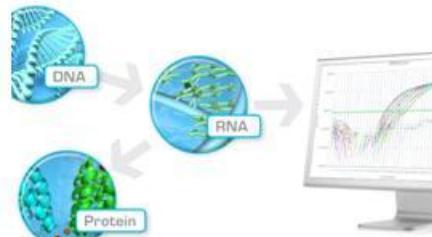


## DiaGenic ASA – Presentation Swedish American Life Science Summit, Stockholm, August 23nd, 2012

*Henrik Lund, MD PhD, CEO*



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# DiaGenic – Company and product outline

**Who** **Stock listed (OSE:DIAG) life science** company based in **Oslo**. Founded in 1998, 20 employees, and holds an extensive portfolio of patents linked to it's technology and products.

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**What** **Early diagnosis and blood based biomarkers** for >20 bm USD markets. Core focus on Alzheimer's Disease (**ADtect®**) and early stages thereof (**MCItect®**). Additional product lines in Parkinson's (**PDtect®**) and Breast Cancer (**BCtect®**).

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**Why** **Early diagnosis and intervention** is key to successful clinical outcome. Alzheimer's Disease (**ADtect®**) (**MCItect®**) address one of the most valuable unmet medical need lifescience markets next 5-10 y

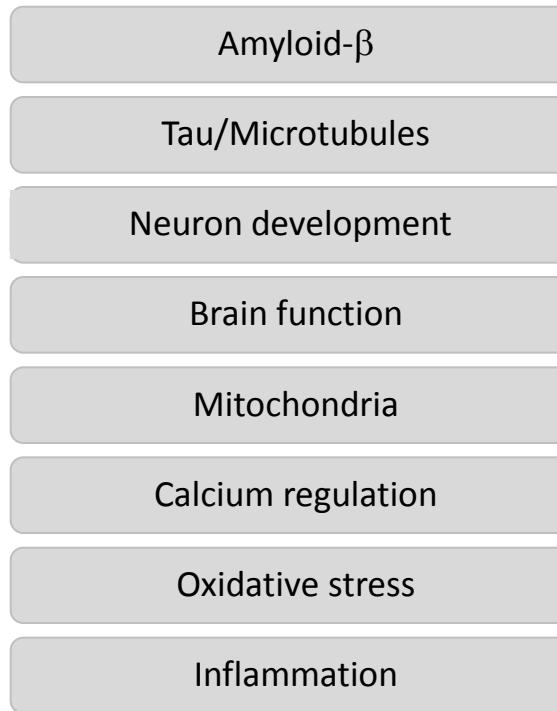
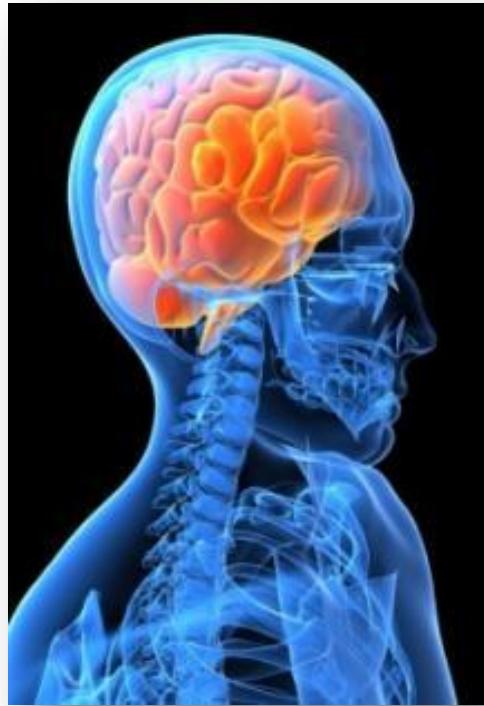
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**How** **Gene expression analysis** from easily available peripheral blood in Alzheimers market with competitive and unique diagnostic utilities

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**When** **ADtect® and MCItect®** are currently promoted as biomarkers for pharma and as companion diagnostic opportunities. Strong collaborative portfolio of partners in diagnostics and pharma in ongoing collaborations. Target FDA submission of ADtect/MCItect in 2014-15 for clinical use in the US.

**Original IP based on Method to identify diseases using blood samples and gene expression technology where the sample is collected distant to the area of the disease (for Alzheimers' Disease e.g. across the Blood Brain Barrier)**



**ADtect®**

**MCtect®**

**<sup>18</sup>PetTECT®**

- In addition to the multitude of genes involved in differentiation, cell cycle and cell metabolism, the ADtect® MCtect® assays also cover a wide range of known pathways associated with AD pathology, such as Amyloid-beta, pTau, presenilin and mitochondrial processing

# Solid IP, backed by 12 years of R & D > 100 granted patents

## 5 patent families granted or in process

<b>Family 1</b>	a. Method to identify diseases using blood samples and gene expression technology where the sample is collected distant to the area of the disease  b. Method to identify diseases using non-sequence based gene expression methods	a. Covers both sequence based and non - sequence based gene expression methods. Granted for Alzheimer in US, Europe, and Hong Kong. Broad patent, including Alzheimer's disease, in Japan and Norway  B. No disease limitations, no sample limitation, Granted in Europe, Hong Kong and Norway
<b>Family 2</b>	Describes sets of gene sequences that can be used to develop disease specific expression signature	Granted in South Africa. Granted in Australia, New Zealand and Europe for Alzheimer's disease and Breast cancer, and for breast cancer in India
<b>Family 3</b>	Describes gene families and genes expressed in blood which can be used to detect cancer	Granted in South Africa, Australia, New Zealand , Europe and US
<b>Family 4</b>	Describes sets of oligonucleotide probes in Kit form that can be used to identify, diagnose and monitor breast cancer	Application filed in 2010. National phase not yet entered.
<b>Family 5</b>	Describes different set of oligonucleotide probes in kit form that can be used to identify, diagnose Alzheimer's disease and stages thereof and monitor its progression	Priority application filed in 2011. National phase entered in US, Australia and Canada in 2012.

