**TEXTS WEBSITE ADOR / Jan 18 2023**

1. HOME PAGE

<https://www.adordx.com/>

RETHINKING MOLECULAR DIAGNOSTICS

NATlab -

GROUNDBREAKING,

SAMPLE-TO-ANSWER,

INFECTIOUS DISEASE

DIAGNOSTIC PLATFORM

BASED ON MULTIPLEXING

ISOTHERMAL AMPLIFICATION

**INNOVATIVE – RAPID – COMPACT**

A new and exciting molecular diagnostics platform that will revolutionise the way small/medium laboratories test for infectious diseases.

SIMPLE

* “Load & Go” Protocol
* Sample in, Result out
* Random Access
* User-friendly software

RAPID

* Sample-to-Answer
* Result  within 30-45 min
* < 2 min hands-on time

INNOVATIVE

* DNA/RNA extraction
* Up to 100-plex RCA
* Carbon array detection
* Data analysis and interpretation

2. ABOUT PAGE

<https://www.adordx.com/ador-company/>

**Our Vision**

Solving an industry-wide problem – harnessing new advances in molecular biology and rapid testing to provide fast, highly specific, and accurate results that support optimal care.

An IVD innovation company established by Adaltis S.R.L (ITA) and Gamida B.V. (NL), two well-established leaders in their field, ADOR Diagnostics develops, manufactures, and markets groundbreaking *in vitro* diagnostic products and solutions designed to rapidly diagnose infectious diseases and conditions.

ADOR’s NATlab system is already revolutionising the sample-to-answer molecular testing industry, by introducing unique multiplex capabilities that support hundreds of tests simultaneously, with a significantly faster DNA amplification method. These unmatched capabilities ensure fast, highly specific, and accurate test results that support optimal care.

ADOR is a diagnostics (IVD) company with operations in Israel, Italy, and Germany. The company, registered in Cyprus, is developing the NATlab system for rapid detection of infectious diseases. This is a unique sample-to-answer platform based on rapid molecular diagnostics (MDx) by isothermal RCA (rolling circle amplification). The method is used to test for multiple pathogens and variants, in a single cartridge.

Specific cartridges are designed for diagnosis of specific infectious disease conditions by testing multiple relevant pathogens and bacterial antibiotic susceptibility in a single test (panel). Such panels include meningitis, respiratory, STD, TB, HAI, sepsis, and more.

OUR MISSION

*"Our mission is to provide solutions to address world challenges relating to infectious diseases and pandemics, by developing a point-of-care, cutting-edge, molecular diagnostics platform for accurate identification and immediate treatment of infectious diseases.*

*Our mission is to make infectious disease diagnosis accessible everywhere by providing fast, simple, and accurate comprehensive solutions at near-patient settings, enabling immediate treatment."*

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*COVID-19 exposed the critical impact of rapid, highly accurate, mass diagnostics on our ability to cope with and survive a pandemic. In order to prepare for the next wave or the next pandemic to hit humanity, molecular testing must take a leap forward.*

*While PCR testing supported humanity through this pandemic, it is clear that we need to bring molecular testing into a new era. ADOR has developed a molecular testing system for the post-coronavirus world.*

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ADVANCED POSSIBILITIES WITH NATLAB

Ador Solutions for MDx

Ultimate molecular diagnostics

3. NATLab PAGE

<https://www.adordx.com/natlab/>

ADVANTAGES

* Fully integrated process – sample-to-answer/point-of-care
* Multiplexing
* Rapid isothermal RCA amplification, rapid sample hybridisation
* High sensitivity and speciﬁcity
* Single sample
* All reagents included
* Low-cost electronic carbon microarray technology
* Innovative chemistry and state-of-the-art microﬂuidics
* Compact & stackable vertical and horizontal conﬁguration

Scalable Throughput

NATlab system can be expanded by adding several processing units,

as per requirements and needed throughput—“pay as you grow”.

* Fits perfectly into minimal available space.
* No need for any environmental installation.

By adding several processing units, the NATlab point-of-care platform can be optimised according to specific requirements and desired throughput.

* Specially designed to fit into small, mid-sized, and large laboratories.

RAPID

**Fast and Easy Sample Preparation**
This simple system requires less than 2 minutes hands-on time, without any sample preparation.
Simple, convenient procedure that is easily reproducible by all laboratory technicians and requires no advanced training.

**Productivity**
NATlab provides random and continuous access sample loading to support improved testing and laboratory productivity.

**Rapid to Result**
Innovative micro-fluidics, isothermal RCA amplification, and electronically-mediated hybridisation vastly reduce processing time, allowing results to be displayed in less than 40 min.

