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# Commercialisation of research outcomes.

## The 30 year journey at The University of Queensland

**Dr Judy Halliday**

**Senior Director – Commercial Engagement**



# Commercialisation – What is it?

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Process of managing the transfer of research outcomes to broad market application

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Process of managing the transfer of research  
outcomes to broad market application

# Why Commercialise?

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Satisfaction of bringing benefits to society - IMPACT

- *creating jobs or curing disease; solving a problem for industry or society*

Industry Engagement

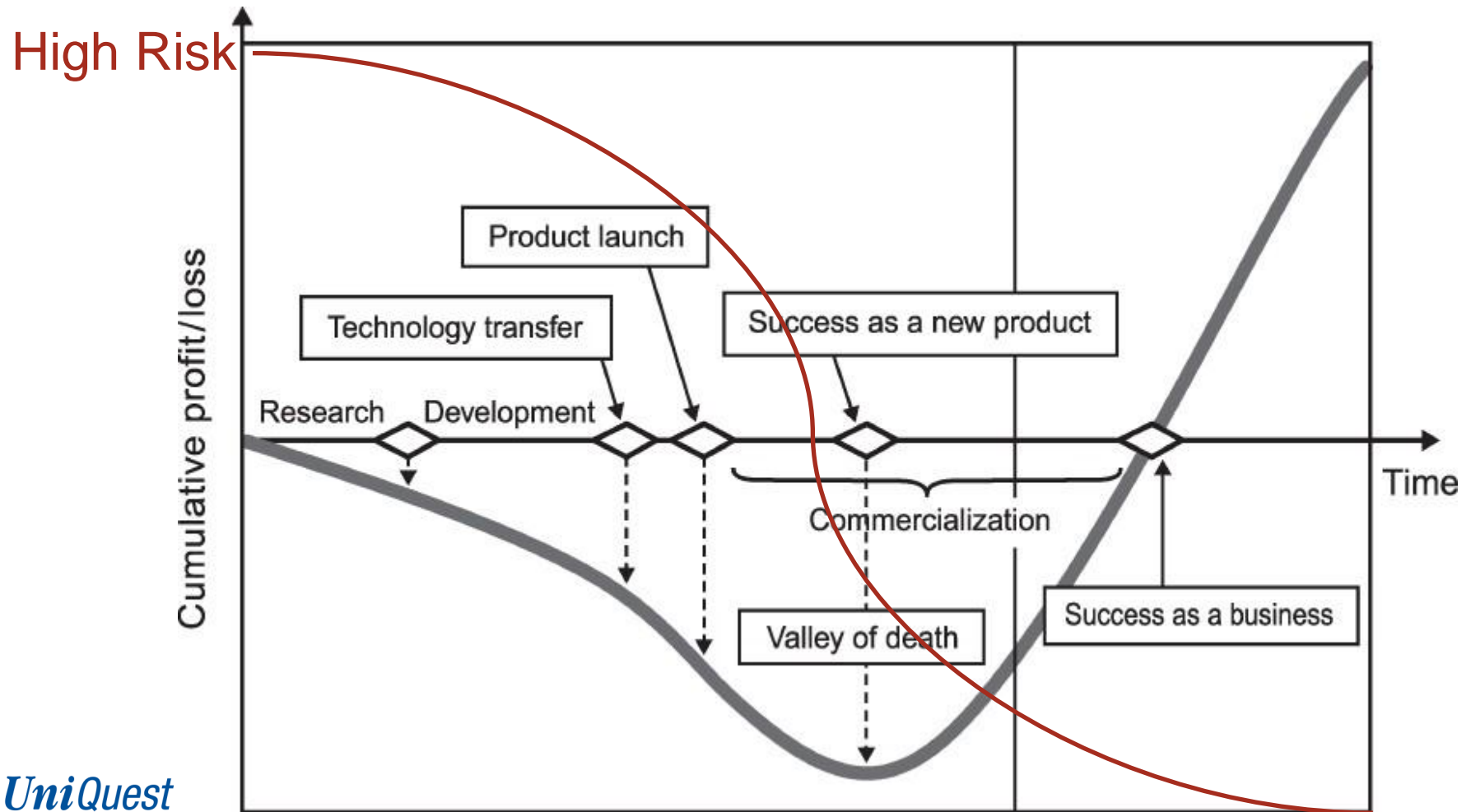
- *expanded career options + enhanced 'employability' for graduates and staff*
- *Assuring relevance of teaching and research programs.*

