



# RANDOX

# evidence investigator™



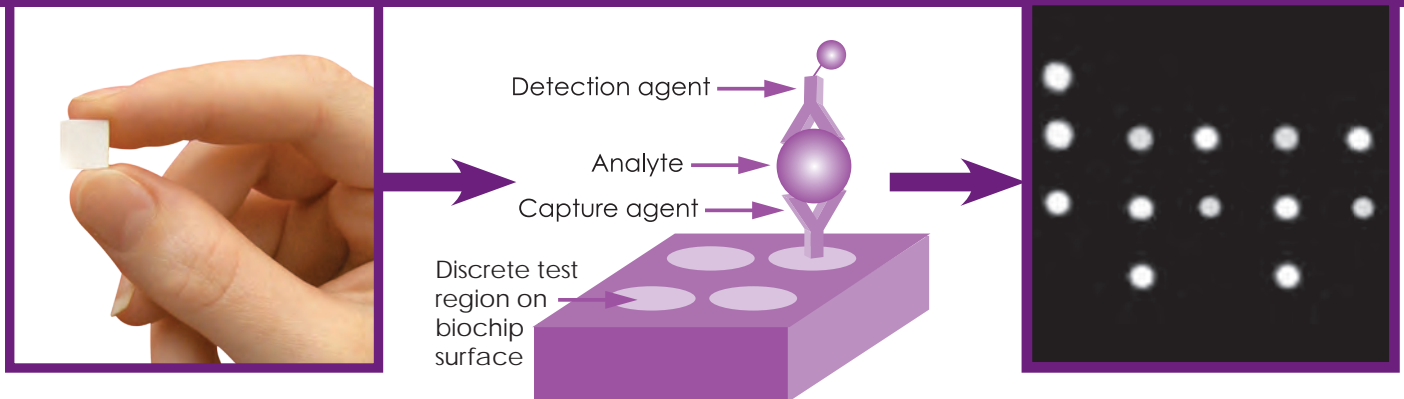
The semi-automated *evidence investigator*<sup>™</sup> is a sophisticated biochip system designed for research, clinical, forensic and veterinary applications. Using the same biochip array technology as the fully automated *evidence*<sup>®</sup> system, this compact biochip imaging platform also comprises a super-cooled Charge Coupled Device [CCD] camera and unique image processing software.

**Biochip Array Technology -**  
*focused around a central ethos of TLC*  
**Time saving, Labour saving, Cost saving**  
*as well as an expanding test menu*

Randox has over 27 years experience in *in vitro* diagnostics and currently has 220 new tests in development, including new protein and DNA biochips. The wide test menu covers diseases ranging from **cancer** to **cardiovascular disease**.

## Biochip Array Technology for research, clinical, forensic & veterinary applications

### The science behind the biochip



The Biochip presents a common test platform for many related markers. The technology is based upon ELISA principles of sandwich and competitive immunoassays.

Multiple specific capture ligands (antibodies or antigens) are attached at pre-defined discrete test regions on the surface of the biochip.

Analyte in a sample leads to binding of conjugate labelled with Horseradish Peroxidase (HRP). The addition of signal reagent leads to generation of a light signal.

# evidence investigator™

## The evidence investigator package includes



Biochip imaging module



PC & imaging software



Thermoshaker



Carrier handling tray



Barcode Scanner

## Applications of Biochip Array Technology

- Pharma & Drug Development: Pre-Clinical and Clinical Studies
- Research Applications: Universities, Contract Research Organisations and Private/Public Sector Research
- Environmental/Veterinary Laboratories
- Forensic / Drugs of Abuse testing



ready-to-use, 9 biochip carrier



addition of assay reagents & sample to the biochip



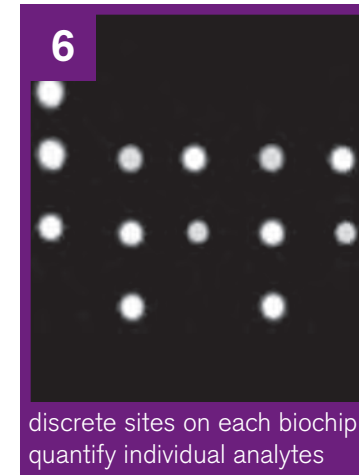
54 biochips placed in custom thermoshaker



washing of biochips



biochip carrier loaded into evidence investigator TM



discrete sites on each biochip quantify individual analytes

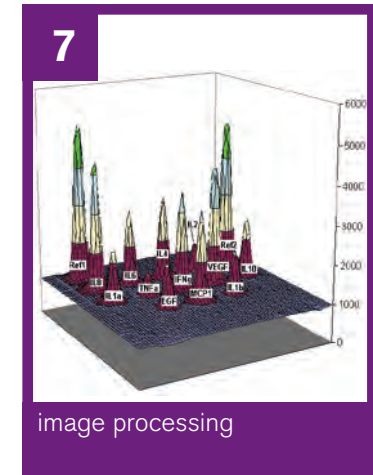


image processing

Radox biochips can support up to 23 assays per biochip. The number of tests per biochip is dependent on the array selection.