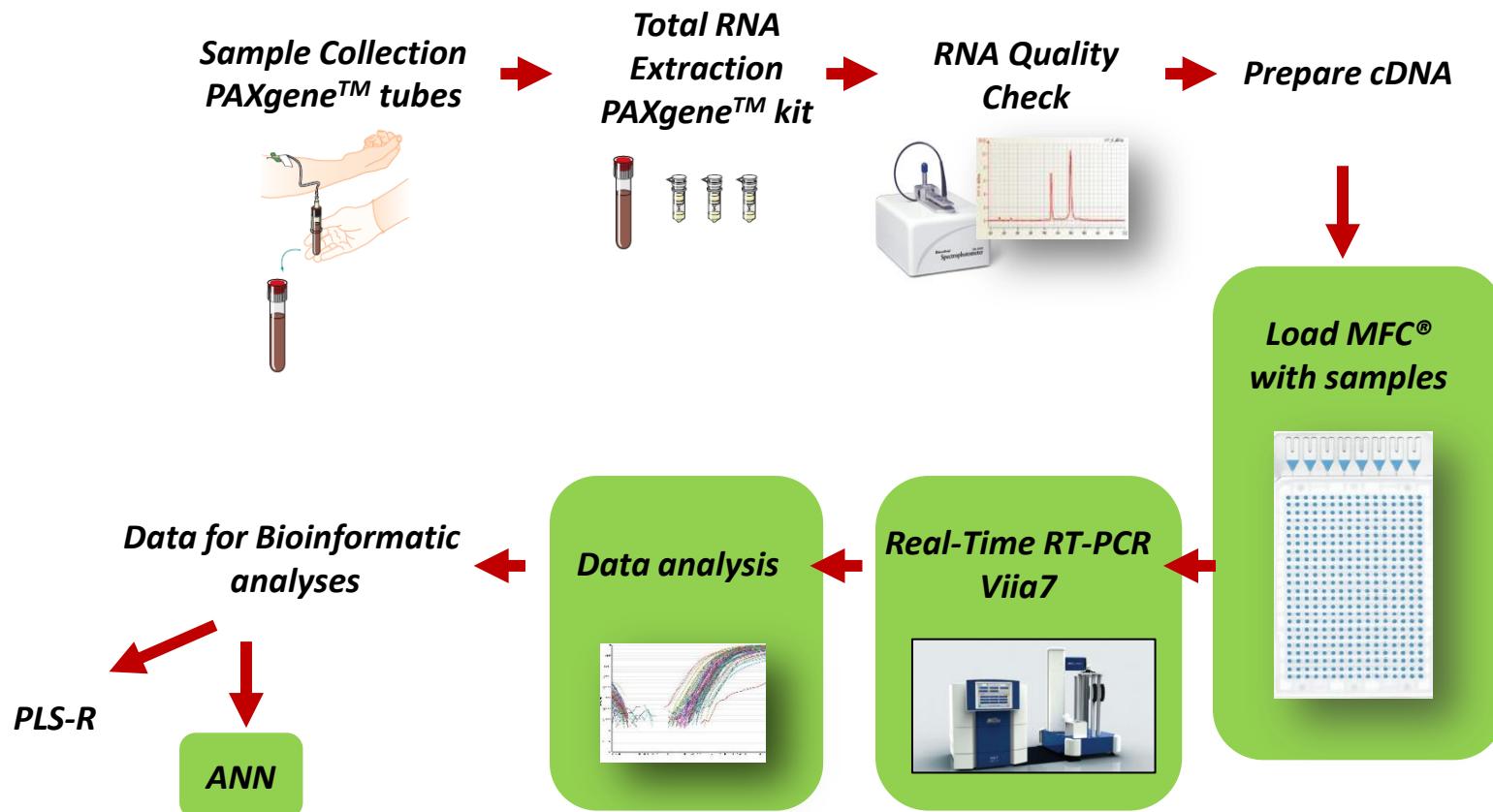
# Solid IP, backed by 12 years of R & D

## > 100 granted patents (reviews by Merz, Pfizer, GE Healthcare)

Diseases	Technology related granted patents	Granted patents covering important gene sets including our products
<b>Alzheimer's Disease (and stages thereof)</b>	US 6720138 EP1323728 HK 03109502 NO 327084 JP 4163758	EP 1565574 HK 1057217 AU 2003286262 NZ 540750 ZA 2005/03797 AP/P/2005/003317, Family 5 application (on file)
<b>Diseases where blood samples taken distant to the disease sites, includes other CNS diseases</b>	NO 327084 JP 4163758	
<b>Breast cancer (including its very early stage)</b>	NO 327084 JP 4163758 US (pending)	US 8105773 (includes polypeptides for corresponding gene sets) EP 1766056 AU 2003286262, AU 2005250219 NZ 540750 NZ 551797 ZA 2005/03797 ZA 2006/10644 IN 248463 AP/P/2005/003317 Family 4 application (PCT on file)

# A simple blood sample in a specialized tube - *PAXgene<sup>TM</sup>*

ADtect<sup>®</sup> mctect<sup>®</sup> PDtect<sup>®</sup> BCtect<sup>™</sup> <sup>18</sup>PetTECT<sup>®</sup>



Symbol indicates new developments in Diagenic methodology

for early disease detection

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# Development of ADtect® - Applied Biosystems 7900/ViiA7 – process for selection of disease specific gene probes.

Proof of concept	Whole Genome Array	Gene Validation	Prototype	ADtect® Test
Macroarray	Microarray		Real-time PCR	
Membrane 1536 gene probes	AB1700 platform >32000 gene probes	ABI 7900HT 384 gene probes	ABI 7900HT 96 gene probes	ABI 7900HT 96 gene probes
IPA Stockholm 2005	Journal of Alzheimer's Disease 23 (2011) & ICAD Madrid 2006	AD/PD Salzburg 2007	Biomarkers Europe Vienna 2007 23 (2011) & ICAD Vienna 2009	Journal of Alzheimer's Disease 23 (2011) & ICAD Vienna 2009

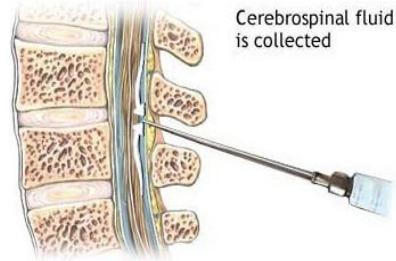
# The competitive edge of the technology: ADtect® is patient and payer friendly compared to other technologies

## PET imaging



- ✗ Expensive  
Tracer costs \$6000
- ✗ Equipment
- ✗ Include one AD related biological processes (A $\beta$ )
- ✗ 20-30% false positives
- ✗ Limited access

## CSF biomarker



- ✗ Invasive procedure  
Medical complications
- ✗ Average procedural charge USD 5,700
- ✗ Include two AD related biological processes (A $\beta$ , Tau)
- ✗ 36% false positives
- ✗ Assay standardization

## ADtect



early detection of  
Alzheimer's disease

- ✓ Patient friendly
- ✓ Less invasive
- ✓ Include all known AD related biological processes\*
- ✓ Less expensive
- ✓ Fast turnaround time

# Diagenics product portfolio with core focus on Alzheimer's Disease

**Rx**

Integrated biomarkers

Companion Diagnostics

**MDx**

Stand alone IVD assay

<sup>18</sup>PetTECT®\*

MCTECT®

PDTECT®

ADTECT®

BCTECT™

Tailor made biomarker with Alzheimer's PET tracer

Mild Cognitive Impairment to AD progression biomarker

Early detection of Parkinson's

Early detection of Alzheimer's

Early detection of breast cancer



Core focus areas

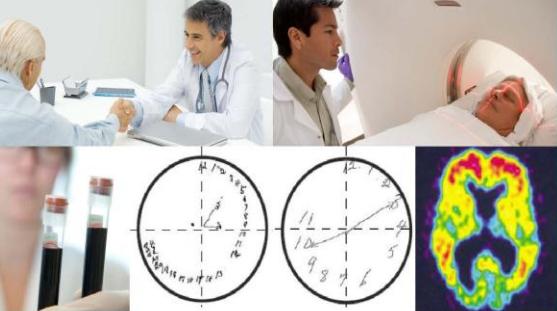
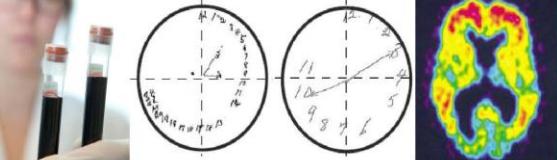
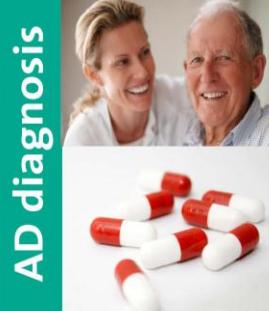
\* PETTECT not a registered trademark – development of amyloid IVD illustrative purpose

for early disease detection

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# DiAGenIC delivers blood based biomarkers for early diagnosis in Alzheimer's disease - significant unmet medical and diagnostic need

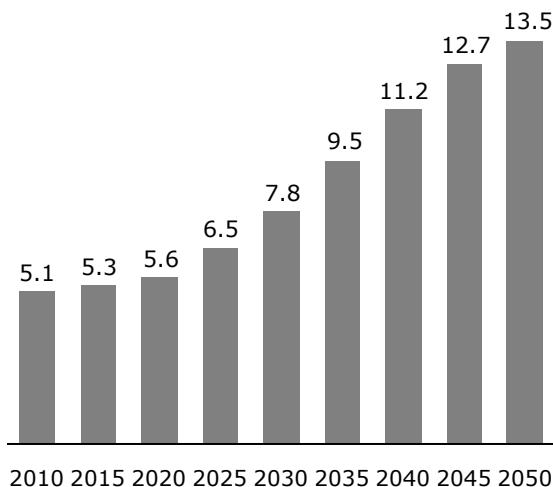
ADtect® mCItect® <sup>18</sup>PetTECT®

Presymptomatic	Prodromal AD	Diagnostic procedure	AD care/treatment
		 	   

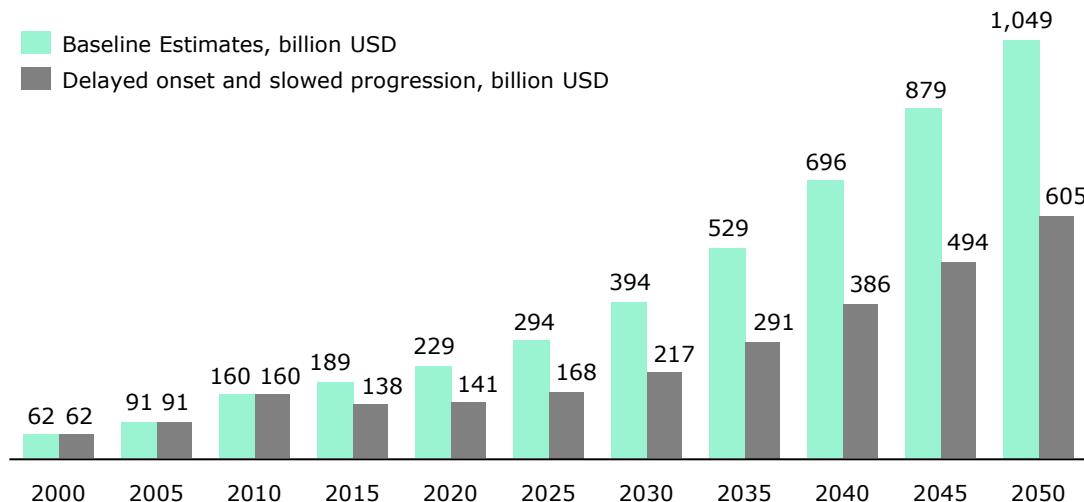
- Alzheimer's disease ("AD") is a progressive neurodegenerative disease
  - Multifactorial, and not completely understood disease mechanism
  - Amyloid hypothesis prevailing
  - Currently 5.4 million<sup>1</sup> patients suffers from AD in the US
- A substantial unmet medical need
  - No effective medications that delays disease development today, only symptomatic treatment
  - Disease management today is a combination of drugs, change of lifestyle and diet Amyloid hypothesis prevailing
- A difficult diagnostic challenge – disease first detected at dementia stage
  - Current diagnostics is time consuming, costly and has low diagnostic accuracy
  - Large unmet need for diagnostic tools in pre-dementia stage

# The market for blood based test for Alzheimer's is large due to high disease prevalence and the serious public health challenge

