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Our data	
Foundation	2001
Based in	Copenhagen, Denmark
Main shareholders	Beckman Coulter, Inventages (Nestlé), Sunstone Capital, Omron Healthcare, MuRata Manufacturing
Active in geography	Global
Technology	Detection of dx & Mdx biomarkers in small devices Complex manipulation of biochemical reactions for high data quality
Business model	Innovative new business model directed at consumers and lifestyle diseases
Primary target segment	Small labs, hospital point-of-care
Initial product stage	Prototype approaching pre production
Strategic alliances	Omron Healthcare, Beckman Coulter, Shionogi & Co
Other partners	MuRata, Hamamatsu Photonics

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Trends in healthcare
<p><b>For the benefit of public health, to target better management of chronic diseases...</b></p> <ul style="list-style-type: none"> <li>• Ageing population</li> <li>• More people with affordable healthcare</li> <li>• Current medical delivery systems are already stretched</li> <li>• Healthcare must expand beyong traditional settings</li> <li>• Group practice labs, pharmacies</li> </ul> <p><b>... and reach consumers in their local environment ...eventually at home.</b></p>
<p>3</p> <p style="text-align: right;">atomics </p>

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## The Need for New Solutions

- Current central lab system will not work in the new environment
- They are too big, too expensive and require trained personnel to run them
- Current sample (serum and plasma) will not work in the new environment
- The new preferred sample is a finger stick of whole blood



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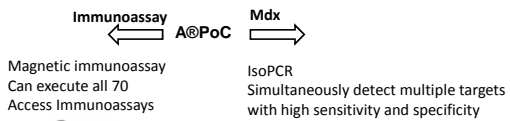
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## The Danish Solution from Atonomics

Build an instrument that can do

- ✓ High sensitivity immunoassay (10% CV at 99<sup>th</sup> percentile for troponin)
- ✓ Multiplex DNA probe assay (25 target)
- ✓ Multiplex RNA probe assay (25 target- high precision!)



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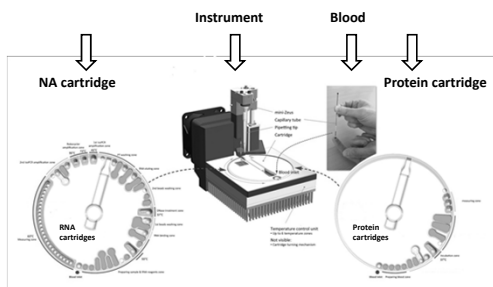
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## Systems components



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### Instrument component (continued)

**Sensor units**

- ✓ Micro PMT for measuring glow chemilumescence (immunoassay)
- ✓ Real time turbidimetry at 400nm (nucleic acids)

**Precision pipetting**

- ✓ In collaboration with Hamilton developing the miniZEUS module

**Instrument components**

HAMILTON

- ✓ Temperature control (+/- 0.1 °C)
- ✓ PCB for control of mechanics, GUI and external communication
- ✓ RFID chip in each cartridge (software script for assay execution)
- ✓ Magnet separation (immuno-wash ; Mdx-purification)

RFID: Radio Frequency Identification

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### ImmunoCartridge

- All reagents are in the cartridge including magnetic particles with capture reagent, labeled detector reagent and glow CL trigger reagents
- Calibration curves and lot information are imprinted in RFID chip
- Sample is an unmeasured drop of blood

Add 40 µl human blood to cartridge inlet

1. Incubating blood with tracer Ab+buffer
2. Adding magnetic beads for ELISA sandwich formation and second incubation
3. Washing the beads
4. Adding Light substrate
5. Measuring light emission

Blood  
 Magnetic beads  
 based ELISA assay

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### Troponin I Immunoassay Results

