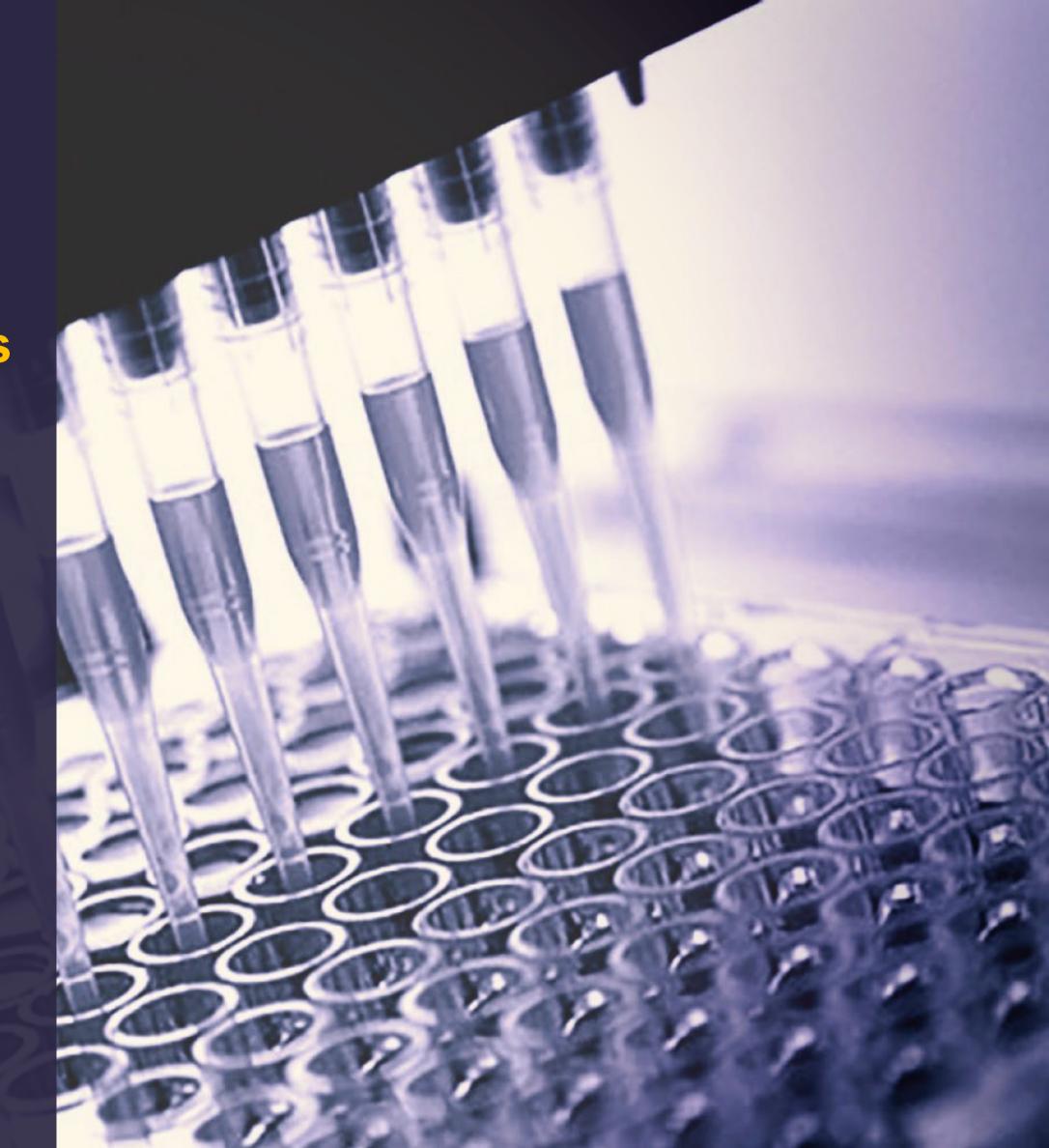


### Detecting cancer earlier to save lives

Annual General Me 29 November 2021 CEO Presentation Annual General Meeting 29 November 2021