**Maintenance**
No maintenance is needed.

SIMPLE

**Sample-to-Answer**
The barcoded cartridge contains all required hardware and reagents for sample preparation, amplification, and microarray-based detection, allowing true walk-away automated analysis.

**User-Friendly Experience**
Designed in collaboration with professionals from leading labs to optimise the workflow, user interface usability, and unique user experience.
NATlab has been optimised with a large screen for a clear view, user-friendly interface, integrated barcode scanner, and intuitive instrument control – providing faster input and navigation for the operator.
Wizard, step-by-step operation instructions.
NATlab simpliﬁes daily routine work, automates data management, and increases efﬁciency with LIS/HIS system connectivity.

INNOVATE

**Fully Integrated & Comprehensive**

Innovative cartridge design, amplification chemistry, and exceptional array allow:

- Integrated sample-to-answer process

- Next-generation isothermal RCA multiplex amplification assay

- Detection of up to 100 targets per carbon array sensor

* Artiﬁcial intelligence and machine learning optionality

VERSATILE

**Multiple Sample Types**

Compatible with a multiplicity of clinical sample types, e.g., blood, urine, faeces, CSF, etc.

No sample preparation is required.

4. NATLab / Technology PAGE

<https://www.adordx.com/natlab/technology/>

ADOR'S

Groundbreaking Technology

UNIQUE ISOTHERMAL MOLECULAR AMPLIFICATION

Significant funds have been invested in developing a rapid, sample-to-answer, sensitive, and multiplex molecular biology tool (molecular diagnostics, MDx), the NATlab. Our development of isothermal RCA is patented extensively as a combined technology of the NATlab cartridge and instrument. This sample-to-answer diagnostic system is able to detect up to 100 targets per cartridge, using our unique carbon array sensor.

**The** **NATLab System**

This is a qualitative, multiplexed, nucleic acid-based diagnostic test intended for simultaneous detection and identification of DNA/RNA of multiple bacteria, viruses or fungi. The pathogens can be identified directly from cerebrospinal fluid (CSF), rectal/perianal swabs, whole blood/serum/plasma/urine, and nasopharyngeal swabs/BAL obtained from symptomatic patients who are suspected to have infectious diseases. This method allows native specimens to be identified without any special preparation and results to be available within 30-45 minutes.

**The** **NATLab Cartridge**

ADOR unique cartridge is a closed, disposable system that houses all the chemical and biological agents required for isolation, purification, amplification, and detection of pathogenic nucleic acid by our proprietary carbon array sensor. This molecular biology system is capable of handling specimens obtained from symptomatic patients suspected of having infectious diseases including meningitis/encephalitis, sepsis, respiratory infections, STIs, and others. Cartridges are loaded with a variety of sample types (blood, urine, CSF, etc.) without any pretreatment, sealed, and placed in the NATLab instrument.

**The** **NATLab Sensor**

The multiplex detection sensor is based on the allocation of 100 separate carbon electrodes, each one DNA target-oriented. Such an IP system offers unique insight into specific DNA/RNA detection.

Ador's electrochemical sensor system is the key to the development of reliable and accurate point-of-care (POC) devices as it is capable of detecting a vast number of targets on a signal sensor from a single sample.

Carbon-based microfluidic sensors provide high sensitivity and reproducibility in comparison to standard sensors.

The enhanced sensitivity of POC sample-to-answer devices is essential to lower their detection limit for better analysis of targets at low concentrations.

Multilayer carbon-array technology offers application-specific sensors with high multiplex thanks to an innovative biosensor cell platform that has been optimised for large multiplex applications.

As multiple optical filters are no longer needed to distinguish between different emission colours, device simplicity and flat assembly, along with lower production and material costs, can be achieved. Standard components allow for a simple and reliable optical detection system, with lower maintenance needs.

Multi-exposure mode is used to accumulate light-induced charges during the detection phase of the imaging process, allowing for high dynamic range (HDR) imaging that lowers the limit of detection and increases sensitivity.

Various configurations of cell count and sensor sizes are possible, enabling the rapid development of specific panels. The image acquisition process is fully programmable and controlled by the internal sequencer.

**Rolling Circle Amplification (RCA)**

RCA-based molecular diagnosis of infectious diseases offers advantages over PCR for reaction multiplexity, speed, and cost. As an isothermal process, RCA obviates the need for a thermal cycler.

The RCA-based amplification reaction is fast, ~10 minutes, due to isothermal conditions and a short template to replicate. This replaces amplification performed by PCR that requires a different set of enzymes, a temperature cycling process, and a prolonged reaction time of 60 to 90 min. The use of single probes per target and the NATlab’s multi-electrode sensor enable enhanced multiplexity over any existing PCR method.

The technology is an excellent tool for point-of-care molecular diagnosis of infectious diseases by accurate detection of target nucleic acids of a specific pathogen.