**Number of Americans aged 65 and over with Alzheimer's**

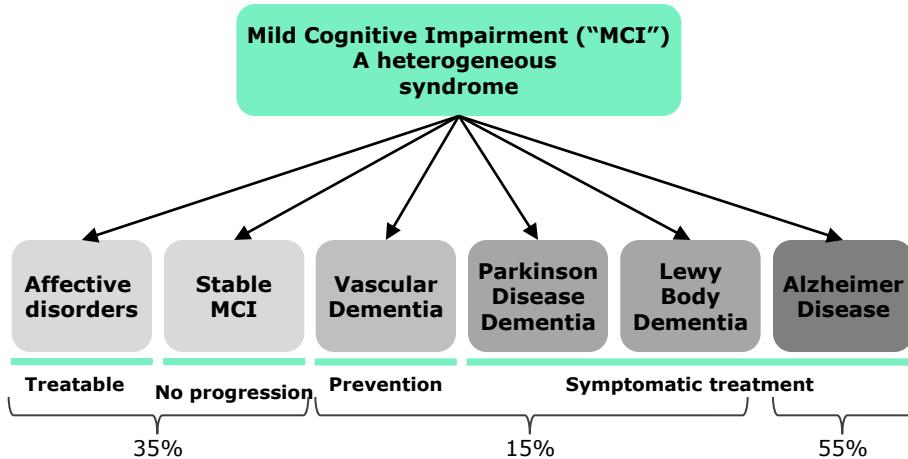


**Medicare spending for people with Alzheimer's disease using current projections vs. projections with delayed onset and slowed progression**



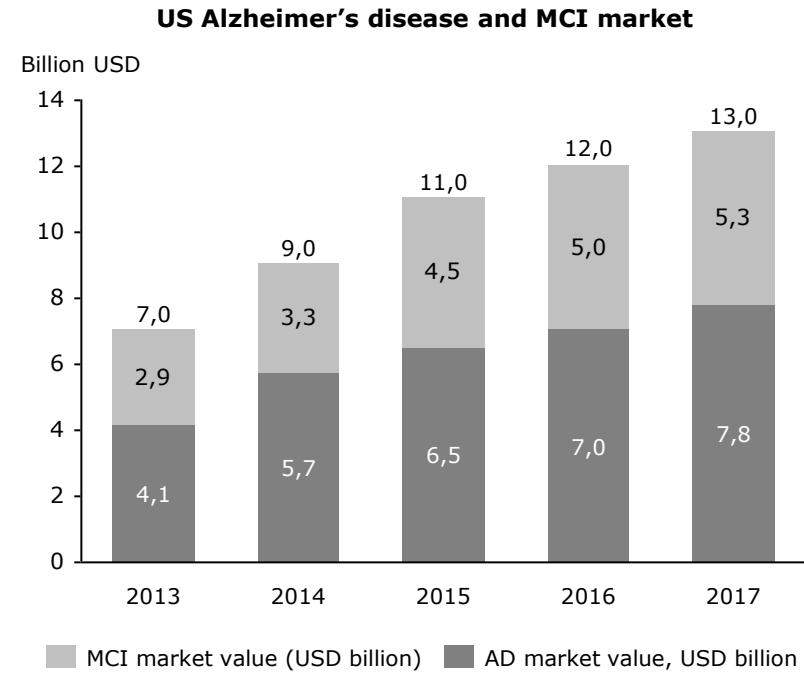
- The number of AD patients and associated medical expense is expected to grow exponentially between 2010 and 2050
- Medicare alone expected to spend \$20 trillion on AD between 2010 to 2050 if no advances are made (~40% of total Medicare spending).
- A treatment that delays disease onset by only 5 years will reduce the overall cost of AD by \$3.97 trillion over 30 years, a 40% reduction!

# An early diagnosis of Alzheimers is difficult and prodromal AD diagnosis is key to any disease modification. Mild Cognitive Impairment (MCI) is where future focus is.....



*"The earlier in the disease process that people at risk for developing Alzheimer's are identified, the sooner we can intervene. Earlier detection will be our best opportunity to prevent continuing damage to the brain, once more effective therapies are developed."*

William Thies, PhD,  
Chief Medical and Scientific Officer at the Alzheimer's Association

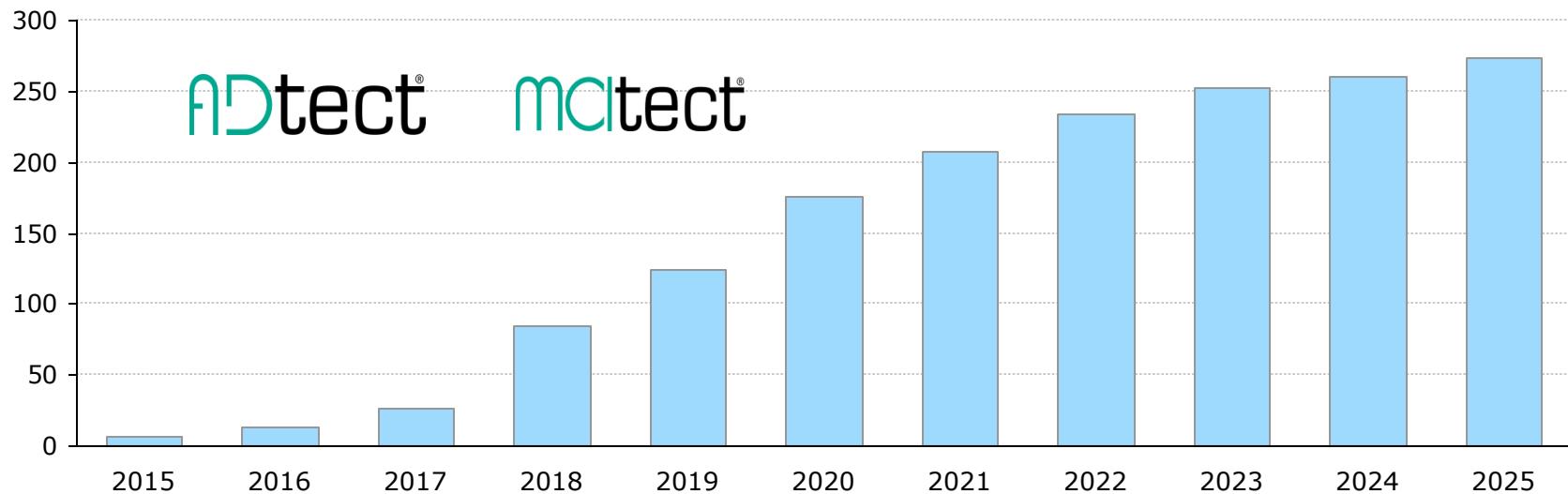


- Current diagnostics and therapeutic intervention applied at dementia stage
- Successful drug development is expected to significantly boost the AD therapeutic market – increase need and value of diagnostics
- Ability to diagnose and intervene in Prodromal AD may further increase the market significantly

# ADtect® - promising opportunities in the current US market

- Promising opportunities in the Alzheimer diagnostic market, despite the limitations of existing treatment options
- ADtect® US sales projection 5 years from launch \$150M – 200M, assuming reimbursement and 80% test accuracy

**US market estimate blood based Alzheimer biomarkers – (USD million)<sup>1</sup>**

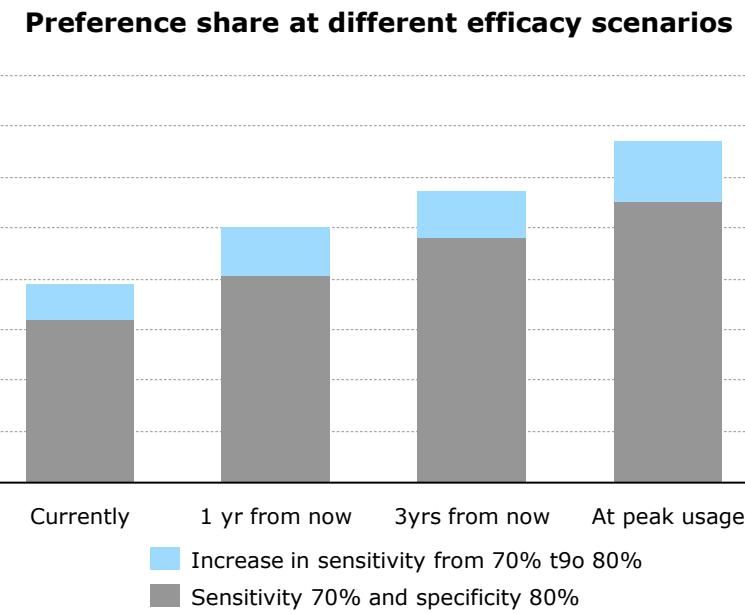
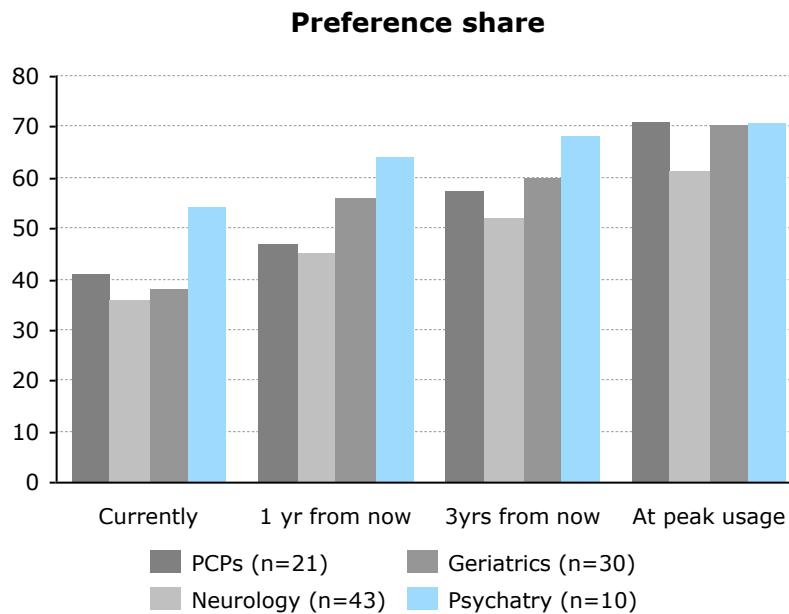