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### Company overview

### **BARD1 Life Sciences (ASX: BD1)**

- Lifesciences company initially focused on earlier cancer detection
- Innovative technologies with strong IP protecting methods & use
- Multi-product pipeline for breast, ovarian & other cancers targeting US\$11b global markets
- Compelling POC results for lead SubB2M tests for breast & ovarian cancers<sup>1</sup>
- Strong cash position to commercialise lead products as LDTs
- Products in-market for bladder cancer<sup>2</sup> & exosome research

Financial information (ASX:BD1)	
Ordinary shares	91,994,920
Share price (26/11/21)	A\$1.040
Market capitalisation	A\$95.6m
Cash position (30/9/21)	A\$20.4m
Ave monthly cash burn (Q1 FY22)	A\$593k
Top 20 Shareholders (26/11/21)	36.4%

### **Board and management**



**Dr Geoff Cumming** Chairman



Max Johnston Non-Exec Director



Phillip Powell Non-Exec Director



**Prof Allan Cripps** Non-Exec Director





Dr Greg Rice Chief Scientific Officer



Tony Di Pietro CFO / Company Sec



Susan Belzer Development Director



Dr Wayne Jensen R&D Director



Dr Emily Stein echnology Director (NETs)



# Key achievements

### Commercial

- hTERT revenues steady at \$550k pa, new lab users gained in US, and Sth Korean registration achieved
- **EXO-NET RUO** product launched and multiple evaluations progressed for exosome research applications (incl. Minomic, UQ)
- Multiple collaboration & partnering discussions underway with academia & industry
- Strengthened IP portfolio with multiple patents granted, new patent applications filed & new trade marks registered and filed
- ISO 13485 re-certification

# Research & Development

- Progressed SubB2M immunoassay program with initial feasibility achieved for SubB2M-CA125 test for ovarian cancer
- Preliminary feasibility results for SubB2M IHC for diagnosis of breast cancer in tissue biopsies
- Multiple EXO-NET evaluations by independent research groups and internal data generated for competitor comparison paper
- Completed evaluations of BARD1
   AAb test in ovarian cancer samples on Luminex platform at UNIGE & Griffith Uni showing reproducibility of data
- Multiple publications and presentations for SubB2M SPR assay, BARD1 AAb test, and EXO-NET

### Corporate

- Acquisition & integration of Sienna with focus on realising synergies, prioritising R&D pipeline & growing revenue
- 1:30 share consolidation to improve register management
- Capital raising of \$18.4m to fund development & commercialisation of lead programs
- Strengthened R&D leadership with appointment of Dr Greg Rice PhD as CSO

### **Financial**

- Cash balance of \$20.4m at 30 September 2021
- Cost-savings of over \$1.1m realised from operational synergies & restructuring postmerger

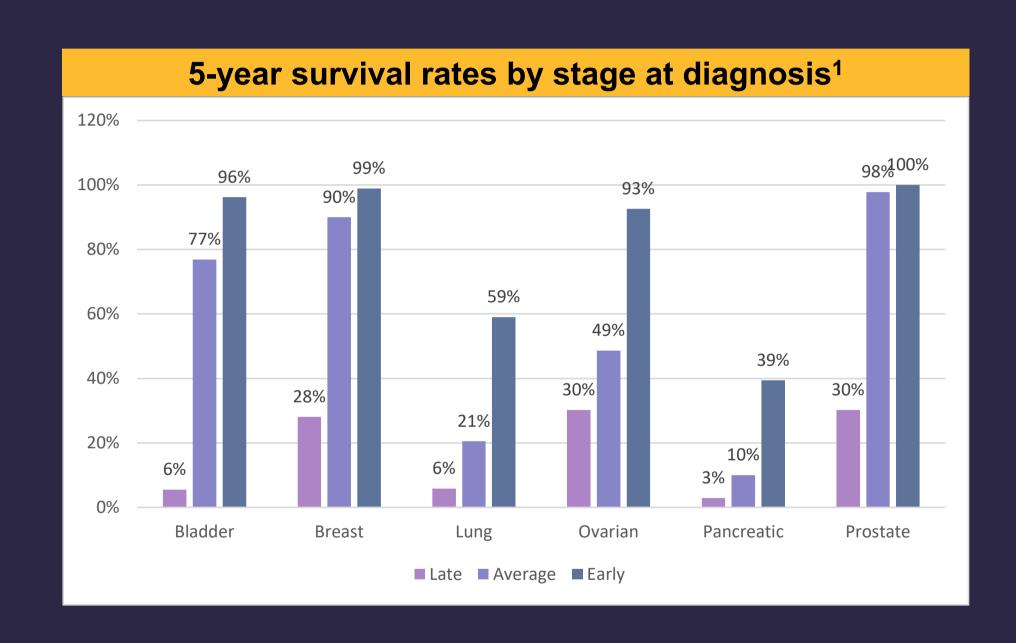
### Unmet need for earlier cancer detection

