continue on cancer therapies
- Stem cell therapies will develop but problems will surface
- Antibody therapies will dominate biopharmaceuticals
- Combinations of approved drugs
- Orally-active receptor targets will be a focus
- Genetic screening will simplify clinical trials
- Anti-obesity drugs will become a holy grail
- Neurodegeneration with aging also a focus

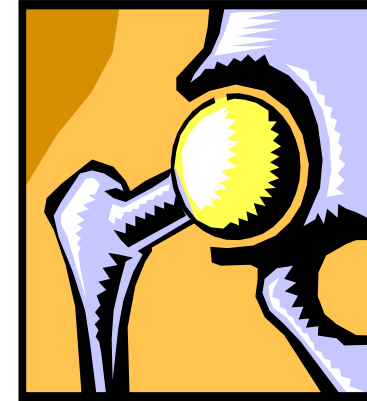


# Medical Devices

- Great role models for success – Cochlear, Resmed
- Many innovative small local firms
- Easier to take to market

**BUT**

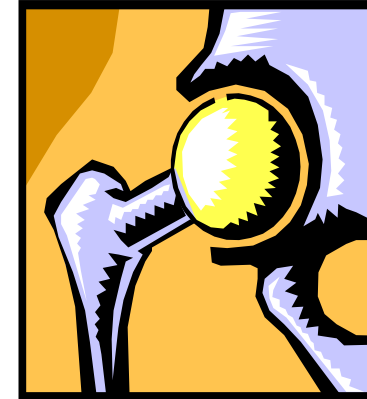
- Try getting NH&MRC support!
- VC backing hard to get
- Marketing worldwide dominated by a small number of multinationals – very hard to compete



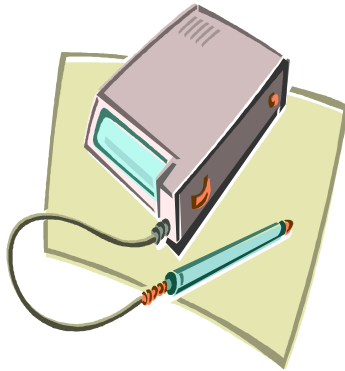
# Medical Devices – Which Ones?

This is harder to predict than drugs but:

- Bioactive implants may deliver at last
- Electronics for restoring sight
- Less interest in safety syringes
- Those with specialised marketing paths will be favoured as with COH & RMD
- Surgeons will continue to drive innovation



# Diagnostics

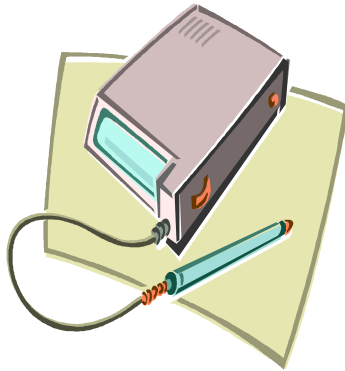


- Projected huge growth of personalised medicine and point-of-care testing
- Evidence for increasing product margins

**BUT**

- Try getting NH&MRC support!
- No large Australian company models (Cellestis, Universal Biosensors, Fermiscan seem successful)
- Little past investment interest by VCs
- Regulatory seems to be getting harder

## Diagnostics – What Areas?



- Genome analysis
- Self diagnosis tests for OTC use
- High throughput screens without washing steps
- Direct links with therapies
- Better age-related tests – heart diseases, prostate, neurodegeneration
- Lower prices as more tests performed
- Biosensor tests at last

# Agbiotech & Veterinary Biotech

- Long & strong history of agricultural research
- Support from R&D Corporations
- Major part of Australian economy

**BUT**

- Inventions difficult to protect
- GM plants dominated by multinationals
- Very few company role models (eg Hexima)
- Consumer and farmer resistance to GM



