

# Bluechiip Ltd

May 2016





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## Corporate





## Corporate overview

Shareholders					
Dr. Stephen Woodford	7.96%				
Chairman & Entities	7.42%				
Top 20 Shareholders	46.15%				
Founder	2.20%				



Summary					
ASX Code	ВСТ	Market Cap. (31 Mar '16)	\$4.83m		
Share Price (31 Mar'16)	2.5c	Net Cash (31 Mar'16)	\$0.27m		
Shares on Issue (31 Mar'16)	193,376,311	Enterprise Value (31 Mar'16)	\$4.56m		



## **Our Team**

#### Board

#### **Iain Kirkwood**

#### Chairman

Experienced investor and non-executive director (listed and unlisted). Iain has considerable practical and operational experience gained from a successful financial career spanning 35 years including in resources, manufacturing and latterly healthcare in Australia, Britain and the USA. Iain has been a major shareholder in Bluechiip for over 5 years.

#### **Andrew McLellan**

#### **Managing Director**

Experienced in innovation and commercialisation combined with significant technical and operational background. Andrew has held senior positions including as VP of Business Development in North America and Director at Leica Microsystems (previously Vision BioSystems a division of the publicly listed Vision Systems), and as CEO of the Advanced Manufacturing Co-operative Research Center (AMCRC)

#### **Michael Ohanessian**

#### Non-executive Director

CEO and Managing Director of
Praemium Ltd, Michael brings
executive experience in
technology-related businesses.
Previously CEO of Vision BioSystems
Michael led the technology
commercialisation into global markets
before its parent Vision Systems was
acquired by US based Danaher Corp.
Michael brings a mixture of
operational, strategic and leadership
capabilities to his role at Bluechiip.

#### Team

#### **Scott Turner**

Engineering Manager

#### **Dr Ian Johnston**

Product Engineering Manager, MEMS (EU)

#### **Irvin Teoh**

Finance Manager

#### **Oscar Val**

Technical Sales and Marketing Manager

#### **David White**

Business Development North America (US)



Unique patented technology combining secure wireless tracking with integrated temperature sensing for extreme environments



## Bluechiip

## Sample tracking for extreme environments using MEMS sensors

#### **The Company**

- Founded in 2003
- Listed on Australian Securities Exchange (ASX) in 2011
- Head office in Melbourne, Australia
- Distributors in Nth America, Europe, China, Hong Kong,
   Japan, Taiwan, Sth Korea, Malaysia, Sth America and Australia
- Key manufacturing partners in Europe, UK and Malaysia.
- OEM Partnering agreement in IVF
- Strong IP portfolio 21 granted patents in 7 families

#### Our Product: Chip + Reader + Software

- Unique differentiated technology to labels, barcodes and RFID
- Operates reliably down to -196° C
- Instant sample temperature sensing
- Gamma resistant
- Reduced human error
- Increased productivity
- Extremely difficult to clone
- Applications in niche markets eg cryogenic storage and Biobanking



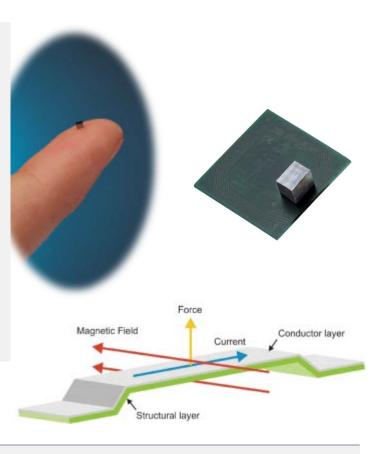
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## Core Technology | Chiip

#### MEMS smart Chiip

Micro-Electro Mechanical Systems (MEMS) is a manufacturing technology used to make micro devices with features less than the width of a human hair

- Functional at Cryogenic temperatures (-196° C)
- Unique ID coded into each Chiip at manufacture
- Provides temperature when polled by reader
- Reading time under 0.5 second, even through frost
- Gamma resistant
- Can be molded into any plastic





## Core Technology | Chiip

### MEMS smart Chiip

Micro-Electro Mechanical Systems (MEMS) is a manufacturing technology used to make micro devices with features less than the width of a human hair