### **Problem**

- Detection of early-stage cancers is often associated with high false-positives &/or lack of sensitivity
- Cancers often detected at late-stage after symptoms have appeared resulting in poor prognosis
- Current tests can have safety, cost and convenience issues reducing test participation rates

### **Unmet need**

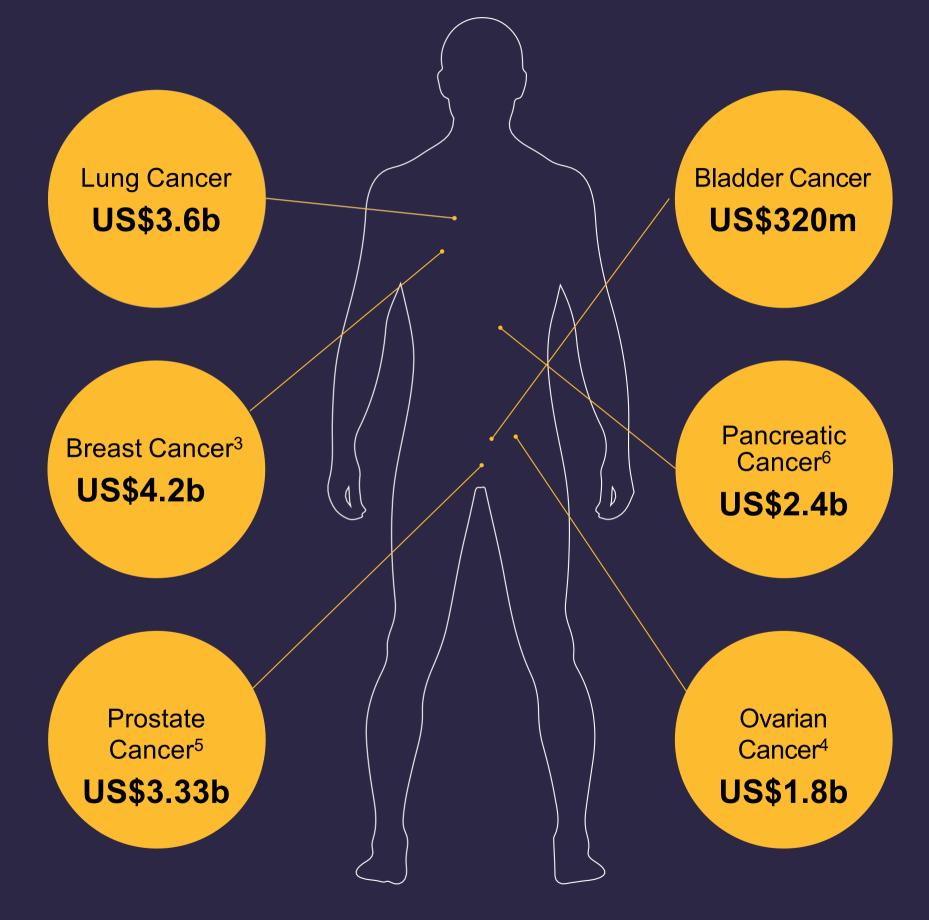
- Unmet need for non-invasive, accurate and reliable diagnostic tests for earlier detection of cancer
- Earlier detection improves treatment options, patient outcomes & survival<sup>1</sup>



## Global cancer diagnostics market

- Global cancer burden: 50.6m survivors, 19.3m new cases and 10.0m deaths p.a.<sup>1</sup>
- Global cancer diagnostics market valued at US\$250b²
- BARD1 is targeting markets worth over US\$11b for some of the world's most common and deadliest cancers

#	Cancer	Prevalence	Incidence	Deaths
1	<b>1 Breast</b> 7,790,717		2,261,419	684,996
3	Prostate	4,956,901	1,414,259	375,304
17	Ovarian	823,315	313,959	207,252
22	Pancreatic	379,958	495,773	466,003