C	D	E	F	G	H	I
Sample	Type	Conc. (pg/ml)	Result (RLU)	CV (%)	S/N	Notes
BEC calibr.	S0	0	14131			
BEC calibr.	S0	0	16208			
BEC calibr.	S0	0	15485			
BEC calibr.	S0	0	14485	6,28		
Control	BR1	59	75457			Biorad control 146
Control	BR1	59	79475			Biorad control 146
Control	BR1	59	74647			Biorad control 146
Control	BR1	59	84396	5,69	5,2	Biorad control 146
BEC calibr.	S1	295	403101			
BEC calibr.	S1	295	423401			
BEC calibr.	S1	295	449534			
BEC calibr.	S1	295	421406	4,50	28,1	
BEC calibr.	S2	1216	1912450			
BEC calibr.	S2	1216	1818873	3,55	123,7	
BEC calibr.	S3	5100	8063244			
BEC calibr.	S3	5100	8040793	0,20	534	
BEC calibr.	S4	24200	37144356			
BEC calibr.	S4	24200	36833197	0,59	2453	
BEC calibr.	S5	102000	88243374			
BEC calibr.	S5	102000	89133480	0,71	5882	
LOD						
		(pg/ml):	1,4	Based on S0 and S1 values above		
		TAT (min):	14,6			

Run on Access AccuTnl Reagent

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## DNA Cartridge

- Again, all reagents in the cartridge and calibration and lot information are stored in the RFID chip
- Sample is an unmeasured drop of finger stick blood
- DNA is purified in the cartridges with ChangeSwitch gDNA (Invitrogen)
- First amplification is done with the first sets of primers with temperature cycling
- The first amplification mixture is then precision pipetted into 25 individual wells that contain the primers for the second isothermal amplification
- The pyrophosphate being generated by the amplification causes turbidity which is measured real time in all 25 wells

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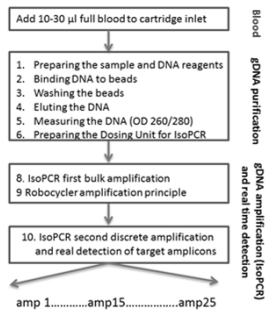
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## DNA Cartridge / assay principle



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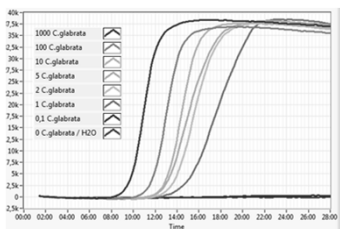
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## DNA Probe Result

- Experiment published in [Clinical Chemistry](#) last year showed that 1 colony forming units of *Candida glabrata* can be detected in about 22 minutes



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## RNA Cartridge

- Very similar to DNA cartridge with the addition of a commercial RNA extraction method (Beckman Coulter) in the cartridge
- This is followed by a reverse transcription reaction
- IsoPCR is then done on the cDNA from the RT reaction

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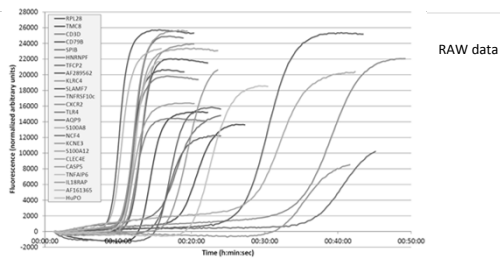
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## Corus CAD (RNA) assay on the A<sup>®</sup>PoC



Detection of the Corus CAD twenty three mRNA panel using the IsoPCR based platform. Singleplex refers to a first-stage IsoPCR with primers targeting a single mRNA followed by a second-stage isothermal reaction for detection of the specific mRNA target. Multiplex refers to a first-stage Iso-PCR with primers targeting all twenty three mRNAs followed by splitting of the reaction product for use as a template in twenty three second-stage isothermal reactions for individual detection of specific mRNA targets.

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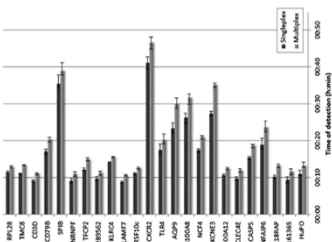
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## Corus CAD (RNA) assay on the A<sup>®</sup>PoC



The results were published in [Analyst](#) last year

Detection of the Corus CAD twenty three mRNA panel using the IsoPCR based platform. Singleplex refers to a first-stage IsoPCR with primers targeting a single mRNA followed by a second-stage isothermal reaction for detection of the specific mRNA target. Multiplex refers to a first-stage Iso-PCR with primers targeting all twenty three mRNAs followed by splitting of the reaction product for use as a template in twenty three second-stage isothermal reactions for individual detection of specific mRNA targets.

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**Thank You  
For Your Attention  
Questions?**

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