



ANGLE

Parsortix Liquid Biopsy

**Preliminary Results for the year ended
30 April 2017**

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ANGLE's Parsortix system

- ❖ Simple blood test for personalised cancer care
- ❖ Proven performance with multiple Key Opinion Leaders
- ❖ Emerging \$ multi-billion market (Goldman Sachs \$14bn in US alone by 2025)
- ❖ Circulating tumor cell (CTC) solution with strong competitive differentiation
- ❖ Product based solution with instruments and cassettes

- ❖ **Positive results from 400 patient Ovarian Cancer studies in Europe and US**
- ❖ MD Anderson leading 400 patient Breast Cancer FDA clinical study. Analytical study in progress.
- ❖ **Barts Prostate Cancer detection and grading – CTCs and megakaryocytes positive studies**
- ❖ Research use by world-leading cancer centres building with growing body of published evidence

Financial Results for the year ended 30 April 2017 (unaudited)



Year ended 30 April	2017	2016
Statement of Comprehensive Income	£'000	£'000
Revenue	498	361
Cost of sales	(123)	(107)
Gross profit	376	254
Operating costs	(7,810)	(5,703)
Tax credit and other income	1,043	331
Loss for the year	(6,392)	(5,118)
Statement of Financial Position	30Apr17	30Apr16
Trade and other receivables and tax	1,975	798
Inventories	665	376
Cash	5,536	3,764
Property, plant and equipment	824	455
Intangible assets	1,918	1,346
Total assets	10,918	6,739

Comments

- ◆ Research use sales established and growing
- ◆ 75% gross margin
- ◆ Planned expenditure on clinical studies
- ◆ Cash position strengthened

Parsortix™ – the Complete Picture

- ❖ Intact CTCs not just ctDNA
Compatible with existing downstream analysis techniques
- ❖ Parsortix captures living cancer cells
These cannot be present unless the patient has cancer
- ❖ Evidence-based driven by KOLs and clinical studies
- ❖ Patented product solution
- ❖ Scalable business with third party manufacture



Benefits of Parsortix CTCs



Source	Solid tissue biopsy		Liquid biopsy	
	Primary tumour	Metastatic site	CTCs ¹	CNA (cfDNA ²)
Sample type	Intact cells	Intact cells	Intact cells	Fragmented DNA
Procedure	Invasive	Invasive	Non-invasive ³	Non-invasive ³
Sample accessibility	Not always accessible	Less accessible	Accessible using Parsortix⁴	Accessible
Patient recovery time	Varies	Longer	None	None
Test costs	Varies	Higher	Lower	Lower
Test turnaround time	Varies	Longer	Shorter	Shorter
Repeatability	Varies – difficult	Very difficult	Easy	Easy
Molecular analysis	DNA	Yes	Yes	Yes
	RNA	Yes	Yes	Difficult
	Protein	Yes	Yes	No
Live cells	Cell culture	Yes	Yes	No
	Xenograft	Yes	Yes	No
Standard of care	Proven	Proven	Not yet proven	Not yet proven

1. CTCs are live cancer cells circulating in the blood known as circulating tumour cells
2. cfDNA also known as ctDNA is cell-free circulating fragments of DNA from dead cells, which may be found in the plasma component of the blood

3. Tissue obtained from simple peripheral blood test
4. Access to CTCs technically challenging given low number of CTCs present and historically has been very difficult. ANGLE's Parsortix system has been specially designed to address this issue

