MagSense™ Technology
A New Clinical Diagnostic Technology for Targeted Early Detection of Cancer

PROACTIVE’S CEO INVESTOR SESSION - MELBOURNE
JULY 2018 | ASX: IBX

www.imagionbiosystems.com
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Currency translation
All figures in this presentation are expressed in US Dollars or where identified as Australian Dollars (AUD or A$) are converted, where relevant, at an exchange rate of [0.75] USD/AUD.
Cancer diagnostics is a $100 billion market growing at a CAGR of >7%* with imaging techniques accounting for the largest portion.

Cancer continues to be one of the leading causes of mortality globally despite technical advances in science & medicine made in the last 150 years.

THE CONSENSUS WITHIN THE MEDICAL COMMUNITY & SUPPORTED BY THE SEER CANCER STATISTICS IS THAT MORE LIVES COULD BE SAVED IF CANCER COULD BE DETECTED EARLIER.
# Medical Imaging in Cancer

<table>
<thead>
<tr>
<th>Modality</th>
<th>X-Ray (Mammography) 1895 (1913)</th>
<th>Ultrasound 1956</th>
<th>Computed Tomography (CT) 1972</th>
<th>Magnetic Resonance (MRI) 1971</th>
<th>Positron Emission Tomography (PET) 1973</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modality</td>
<td>Contrasts bone/tissue density by attenuation of radiation</td>
<td>Contrasts tissue by measuring echo of high frequency sound waves</td>
<td>High resolution &amp; cross sectional form of X-ray</td>
<td>Contrasts bone/tissue density by attenuation of radio frequency</td>
<td>Identifies accumulation of radioactive tracer in tissue</td>
</tr>
<tr>
<td>Risk</td>
<td>Exposes patient to carcinogenic ionizing radiation</td>
<td>Exposes patient to carcinogenic ionizing radiation</td>
<td>Longer scanning time (~ 1hr)</td>
<td>Claustrophobia</td>
<td>Uses radiation emitting non-specific tracer</td>
</tr>
<tr>
<td>Use in Cancer Diagnostics</td>
<td>Mammograms used for screening for breast cancer</td>
<td>Screening for ovarian cancer &amp; to guide biopsy</td>
<td>Staging of solid tumors &amp; recurrence</td>
<td>Reflex imaging</td>
<td>Best for determining metastatic spread</td>
</tr>
<tr>
<td>Cost</td>
<td>$250 - $500</td>
<td>$250 - $750</td>
<td>$1500 - $3000</td>
<td>$2000 - $4000</td>
<td>$5000</td>
</tr>
</tbody>
</table>

**Imaging is Not ‘Diagnostic’**
UNMET MEDICAL NEED

NON-SPECIFIC, LACK SENSITIVITY

CURRENT MARKET

Imaging methods identify a “region of interest” & can’t differentiate benign from malignant tumors

Contrast agents are regulated as a drug, not a device, making the ROI poor

PET tracers are difficult to develop due to the trade-off of ligand-isotope half life

Obtaining tissue can be difficult (e.g. lung biopsies) or can be prone to false negative results

Pathological assessment requires an invasive & typically painful procedure.
ADDRESSING THE UNMET NEED

CURRENT MARKET

- Imaging methods identify a “region of interest” & can’t differentiate benign from malignant tumors.
- Methods to achieve molecular specificity have not been realized
- Pathological assessment requires an invasive & typically painful procedure; often with side effects.
- Obtaining tissue can be difficult or can be prone to false negative results.

MAGSENSE™ TECHNOLOGY

- Is a functional imaging method able to identify specific tumor phenotypes.
- Will be regulated as a medical device making the regulatory path easier.
- No radio-isotopes are used & particles are metabolized & excreted by normal processes.
- Is a non-invasive method able to minimize need for surgical or biopsy procedures.
- Will be demonstrated clinically by concordance with pathology.
HOW MAGSENSE TECHNOLOGY WORKS

- A low dose of magnetic nanoparticles is injected & allowed to infiltrate or circulate & find the tumor.