<sup>1</sup> End user sales based on price per test of USD 650

# Diagenics CE approved ADtect® meets an unmet need and will be adapted by physicians

Assuming existing treatment options, reimbursement and 80% test accuracy:

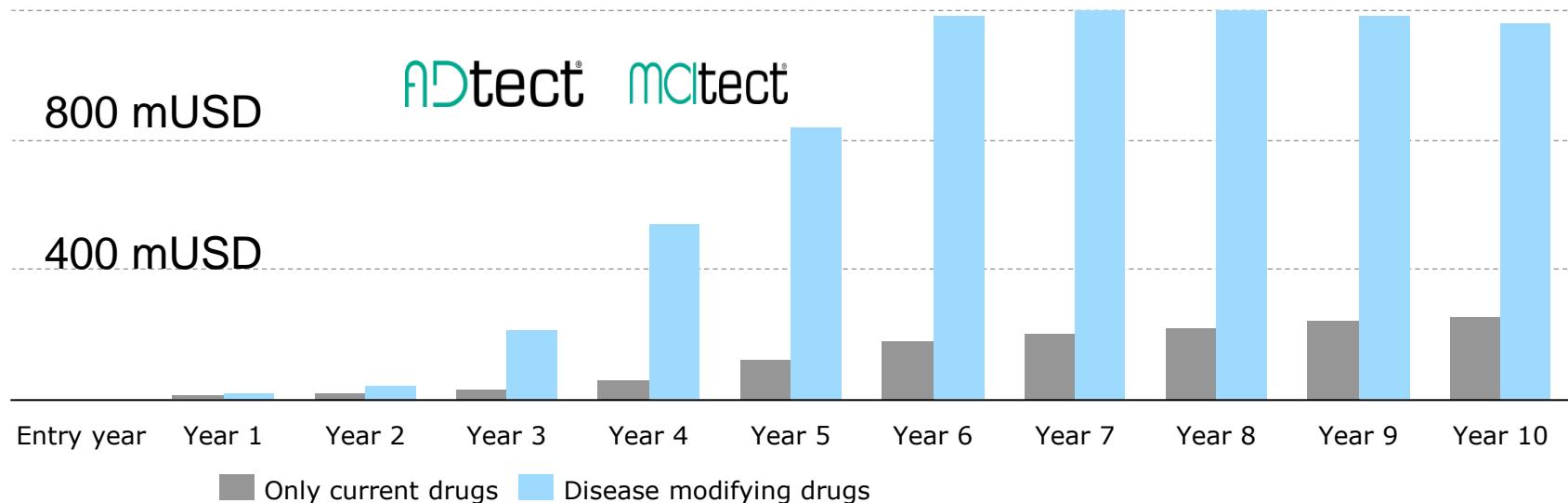
- Physicians would use ADtect® on 67% of ALL the patients with symptoms of dementia at peak usage if accuracy of 80% for the blood test.
- 45 % of the physicians asked anticipate hitting peak usage within 2 years
- If ADtect sensitivity or specificity drops from 80% to 70%, then peak usage will drop from 67% to 56%



## Development of disease modifying therapy in Alzheimer's is challenging. Therapeutic intervention must be at early disease (MCI) stage – will drive blood based test market beyond 1 bn USD

- The market for DiaGenic's Alzheimer's diagnostic tests has blockbuster potential, and peak US sales projected to increase by a multiple of 7 if disease modifying drugs are successfully launched.
- Key driver for accelerated growth will be ability of new drugs 2012-onwards to modifying disease progression
- DiaGenic blood based RNA signature technology unique – few competitors

Illustration of US Market estimate blood based Alzheimer biomarkers with and without new effective drugs



for early disease detection

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# **DiaGenic test accuracy in dementia and pre-dementia stages of Alzheimer's Disease**

Pending board meeting

for early disease detection

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# ADtect® multi-center studies – high accuracy achieved

Validation studies indicates a true detection of AD pathology of 85%

- ADtect agreement with clinical diagnosis is 72% (n=412)
  - Clinical diagnosis as set by a review board was used as standard of truth, assumed to be 80% accurate
  - 72% observed agreement with 80% accurate clinical diagnosis indicates a true detection of AD pathology of 85%
- 30 Clinical samples contained CSF biomarker data ( $\text{A}\beta 1-42$ , t-tau, p-tau)
  - 24 of 28 positive CSF samples were correctly predicted with ADtect® (85% agreement)

<b>Agreement with clinical diagnosis</b>	<b>Calibration (%)</b>	<b>Validation (%)</b>		<b>Total (%)</b>
	N=208	Initial N=74	Extended N=130	N=412
<b>Overall agreement</b>	71.6	71.6	71.5	71.6
<b>Agreement with positive outcome</b>	71.8	71.9	70.6	71.8
<b>Agreement with negative outcome</b>	71.4	71.4	72.6	71.6

# DiaGenic reaches 82% accuracy milestones for ADtect improvement – results from IAAC July 18th increases deal potential

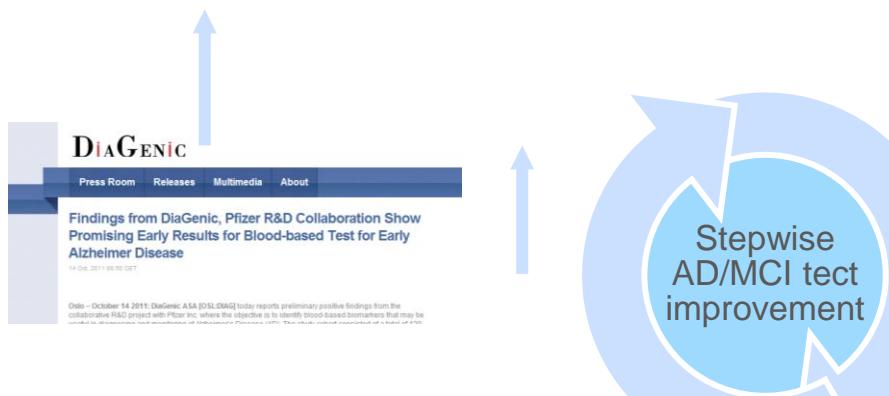
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**DiaGenic show 82% accuracy of new ADtect blood test in Alzheimer's disease.**

18 Jul, 2012 08:30 CET

alzheimer's association® **AAIC>12** Alzheimer's Association International Conference® Vancouver, British Columbia, Canada July 14 - 19, 2012



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**DiaGenic presents promising findings in pilot study**

3 Nov, 2011 16:00 CET

DiaGenic's blood sample based Alzheimer's disease test has proven successful in a clinical study released today. DiaGenic is the first to diagnose Alzheimer's disease from a blood sample at such an early stage of the disease.

*Q2 2012 highlight (post Q):  
IAAC Vancouver July 18th*

*R&D excellence and  
continuous product  
improvement  
to reach accuracy > 80% for  
early Alzheimer detection*

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Highly ranked Journal of Alzheimer's Disease to publish two DiaGenic ADtect® articles

22 Sep, 2010 09:55 CET

Abstracts of two articles to be published in the highly ranked Journal of Alzheimer's Disease have been posted today on the journal's web site. This will build confidence in ADtect® among clinicians and pharmaceutical companies and confirm DiaGenic's leading position as a provider of biomarkers in the CNS field.