The current video describes the RCA process on bacteria.

SOLVING AN INDUSTRY-WIDE PROBLEM

COVID-19 exposed the critical impact of rapid, highly accurate, mass diagnostics on our ability to cope with and survive a pandemic. In order to prepare for the next wave or the next pandemic to hit humanity, molecular testing must take a leap forward.

While PCR testing supported humanity through this pandemic, it is clear we need to advance molecular testing into a new era. ADOR has developed a molecular testing system for the post-coronavirus world.

FAST, ACCURATE AND COST-EFFECTIVE

COVID-19 provided a painful lesson on the importance of fast reacting to new market needs with mass, rapid, highly accurate molecular testing. While PCR testing supported humanity through this pandemic, it is clear we need to bring molecular testing into a new era.

By running hundreds of tests simultaneously, based on multiplex panels, and using RCA, a significantly faster DNA amplification method; ADOR’s sample-to-answer NATlab system provides fast, highly specific, and accurate results that support optimal care and dramatically improve pandemic readiness.

REVOLUTION DRIVEN BY INNOVATION

Setting New Standards for Infectious Disease Diagnostics

**NATlab by ADOR**

Multiplexing isothermal amplification enables the use of one cartridge with dozens of different targets to deliver results in minutes rather than hours or days, enabling quicker medical intervention.

**Standard Diagnostics Platforms**

Existing *in vitro* diagnostic testing methods are slow, imprecise, and costly.

5. APPLICATION PAGE

<https://www.adordx.com/applications/>

APPLICATIONS

MDx Panels

**Building on the distinctive features which allow for rapid, sample-to-answer,**
**highly multiplexed MDx determinations, we are developing several unique applications**

6. APPLICATION PAGE – Meningitis/Encephalitis

<https://www.adordx.com/applications/meningitis-encephalitis-panel/>

SAMPLE-TO-ANSWER RCA CARTRIDGE TECHNOLOGY

Meningitis/Encephalitis Detection Solution

**A Cartridge of Up to14 Targets**

**Composition Panel**

INCLUDES 6 BACTERIA, 7 VIRUSES, & 1 FUNGUS

SIMULTANEOUS DETECTION & IDENTIFICATION OF UP TO 14 PATHOGENS FROM A SINGLE CSF SAMPLE

A “one-stop-shop” for rapid differential Dx – Meningitis/Encephalitis

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Meningitis/Encephalitis is a medical emergency requiring rapid diagnosis (IVD) and an immediate transfer for proper treatment.

NATlab Meningitis/Encephalitis Cartridge detects pathogens that cause meningitis from a single CSF sample with technology based on a multiplex isothermal molecular amplification method using sample-to-answer technology.

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This assay overcomes the limitations of current diagnostic methods such as CSF culture and latex agglutination assay, with a solution that enables prompt and appropriate treatment of meningitis.

NATlab Meningitis Panel assay allows faster, more reliable, and more comprehensive test results than any other product by the innovative NATlab automation platform.

7. APPLICATION PAGE – Respiratory Infectious Diseases

<https://www.adordx.com/applications/respiratory-infectious-diseases-panel/>

SAMPLE-TO-ANSWER RCA CARTRIDGE TECHNOLOGY

Respiratory Infectious Disease Detection Solution

**A Cartridge of Up to 22 Targets**

**Composition Panel**

INCLUDES 17 VIRUSES & 5 BACTERIA

SIMULTANEOUS DETECTION & IDENTIFICATION OF UP TO 22 PATHOGENS FROM A SINGLE SAMPLE

A “one-stop-shop” for rapid differential Dx – Respiratory Infectious Diseases

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Designed for rapid screening of respiratory infections due to certain bacteria or viruses.

This panel is primarily performed on patients who are seriously ill, hospitalised, and/or at an increased risk for a severe infection with complications or multiple infections (co-infections).

Use:
Hospitalisation, Epidemic, Pandemic

The express version is used to test people in go/no go situations such as travel or cruises, and includes mainly SARS-CoV-2, FLU A&B ,RSV, etc.

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Respiratory infections are responsible for significant morbidity and mortality and are costly in terms of lost work time, inappropriate use of antibiotics, and lengthy hospital stays.

They are the most economically devastating **pandemics.**

Fast and comprehensive molecular detection will allow immediate treatment or a quarantine decision to be made for the patient and control of the risk of airborne transmission of the pathogen.