### Breast cancer | US screening market potential

- World's most common cancer: 2.3m new cases & 685k deaths pa<sup>1</sup>
- US: 3.7m survivors, 234k new cases & 43k deaths pa<sup>1,2</sup>
- Life-time risk of 12.9%, increases to 55-70% with BRCA1 & 45-69% with BRCA2 mutations 2
- Screening using mammography recommended for average-risk women and those with a family history or genetic mutations<sup>3</sup>
- Issues with high false positives, safety and self-exclusion due to discomfort, inconvenience and cost
- CA15.3 test approved for monitoring BC: sensitivity <50-75% and specificity 85%.</li>
- Unmet need for an accurate & reliable blood test for earlier detection of BC
- Early detection can improve QOL, treatment options & survival (from 29% at late-stage to 99%)<sup>2</sup>

	Market	<b>US Breas</b>	t Cancer Market	pa (USD)
Р	enetration	10%	20%	30%
a)	\$125	•	\$0.8 bn	\$1.1 bn
Price	\$250	\$0.8 bn	\$1.5 bn	\$2.3 bn
	\$500	\$1.5 bn	\$3.0 bn	\$4.5 bn

### Key Assumptions (US market):

- Target population: 60.5m women aged 45 - 74 years<sup>3,4</sup>
- Screening frequency: biennial<sup>4</sup>
- Price: indicative pricing only<sup>5</sup>

## Ovarian cancer | US screening market potential

- World's deadliest gynaecological cancer: 314k new cases & 207k deaths pa<sup>1</sup>
- US: 235k survivors, 24k new cases & 14k deaths pa<sup>1,2</sup>
- Life-time risk of 1.2%, increases to 35-70% with *BRCA1* mutation <sup>2,4</sup>
- Average 5-year survival 49% due to late-stage detection after symptoms have appeared (57%)<sup>2</sup>
- Screening not recommended in ave-risk women, whereas CA125 test + TVUS may be offered to high-risk women<sup>4</sup>
- CA125 test approved for monitoring OC: sensitivity 50-75% and specificity 80%
- Unmet need for an accurate & reliable blood test for earlier detection of OC
- Early detection can improve QOL, treatment options & survival (from 30% at late-stage to 93%)<sup>2</sup>

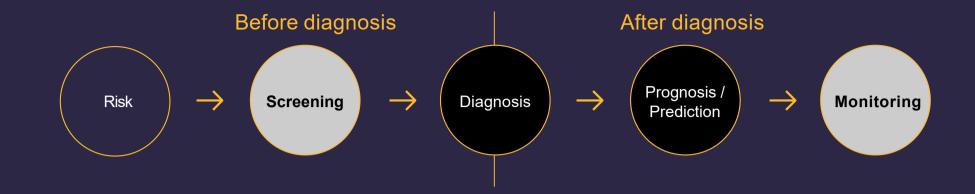
	Market	US Ovaria	US Ovarian Cancer Market pa (USD)					
	Penetration	10%	20%	30%				
ນ <u>&gt;</u> ຜ	\$125	\$0.6 bn	\$1.3 bn	\$1.9 bn				
mulcauve Price	\$250	\$1.3 bn	\$2.5 bn	\$3.8 bn				
	\$500	\$2.5 bn	\$5.1 bn	\$7.6 bn				

### Key Assumptions (US market):

- Target population: 50.5m women aged 50 - 74 years<sup>3</sup>
- Screening frequency: annual
- Price: indicative pricing only<sup>5</sup>

### Product and pipeline portfolio

- Commercial products for bladder cancer<sup>1</sup> & exosome research
- Multi-product pipeline focused on detection & monitoring of cancer
- Lead pipeline products for monitoring breast & ovarian cancer