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**CE MARKING OF THE FIRST BLOOD TEST FOR EARLY ALZHEIMER'S DIAGNOSIS**

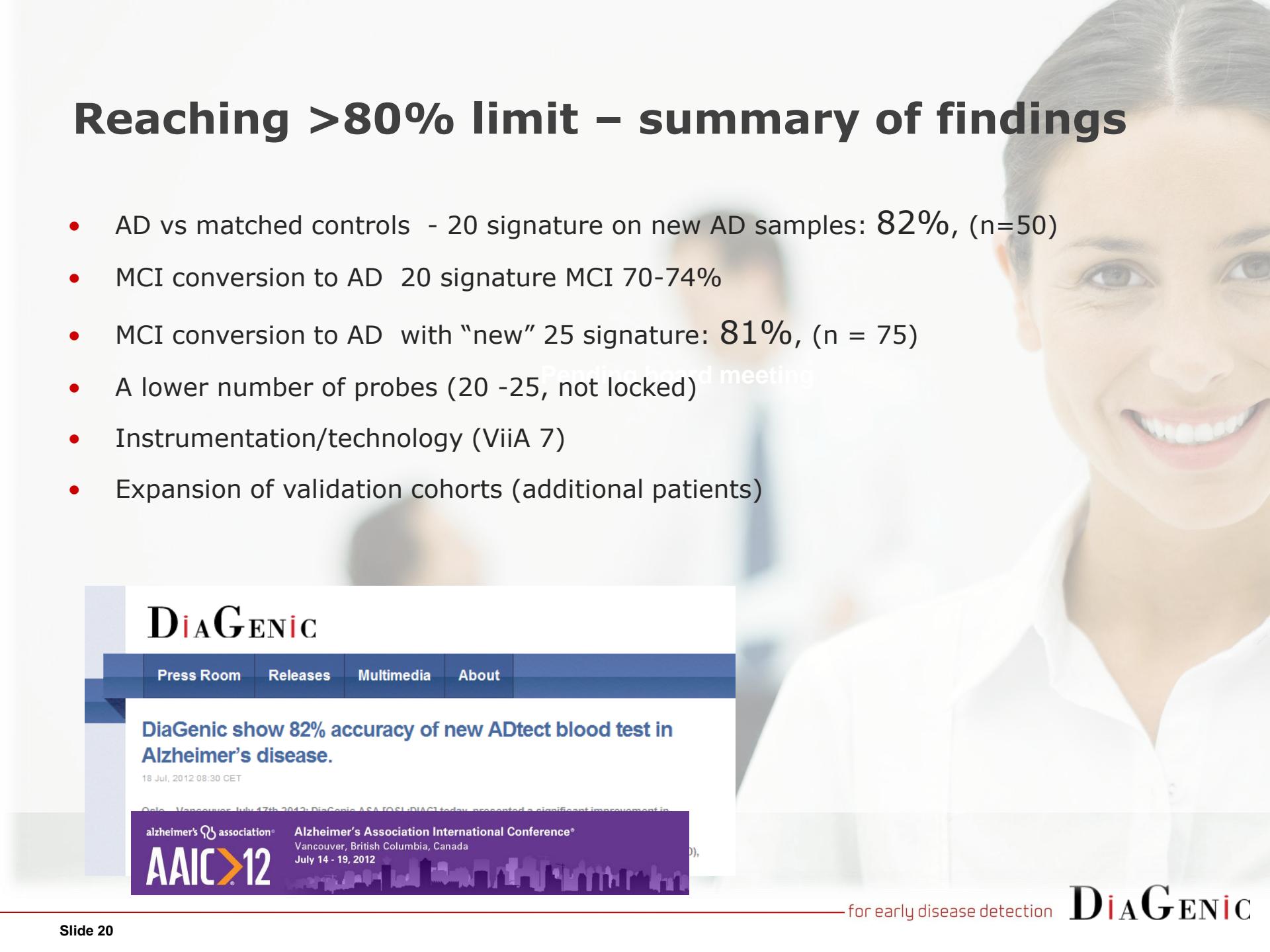
12 Jun, 2009 08:30 CET

DiaGenic ASA today announces the European release of its ADtect® (Alzheimer's) blood-based gene-expression assay for clinical diagnostic use. The Alzheimer's assay is released as a CE IVD Mark product under the European Directive on In Vitro Diagnostic Medical Devices 98/79/EC.

**G**  
**ENIC**

# Reaching >80% limit – summary of findings

- AD vs matched controls - 20 signature on new AD samples: 82%, (n=50)
- MCI conversion to AD 20 signature MCI 70-74%
- MCI conversion to AD with “new” 25 signature: 81%, (n = 75)
- A lower number of probes (20 -25, not locked)
- Instrumentation/technology (ViiA 7)
- Expansion of validation cohorts (additional patients)



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**DiAGENIC show 82% accuracy of new ADtect blood test in Alzheimer's disease.**

18 Jul, 2012 08:30 CET

Oslo – Vancouver, July 17th, 2012: DiAGENIC ASA (OSLO:DIAGT) today presented a significant improvement in

alzheimer's association®   Alzheimer's Association International Conference®  
Vancouver, British Columbia, Canada  
July 14 - 19, 2012

AAIC 12

for early disease detection

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# Summary of findings: Fewer genes improves ADtect and sets standard for MCItect

ADtect improvement	ADtect
Number of genes	20
Sample size (25 AD 25 controls)	50
<b>Performance characteristics</b>	
Accuracy	82 %
Sensitivity	80 %
Specificity	84 %
AUC	0.85

**Results I: 20 Gene signature from ADtect increased accuracy in detecting Alzheimer's disease in the dementia stage**



MCI due to AD improvement		MCItect	
Number of genes	20	25	25
Sample size (MCI-c 35, MCI-s 40 whereof newly included 7 MCI-C and 13 MCI-s)	20	20	75
<b>Performance characteristics</b>			
Prediction accuracy	70 %	75%	81%
Sensitivity	69 %	71%	77%
Specificity	71 %	77%	85%
AUC	0.73	0.73	0.83

**Results II: 25 Gene signature with increased accuracy in detecting Prodromal AD 2 years before dementia onset**



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# Licencing opportunities & Pharma collaborations

Regulatory board meeting

# R&D collaboration 2011 with Pfizer 20 gene signature prodromal (pre-dementia) AD biomarker

Development of blood based biomarkers for early stages of Alzheimer's disease

## Biomarkers for prodromal AD and progression rate in AD identified

In collaboration with



### Biomarker for prediction of **prodromal AD** in blood

- DiaGenic has identified a 20 gene signature in blood predicting MCI conversion to AD (prodromal AD) within 2 years, n =129.  
DiaGenic's prodromal AD signature significantly reduces samples size in clinical trials
  - Cost reduction by 35%-45%.
  - Homogenous cohorts secures successful completion of clinical trials



### Biomarker in blood defining **AD progression**

- DiaGenic has identified a 113 gene signature in blood for rate of progression in AD
  - Correct staging in >80% of fast progression cases
  - Provides an independent marker of progression in AD
  - Prediction of AD progression rate was demonstrated
    - >90% overall agreement for subjects with mild AD
    - Potential to reduces sample size in mild AD trials



# R&D collaboration 2012 Diagenic GE Healthcare to develop amyloid PET In Vitro Diagnostic

- R&D agreement for first in class study comparing gene signature and brain PET imaging
- GE Healthcare completes succesfull phase III with autopsy studies and restates FDA filing end of 2012
- Alzheimer market see important step change with FDA approval of first  $^{18}\text{F}$ -PET ligand (AMYVID®; Eli Lilly) for detecting amyloid in the brain April 4<sup>th</sup>. Market expected to hit 1.5 bn USD
- Amyloid PET launch in selected US sites from June 1st onwards



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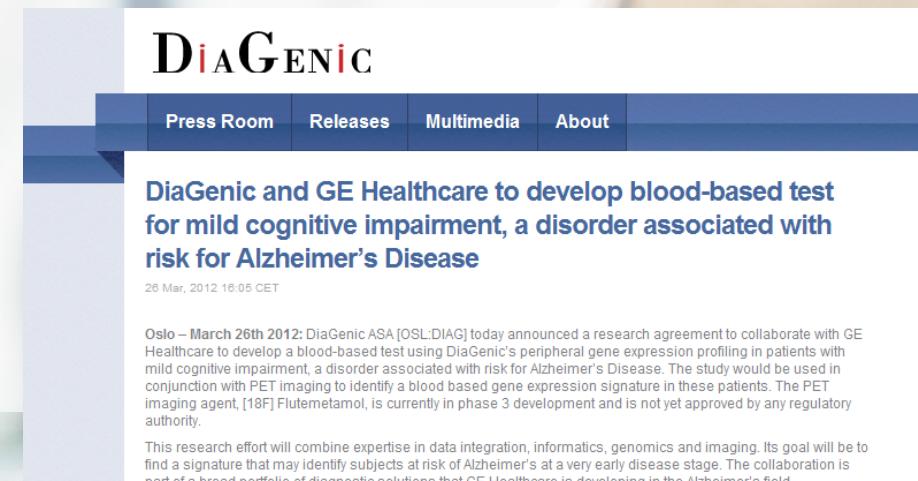
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**First patient included in DiaGenic and GE Healthcare project to develop a blood test for Mild Cognitive Impairment, associated with Alzheimer's**

7 Jun, 2012 17:28 CET

Oslo – June 7th 2012: DiaGenic ASA [OSL:DIAG] today announced that the first patient with MCI (Mild Cognitive Impairment) was examined with  $[18\text{F}]$  Flutemetamol PET imaging at University of Lund Sweden in the DiaGenic and GE Healthcare Research Collaboration announced March 27th 2012. First patient examined with PET imaging means that the clinical phase of the collaboration has been initiated.

The study aims to develop a blood-based gene expression profile in patients with mild cognitive impairment (MCI) to be used in conjunction with PET imaging of the brain. The PET imaging agent,  $[18\text{F}]$  Flutemetamol, is currently in phase 3 development and is not yet approved by any regulatory authority.