Economic Benefit

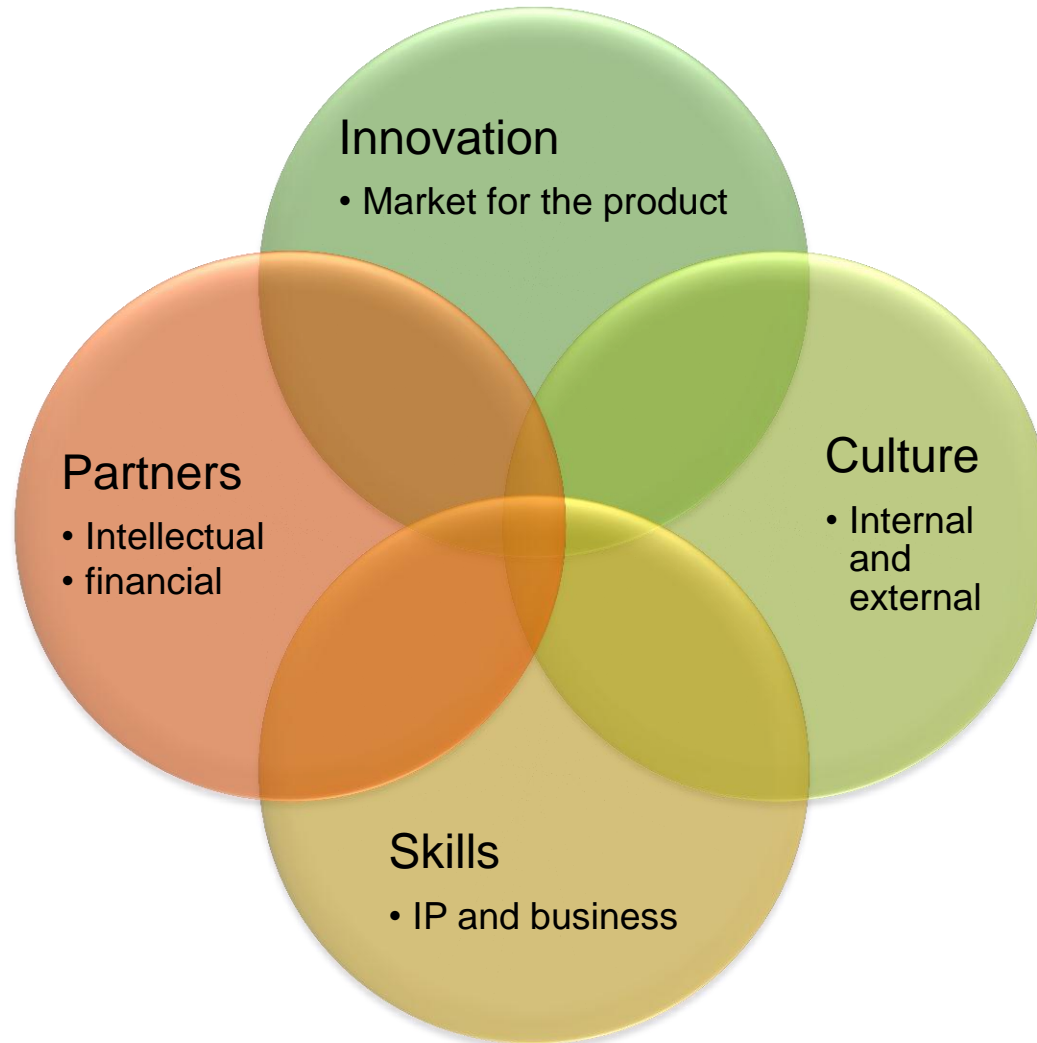
National economic, social and political imperatives