Far-reaching market potential



ANGLE targets

Research use

Screening trials

Basic and translational research
Drug trials

Clinical use

Ovarian triage
Prostate biopsy

Metastatic breast

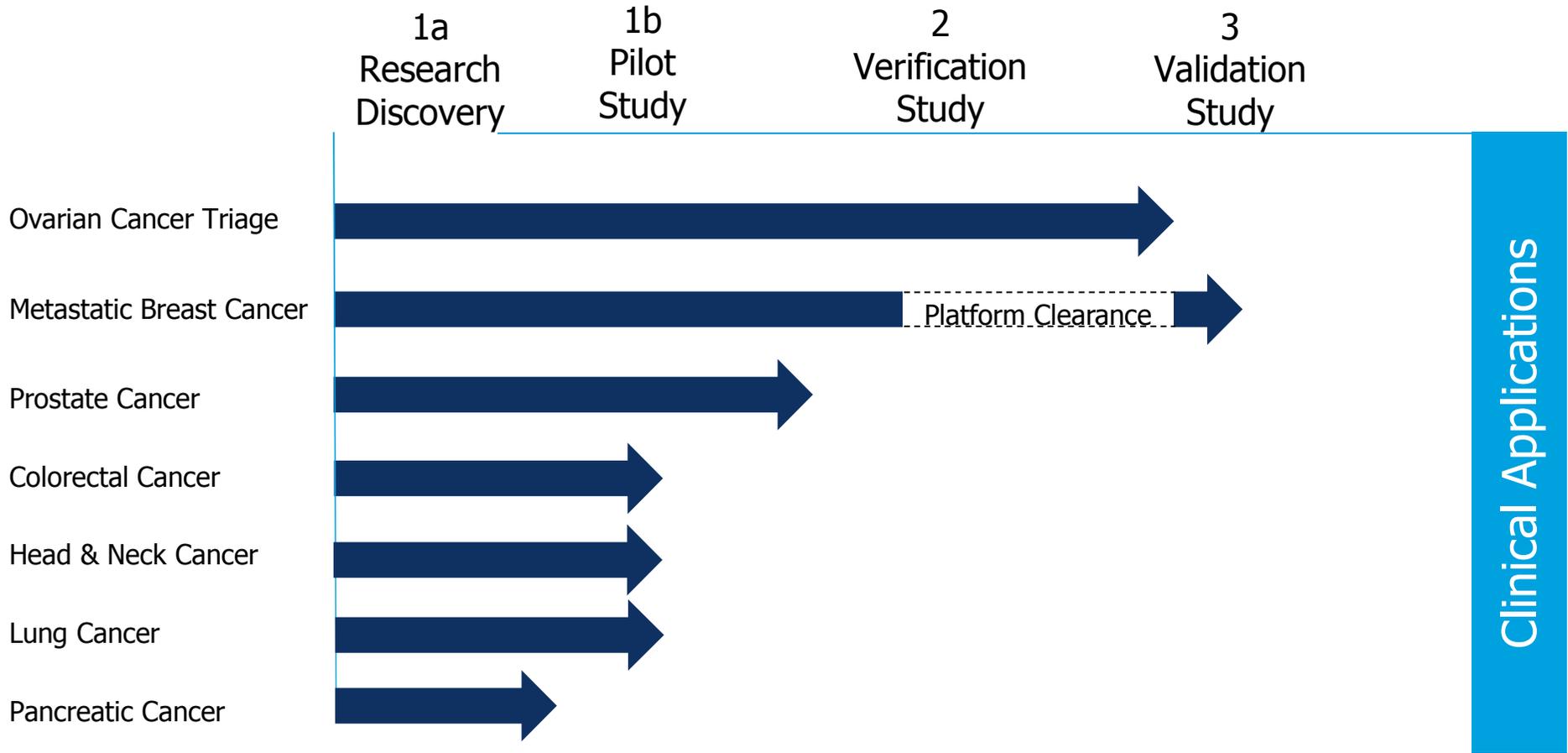
Tissue sample provision

Platform feeding in to existing molecular analysis systems for applications in all cancers in all segments "Parsortix inside"

Emerging \$ multi-billion market (Goldman Sachs \$14bn in US alone by 2025)

- ◆ Evidence-based approach to prove performance with ovarian cancer, FDA breast cancer
- ◆ Substantiating value as sample collection platform
- ◆ Partnering strategy for widespread deployment