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**DiaGenic and GE Healthcare to develop blood-based test for mild cognitive impairment, a disorder associated with risk for Alzheimer's Disease**

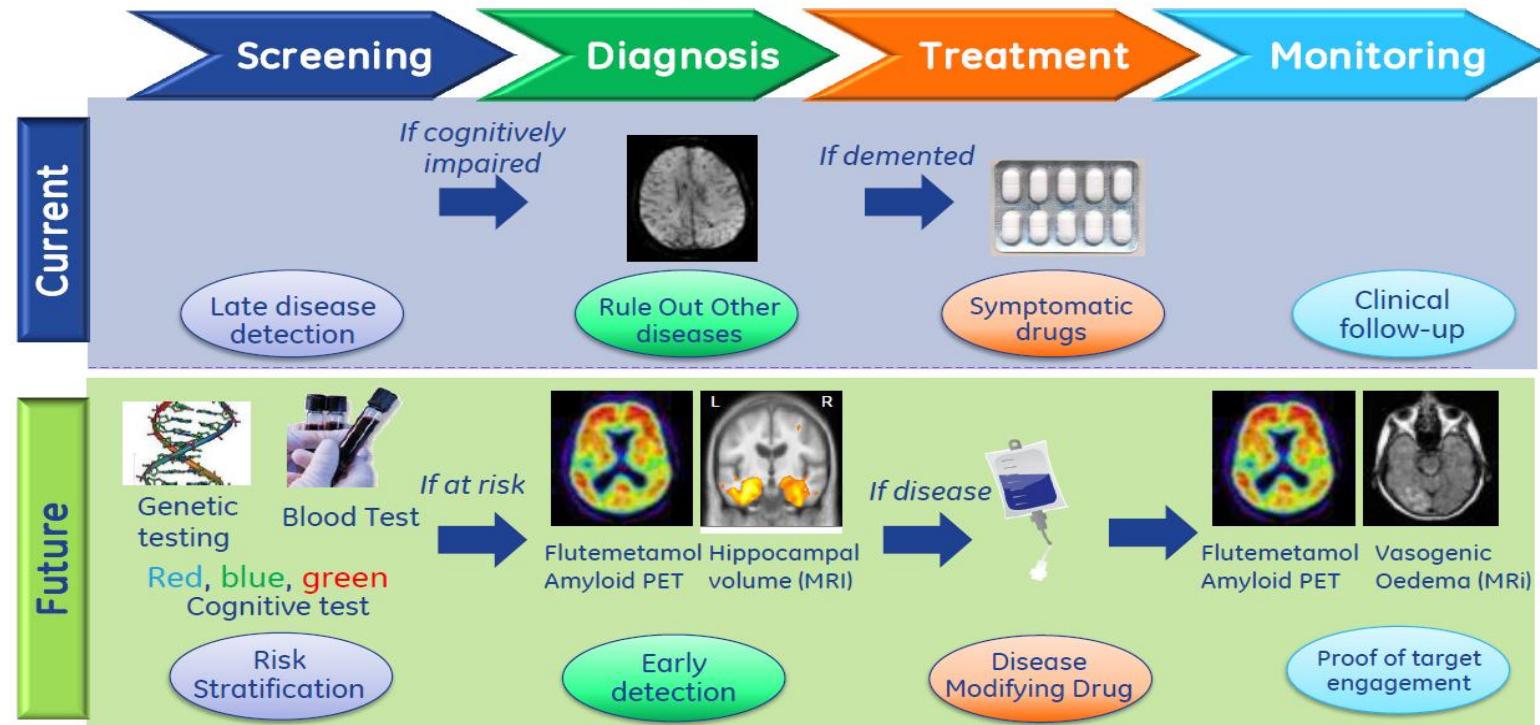
26 Mar, 2012 16:05 CET

Oslo – March 26th 2012: DiaGenic ASA [OSL:DIAG] today announced a research agreement to collaborate with GE Healthcare to develop a blood-based test using DiaGenic's peripheral gene expression profiling in patients with mild cognitive impairment, a disorder associated with risk for Alzheimer's Disease. The study would be used in conjunction with PET Imaging to identify a blood based gene expression signature in these patients. The PET imaging agent,  $[18\text{F}]$  Flutemetamol, is currently in phase 3 development and is not yet approved by any regulatory authority.

This research effort will combine expertise in data integration, informatics, genomics and imaging. Its goal will be to find a signature that may identify subjects at risk of Alzheimer's at a very early disease stage. The collaboration is part of a broad portfolio of diagnostic solutions that GE Healthcare is developing in the Alzheimer's field.

# The future of Alzheimer diagnostics as viewed by GE Healthcare

## Alzheimer's Disease ... ... an unmet need for complete Dx solution



### Enabling First Generation of Disease Modifying Drugs

The imaging agents described are not approved for use by the FDA or any other health regulatory agency

for early disease detection

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## Market access & US regulatory 510k/PMA process

Pending board meeting

# US out-licensing and Pharma partnering

- Progress in licencing activities in the US (with Ferghana Partners)
- Additional large pharma collaboration requests for DiaGenic's Alzheimer platform/products
  - Ferghana extension of contract with 6 months from May 31<sup>st</sup>
  - DiaGenics AD and PD technology in focus.
  - Counterparties represent service providers (typically laboratory chains) or technology providers (platform providers).
  - Scope for license is funding of US PMA/510k approval, milestone based upfronts and royalty on commercialization. A limited number of counterparties are at different stages of DiaGenic interaction.
  - DiaGenic continue discussions to add pharma R&D collaboration with partner having phase II-III clinical programs with NCEs in the quarter.

## **DiaGenic Alzheimer's/Mild Cognitive Impairment biobank**

for early disease detection

**DiAGENIC**

# Pushing the boundaries to the pre-dementia stage – gene expression in prodromal AD (MCItect®) – collecting sufficient number of MCI patients a rate limiting factor in AD drug/diagnostic development

- DiaGenic has conducted a 4 year prospective clinical study in mild cognitive impairment patients
  - Monitored disease progression with annual clinical exam and blood sampling
  - Full DiaGenic ownership for commercial product development
- DiaGenic has of the world's largest RNA blood based biobank in neurodegeneration
  - >3500 unique samples from MCI, AD, PD patients, age matched healthy controls and technical samples from all relevant clinical groups
- DiaGenic key collaborators on MCI
  - UC Davis, USA, Professor Charles DeCarli
    - 200 MCI patients, 50 controls and other dementias
  - University of Lund, Sweden, Dr Oscar Hansson
    - 300 MCI patients and controls – GE Healthcare project
  - Other sites as part of DiaGenic and EU funded studies (SPIDIA, EDAR)
    - 300 MCI cases and controls
  - Baltazar (France) – pending signature : > 50 MCI converters
  - DiaGenic – "Pfizer" cohort : 130 MCI- controls – AD (60 MCI converters)
  - DiaGenic US regulatory 510k/PMA process (DOCRO): 24 US specialist MCI sites





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for early disease detection

**DiaGenic**

## Parkinsons Disease and Breast Cancer

**PDtect**<sup>®</sup>

**BCtect**<sup>™</sup>

- ◆ *PDtect – early detection of Parkinsons Disease*
- ◆ *BCtect – gene signatures for pre-menopausal women with dense breasts*  
Pending board meeting

*Back-up slides*

4-6 million PD patients world wide

# High Unmet medical need for PD biomarkers



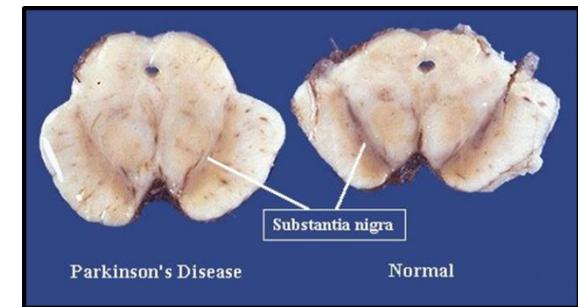
► **Degeneration of dopaminergic neurons starts years before symptoms become apparent**

► **No disease modifying drug available, only symptomatic**

- 28 ongoing clinical trials including new drugs

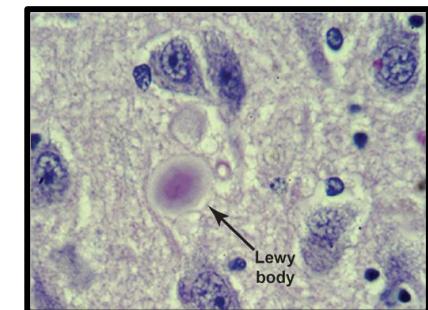
► **Current diagnostic work up:**

- PD commonly misdiagnosed by non-specialists (<60%\*)
- First investigated by GPs and then by Neurologists
  - Clinical examination
  - DaTSCAN imaging detects loss of functional dopaminergic neurons
- Post-mortem seldom done but is gold standard - Lewy bodies



► **Need for blood based biomarkers**

- Pharma use
  - Aid in early diagnosis, patient stratification into clinical trials
  - Measure disease progression
- Clinical use
  - Clinical diagnosis in early disease stages
  - Triage with DaTSCAN imaging (Proposal submitted to GE Healthcare July 2012 for post patent project in PD)



\*) C E Clarke (2007). Parkinson's disease. BMJ 2007;335;441-445.