- The patient is positioned under the detector for measurement to see if any particles are detectable.

- Only particles attached to the cancer cells will be detectable.

- The bio-specific antibodies on the nanoparticles cause the particles to stick to the specific tumor being targeted.

- All nanoparticles lose their magnetization (“relax”) after a low magnetic field is applied.

- A nanoparticle attached to a bio-marked cancer cell will relax more slowly than particles in circulation.

- Imagion’s ultra-sensitive detectors are able to locate & quantify the relaxation of only the attached nanoparticles.
LOW TECHNICAL RISK

✓ Nanoparticle formulation uses known materials & methods
  - Iron oxide is already in use for anaemia treatment, & contrast agents
  - Use of antibodies is already the standard for in vitro diagnostics & current standard for IHC pathology assessment
  - FDA agrees the safety profile of the nanoparticles is low risk

✓ Imagion’s **instrument uses proven technologies** that have already been employed in other clinical devices
  - SQUID detectors are use in MEG systems
  - Magnetic coils generate a field strength orders of magnitude weaker than MRI

✓ MagSense technology will be **regulated as a medical device** & not a drug
  - Clinical studies will be pivotal & not multi-phase; requiring fewer patients, saving cost & time

DEVELOPMENT RISK FACTORS

Identifying & sourcing the best targeting antibody or ligand to achieve specificity.

Optimization of the nanoparticle formulation to maximize delivery & achieve the sensitivity needed for each type of cancer.

Safety/toxicity studies will be required for each new cancer targeting nanoparticle.
### How MagSense Technology Compares

<table>
<thead>
<tr>
<th>Method</th>
<th>MagSense Magnetic Relaxometry</th>
<th>MRI Magnetic Resonance Imaging</th>
<th>PET Positron Emission Tomography</th>
<th>Ultrasound</th>
<th>X-Ray/CT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detection Threshold</td>
<td>&lt; 10 million cells</td>
<td>10’s Millions of cells</td>
<td>NA</td>
<td>Billions of cells</td>
<td>NA</td>
</tr>
<tr>
<td>Quantitative</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Specificity</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
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**Graphic courtesy MD Anderson Cancer Center Dept. Imaging Physics**

### Costs Less to Make & Install

MagSense instrument will **cost less** than conventional MRI or CT technologies (~$500K)

Does not require expensive shielded environment (eliminates ~ $1M in installation costs)

### More Sensitive & Specific

MagSense technology is more sensitive than conventional imaging methods which will allow tumors to be detected & treated earlier.

Current imaging methods can not differentiate benign from malignant lesions but MagSense nanoparticles locate specific tumor phenotypes.

### Reduces Patient Risks

MagSense technology uses a very low applied magnetic field; orders of magnitude less than MRI.

Unlike PET or X-ray which expose patients to radioactivity or harmful X-rays, Imagion’s nanoparticles are biologically safe & applied at a non-toxic low dose.
BUSINESS MODEL

PRINTER / INK
• MagSense technology includes both the measuring instrument & a consumable (injectable) test reagent - unique in the medical imaging market.
• Revenue & profits driven high gross margin test reagent use on growing installed base of instruments.

GROWTH THROUGH APPLICATIONS
• MagSense technology can be applied to a wide variety of cancers (& other diseases) increasing the recurring revenue on the installed base of instruments.
• The technology can be used at multiple points in the diagnosis & treatment of patients.

MONETIZING THE TECHNOLOGY
• Value proposition & printer/ink revenue model will be attractive to a commercial licensee or partner.
• Imagion will receive milestone fees & royalties or revenue share.