Clinical Applications



❖ **Detection of ovarian cancer key unmet medical need**

❖ US market statistics

- 750,000 women p.a. abnormal pelvic mass
- >200,000 women have surgery
- 10-11% have cancer

❖ Women with cancer need expensive, specialist cancer surgeon

- in the US, women typically have a specialist surgeon leading to wasted resources in 90% of cases
- in Europe, women typically have a general surgeon leading to poor outcomes for the 10% with cancer

❖ **Existing tests CA125, OVA-1 and ROMA suffer from low sensitivity and/or low specificity**

❖ Medical University of Vienna pilot study showed Parsortix with high sensitivity and high specificity

Sensitivity

The test correctly identifies those with the disease (true positive). A low sensitivity means the test may miss many people who have cancer (false negative).

Specificity

The test correctly identifies those without the disease (true negative). A low specificity means patients are told they may have the disease when they do not (false positive).



Professor Robert Zeillinger, Head of the Molecular Oncology Group at the Department of Obstetrics and Gynaecology, Medical University of Vienna "The 200 patient ANG-001 clinical multi-centre study has shown that the Parsortix based test allows us to successfully discriminate patients with ovarian cancer from patients with a non-malignant pelvic mass with a high degree of accuracy."

Ovarian cancer clinical studies: 400 patients

- ❖ 400 patient European (ANG-001) and United States (ANG-003) studies
 - Medical University of Vienna, Charité and Vivantes
 - University of Rochester Wilmot Cancer Center
- ❖ **Both studies report positive results**
- ❖ **Potential to significantly out-perform current clinical care** in discriminating malignant from benign
 - **up to 95% sensitivity and nearly double specificity of CA125**
 - provide valuable gene expression information on malignant cases
- ❖ **Moving to Optimisation and Validation Phase**
- ❖ Optimisation (6 months) to improve performance still further
- ❖ Validation studies (12-18 months) to support CE Mark and FDA clearance
- ❖ Opportunities for accelerated commercialisation via commercial partnerships
- ❖ **£300 million per annum market**



Dr Richard Moore, Director of the Gynecologic Oncology Division, University of Rochester Medical Center Wilmot Cancer Institute “The 200 patient ANG-003 clinical study shows that the Parsortix test has the ability to accurately discriminate malignant from benign pelvic masses prior to biopsy or surgery. The test also offers key additional benefits over existing practice through the gene expression information it provides, which may help to further guide choices for targeted therapy in women with ovarian cancer. Additionally, the test may allow separate identification of patients with low malignant potential and/or other cancer types using a non-invasive liquid biopsy test.”

Breast cancer FDA clearance progress (400 patient study)

❖ **Potential to be first FDA cleared system for harvesting cancer cells from blood**

- ❖ Seeking FDA clearance in metastatic breast cancer
 - breadth of clearance to provide flexibility
 - base clearance to which specific clinical uses can be added
 - ovarian cancer and other cancer types to follow

❖ **Analytical studies in progress**

- precision and reproducibility (internally and externally)
- limits of quantification and detection
- accuracy and linearity
- potential interferents and carryover

❖ **FDA clearance will differentiate Parsortix in markets worldwide**

❖ **ANG-002 clinical study plan developed in consultation with several world-class US breast cancer centres**

- designed to meet FDA regulatory requirements
- 200 metastatic breast cancer patients and 200 age appropriate healthy volunteers

❖ **MD Anderson, #1 cancer centre in the US, contracted to lead ANGLE FDA clinical study**