PRODUCT	INDICATION	PLATFORM	USE	RESEARCH	PRECLINICAL DEVELOPMENT	CLINICAL DEVELOPMENT	MARKETING AUTHORISATION
hTERT	Bladder Cancer	ICC	Adjunct to cytology				→ In-market
EXO-NET-RUO	Exosome Capture		Research tool				➤ In-market
SubB2M-BCM	Breast Cancer	Immunoassay	Monitoring			IPELINE PRODUCT	2023
SubB2M-OCM	Ovarian Cancer	Immunoassay	Monitoring		<b>→</b>	II LLINL I RODGO	2023
SubB2M-PCS	Prostate Cancer	Immunoassay	Detection	$\rightarrow$			**
SubB2M-PaCS	Pancreatic Cancer	Immunoassay	Detection	<b>&gt;</b>			**
BARD1-Ovarian	Ovarian Cancer	Immunoassay	Detection	<del></del>			**
BARD1-Breast <sup>2</sup>	Breast Cancer	Immunoassay	Detection	<del></del>			
BARD1-Lung <sup>2</sup>	Lung Cancer	Immunoassay	Detection	$\rightarrow$			

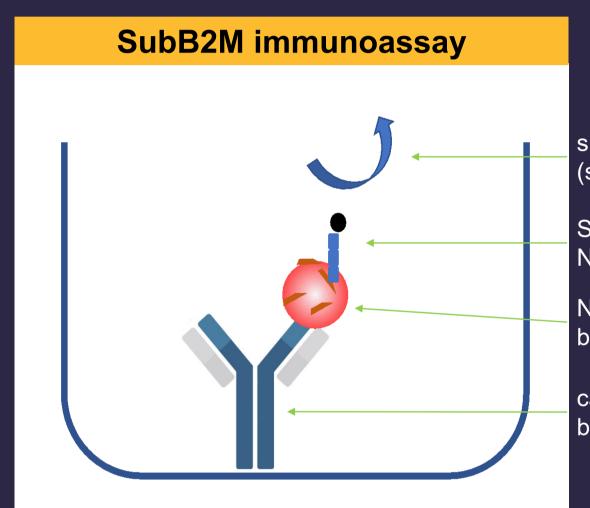
## SubB2M™ | technology and test method





Game-changing technology for monitoring and detection of cancer

- SubB2M protein detects a unique cancer marker Neu5Gc found in human cancer tissues, cells & biofluids¹
- Exclusive worldwide licence to SubB2M technology for diagnostic applications<sup>2</sup>
- Multiple applications for diagnosis of various cancers (breast, ovarian, prostate, pancreatic, others)
- Potential to improve the specificity of existing cancer biomarker tests with next generation SubB2M tests for monitoring and/or detection of ovarian (CA125), breast (CA15.3), prostate (PSA) and other cancers
- Focused on developing SubB2M tests for monitoring of breast and ovarian cancers<sup>3</sup>
- Currently optimising assay for transfer to CRO for commercial development on immunoassay platform



signal generation (streptavidin HRP)

SubB2M-biotin detects
Neu5GC on cancer biomarker

Neu5Gc decorated cancer biomarker

capture antibody to cancer biomarker

### Commercialisation | goals and strategy

GOAL is to develop and commercialise accurate and reliable blood tests for earlier detection and monitoring

Develop SubB2M-based immunoassay	<ul> <li>Prioritise development of SubB2M immunoassay for monitoring breast and ovarian cancers on platform compatible with high-throughput laboratory workflow (ELISA / bead-based assays)</li> <li>Evaluate development SubB2M test on small foot print SPR instrumentation</li> <li>Development of SubB2M IHC for diagnosis of breast, melanoma and/or other tissue biopsies</li> </ul>
Advance lead Dx pipeline	<ul> <li>Transfer development from academic to CRO partner</li> <li>Assay development of SubB2M assay and platform</li> <li>Analytical validation of test/s to ensure robust, reproducible and reliable on instrument platform</li> <li>Clinical validation of test/s to ensure Dx accuracy for intended use (Se, Sp, PPV, NPV &amp; Accuracy)</li> </ul>
LDT initial commercial-isation	<ul> <li>Commercialise first as LDTs with CLIA certified laboratory partner/s in the US</li> <li>Fast-to-market pathway enabling early revenues, access to 'real world' data (acceptable to FDA), build biobank &amp; reimbursement case, and gain market acceptance</li> </ul>
IVD regulatory authorisation	<ul> <li>Gain IVD regulatory clearance/approval dependant on use (510k/De Novo/PMA submission)</li> <li>Larger-scale, multi-site clinical studies to prove safety &amp; efficacy in intended use population</li> <li>Enables improved clinical adoption, reimbursement and partnering with Dx distributors</li> </ul>
Expand indications & markets	<ul> <li>Expand uses to BC and OC earlier detection in high-risk (&amp;/or average-risk) asymptomatic women</li> <li>Expand cancer applications to prostate, pancreatic &amp; other cancers</li> <li>Expand technology applications to improve specificity of CTC, PET &amp; others</li> <li>Expand regulatory approvals and market entry to EU, AU &amp; Asia</li> </ul>