Tag Property	Results
Temperature Range	Operating Temperature without encapsulation : -196°C to 60°C Storage Temperature without encapsulation: -196°C to 150°C
Gamma Radiation	Tags from all development and pre-production lots have been tested, with no change in performance. One lot was exposed to 500kGy (11 times medical requirements), with no change.
Cryogenic Cycling	Sample tags from all lots are accelerated life tested by being cycled up to 200 times from LN2 to room temperature. The tags are still operational after this process.
Reading/Scanning	Tags have been continuously read over one million times, with no change in performance.
Cryogenic Storage	Tags from different lots have been stored at Bluechiip for over 500 days in LN2, and tags are still operational when read at LN2 and room temperatures during this period.
Injection Molding	Bluechiip has carried numerous tests of direct over mould of the Bluechiip's tag using polypropylene and other plastics.
Microwave, Frost and Drop Testing	Through the trials described in this section, the Bluechiip tag survives microwave and drops.
High security/Anti counterfeiting	Each bleuchiip tags ID is mechanically encoded during manufacture making it extremely difficult to clone or corrupt

#### MEMS chips are superior to RFID in harsh environments

Most RFID tags use integrated circuit (IC) technology with electrical components sensitive to damage by temperature extremes and gamma radiation.

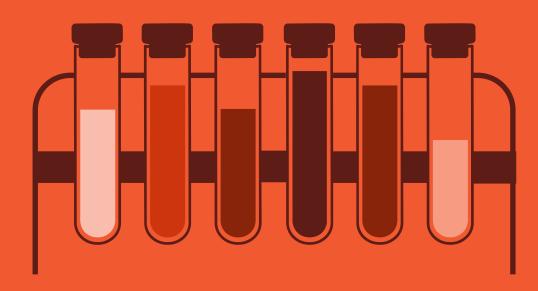
MEMS devices contains micromechanical components that are rugged and able to withstand exposure to wide temperature ranges and gamma radiation.





# Primary Market Biobanking

300+ million biosamples per annum, 2+ billion in storage





## Biobank tracking technology is not keeping up with the increasing value of biosamples



Tissue

**Blood** 

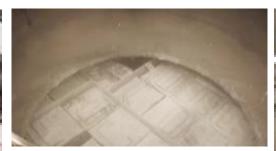
IVF Sperm/Eggs

Plasma

**StemCell** 







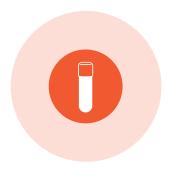




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## Biobanking today

300+ million biosamples per annum, 2+ billion in storage







Dual labelling



Emerging guidelines (ISBER, CAP etc) including temperature

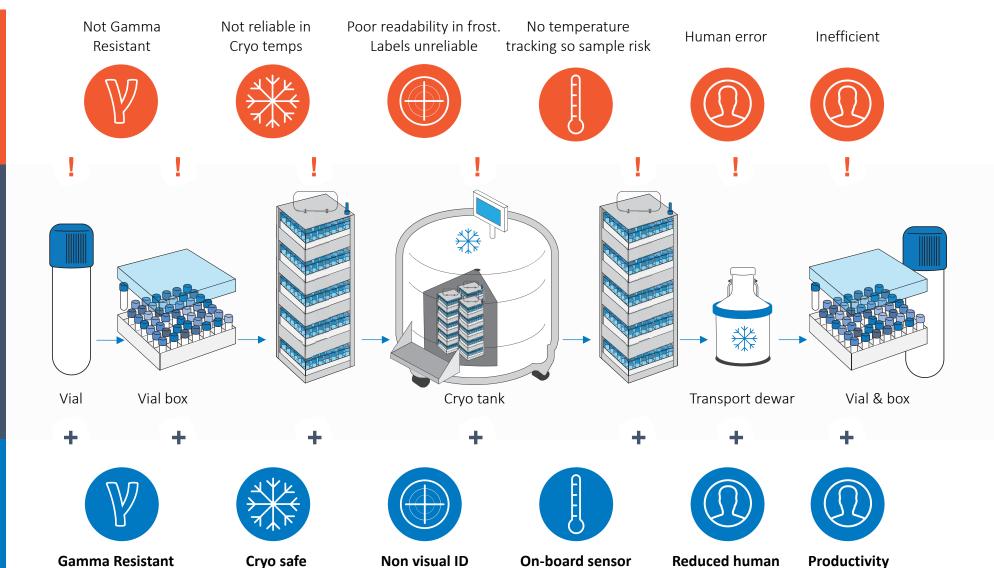


Increasing demand for Cryogenic storage

Survives extreme

temps





Temperature sensing

Immune to gamma

irradiation

(used for sterilisation)