Relative autonomy - Another source of funding for further R&D effort

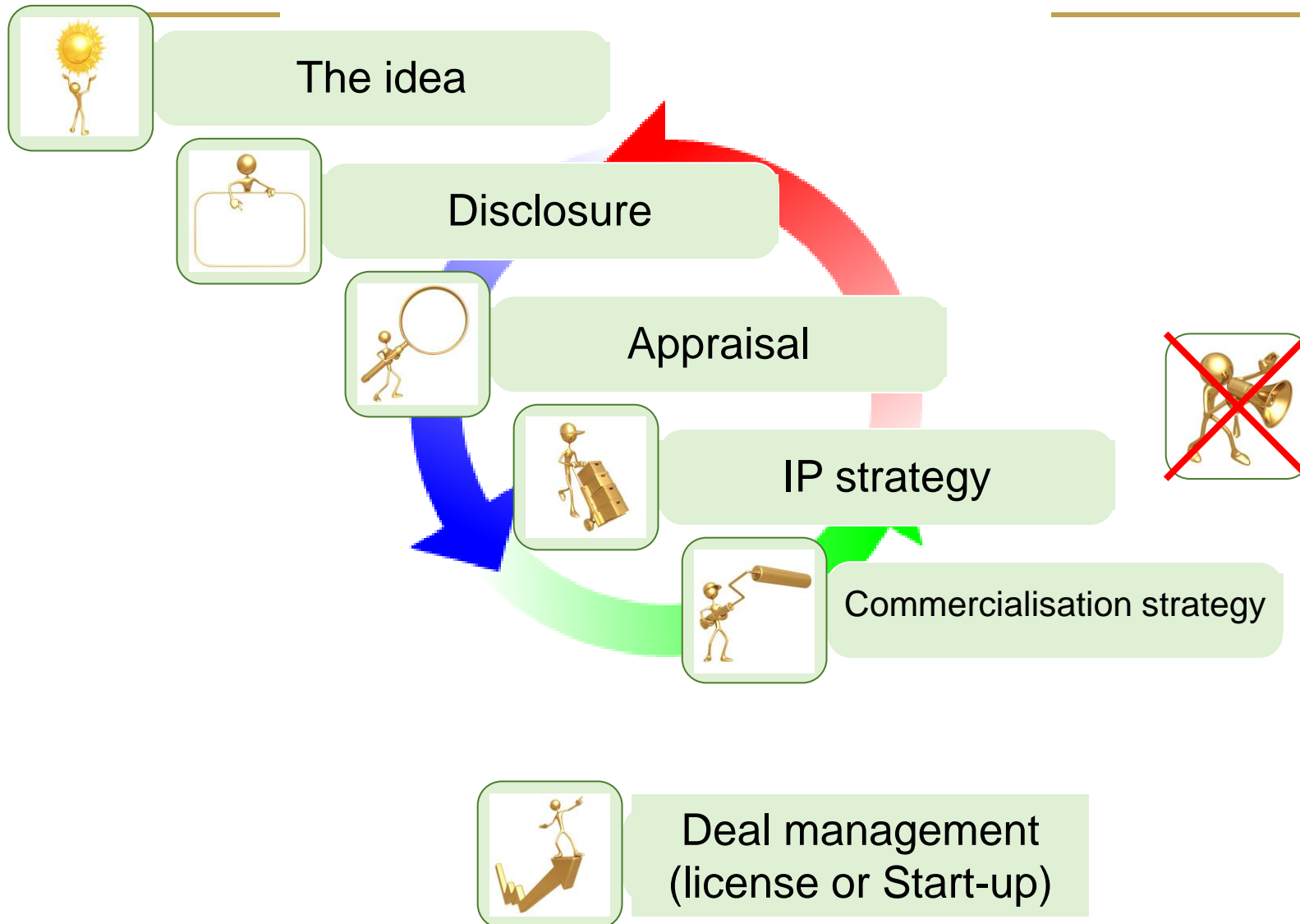
# The challenge



# Ingredients for Success



# The process



# COMMERCIALISATION FOR IMPACT

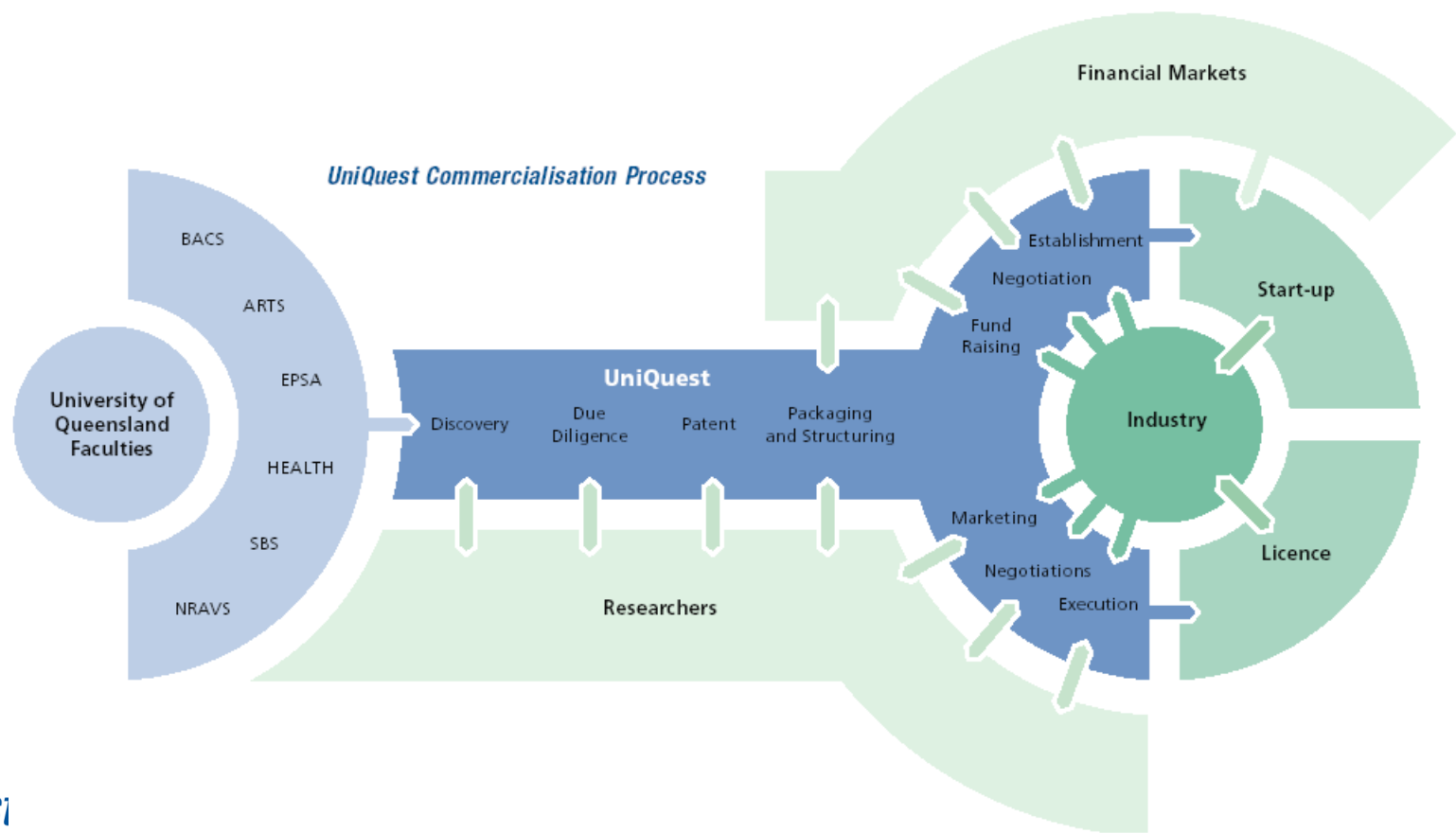
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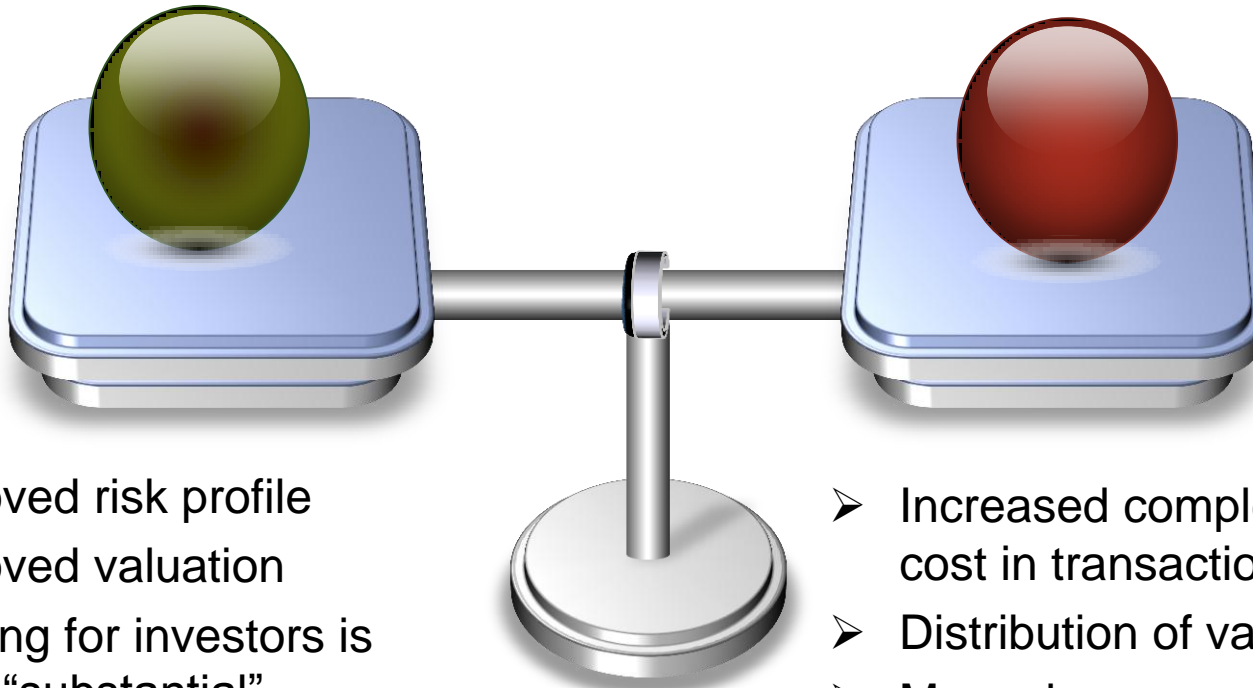
- UniQuest is one of Australia's largest and most successful university commercialisation groups (Founded 1984)
- From an intellectual property portfolio of 1500+ patents it has created over 70 companies
- Since 2000 more than A\$450 million has been raised to take university technologies to market
- \$3B annual sales of products based on UQ research outcomes and licensed by UniQuest
- UniQuest – is a global top 10% of university commercialisation companies
- Unique embedded model