# SubB2M | breast cancer test





Monitoring and detection of breast cancer

Data	<ul> <li>POC study conducted by Griffith University to evaluate SubB2M SPR-based assay for detection of Neu5Gc in 118 samples of BC cases and controls</li> <li>&gt;95% sensitivity and specificity for all stages of BC compared to controls<sup>1,2</sup></li> </ul>
Next steps	<ul> <li>Develop and validate SubB2M-CA15.3 immunoassay for monitoring BC</li> </ul>
	<ul> <li>Evaluate SubB2M-IHC for BC (Analyte Specific Reagent)</li> </ul>

Stage	Breast Cancer <sup>1</sup> n=118 (96 cancers : 22 controls)							
	Sensitivity Specificity AUC							
Stage I	95.83%	100%	0.958					
Stage II	100%	100%	1.000					
Stage III	100%	100%	1.000					
Stage IV	100%	100%	1.000					

Project plan	CY2021	<b>CY2022</b>			CY2023	)	
Feasibility of SubB2M-CA15.3 immunoassay for detection of BC <sup>3</sup>	Feasibility		@Griffith4/BARD1				
Optimisation & verification testing of SubB2M-CA15.3 test for BC		Assay Dev	relopment		@CRO⁵		
Retrospective study to establish diagnostic accuracy for stage I-IV				Clinical St	udy 1	@CRO	
Retrospective study to establish clinical performance of test for monitoring BC compared to CA15.3				Clinical St	udy 2	@CRO	_
Validate analytical performance of in-house test in CLIA Lab					Analytical \	/alidation	@Lab <sup>6</sup>
Validate clinical performance of in-house test in CLIA Lab					Clinical Val	idation	@Lab
Market launch by CLIA Lab partner							LDT Market Launch

### SubB2M | ovarian cancer test





Monitoring and detection of ovarian cancer

Data	<ul> <li>POC study conducted by Griffith University to evaluate SubB2M SPR-based assay for detection of Neu5Gc in 69 samples of OC cases and controls</li> <li>100% sensitivity and specificity for all stages of OC compared to controls<sup>1,2</sup></li> </ul>
Next steps	<ul> <li>Develop and validate SubB2M-CA125 immunoassay for monitoring OC</li> <li>✓ Initial POC achieved for SubB2M-CA125 ELISA-based test</li> <li>Evaluate SubB2M-IHC for OC (ASR)</li> </ul>

Stage	Ovarian Cancer n=69 (47 cancers : 22 controls)							
	Sensitivity Specificity AUC							
Stage I	100%	100%	1.000					
Stage II	100%	100%	1.000					
Stage III	100%	100%	1.000					
Stage IV	100%	100%	1.000					

Project plan	CY 2021	2022			2023		
Feasibility of SubB2M-CA125 immunoassay for detection of OC	Feasibility		@Griffith <sup>3</sup> /BARD1				
Optimisation & verification testing of SubB2M-CA125 for OC		Assay Dev	velopment		@CRO <sup>4</sup>		
Retrospective study to establish diagnostic accuracy for stage I-IV				Clinical Stu	ıdy 1	@CRO	
Retrospective study to establish clinical performance of test for monitoring OC compared to CA125				Clinical Stu	ıdy 2	@CRO	
Validate analytical performance of in-house test in CLIA Lab					Analytical '	√alidation	@Lab⁵
Validate clinical performance of in-house test in CLIA Lab					Clinical Va	lidation	@Lab
Market launch by CLIA Lab partner							LDT Market Launch

## **EXO-NET** | products & pipeline

Enabling technology for exosome research, diagnostic and therapeutic applications