- ❖ Contractual negotiations with 6 major cancer centres in progress

❖ **Results expected H1 2018**

Breast cancer metastatic biopsy comparison

University of Southern California Norris Comprehensive Cancer Center

- ❖ CTCs harvested and RNA-Seq analysis successful for 100% of patients
- ❖ **CTCs from Parsortix liquid biopsy had similar patterns of expression for 192 genes to the traditional biopsy of cancer cells from metastatic sites in all cases (21 patient study)**
- ❖ Wide range of metastatic sites
 - Skin, pleural effusion (fluid around the lung), pericardial effusion (fluid around the heart), breast, cerebrospinal fluid (fluid found in brain and spine) and bone tissue
- ❖ **CTCs provide information on 66 different pathways that may be targeted by new or existing cancer drugs**
- ❖ Parsortix provides clinical information beyond a single metastatic site
- ❖ Metastatic biopsies invasive, often requiring surgery, expensive and may delay treatment. Often they are not possible at all

❖ **Non-invasive, repeatable, lower cost, more effective**

❖ ANGLE FDA study in metastatic breast cancer to investigate RNA-Seq (full next generation sequencing) in larger patient sample

❖ **Multiple commercial opportunities**

- repeat biopsy allowing targeted treatment
- tool for identifying drug targets in metastatic breast cancer
- tool to assess the effectiveness of drugs under development in clinical trials

❖ Most common cancer in women - 1.7 million cases recorded in 2012 and 6.3 million women living with breast cancer. 20% to 30% will become metastatic



Julie E. Lang, MD, FACS, Director, USC Breast Cancer Program, Associate Professor of Surgery, Norris Comprehensive Cancer Center, University of Southern California

"As a breast cancer surgeon, I am very enthusiastic about the potential of liquid biopsy ... Our pilot data shows that potentially the same information can be obtained from a simple blood test using Parsortix as from an invasive tissue biopsy and indeed may be advantageous over invasive tissue biopsies in regards to the diverse sites of metastatic disease ..."

Non-invasive prostate biopsy using Parsortix £3 billion p.a. market potential

- ❖ Barts Cancer Institute pilot studies
 - harvested CTCs in 100% of patients (52 patient study)
 - detected cancer in 100% of the metastatic prostate cancer patients and 75% early stage (80 patient study)
 - number of mesenchymal CTCs showed good correlation to Gleason score
 - metastatic or localised: CTCs showed higher level of accuracy than Gleason score
- ❖ **Simple blood test before solid biopsy test**
 - **detect presence of prostate cancer**
 - **assess aggressiveness of disease**
 - patient risk stratification – differentiate between active surveillance (indolent) or intervention (aggressive)
- ❖ Avoid surgical intervention
 - >1 million solid prostate biopsies p.a. in US
 - 75-80% no cancer and >50% with cancer “watchful waiting” / “active surveillance”. Only 10% needing treatment



Dr Yong-Jie Lu, Reader in Medical Oncology at Barts Cancer Institute

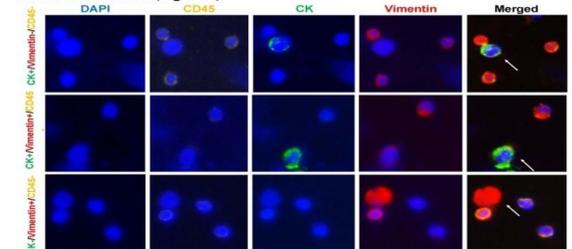
“The exciting part of this research is the potential for the Parsortix system to be used to assess the severity of the disease as well as to detect it. This meets a key medical need to avoid over-treatment as well as to ensure treatment is available for patients who need it.”