Reads through frost

improvements

error



## Alternative technologies

		LABELS	BARCODES	RFID	BLUECHIIP
Y	Gamma Resistant				
TAKE THE PROPERTY OF THE PROPE	<b>Cryo safe</b> Survives extreme temps				
	<b>Non visual ID</b> Reads through frost				
	On-board sensor Temperature sensing				
	Reduced human error				
	Productivity improvements				

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## **Our Sales**

























## PETER MAC CASE STUDY:



#### **METHOD**

Bluechiip tracking devices were attached to five cryocyte cryopreservation bags.

All bags were transferred to a cryogenic storage tank. Each bag underwent five consecutive freeze-thaw steps.

#### **RESULTS**

All bags were successfully identified without the need to manually lift and visually check the patient identification label.

The Bluechiip tracking technology provided localised temperature information during the retrieval process.

Faster and more consistent search times compared to manual methods.

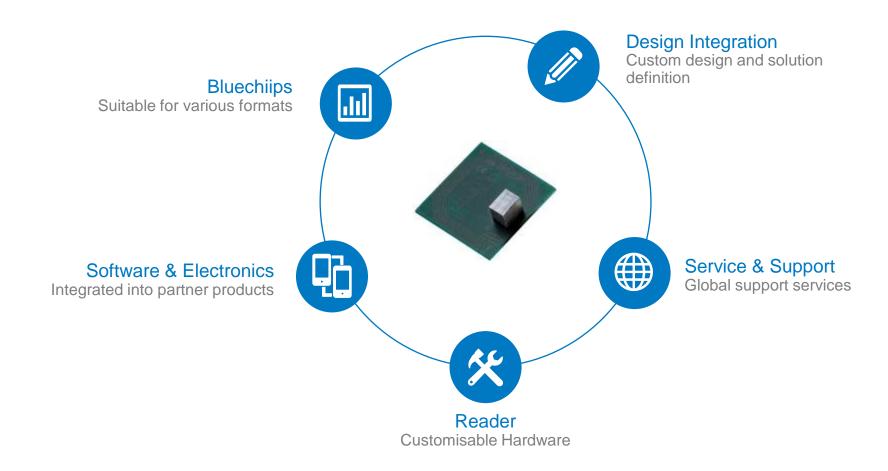
Bags were maintained in more ideal, less disrupted conditions compared to manual methods.



# Strategy, Opportunity, Pipeline & Execution



# Embedded solutions for OEM partners

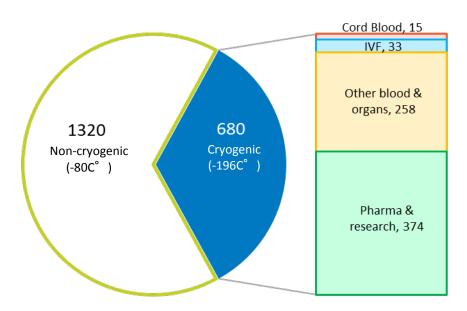




## **Primary Market Opportunity**

### Global Biopreservation Market Greater than \$2B in 2015

Biobanking samples (millions)

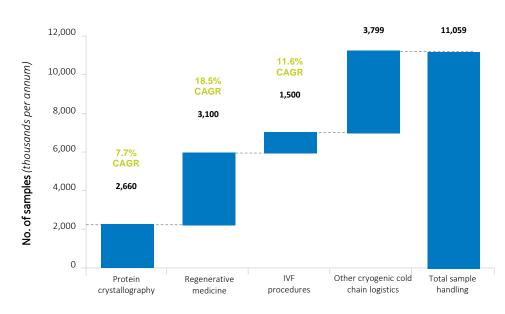


Total biobanking: 2B samples

Cryogenic biobanking: 680M samples

Note: Cryogenic biobanking is a segment of the biobanking market which stores samples at cryogenic temperatures (-196C) for extended periods. The market is dominated by human samples for biomedical applications.

#### Cryogenic transport and handling



### Annual biobanking: 300M samples

### Cryogenic handling: 11M samples

Note: Cryogenic transport refers to supply, transport and handling from long term storage facilities to application sites s well as short term storage and manipulation of samples at cryogenic temperatures (e.g. personalised medicine and protein crystallography).