# RUO EXO-NET® product



- RUO EXO-NET is a pan-exosome capture tool for research use
- Suitable for enrichment from blood, urine, saliva and cell culture
- Highly scalable with **speed**, **purity and yield** advantages
- Commercialisation strategy to embed EXO-NET into the discovery, research & development phases of future exosome-based Dx and Tx
- Evaluations progressing with multiple KOLs in academia & industry
- Plans to expand collaborations with KOLs to validate use of EXO-NET in key exosome applications
- Presentations of research at scientific conferences
- Publication of in-house and collaborator data in peer reviewed journals to build product awareness, validate technology & gain adoption
- Secure distributor/s for RUO EXO-NET to manage distribution & sales
- Research market estimated at US\$100-500m by 2026<sup>1</sup>

# **EXO-NET** pipeline

- **EXO-NET** is a proprietary multi-layered matrix of capture antibodies coated onto magnetic beads to enable efficient exosome isolation
- **Exosomes** are nano-particles (30-150nm) produced by cells containing nucleic acids, proteins & lipids that are **biomarkers** for diagnosis and treatment of multiple diseases including cancer, metabolic, neurological
- New product opportunities:
  - I. IVD EXO-NET for diagnostic use
  - 2. Capture and release EXO-NET for therapeutic applications
  - 3. Customised EXO-NETs for capture of specific exosomal targets
  - 4. In-house exosome-based cancer diagnostics
  - 5. Partnered exosome-based companion diagnostics (CDx)
- Potential for contract research fees and license revenues from upfront fees, development milestones & royalties
- Global exosomes market for Dx and Tx **US\$2.3b** by 2030<sup>2</sup>

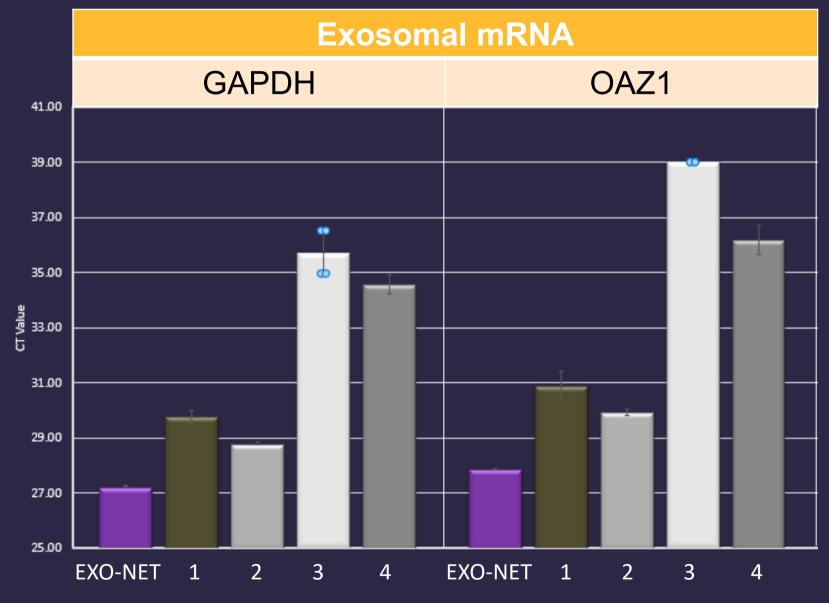
# **EXO-NET** | comparison data

- Scalable exosome isolation for high throughput screening
- Speed, purity and yield advantages

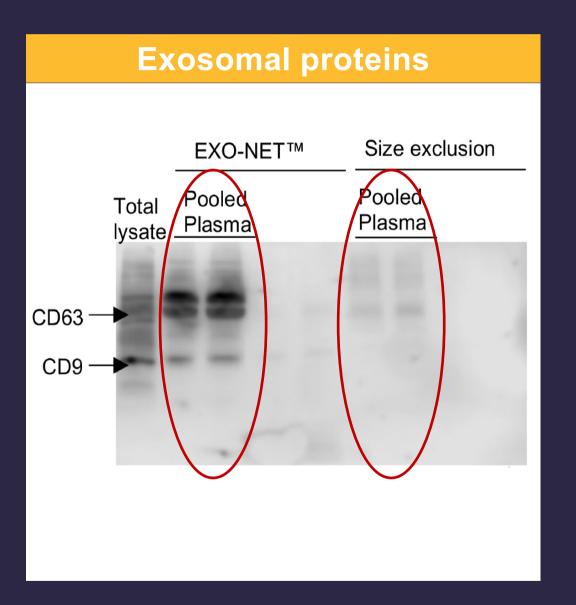
use

persona

Compatible with downstream exosomal RNA & protein analyses



EXO-NET results in higher recovery of exosomal mRNA compared to 4 commercial exosome isolation kits



EXO-NET results in enrichment of exosomal proteins compared to SEC

"EXO-NET enables simple and rapid exosome capture for clinical applications."