**Respiratory Infectious Disease Panel – Up to 22 Targets**

8. APPLICATION PAGE – Sexually Transmitted Infectious Diseases <https://www.adordx.com/applications/sexually-transmitted-infectious-diseases-std-panel/>

SAMPLE-TO-ANSWER RCA CARTRIDGE TECHNOLOGY

Sexually Transmitted Infectious Disease Detection

**A Cartridge of Up to 13 Targets**

**Composition Panel**

INCLUDES 3 VIRUSES, 9 BACTERIA & 1 FUNGUS

SIMULTANEOUS DETECTION & IDENTIFICATION OF UP TO 14 PATHOGENS FROM A SINGLE SAMPLE

A “one-stop-shop” for rapid differential Dx – Sexually Transmitted Infectious Diseases

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Sexually transmitted infections (STIs) are **spread predominantly by unprotected sexual contact**. Some STIs can also be transmitted during pregnancy, childbirth, and breastfeeding, and through infected blood or blood products. STIs have a profound impact on health.

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Sexually transmitted diseases (STDs), or sexually transmitted infections (STIs), are generally acquired by sexual contact. The bacteria, viruses or parasites that cause sexually transmitted diseases may pass from person to person in blood, semen, or vaginal and other bodily fluids.

Sometimes, these infections can be transmitted nonsexually, such as from mothers to their infants during pregnancy or childbirth, or through blood transfusions or shared needles.

STIs don't always cause symptoms. It is possible to contract sexually transmitted infections from people who seem perfectly healthy and may not even know they have an infection.

9. APPLICATION PAGE – Sexually Transmitted Infectious Diseases

<https://www.adordx.com/applications/hospital-acquired-infections-hai-panel/>

SAMPLE-TO-ANSWER RCA CARTRIDGE TECHNOLOGY

Hospital-acquired Infections (HAI) Detection Solution

**A Cartridge of Up to 14 Targets**

**Composition Panel**

INCLUDING 14 BACTERIA

SIMULTANEOUS DETECTION & IDENTIFICATION OF 14 PATHOGENS FROM A SINGLE CSF SAMPLE

A “one-stop-shop” for rapid differential Dx – Hospital-acquired Infections (HAI)

A unique tool for rapid screening of deadly multi-antibiotic resistant HAIs upon admission, during hospitalisation or prior to elective procedures.

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Hospital-acquired infections, also known as healthcare-associated infections (HAI or HCAI) or nosocomial infections, are typically not present or are incubating at the time of admission. These infections are usually acquired after hospitalisation and manifest 48 hours after admission to the hospital.

Some of the common nosocomial infections are **urinary tract infections, respiratory pneumonia, surgical site wound infections, bacteraemia, and gastrointestinal and skin infections**.

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HAIs are infections that patients develop while receiving treatment for medical or surgical conditions. HAIs occur in all care settings, including hospitals, surgical centers, ambulatory clinics, and long-term care facilities such as nursing homes and rehabilitation facilities.

HAIs may be caused by **viral, bacterial or fungal pathogens**; with the most common types being bloodstream infection (BSI), pneumonia (e.g., ventilator-associated pneumonia [VAP]), urinary tract infection (UTI), and surgical site infection (SSI).

**Hospital-acquired Infection (HAI) Panel – Up to 14 Targets**

10. APPLICATION PAGE – Sepsis

<https://www.adordx.com/applications/sepsis-panel/>

SAMPLE-TO-ANSWER RCA CARTRIDGE TECHNOLOGY

Sepsis Detection Solution

**A Cartridge of Up to 34 Targets**

**Composition Panel**

INCLUDING 28 BACTERIA & 6 FUNGI

SIMULTANEOUS DETECTION & IDENTIFICATION OF 34 PATHOGENS FROM A SINGLE CSF SAMPLE

A “one-stop-shop” for rapid differential Dx – Sepsis

Sepsis is a life-threatening complication caused by the body’s response to an infection, which can result in organ failure and tissue damage, and ultimately lead to death if left untreated. If sepsis progresses to septic shock, a sudden, a life-threatening drop in blood pressure results. Sepsis can occur due to infection in any part of the body. However, the most common sites of infection leading to sepsis include lungs, abdomen, pelvis, and the urinary tract.

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Now, healthcare professionals also perform tests to check for signs of infection or organ damage. Some of these tests are used to identify the organism that caused the infection which led to sepsis. This testing might include blood cultures to look for bacterial infections, or tests for viral infections, like COVID-19 or influenza.

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Sepsis is a significant public health problem across the world, with more than 31 million cases annually and a 17% mortality rate.

An accurate and timely diagnosis of sepsis, particularly specific identification of the causative pathogen, allows prompt and appropriate treatment.

Multiplex approaches to direct pathogen detection form the basis for the next generation of diagnostics. Based on the isothermal RCA method, the NATlab system allows single tests to be carried out for the rapid identification of up to 34 pathogens.

**Sepsis Panel – Composition of up to 34 Targets**