# The complexity - skills and people





- Improved risk profile
- Improved valuation
- Offering for investors is more “substantial”
- “whole is more than the sum of the parts”
- Collaboration

- Increased complexity and cost in transaction
- Distribution of value
- Managing expectations
- Differing legal and regulatory environments
- Collaboration

## projects

- ✓ Fit
- ✓ Focus
- ✓ Quality
- ✓ Need



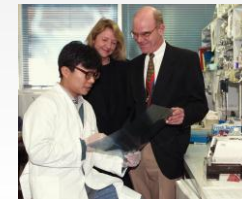
## place

- ✓ Proximity
- ✓ Policy
- ✓ Funding
- ✓ infrastructure



## people

- ✓ Passion
- ✓ Persistence
- ✓ Collaboration
- ✓ Culture



## projects

- ✓ Fit
- ✓ Focus
- ✓ Quality
- ✓ Need



- Does it makes sense - business and science?
- Gaps and complementarity
- Appropriate focus on business deliverables
- Market need identified and quantified

## place

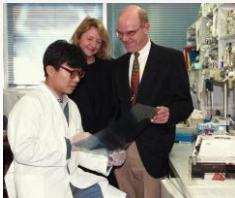
- ✓ Proximity
- ✓ Policy
- ✓ Funding
- ✓ infrastructure



- Do the parties need to be co-located?
- Jurisdictional variations in tax, corp law etc
- Availability of funding – all forms
- CAPEX vs OPEX

## people

- ✓ Passion
- ✓ Persistence
- ✓ Collaboration
- ✓ Culture



- The most important!
- Still more important...
- Collaboration not convenience
- In the individuals, institutions and local environment.

# Industry Engagement – Drug Discovery & Development



GEORGIA  
RESEARCH  
ALLIANCE

CANAAN PARTNERS

## Outreach initiatives & industry networks



Q.E.D. ALLIANCE



Biotechnology  
Industry  
Organization

IndustryConnect

Improving links between industry and academia



EMORY  
UNIVERSITY



georgia venture partners



MedImmune

uniseed



HealthCare Ventures LLC

## Working with UQ Commercial Champions - licenses and start-ups

QUE  
Oncology



Technology Licenses



Integrated Preclinical Drug  
Development



## Working with UQ Commercial Champions - grants, alliances



Australian Research Council



Alchemia



LEO Pharma



## Commercial Champions incl.

- Ian Frazer
- Maree Smith
- Ranjeny Thomas
- Mark Kendall
- Matt Cooper
- Greg Monteith
- David Fairlie
- Mark Walker
- David Craik
- Trent Woodruff
- Glenn King
- Anton Middelberg
- Craig Williams

## Capability Stars incl.

- Faculties
- Institutes
- Centres

## Development Stars incl.

- Maree Smith
- TetraQ
- Matt Cooper

# Track Record

## GARDASIL

More than 100 million doses of the HPV vaccine, Gardasil and have been distributed worldwide.



## IMAGE CORRECTION FOR MRI

75% of high field MRI scanners use UQ image correction technology.



GE Healthcare

## TRANSIENT BLOCKING UNIT®

High-speed circuit protection devices using MOSFET semiconductors sold by Bourns.



## LASER MACHINING OF TITANIUM ALLOYS

Technology used by Ferra Engineering to manufacture F-35 JSF components.



## LYMPHEDEMA DIAGNOSIS

Bioimpedance diagnosis of lymphedema, covering over 20 million lives.



## EXTREMITY MRI SCANNERS

GE Optima MR430s 1.5T extremity scanner uses novel magnet design by Magnetica.



GE Healthcare

## SLOPE STABILITY RADAR

Safety monitoring of open pit mines in over 20 countries.



