Cutting-edge & Focused Sensing Technology

CLINICAL NEEDS

Rapid, reliable and non-invasive detection systems.
Patient testing for earlier prognosis, diagnosis and treatment assessments are vital for personalized and stratified medicine.

microRNA Analysis

CHEMISTRY

Dynamic Chemistry for nucleic acids detection

- Selective hybridization
- No false positive results

SENSOR

High sensitive photonic device

- Microelectronic silicon technology
- Integrated and miniaturized microsystem

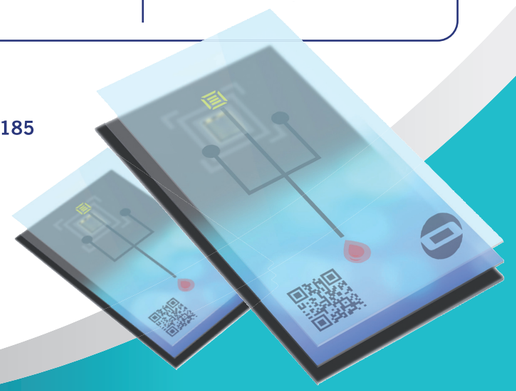
Focused & Error-free diagnosis body fluids

MEASURE

SMART measuring diagnostic system

- Reliable, sensitive, reproducible detection of new biomarkers, speed of testing

- Diagnostic, Prognostic and Treatment Assessment Capabilities
- Clinical and Companion Diagnostic Platform
- Small foot-print platform for a Global Market
- Multi-disease applicability, Open Platform
- Data output on portable or benchtop reader in a very short time



PCT/GB2008/003185
Patent pending

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OPTOI® MICROELECTRONICS

ODG

Microelectronic detector for microRNA

SMART Sensing Technology for Rapid and Error-Free Diagnosis

Optoi Microelectronics is an Italian SME that produces and commercializes microelectronic silicon based optical sensors suitable for a wide variety of applications, including molecular diagnostics. Optoi has a patent pending for a novel **optoelectronic solid state sensor kit, highly sensitive to light stimuli.** The device can capture **photons emitted by molecular markers** enabling in vitro detections of **nucleic acid sequences** applied to in vitro diagnostics.

The novel **ODG** (**O**ptoi - **D**estiNA **G**enomics) biochip has been designed for the rapid analysis/identification of nucleic acids, including **DNA** and **microRNAs**, with very high specificity. Combining the unique dynamic chemistry of **DestiNA Genomics** with **Optoi's biophotonic sensors** has created a novel assay to address unmet market need.

With its compact bench-top "footprint" requiring only a single technician to operate, the **ODG** technology promises to transform and expand routine clinical diagnostic testing and screening for ge**netic diseases**, **cancers**, **drug toxicology** and **heart disease**, as well as employment in the emerging companion diagnostics market. Benefits for health care providers will be cost benefits in term of **reliability**, **time**, and **ease of use**.

DestiNA Genomics Ltd (DGL) is a molecular diagnostic company focused on offering solutions and products to its customers based on a **revolutionary and game changing system to detect nucleic acids and their mutations**.

Due to DestiNA's unique chemistry-based core technology, this enables the creation of novel **error free** (no false positive) assays, with impressive single base resolution. Highly valuable assays covering **drug sensitivity**, **poor drug metabolisers, inherited and infectious diseases** can now be developed, as well as those for **cancer biomarkers** that include detection of **microRNAs**.

MicroRNAs: regulators of gene expression

MicroRNAs (**miRNAs**) are small non-coding RNAs of 19-24 nucleotides in length that **regulate gene expression** by base pairing with the 3' -untranslated region of a target gene's mRNA, leading to degradation and/or translational repression of that gene.

Over the last two decades, **miRNAs** have been studied intensely as candidates for **diagnostic** and **prognostic biomarkers** for **cancer** and other **serious illnesses**.

miRNAs are present in biological fluids (e.g. **serum**, **plasma**, **urine**, **saliva**) in a **stable and reproducible fashion.** Blood borne miRNAs fingerprints can be used to detect a variety of diseases.

Circulating miRNAs: the ideal biomarkers

Circulating miRNAs provide most of the characteristics for an **ideal biomarker** when considering **clinical**, **analytical** and practical criteria.

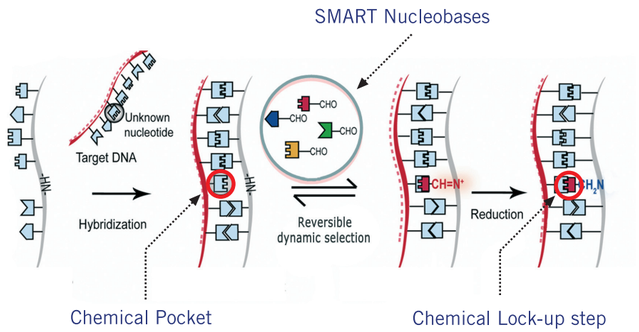
They are **specific** to the disease or pathology of interest, and can be a reliable indication of disease before clinical symptoms appear - **early detection**, **sensitive** to changes in the pathology - disease progression or therapeutic response, **easily obtained** from biological fluids, and **easily translatable** from model systems to humans.

Furthermore, circulating miRNAs are **remarkably stable**, resisting degradation by ribonucleases. This essential nature makes them ideal for clinical diagnostic applications. The challenge has been to find simplified, cost effective and reproducible technologies, superior to current analytical methods.

DestiNA Technology and Toolbox

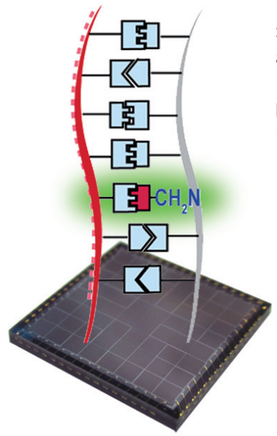
DestiNA Genomics partner Optoi Microelectronics

Revolutionary Chemical Nucleic Acid Testing



The stages involved in DestiNa Genomics chimical-based approach for Nucleic Acid Testing

Reaction & measurement on ODG sensor



Solid-state light detector for microRNA analysis. It can detect light flashes photon by photon, with **outstanding performances**:

- detection of **extremely faint light**;
- exceptionally good **timing performance**;
- **insensitivity** to magnetic fields;
- **small and compact** design.

miRNA detected by Optoi biosensor

Optoi® MICROELECTRONICS