Full reagent package provided. No hidden costs or extra consumables needed.

Multiple results can be obtained simultaneously from as little as 25ul of sample. Up to 54 samples can be analysed per run.

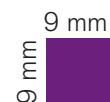
The custom thermoshaker provides the optimum heating environment for samples. The heated lid provides faster heat-up times, bi-directional heating, increased temperature range and standardisation of assay incubation conditions.

The washing procedure is quick and easy and is performed using a wash bottle.

Signal reagent is added to each well before imaging. It only takes 2 minutes for the CCD camera to image each carrier.

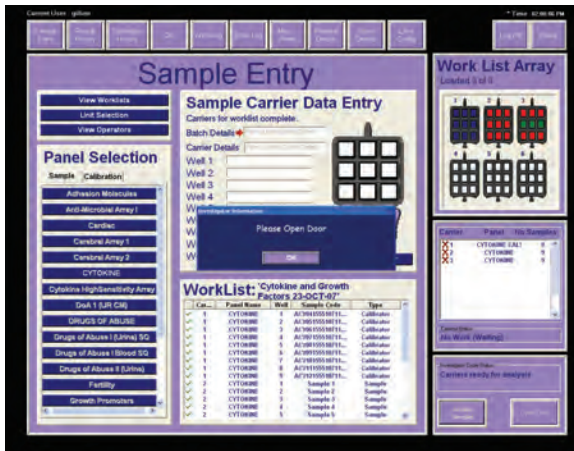
The light signal generated from each of the discrete test regions on the biochip is simultaneously detected.

The analyser uses unique image processing software to translate the light signal generated from the chemiluminescent reactions into an analyte concentration. No manual handling of data required.



9 mm  
9 mm

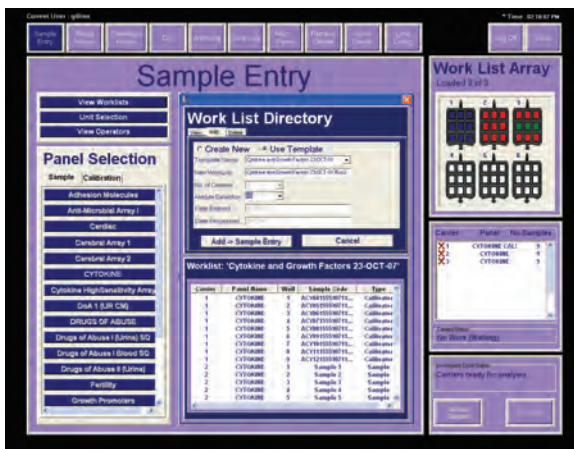
actual size  
of a biochip



## Software Features

The state-of-the-art technology employed by the evidence investigator™ is user friendly and offers:

- No manual handling of results
- Fully quantified results for many arrays
- Multiple test arrays
- Windows® based software
- User-defined cut-off values
- Extensive QC data generation
- Multi-format option for results review, e.g. by array, by user, by date or sample code
- LIMS integrated
- Colour coded sample addition



## System Features

- One system for protein and DNA biochips
- DNA-based biochips for detection of polymorphisms and mutations
- Multiplexing: one sample, multiple results
- Wide range of arrays
- Minimal sample volume, 25-150µl per array
- Ready-to-use biochips supplied with all reagents necessary to run tests
- Multi-analyte calibrators, controls and reagents
- Quality control materials
- Customised biochips available



**Early detection of MI**

**Early detection of CRC**

**More effective stroke diagnosis**

**Expertise**

Over 27 years experience in biomarker development for *in vitro* diagnostics

**Wide Test Menu**

Routine & novel biomarkers

**Flexibility**

Suitable for proteomic & genomic analysis

**Accuracy**

User defined QC capabilities, multi-analyte controls and calibrators traceable to international standards

**Precision**

Inter and intra-assay CVs typically less than 10%

**Multiple sample matrices**

Urine, whole blood, serum, plasma, tissue, honey and oral fluid

**One system = multiple results + multiple applications**

**RANDOX**

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JAN10 ET107

Arrays of tests allowing simultaneous detection of analytes in a single sample using a single device.