Sources: Visual Fuse and MarketsandMakets 2014

# Pipeline Progress – Update Feb 2015



#### **ASX Announcement**

bluechiip®

#### **ASX Announcement**

For immediate release

12 February 2016

For immediate release 3 December 2015

#### Bluechiip & Genea Biomedx License and Supply Agreement

Bluechiip Limited (ASX:BCT, "Bluechiip" or the "Company"), leader in the development of sample tracking technology for harsh environments, and Australian fertility innovator Genea Biomedx, have entered into a license and supply agreement to incorporate Bluechiip's sample tracking technology into Genea Biomedx's range of Assisted Reproductive Technology (ART) instruments used in NF clinics across the globe.

The agreement will see groundbreaking technologies coming together to provide automation, standardization and traceability for the treatment of patients with infertility. Bluechiip's wireless tracking technology uniquely suited to operate in -196°C cryogenic temperatures combined with Genea Biomedx's platform technologies and access to global markets will give fertility clinics across the world innovative and effective tools.

Under the terms of the License and Supply agreement:

- Bluechiip will exclusively license and supply Genea Biomedx with Bluechiip technology in the field of Assisted Reproductive Technology
- The license and supply will progress through staged development phases including concept due diligence, product development and subsequent commercial release
- The license includes milestone payments with minimum quantities on commercial release

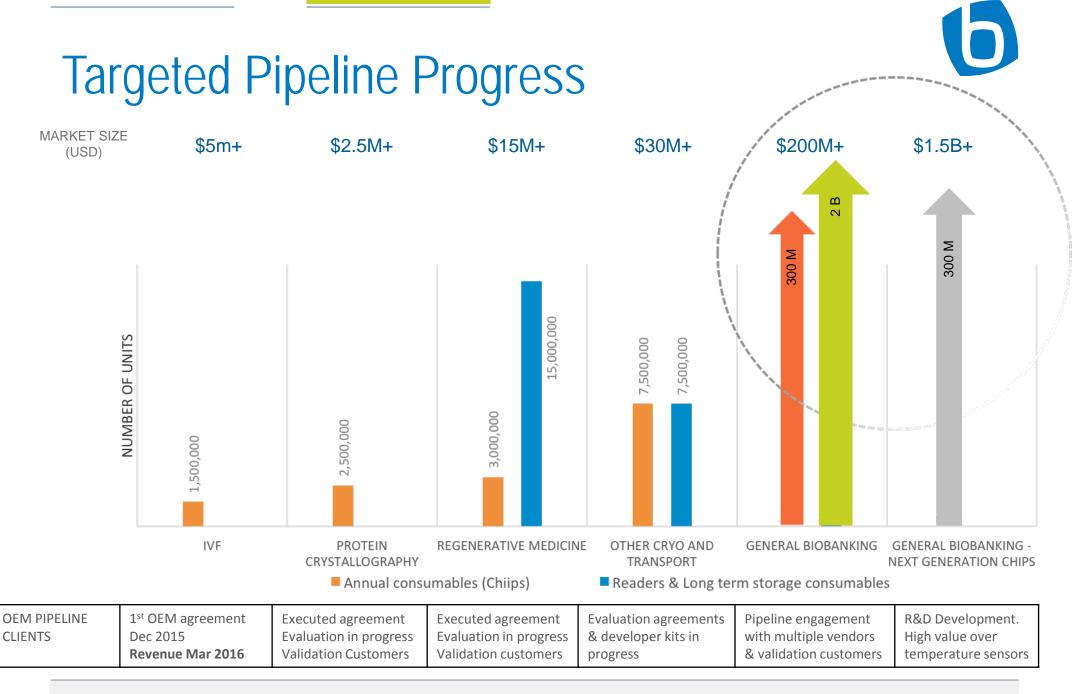
#### Bluechiip Passes Major Milestone in OEM Partnership

Bluechiip Limited (ASX:BCT, "Bluechiip"), leader in the development of sample tracking technology for harsh environments, is pleased to announce that in accordance with the license and supply agreement announced on the 3rd December 2015 Bluechiip has now successfully completed the concept due diligence milestone and is progressing to the product development phase with its partner in the field of Assisted Reproductive Technologies (ART) and In Vitro Fertilisation (IVF) market.