# PDtect® identifies Parkinson patients with high 88% accuracy

- Completed DiaGenic European multi-centre study (Reported high level Q1 2012)
  - 900 samples from PD patients, controls and patients with related neurologic disorders.
  - 160 denovo patients (early PD without pharmaceutical treatment).
  - Monitored over 2 years for disease progression.
- Overall accuracy across all PD stages using 700 genes was 88%
  - In the diagnostic challenging group of early PD (denovo PD) sensitivity was 85%.
  - Whole genome screen on a subset - 79 PD patients, including 27 denovo PD, and 109 controls
  - >2000 genes impacted by the disease in blood.
- Has generated a substantial interest among several pharmaceutical companies

**Predicting Parkinson's disease by integrating clinical and microarray data with Canonical Partial Least Squares**

Magdalena Kauczynska Karlsson<sup>a</sup>, Anders Lønneborg<sup>a</sup>, Solveig Solberg<sup>a</sup>,  
<sup>a</sup>DiaGenic ASA, Grønbeveien 92, 0662 Oslo, Norway; <sup>b</sup>Dept. of Chemistry, Biotechnology and Food Science, Norwegian University of Life Sciences, P.O. Box 5003, 1432 Ås, Norway

**Introduction**  
Parkinson's disease is the second most common neurodegenerative disease after Alzheimer's disease. Current diagnostic tools in the management of Parkinson's disease are mainly based on clinical history and physical examination. The main problem with these methods is that they only give indirect information on the identification of the characteristics related to disease defining that are a consequence of progressive microstructural lesions in the brain. In addition, the clinical presentation of the disease is often non-specific and early symptoms are often confused with other diseases and other neurodegenerative diseases.

It is of great interest to find a blood based biomarker for early diagnosis of Parkinson's disease. However, studies on currently used blood diagnostic methods have shown that the sensitivity is low and the specificity is high. In addition, the cost of these methods is high, making them less attractive for clinical use.

The aim of this study was to explore the potential of a blood based gene expression profile to predict the diagnosis of Parkinson's disease with high accuracy and low cost.

**Materials and methods**  
**Sample Preparation**  
Whole blood was collected from individuals at Norwegian and Swedish hospital neurology clinics. The samples were collected by venipuncture and centrifuged. The plasma was collected and applied to 2200 Biomips. Samples were prepared using the PD2 Assaycard designed from Applied Biosystems.

**Clinical diagnosis**  
Clinical diagnosis was determined at each site by experienced neurologists based on the history and physical examination.

**Expression data and clinical information**  
Blood samples were collected from patients with known disease who were from the 40000 oligo-neurology patients. The generated expression data were 1330 samples from the study cohort. The samples were collected at three sites (Table 1).

In addition several clinical variables were available, among which were Age, gender, smoking and education history.

**Statistical analysis**  
Non-orthogonal linear square regression methods for predicting the disease were used. A variety of PCR, including linear regression, were used to predict the disease outcome (Joshi et al. 2001).

All PCR methods are based on a comparison of the high-dimensional data matrix. A repeated random 10-fold cross validation routine was used to evaluate the times and the number of correctly predicted samples across the 1000 repeats.

**Table 1. Demographics of sample used.**

	Number
PD patients	77
Control group	72

**DiAGENIC**

## PRESS RELEASE

	Ref	Diag.1.12
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**DiAGENIC reports high 85% accuracy for blood based diagnosis in early, naive Parkinson patients in European multicenter study**

Oslo – February 8<sup>th</sup> 2012 (DiaGenic ASA [OSL:DIAG]): The initial findings from DiaGenic sponsored prospective European multicenter Parkinson study is reported. The initial read out of the first subcohort of 79 PD patients and 75 matched healthy controls with no neurodegenerative disease, shows a diagnostic accuracy of 85% in early disease patients while overall accuracy was 88% across all stages.

The preliminary results of the biomarker development program in Parkinson's Disease (PD) were presented at the 19th World Congress on Parkinson's Disease and Related Disorders in Shanghai in November last year. DiaGenic reported that their gene expression data contained information that can be used to classify PD with high average accuracy in peripheral blood.

DiaGenic press release February 8<sup>th</sup> 2012

Magdalena Kauczynska Karlsson et al.  
32nd Annual Conference of the International Society for Clinical Biostatistics 21-25 August 2011 Ottawa, Canada

# Update on Parkinson Disease (PD)

## Completion of clinical phase of Familial PD study – results expected post Q2 - partnering discussions initiated

- ◆ *DiaGenic presented high accuracy (88%) in diagnosing early disease in European multicenter trial (Q1)*
- ◆ *Dialogues with partners providing imaging diagnostics have been initiated (Q1) – Licence dialogues identify strong interest for PD*
- ◆ *To date, there are few alternatives and DiaGenic may quickly provide an innovative improvement to the diagnosis of PD.*

**DiaGenic**

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**DiaGenic reports high 85% accuracy for blood based diagnosis in early Parkinson patients in European multicenter study**

8 Feb. 2012 17:28 CET

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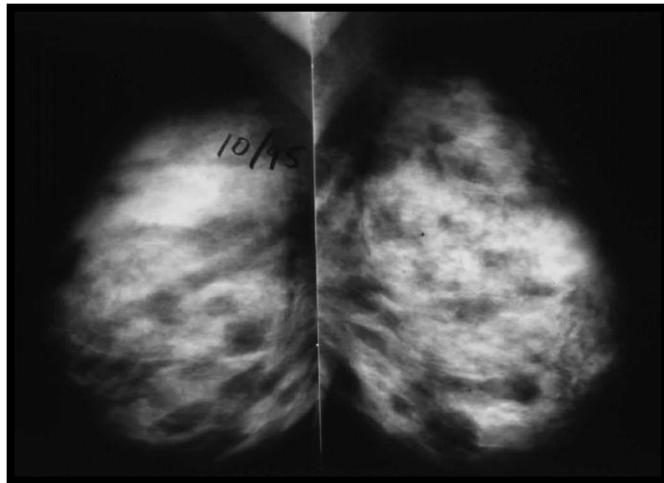
**DiaGenic reports completion of data collection and genetic analyses in a unique study on familial Parkinson's disease**

8 May, 2012 09:40 CET

Oslo – May 8th 2012 (DiaGenic ASA [OSL:DIAG]): DiaGenic today reports on the finalization of data collection and database lock of a blinded study in a Norwegian cohort of 80 patients with familial Parkinson's disease (PD). The majority of these patients are carrying a mutation in the parkin 8 gene (also called LRRK2) that significantly increases the risk of developing PD. Patients recruited from St Olavs University Hospital under the lead of Principal Investigator Professor Jan Aasly are all LRRK2 mutation carriers with or without the disease or healthy relatives. Unblinding of the study is set to the May 16th and analysis and reporting is expected to be completed during summer 2012.

# BCtect® Superior to Mammography in Young Females

- The intended use for BCtect® is in the detection of early stage breast cancer
  - First line test for asymptomatic females with worries due to family history, resistance to mammography or who is not part of a screening program
  - Problem solver: Mammography in younger females has low sensitivity
- No current competition within blood based testing
  - Mammography is a lower cost tool, best suited for postmenopausal females. Sensitivity in younger females as low as 40%-50%
  - Higher cost Magnetic Resonance Imaging (MRI) is sensitive, but lacks specificity



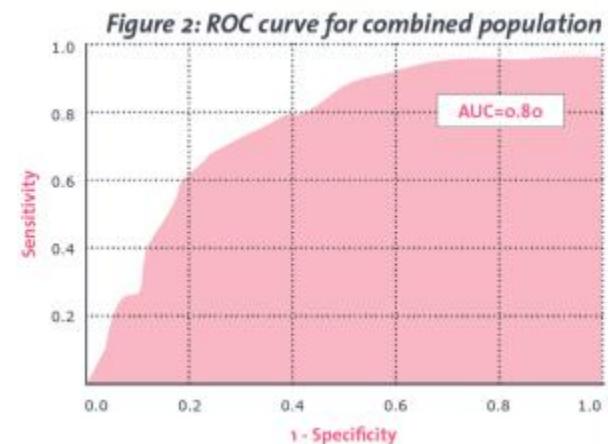
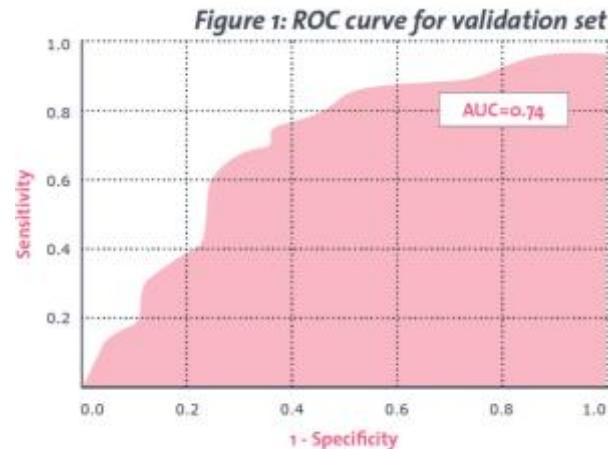
Tumours are not always detected by mammograms

Mammogram with a 5 cm invisible tumour in the right breast (upper right quadrant). The left breast finding is a benign change.