## Clinical / Research Arrays

available now

### Adhesion Molecules Array [serum and plasma]

- E-Selectin
- L-Selectin
- P-Selectin
- Vascular Cell Adhesion Molecule-1 (VCAM-1)
- Intercellular Cell Adhesion Molecule-1 (ICAM-1)

### Cardiac Array [serum]

- Creatine Kinase-MB (CK-MB)
- Fatty Acid Binding Protein (FABP)
- Myoglobin
- Troponin I

### Cardiac Plus Array [serum]

- Carbonic Anhydrase III (CAIII)
- Creatine Kinase MB (CK-MB)
- Fatty Acid Binding Protein (FABP)
- Glycogen Phosphorylase BB (GPBB)
- Myoglobin
- Troponin I

### Cerebral Array I [plasma, serum & CSF]

- Brain Derived Neurotrophic Factor (BDNF)
- Glial Fibrillary Acidic Protein (GFAP)
- Heart type Fatty Acid Binding Protein (hFABP)
- Interleukin-6 (IL-6)

### Cerebral Array II [plasma, serum & CSF]

- C-Reactive Protein (CRP)
- D-dimer
- Neuron-Specific Enolase (NSE)
- Soluble Tumour Necrosis Factor Receptor I (sTNFRI)
- Thrombomodulin (TM)
- Neutrophil Gelatinase Associated Lipocalin (NGAL)

### Cytokine Array I [serum and plasma] &

### Cytokine Array I High Sensitivity [serum and plasma]

- Epidermal Growth Factor (EGF)
- Interleukin-1 alpha (IL-1 $\alpha$ )
- Interleukin-1 beta (IL-1 $\beta$ )
- Interleukin-2 (IL-2)
- Interleukin-4 (IL-4)
- Interleukin-6 (IL-6)
- Interleukin-8 (IL-8)
- Interleukin-10 (IL-10)
- Interferon-gamma (IFN- $\gamma$ )
- Monocyte Chemotactic Protein-1 (MCP-1)
- Tumour Necrosis Factor-alpha (TNF- $\alpha$ )
- Vascular Endothelial Growth Factor (VEGF)

### Cytokine Array III [serum & plasma]

- Interleukin-5 (IL-5)
- Interleukin-15 (IL-15)
- Granulocyte Macrophage Colony Stimulating Factor (GM-CSF)
- Macrophage Inflammatory Protein - 1 alpha (MIP-1 $\alpha$ )
- Tumour Necrosis Factor beta (TNF $\beta$ )

### Cytokine Array IV [serum]

- Matrix Metalloproteinase-9 (MMP-9)
- Soluble IL-2 Receptor alpha (sIL-2R $\alpha$ )
- Soluble IL-6 Receptor (sIL-6R)
- Soluble Tumour Necrosis Factor Receptor I (sTNFRI)
- Soluble Tumour Necrosis Factor Receptor II (sTNFRII)

### Cytokine Array V [serum & plasma]

- Interleukin-3 (IL-3)
- Interleukin-7 (IL-7)
- Interleukin-13 (IL-13)
- Interleukin-12 p70 (IL-12 p70)
- Interleukin-23 (IL-23)

### Endocrine [serum & plasma]

- Cortisol
- DHEA's
- Leptin
- 17 $\alpha$  Hydroxyprogesterone

### Fertility Hormone Array [serum]

- Estradiol
- Follicle Stimulating Hormone (FSH)
- Luteinising Hormone (LH)
- Progesterone
- Prolactin (PRL)
- Testosterone

### Thyroid Free Array [serum]

- Free Thyroxine (FT4)
- Free Tri-iodothyronine (FT3)
- Thyroid Stimulating Hormone (TSH)

### Thyroid Total Array [serum]

- Thyroid Stimulating Hormone (TSH)
- Total Thyroxine (TT4)
- Total Tri-iodothyronine (TT3)

### Tumour PSA Array [serum]

- Carcinoembryonic Antigen (CEA)
- Free Prostate Specific Antigen (fPSA)
- Total Prostate Specific Antigen (tPSA)

### Tumour Monitoring 3 Array [serum]

- Carcinoembryonic Antigen (CEA)
- Alpha Fetoprotein (AFP)
- Human Chorionic Gonadotropin (hCG)

### Customised Biochips available

- Produced on demand

### Multi-analyte Quality Controls

- Adhesion Molecules
- Cardiac
- Cardiac Plus
- Cerebral Array I
- Cerebral Array II
- Customised Quality Controls
- Cytokine
- Cytokine Array III
- Cytokine Array IV
- Cytokine Array V
- Cytokine High Sensitivity
- Endocrine
- Immunoassay

## Clinical / Research Arrays

in development

- Cytokine Array II

- Metabolic Arrays

- Bone Marker Array

Arrays of tests allowing simultaneous detection of analytes in a single sample using a single device.