## BIOPLASTICS FOR PACKAGING

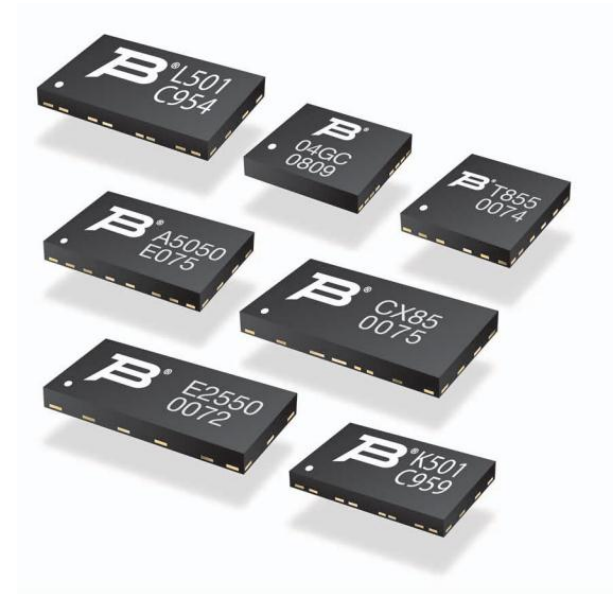
Corn starch-based bioplastics used by Cadbury, Nestle, Marks & Spencer, Coles and others.







- Surge protection components and modules for communications applications
- *“first new approach to electronics circuit protection in over a decade”*
- Richard Harris (Student), ITEE
- Patented in 1996
- Spinout in 2001 (Uniseed investment)
- Moved to US in 2004 (US VC investors)
- Acquired in 2008 by **BOURNS®**
- Now used in:
  - Cell phone base stations
  - Data communications interfaces



- Systematic approach to improving parenting skills developed over many years by professor Matt Sanders, University of Queensland
- *“It started as a doctoral thesis more than 30 years ago. Now with more than 250 published papers, including more than 140 clinical trials, studies and evaluations behind it, Triple P has become one of the world's most-trusted parenting interventions, cited in reports by the World Health Organization, the US Centers for Disease Control and Prevention, and the United Nations among them”* <http://www.triplep.net/>
- Licensed as a system (brand, training and publications)
- Licenses across the world (available in 25 countries)
- Translated into 20 languages
- >30,000 Triple P practitioners world-wide
- Constantly evolving to meet market eg Lifestyle Triple P, Workplace Triple P





- Vaccine for protection against HPV /cervical cancer
- First sales in 2006
- Over 100 million doses delivered.
- Professor Ian Frazer and the late Dr Jian Zhou at the Diamantina Institute
- Licensed to





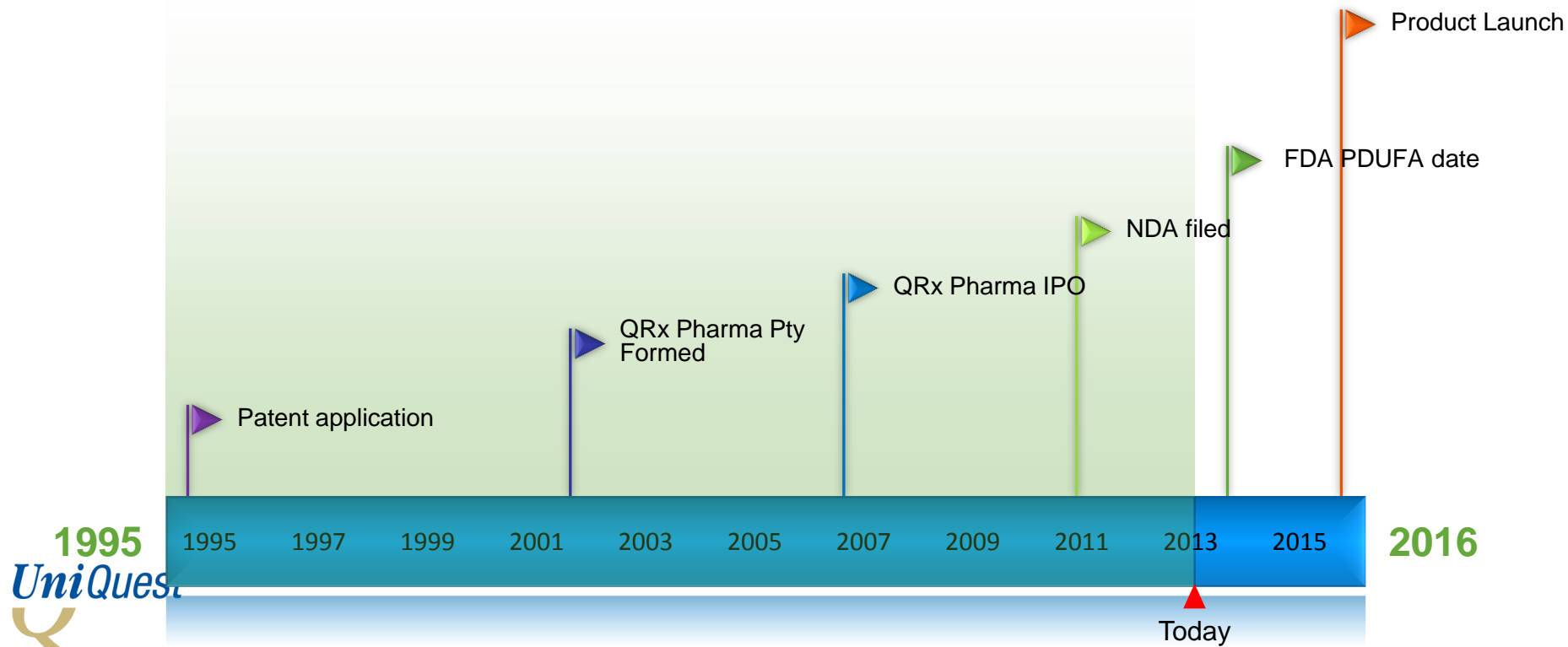
- Slope stability radar
- Spin-out from CRC for Sensor Signal and Information Processing
- Incorporated in 2001
- 2003: Capital raising
- 2007: Revenue of \$21M
- Buyout by Crescent Capital Partners (Private Equity firm) in 2010