# Multi-centre study for BCtect® CE-marking

Performance data	Independent cohort	Total Study Intended use population
Number	N=109	N=332
Accuracy	72%	72%
Sensitivity	69%	72%
Specificity	74%	73%

- Overall 72% accuracy of BCtect®, using only 1 blood sample
- No significant effect observed for the most common co-morbidities included in study,
  - e.g. cardiac conditions, hypocholesterolaemia, diabetes, hypothyroidism, depression, asthma
- No relationship to receptor status
  - the most aggressive tumour type -triple negative- are detected with equal efficacy as entire population
- All tumour types detected
  - Including Lobular carcinomas that often is invisible on mammograms

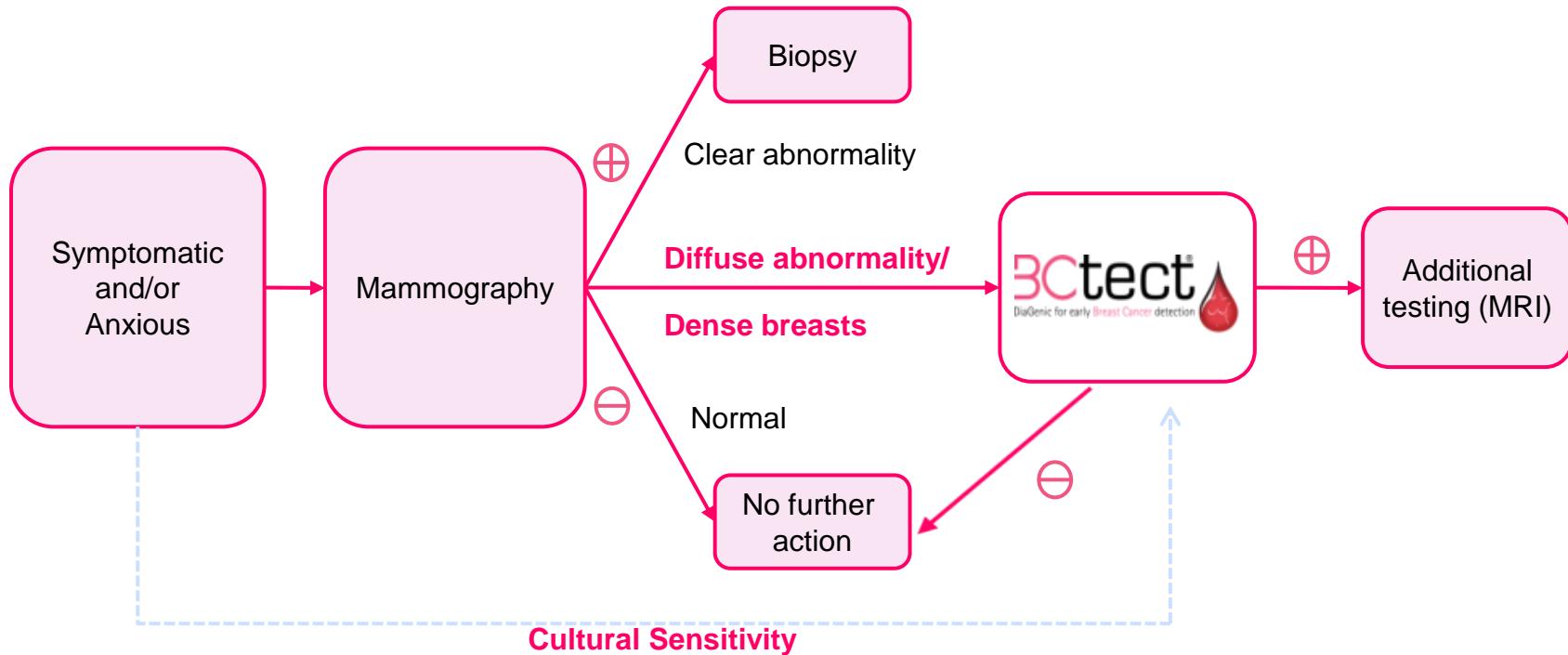


# BCtect® has high performance across tumour types, stages and age

- BCtect® shows similar good performance with
  - All breast cancer types
    - Lobular tumours are often difficult to detect on mammogram
  - Early and late stage breast cancer
    - Detected tumours as small as 4mm!
  - Pre- and post-menopausal women
    - In comparison, mammography sensitivity as low as 40-50% in pre-menopausal females

Performance by tumour type			
	Validation	Calibration	Combined
Ductal	74%	75%	75%
Lobular	73%	83%	76%
Early stage (0-I)	74%	70%	71%
Late stage (II+)	66%	76%	72%
Pre-menopausal	73%	70%	71%
Post-menopausal	70%	74%	73%

# BCtect® is a Problem Solver for Clinicians in Multiple Contexts



## Population estimates

Negative: 75% of those referred for diagnostic mammography

Positive: 16% of those referred for diagnostic mammography, 3 to 4 biopsies taken for 1 cancer

Inconclusive: 10% of those referred for diagnostic mammography

# Q2 update: Market update - Pfizer, Elan, Johnson & Johnson Babpinuzumab did not reach phase III endpoints. All program i.v. bapi programs closing

- *DiAGenic partners and potential licence partners not affected*
- *Target patient population in phase III too advanced (mild-moderate AD)? – Alternative drug targets increased focus*
- *Early intervention key - MCI and early diagnosis even more important*
- *No immediate fall-out on Companies targeting MCI or have non-amyloid approaches in phase II-III*
- *Soleneuzumab phase III read-out october 2012*



August 06, 2012 05:01 PM Eastern Daylight Time

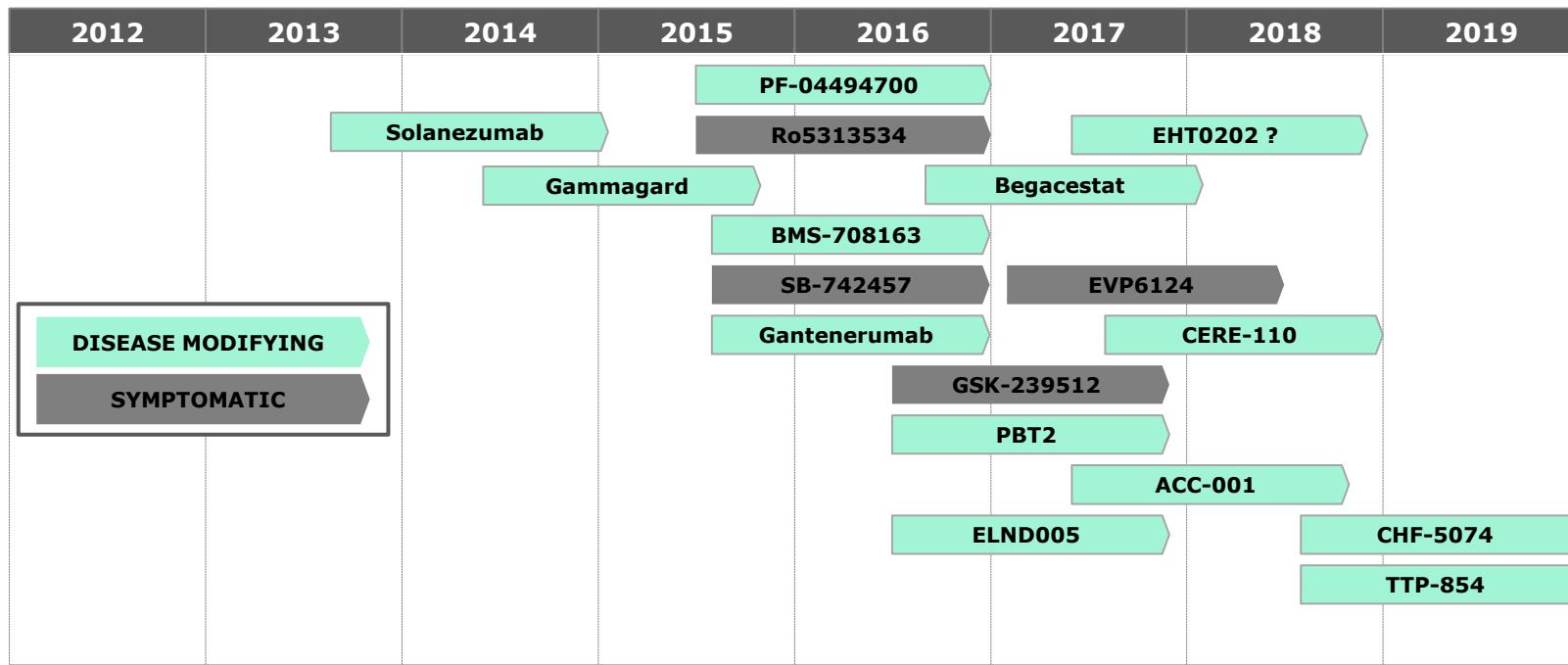
**Pfizer Announces Co-Primary Clinical Endpoints Not Met In Second Phase 3 Bapineuzumab Study In Mild-To-Moderate Alzheimer's Disease Patients Who Do Not Carry The Apoe4 Genotype**

*Pfizer and Janssen Alzheimer Immunotherapy Discontinue Bapineuzumab IV Phase 3 Program*

for early disease detection

# New and expensive therapies expected to increase need and value of early diagnostics

## Estimated launch of Alzheimer's drugs



- The first disease-modifying therapies expected to launch in 2013, and carry a significant price premium:
  - Current pricing of Aricept («gold-standard» symptomatic treatment, but off patent) is \$ 1.000 per year
  - Solanezumab (Eli Lilly) - expected pricing of \$6.000 per year , with sales of \$ 2.6 billion in 2019
  - Gammagard (Baxter) - expected pricing of \$30.000 per year, with sales of \$ 1.2 billion in 2019
- Datamonitor (Dec 2011) estimates that the Alzheimer's disease drug market is worth \$5.8bn in 2011, forecasted to grow to \$14.5bn - > 20 bn by 2020 (Deutche Bank, May 2012)



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