Mr Andrew McLellan, Bluechiip's Managing Director & CEO, said, "We are excited to be moving to the development phase with the achievement of this milestone, it is a very significant step for Bluechiip. Our ability to work with partners to incorporate our technologies is fundamental to our strategy and in the field of ART and IVF we are successfully working to incorporate our technologies into partner's products."

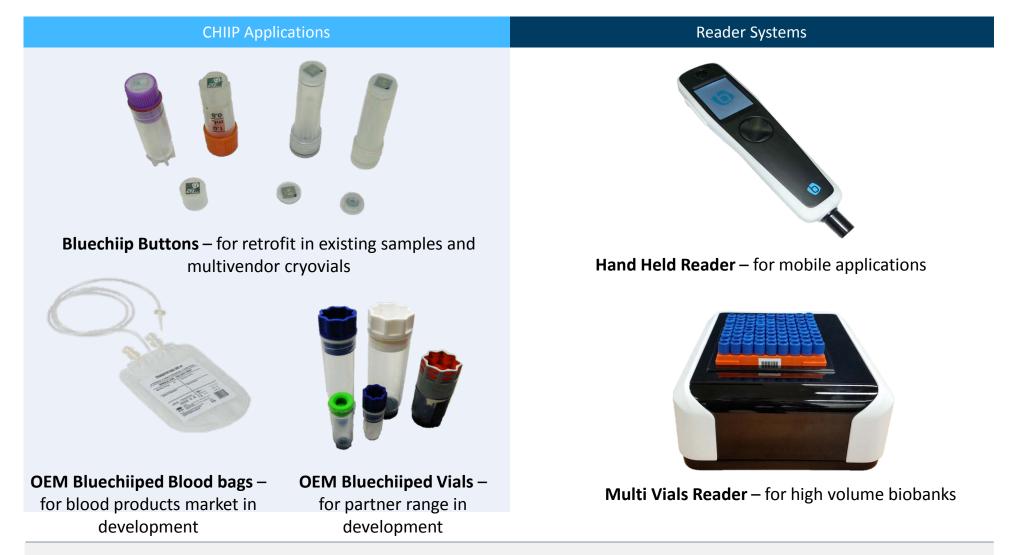
Mr McLellan added, "The partnership strengthens both parties' positions and most importantly ultimately leads to customer benefits in standardization, automation and traceability."

This milestone and the associated milestone payment is a major step forward for Bluechiip and comes alongside two ongoing development agreements with confidential partners in the fields of Protein Crystallography and Cell Therapies."





## **Product Pipeline Expansion**





## Other addressable markets



## Cold Chain Logistic Pharmaceuticals

Item level **temperature tracking** of pharmaceuticals through-out the cold chain cycle.



#### Cold Chain Logistics Food

Item level **temperature tracking** of frozen and temperature sensitive food stuffs through-out the cold chain cycle.



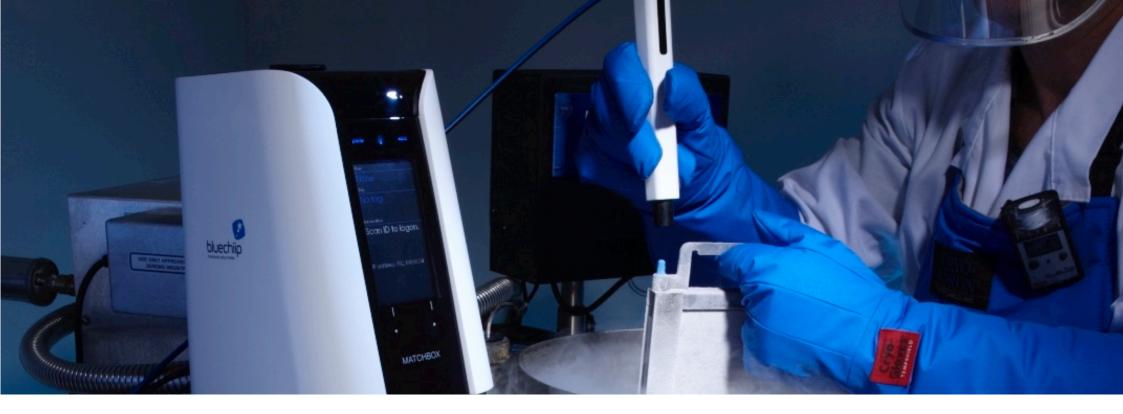
## Industrial and Manufacturing

High temperature tracking, structural health monitoring, tracking of tools and parts that are exposed to ionizing radiation or gamma radiation including sterilised medical devices, disposables and some food products.