- 20+ lives saved in first years of operation
- 500+ wall failures detected
- 150+ radars deployed in 20+ countries
- 150+ people employed worldwide

- *“The Company’s Dual Opioid® platform technology – a patented fixed-ratio combination of morphine and oxycodone – provides effective analgesia while decreasing the frequency and severity of clinically important opioid-related side effects”*
- Professor Maree Smith
- Patented in 1996
- Spinout in 2002 (multiple investors)
- ASX IPO in May 2007 (QRX raised AUD \$50 million)
- NDA filed 2011, refile expected Nov 2013
- Product Launch expected in 2H CY 2014:





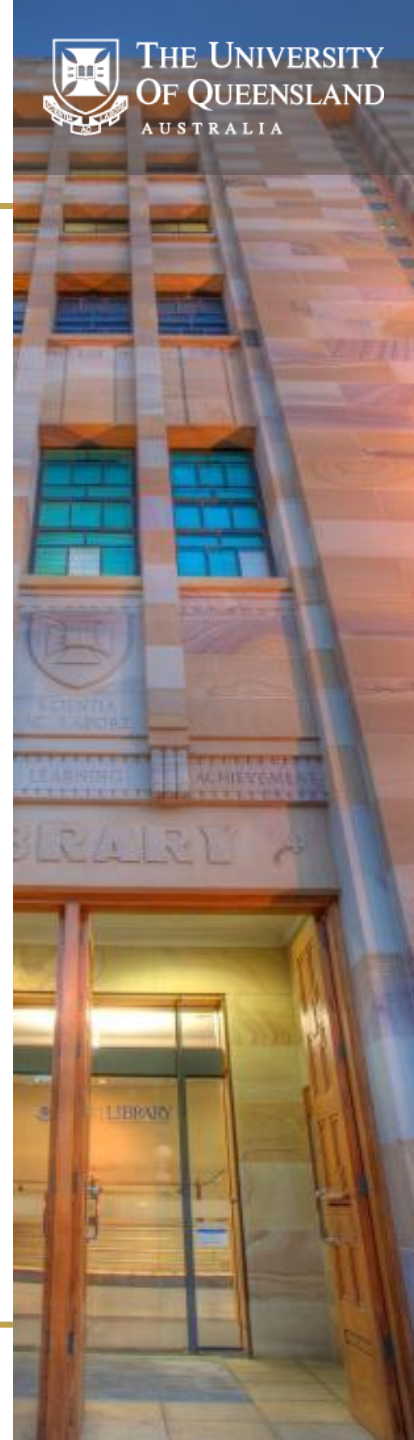
# QUESTIONS ?



# INNOVATION ENGINE - A LEADING UNIVERSITY

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- Established 1910
  - AU \$1.64 billion total operating revenue
  - Leading Australian university in research and research commercialisation
  - 45,548 students
  - 11,398 international student from 134 countries
  - 12,268 graduate students
  - 7453 staff
  - 200,000+ Alumni in 160 countries
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# ONE UNIVERSITY – FOUR CAMPUSES