Prostate cancer metastasis and prediction of survival

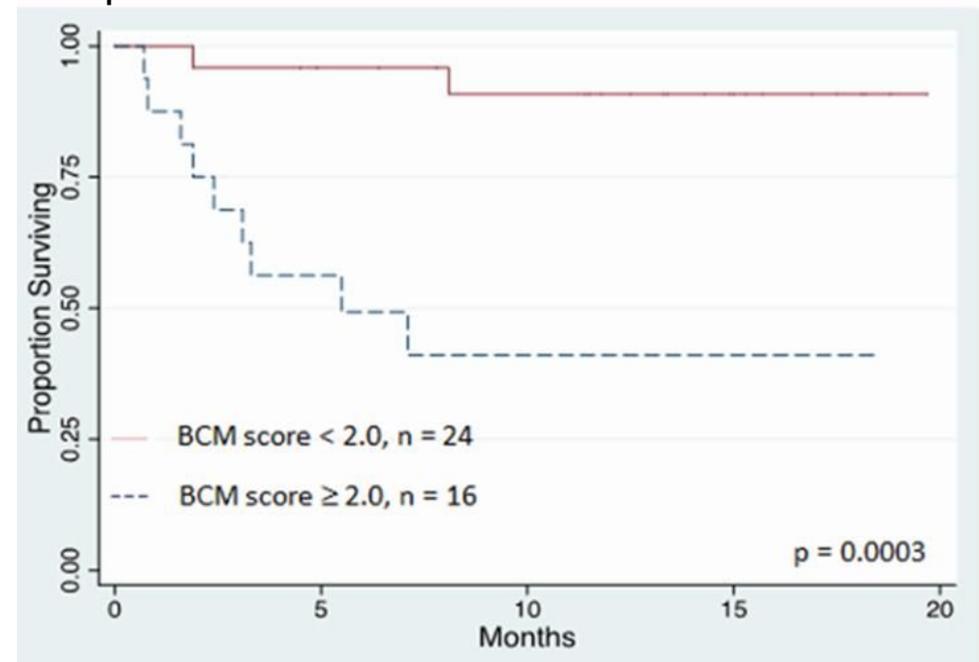
Barts Cancer Institute

- ❖ Prostate cancer most common male cancer. 1.1 million new cases in 2012
- ❖ Number of Parsortix **EMTing CTCs** correlated with metastasis 92% accuracy (81 patient study)
- ❖ Out-performs current approaches – PSA level and Imaging
- ❖ **Blood cell discovery with Parsortix:** cells identified as **megakaryocytes** linked to patient survival (n=40)
- ❖ New **Parsortix CMS** (combined EMTed CTC and megakaryocyte score) predicts overall survival: **patients 10x more likely to die**
- ❖ Enables intensive treatment early

2. Different populations of CK+/Vimentin-/CD45-, CK+/Vimentin+/CD45-, and CK-/Vimentin+/CD45- cells were identified in clinical samples using 4-colour immunofluorescence (Figure 3).



Kaplan Meier curve



Research use sales

- ❖ Research use sales growing
 - **over 145 Parsortix instruments in active use** and growing rapidly
 - **over 30,000 blood separations** have already been performed on the Parsortix system

- ❖ Research use sales £250m p.a. market potential
 - 750 addressable Phase II cancer drug trials p.a. revenue potential £100k / trial
 - 120 addressable Phase III cancer drug trials p.a. revenue potential £750k / trial

- ❖ Targeting sales to leading cancer centres
 - **50% of top 10 breast cancer researchers** worldwide have now adopted Parsortix
 - over 50% of US NCCN Centres purchased or considering Parsortix
 - cancer centres independently researching 14 different cancer types using Parsortix

- ❖ **Growth potential: drug trials, CROs, mouse**

	Instrument	Cassette
Price ¹	£40,000	£100
Cost ¹	£12,000 ²	£17
Margin	70%	83%

1. Indicative. High margins allow flexibility in pricing for competitive advantage
 2. Includes maintenance, technical support, sales and distribution

Parsortix patented system developing a world-leading position in emerging \$ multi-billion liquid biopsy market



- ❖ Providing the **Complete Picture** (viable, intact CTCs for DNA, RNA, and protein analysis not just ctDNA)
- ❖ FDA study to support platform clearance for metastatic breast cancer with results expected H1 2018
- ❖ Ovarian cancer application successfully moved into optimisation / validation phase
- ❖ Prostate cancer application moving into verification phase
- ❖ Widespread adoption of Parsortix by leading cancer centres in Europe and the United States
 - numerous other cancer applications at KOL pilot study phase





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