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<th>MAGENSEN TECHNOLOGY</th>
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<td>Staging</td>
<td>Minimizes use of invasive procedures for certain cancers</td>
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<td>Surgical Assistance</td>
<td>Could be combined with optical imaging agents or surgical magnetometer</td>
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<tr>
<td>Monitoring Progression / Therapy</td>
<td>Assess therapeutic efficacy through loss of magnetic signal</td>
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**Pre-Clinical Experimental Results**

- Results of specificity of a HER2 targeting nanoparticle were reported at the 2016 San Antonio Breast Cancer Symposium.
- Preliminary results of an ovarian cancer targeting nanoparticle were reported by MD Anderson at the 2017 American Association for Cancer Research meeting.

**Key Scientific Collaborators**

- MD Anderson Cancer Center’s Department of Imaging Physics has a Magnetic Relaxometry Research Laboratory helping to validate the technology.
- Experts in computational biology of magnetic fields at UCSD are assisting with technology development.
NEXT STEPS FOR COMMERCIALIZATION

PRECLINICAL TOXICOLOGY SAFETY STUDY

Preclinical toxicology safety study with GLP/cGMP compliant HER2 nanoparticles to demonstrate safety for first-in-human studies – expected Q4 2018.

FIRST-IN-HUMAN EX VIVO RESEARCH STUDY

First-in-human ex vivo research study at MD Anderson with a small number of patients to demonstrate MagSense nanoparticles are able to infiltrate & bind to HER2 tumor cells in the lymph nodes – expected Q1 2019.

The study can be undertaken without the clinical instrument & will provide valuable information that will inform cutoff values used in the pivotal clinical study.

PIVOTAL CLINICAL STUDY

A pivotal clinical study will be undertaken to support regulatory submission for the detection of HER2 breast cancer cells in the lymph node – H2 2019.

Submission & initial commercialization may occur outside the US initially.
**BOARD & MANAGEMENT**

**ROBERT PROULX**  
CHAIRMAN & CEO  
- Operationally oriented executive  
- 25 years experience in life science & medical device product development & commercialization

**BRONWYN LE GRICE**  
NON EXEC DIRECTOR  
- 15 years experience in Australian commercial healthcare & technology markets  
- Expertise spans venture capital, capital raising & corporate governance

**MICHAEL HARSH**  
NON EXEC DIRECTOR  
- Former VP & CTO of GE Healthcare’s Medical Imaging Business  
- 35 years experience in Engineering & product development of medical imaging technologies including MRI, X-ray, & ultrasound

**JOHN HAZLE PHD**  
NON EXEC DIRECTOR  
- Board certified for both therapeutic & diagnostic medical physics  
- 30 years experience in pre-clinical & clinical medical imaging research  
- Chairs Cancer Research programs at UT Graduate School of Biomedical Sciences

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**JAVANKA NAUMOSKA**  
NON EXEC DIR & CORP SEC  
- Australian attorney with expertise in regulatory compliance, corporate, governance & risk, general & commercial liability, & intellectual property

**MARK VAN ASTEN**  
NON EXEC DIRECTOR  
- Australian business executive with strong background in diagnostics & healthcare  
- 25 years experience in market development & commercializing diagnostic products

**BRIAN CONN**  
CFO  
- Financial executive with strong background in early & growth stage biotech  
- 25 years experience in raising both public & private capital & M&A activities

**FARIDEH BISCHOFF PHD, VP CLINICAL RESEARCH**  
- Clinical & basic research scientist  
- 20 years experience in regulated-market product development  
- Widely recognized in fields of rare cancer detection, molecular cytogenetics, diagnostic assays

**DAVID LUDVIGSON**  
NON EXEC DIRECTOR  
- Financial & operating executive  
- 35 years experience in pharma, medical device & computer products  
- Significant experience in corporate strategy, M&A, & financing
INVESTMENT RATIONALE