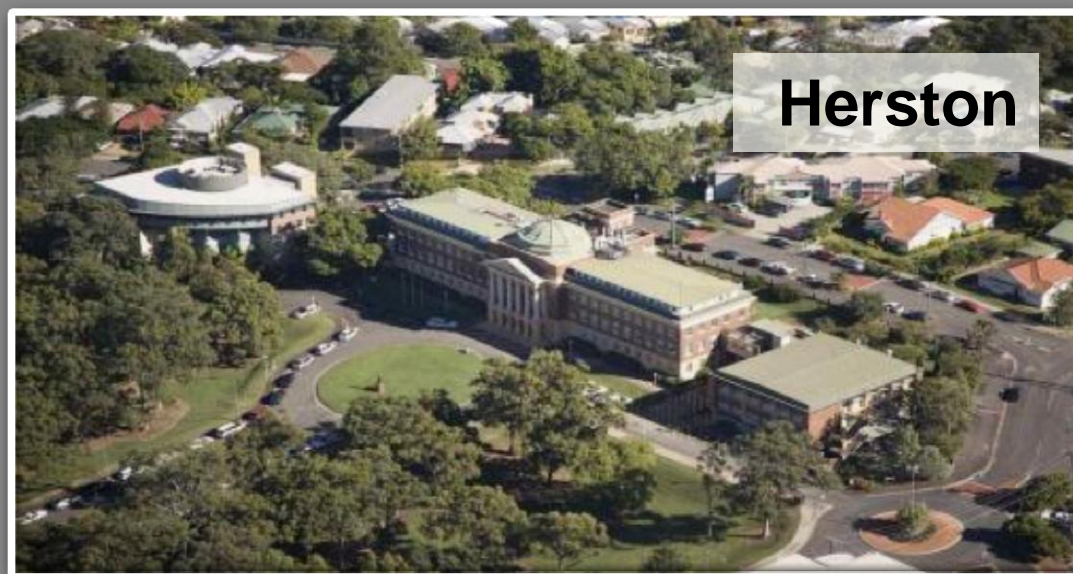
THE UNIVERSITY  
OF QUEENSLAND  
AUSTRALIA  
THE UNIVERSITY  
OF QUEENSLAND



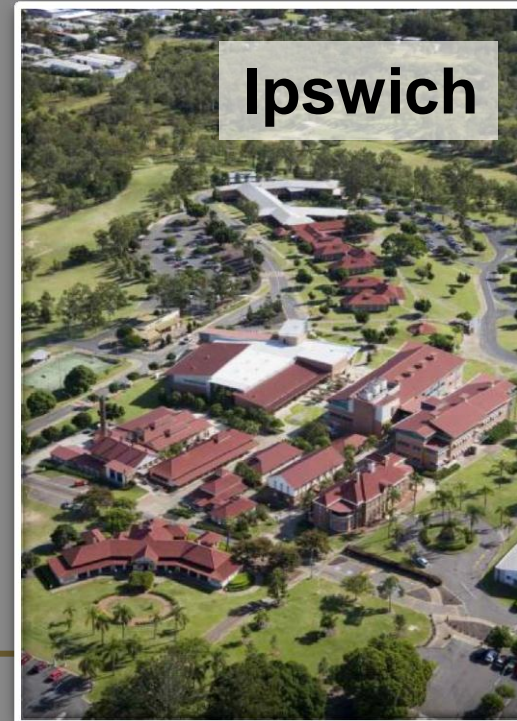
**St Lucia**



**Gatton**



**Herston**



**Ipswich**



# A COMPREHENSIVE UNIVERSITY

## Six Faculties

1. Arts  
(Humanities)
2. Business, Economics & Law
3. Engineering, Architecture & Information Technology
4. Health Sciences
5. Science  
(including Vet Science & Agriculture)
6. Social and Behavioural Sciences

## Eight Institutes

1. Australian Institute for Bioengineering & Nanotechnology
2. Institute for Molecular Bioscience
3. Queensland Brain Institute
4. UQ Diamantina Institute in the Translational Research Institute
5. Queensland Alliance for Agriculture & Food Innovation
6. Sustainable Minerals Institute
7. Institute for Social Science Research
8. Global Change Institute



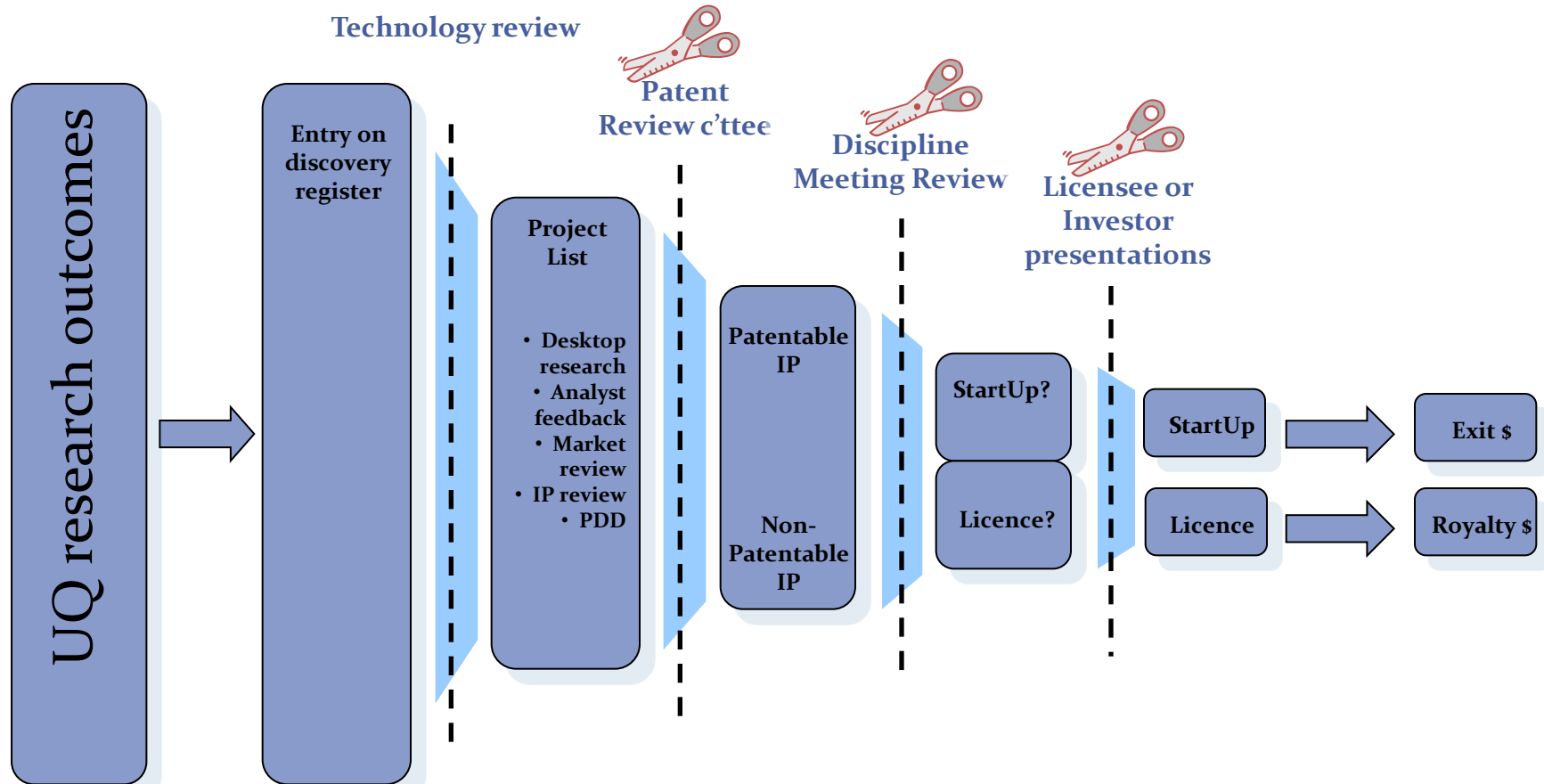
# Research at UQ

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- \$530m funding for research, from government, industry and philanthropy
  - The 2012 Excellence in Research for Australia (ERA) exercise confirmed UQ as one of the nation's top three universities
  - Research at UQ is well above world standard in more specialised fields than at any other Australian university
  - UQ's outstanding critical mass offers researchers significant interdisciplinary capability
  - Focus on quality across a broad range of fields
  - Encourage technology transfer and commercialisation
  - Focus on interdisciplinary research that addresses major challenges
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# The process