# Agbiotech & Veterinary Biotech – What Areas?

- GM plants will become more accepted
- Salt tolerant plants and those that require less water
- Aquaculture advances
- Feel-good products – bigger, brighter, longer-lasting flowers



# Industrial Biotech, Biofuels, Bioremediation



- Ongoing commercial interest
- Numerous R&D opportunities
- Cleantech grant support

**BUT**

- ARC support minimal until recently
- VC backing limited
- Commercial failure of biofuel firms
- Few company role models
- Modest interest from researchers

# Industrial Biotech, Biofuels, Bioremediation – Which Areas?



- Second and third generation biofuels, especially from algae
- Enzyme replacements for harsh chemicals eg. in paper manufacture
- More efficient bioprocessing technologies

Without a seachange in ARC outcomes,  
these will be in the private sector

# Something Else?

## (1) An increase in the currently low M&A activity?

### For change:

- Larger firms spread risk between projects
- Larger firms will come onto the radar of investors
- Larger firms allow more tasks to be internalised

### Against change:

- A merger puts one CEO and Directors out of a job
- The work involved to create a merger is not worth it

**My view: Not until unequivocal synergy is demonstrated**

(eg Arana at \$210M << Peptech at \$240M + Evogenix at \$100M)

# Something Else?

**(2) Success will persuade Oz firms to relocate HQ to the US**

**For relocation:**

- VC investors expect it (“uptick”)
- Can perhaps raise \$\$ easier
- Management needs to be close to the market and FDA

**Against relocation:**

- CSL and Cochlear (but not Resmed) retain Australian HQs
- Staff disruption will outweigh any benefits

**My view: It will happen at an increased rate after commercial value becomes evident or firms will be bought and moved**

# Something Else?

## (3) A move towards lower technical risk with proven drugs

### For less technical risk:

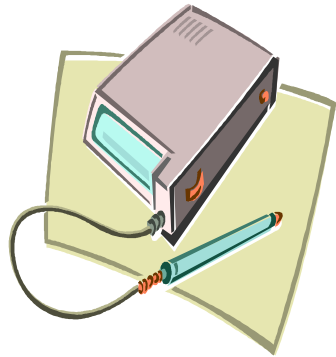
- It's already happening – in-licensing, generics, combinations
- Easier path through regulatory if safety profile established
- Investors understand it better
- Many opportunities for niche applications

### Against reducing technical risk:

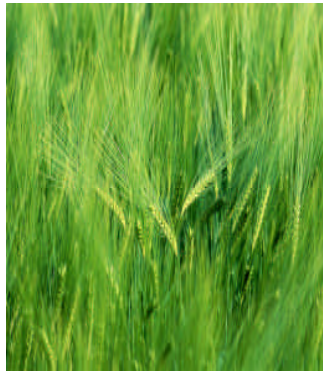
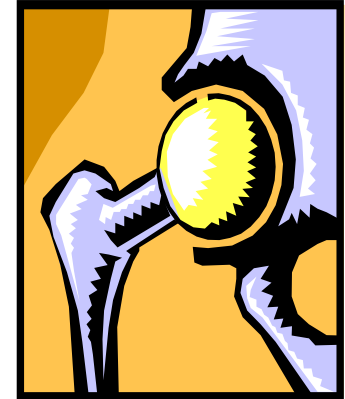
- Possibly less upside
- Rather boring for R&D staff

**My view: It will happen more and more**

# Where does that Leave us over the next Decade?



- Researchers are conservative so peer review pressure will inhibit NH&MRC support for new areas; thus:
- Drug research will still dominate
- We may miss the diagnostics boom
- Investors will adapt to success
- Firms with cash flow will succeed
- But must focus on niche markets



## And for Bioprocessing?



- NCRIS-supported facilities will succeed
- A GMP mammalian cell plant will come
- Pharming will still have major problems
- We will still go offshore for scale-up
- Many new opportunities in biofuels
- New opportunities in industrial biotech
- Bioprocessing staff will be in demand but will probably need offshore experience