## Security & Defence

Anti counterfeiting fashion, food and high value commercial items. Cloning a bluechiip® tag is extremely difficult. tracking of tools and parts that are exposed to ionizing radiation, security and defense.



# Bluechiip

Andrew McLellan
Managing Director & CEO
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## **Bluechiip Corporate Overview**

bluechiip

April 2016

#### What we do

Bluechiip (ASX:BCT) provides unique and patented technology that combines secure wireless sample tracking with integrated temperature reading for use in extreme environments.

#### The Company

Founded in 2003 and ASX listed in 2011, Bluechiip has its head office in Melbourne, Australia and distribution channels around the globe.

Bluechiip's strong IP portfolio includes 21 granted patents in 7 families, including the core MEMS (Micro Electro Mechanical System) memory device and sample storage and monitoring systems that include sample level ID & temperature tracking.

#### Our product

The core Bluechiip system consists of a wireless tracking/measuring chip, a reader, and associated software.

- The chip: The Micro Electro Mechanical Systems (MEMS) chip is a purely mechanical device with no powered electronics. It is different from labels, barcodes and radio-frequency identification (RFID) technology in that it performs in extreme environments, operating reliably at -196°C, resistant to gamma sterilisation, is extremely difficult to clone or corrupt and provides temperature reading. It can be attached to any plastic for a variety of uses (e.g. in vials or consumables).
- The reader: The reader can be handheld or multi-point. It enables instant tracking of ID and temperature sensing, increasing productivity and reducing human error.
- The software: The easy-to-use software database has wireless connectivity and keeps a chain of custody data record for samples in one location.

#### Primary target market

Bluechiip's initial target is the \$2b biopreservation & cryopreservation market, processing more than 300 million

samples per year of tissue, blood, serum, plasma, etc., for industries such as pharmaceuticals, IVF, research and clinical trials.

#### Additional markets

The Bluechiip technology also has applications in cold chain logistics, food, manufacturing, security and defence.

#### Strategy

With a maturing Bluechiip core technology, we are now (as of 2015) actively moving into commercialisation. We have brought in a team with extensive experience in taking technology products to market, and they have decided to initially target companies who handle high-value samples (where the cost of failure is high), such as IVF, regenerative medicine, protein crystallography, cryo transport and pharmaceutical applications. These industries must take all possible steps to minimise the risk of sample failure, and they quickly grasp the value of the Bluechiip system in mitigating this risk.

#### Competitive advantages

There are few technologies that work in extreme environments, and no other technologies provide integrated wireless temperature reading and tracking. Traditional tracking technologies are not suited for the abovementioned industries because:

- Labels and barcodes can't be read through frost, and removing frost to take a reading can damage the sample
- RFID technologies typically do not survive in low temperatures or sterilization.

Conventional temperature-sensing technologies are limited because:

- They sense the environmental temperature, not the temperature of the specific samples.
- They require wiring and electronics, which do not work in harsh environments.









#### Progress thus far

The team has made great progress in the last year, and we are delighted to report that Bluechiip now is receiving revenue from select clients.

#### Key accomplishments:

- The Bluechiip reader has been configured for OEM adoption and is now being adopted by an OEM partner.
- The team has established a technical sales and support team and crafted a developer kit. We are now beginning to train and assist OEM companies to integrate the chip and reader into their own systems.
- We have engaged several lead customers to evaluate and validate our products.
- We are demonstrating a visible revenue stream through OEM licensing fees in the IVF sector. We have also received initial revenue from developer kit sales and validation customers.

#### Projects in progress:

- We are engaged in Government co-funded projects with University of Melbourne and Swinburne University to make Bluechiips adaptable and suitable for various formats.
- We are now standardizing the chip reader for direct customer sales. We have a mature mobile handheld reader and a prototype multi-vial reader.
- We are building a track record of real product applications for OEM proof.
  - Fully executed OEM agreement
  - 2 agreements in place for protein crystallography and cell therapies
  - OEM pipeline has grown from two to over 15 companies.

#### For more information

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