BARD1 collaborator

# BARD1 | technology and autoantibody tests

- Splice variants of **BARD1** are associated with cancer formation, progression and poor prognosis
- BARD1 autoantibody (AAb) tests measure autoantibodies to BARD1 variants and use a weighted algorithm to give a cancer score
- Potential applications for earlier cancer detection in highrisk individuals
- **POC studies**<sup>1</sup> performed at UNIGE<sup>2</sup> using a research-stage multi-peptide immunoassay on MSD platform<sup>3</sup> showed high accuracy for detection of ovarian, breast & lung cancers compared to healthy controls
- 20-peptide assay developed under contract by Thermo
  Fisher Scientific on Luminex platform for commercialisation
  (prototype RUO BARD1 kit)
- Evaluations at UNIGE and Griffith confirmed assay performance, but further assay design, development and technical validation required before advancing to clinical development





Product	Study	n (cancer:normal)	AUC	Sensitivity	Specificity
BARD1 Ovarian	OC-CA125 (ave-risk)	400 (200:200)	0.95	88%	93%
	OC-R001 (high-risk)	261 (127:134)	0.97	89%	97%
BARD1 Breast	BC-001a (ave-risk)	123 (61:64)	0.86	70%	88%
	BC-001b (benign)	110 (61:49)	0.84	85%	76%
BARD1 Lung	LC-POC (ave-risk)	187 (94:93)	0.86	80%	77%

AUC is the accuracy of the test; Sensitivity is the % of people with cancer that correctly test positive; Specificity is the % people without cancer that correctly test negative.

### hTERT | ICC test for detection of hTERT



Anti-hTERT antibody

# Anti-hTERT Antibody

- hTERT test is an immunocytochemistry (ICC) assay that detects hTERT
- Adjunct to urine cytology to assist bladder cancer diagnosis
- Registered in US (FDA Class I), Europe (CE-IVD mark), South Korea (MFDS Class II) & Australia (TGA Class II)
- **Distributors appointed** in US (StatLab), Greece (Aenoresis), Sweden (TrioLab), Israel (Zotal) & South Korea (Mirax)
- **US**: Generating ~A\$550k revenue pa & reimbursable US\$108 per test
- **ROW**: Initial commercialisation efforts focused on establishing test in Key User / reference laboratories; User pays
- US bladder cancer market: incidence 80,617, prevalence 269,259,
   1.7m urine cytology tests pa on new cases of haematuria (2017)<sup>1,2</sup>



## Catalysts

Expected value-adding milestones over the next 12 months

### **Key catalysts**

- Further **feasibility results** for SubB2M immunoassay tests
- Appoint CRO to advance assay development
- Commence clinical studies for SubB2M breast and ovarian cancer tests
- Contract manufacturing agreements for reagents
- Secure laboratory partner/s for Dx commercialisation
- Appoint distribution partner/s for RUO EXO-NET
- Expand collaboration / licensing opportunities for EXO-NET

# Summary

Lifesciences company	<ul> <li>Focused on unmet needs for earlier detection of cancer to save lives</li> </ul>
Game changing technology	<ul> <li>Proprietary technologies with clear advantages for multiple cancer applications</li> </ul>
Strong pipeline	<ul> <li>Multi-product pipeline for detection of common and deadly cancers</li> </ul>
Compelling POC results	<ul> <li>POC results for lead SubB2M tests show high sensitivity &amp; specificity for detection of breast and ovarian cancers<sup>1</sup></li> </ul>
Commercialised products	<ul> <li>Products in-market for bladder cancer<sup>2</sup> and exosome research</li> </ul>
Significant growth potential	Targeting unmet needs in US\$11b global markets
Experienced leadership	Track record in healthcare leadership, Dx development and commercialisation
Strong cash position	<ul> <li>Cash balance of \$20.4m to fund development of lead diagnostics<sup>3</sup></li> </ul>

### Contacts



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