# Track Record

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**QRx Pharma** – MoxDuo for the treatment of severe to acute pain  
*December 2011, partnered with Actavis, world's 4<sup>th</sup> biggest generic drug company, to develop and market MoxDuo IR (morphine and oxycodone) in the US. New Drug Application (NDA) has 25 June 2012 approval target date.*



**Spinifex Pharmaceuticals** – Treatment of post-herpetic neuralgia  
*September 2011, commenced treatment of 1st patients in Phase 2 clinical trial of EMA401 in PHN, a condition that develops in some patients following herpes zoster (shingles) and where existing therapy does not always relieve pain.*



**Xenome** – Novel non-opiate therapeutic for moderate to severe pain  
*December 2011, closed A\$8 million financing in to fund Xen2174 Phase 2 clinical trial to demonstrate improved postoperative pain relief for an extended period following a single intra-theal administration immediately prior to surgery.*



**Protagonist Therapeutics** – disulphide rich peptide drug discovery  
*January 2011, entered into a collaboration with Ironwood Pharmaceuticals, Inc. (NASDAQ: IRWD) to discover novel peptides for potential development.*

# Case Study - ImpediMed

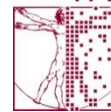
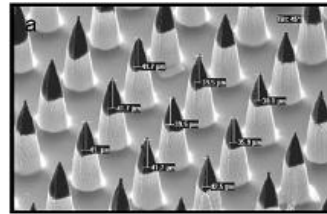
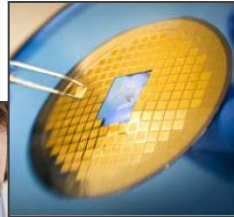
Non-invasive diagnostic and monitoring for lymphoedema  
Affects 30% of women who undergo breast cancer surgery  
Approx. 400,000 Australian sufferers

- |       |   |
|-------|---|
| 1988  | • Research commenced                                |
| <hr/> |   |
| 1999  | • Patent filed by UniQuest                          |
| 2000  | • ImpediMed Ltd established                         |
|       | • First investment from Pharma Corporation          |
| 2004  | • Regulatory submission & market launch             |
|       | • FDA approval                                      |
| 2006  | • Initial venture capital investment                |
|       | • Launch into US and European markets               |
| 2007  | • Australian Stock Exchange listing                 |
|       | • \$18 million capital raise                        |
| 2011  | • American Medical Assoc. issues reimbursement code |





# Vaxxas Pty Ltd – Australia's second largest first round investment in a university start-up



HealthCare  
Ventures LLC



BRANDON CAPITAL PARTNERS  
*creating value in the life sciences*



## The Technology

- Nanoprojections on a silicon 'patch' – low cost of manufacture
- Vaccine dried onto nanoprojections – no need for cold chain
- Vaccine delivered to dermis layer of skin with high concentration of immune cells – 150 times less vaccine required

## The Journey

- |         |   |
|---------|---|
| 2006    | Mark Kendall comes to UQ on a QLD Smart State Fellowship                                    |
| 2007-08 | 6 patents lodged, taken through PCT   |
| 2008-10 | 47 presentations to industry and investors  |
| 2009-11 | Already receiving strong interest from pharmaceutical companies for use with their vaccines |

## The Transaction

- 2011, syndicate of 3 investors organised, due diligence managed, deal completed
- \$15m investment to take the technology through product development to first in-human studies and subsequent commercialisation

Commercialise intellectual property, expertise and research outcomes to create demonstrable value for UQ and ensure UniQuest is self-sustaining.

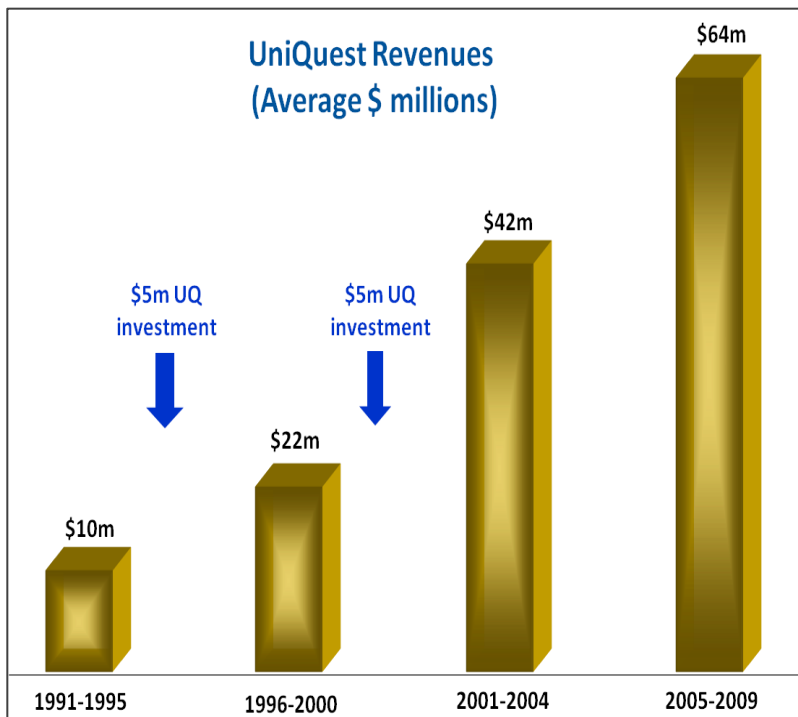


Facilitate commercialisation to achieve profound commercial, environmental and social benefits.

# UniQuest Pty Limited – as a business

## INPUT

UniQuest revenues  
(Average A\$ millions)



## OUTPUT

Cumulative funds raised  
(A\$ millions)