Strong value proposition addressing large unmet medical need

Low technical risk with near-term de-risking inflection points

Strong board & management team

Large market with clear path to multiple commercial uses

SOUND FINANCIALS

Total funding to-date – US$27.4M

Cash at 30 June 2018 – US$2.7M

Quarterly cash burn projection – US$1.0M plus project outsourcing costs

Clean balance sheet – no debt; no convertible notes or warrants
<table>
<thead>
<tr>
<th><strong>INVESTMENT HIGHLIGHTS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>$100 BILLION</strong></td>
</tr>
<tr>
<td>Annual global spending on cancer diagnosis in imaging &amp; pathology.</td>
</tr>
<tr>
<td><strong>8 PATENTS</strong></td>
</tr>
<tr>
<td>Core technology covered in major markets through to 2029.</td>
</tr>
<tr>
<td><strong>“PRINTER &amp; INK” MODEL</strong></td>
</tr>
<tr>
<td>Product includes both the instrument &amp; a diagnostic consumable.</td>
</tr>
<tr>
<td><strong>$2 BILLION</strong></td>
</tr>
<tr>
<td>Addressable markets for first cancer targets: breast, prostate, ovarian.</td>
</tr>
<tr>
<td><strong>PLATFORM TECHNOLOGY</strong></td>
</tr>
<tr>
<td>Not limited to initial targets or cancer diagnostics.</td>
</tr>
<tr>
<td>Additional targets being explored.</td>
</tr>
<tr>
<td><strong>LOW TECHNICAL RISK</strong></td>
</tr>
<tr>
<td>Pre-clinical development has reduced technical risks. Clear path to clinical &amp; commercial utility.</td>
</tr>
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<td><strong>8 PATENTS</strong></td>
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# MAGSENSE FUNCTIONAL IMAGING IN THE CANCER DIAGNOSTIC LANDSCAPE

## Diagnostics Landscape

<table>
<thead>
<tr>
<th>APPLICATION IN CANCER</th>
<th>MAGSENSE TECHNOLOGY</th>
<th>IMAGING E.G. MRI, CT, PET, X-RAY</th>
<th>LIQUID BIOPSIES E.G. CTC &amp; CNA</th>
<th>OPTICAL IMAGING E.G. CDOTS &amp; QDOTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screening</td>
<td>Currently limited to localized detection Requires targetable biomarker</td>
<td>Mammograms &amp; ultrasound are cost effective for screening certain cancers</td>
<td>Could become a cost effective means for screening for cancer related cells/mutations</td>
<td></td>
</tr>
<tr>
<td>Primary Diagnosis</td>
<td><strong>Diagnosing “at risk” patients of solid tumor cancers with detectable phenotypes</strong></td>
<td>Identifies a “Region of Interest” but can not differentiate benign from malignant Ab-PET may improve diagnostic utility</td>
<td>May achieve diagnostic utility but will require some form of in vivo assessment</td>
<td>Limited by depth of penetration to cancers within optical imaging specifications</td>
</tr>
<tr>
<td>Staging</td>
<td><strong>Minimizes use of invasive procedures for certain cancers;</strong></td>
<td>Can be used as an aid but not able to determine positively</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surgical Assistance</td>
<td>Could be combined with optical imaging agents or surgical magnetometer</td>
<td>Can be effective to guide biopsy procedures</td>
<td></td>
<td>Can be viewed in real time during surgery for assessment of surgical margins</td>
</tr>
<tr>
<td>Monitoring Progression / Therapy</td>
<td><strong>Assess therapeutic efficacy through loss of magnetic signal</strong></td>
<td>Well suited to assess tumor shrinkage or growth</td>
<td>Could be a cost effective means to evaluate tumor burden &amp;/or prognosis or recurrence</td>
<td></td>
</tr>
</tbody>
</table>
STAGING BREAST CANCER
Shortest Path to Clinical Proof

$500M

PRIMARY TUMOR DETECTION
Breast, Prostate, Lung, & Ovarian

$5B

DOCTORS OFFICE
Ubiquitous like Ultrasound

$10’sB

DETECTION & THERAPY
Nanoparticle is both detection & delivery of therapy

> $100B

OPPORTUNITY & SHAREHOLDER VALUE

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