## Forensic Toxicology

available now

### Drugs of Abuse Array I

[urine, whole blood and oral fluid]

- Amphetamine
- Barbiturates
- Benzodiazepine 1
- Benzodiazepine 2
- Cannabinoids
- Cocaine metabolite (Benzoylcegonine)
- Methamphetamine
- Methadone
- Opiates
- Phencyclidine
- Dilution Marker for Urine only (Creatinine)

### Drugs of Abuse Array II

[urine, whole blood and oral fluid]

- Buprenorphine
- Fentanyl
- Opiates
- Ketamine
- Lysergic Acid Diethylamide (LSD)
- Methaqualone
- 3,4 Methylene-dioxyamphetamine (MDMA)
- Oxycodone 1
- Oxycodone 2
- Propoxyphene
- Dilution Marker for Urine only (Creatinine)

### Multi-Analyte Controls

- Drugs of Abuse I [urine, whole blood & oral fluid]
- Drugs of Abuse II [urine, whole blood & oral fluid]
- Growth Promoters
- Synthetic Steroids

## Veterinary Residues

available now

Randox scientists have embarked on a programme of research and development of new products for the detection of drug residues in livestock and in sport. The following arrays have been developed for the simultaneous determination of veterinary drug residues in various sample matrices.

### Anti-Microbial Array I

[urine, tissue, honey, feed, milk]

- Sulphamerazine
- Sulphadimethoxine
- Sulphaquinoxaline
- Sulphamethazine
- Sulphadiazine
- Sulphamethizole
- Sulphadoxine
- Sulphapyridine
- Sulphamethoxy-pyridazine
- Sulphachlorpyridazine
- Sulphathiazole
- Sulphisoxazole

### Anti-Microbial Array II

[urine\*, tissue, honey, feed, milk]

- Tetracyclines
- Quinolones
- Thiamphenicol
- Tylosin
- Streptomycin
- Ceftiofur

### Anti-Microbial Array III

[urine, tissue, honey, feed]

- AMOZ
- AHD
- AOZ
- SEM
- Chloramphenicol

### Multi-analyte Controls

- Sulphonamide Array Multi-Analyte Control
- Antimicrobial Array II Control
- Antimicrobial Array III Control

### Growth Promoter Multiple Matrix Screen

[urine, tissue, feed]

- β-Agonists
- Trenbolone
- Boldenone
- Stilbenes
- Stanozolol
- Nandrolone
- Corticosteroids
- Ractopamine
- Zeranol

### Growth Promoter Rapid Urine Screen

- β-Agonists
- Trenbolone
- Boldenone
- Stanozolol
- Corticosteroids
- Ractopamine
- Zeranol

### Synthetic Steroids Array

[Bovine Urine, Equine Urine]

- CLAD/ 17β - Clostebol
- Ethinylestradiol
- Gestagens (generic)
- Methylboldenone / Methyltestosterone / Methandriol

\*In development

## Veterinary Drug Residue Arrays

in development

- Agonists Array
- Anthelmintics Array

- Coccidiostats Array
- Anti-Inflammatory Drugs Array

## DNA Arrays

available for clinical trials

### RanplexCRC [Colorectal Cancer] Array

- K-ras*
- TP53*

- BRAF*
- APC*

For simultaneous detection of 28 mutations across the 4 genes

## DNA Arrays

in development

### Ranplex Cardiovascular Disease DNA Array

- ACE
- ApoE
- ApoB
- ApoCIII
- CETP
- CYBA
- ELAM1
- Fg
- FII
- FVII
- GJA4
- GNB3
- IL6
- LDLR
- LPL
- LIPH

- MMP3
- MTHFR
- PON1
- PAI-1
- PCSK9
- TNF-α

Will measure 26 different polymorphisms

### cDNA Expression Arrays

- Ovarian cancer
- Breast cancer

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