

# APPLICATIONS

## HEALTHCARE

An increasing number of OptiGene's partners and customers are applying isothermal amplification of DNA and RNA to detection of human infectious diseases and bacterial infections. This method has greatest advantage where rapid results are needed and is particularly beneficial in fields such as disease screening, point-of-care diagnostics and pathology. Examples include: detection of antibiotic resistant bacteria inside 15 minutes, screening for MRSA direct from swab in less than 30 minutes and identification of Meningitis in around 10 minutes.



## FOOD SAFETY & AUTHENTICITY

OptiGene has developed LAMP tests for key food pathogens and for use in meat speciation. The tests are run using OptiGene's 'Lyse & LAMP' process that is very simple to perform. Virtually any type of sample (including raw meat, cooked meat, cheese and processed products) can be used and the tests complete in around 30 minutes. Speciation assay development has been ongoing since the beginning of 2013 and tests are now available for a large range of animals, many white fish and for important crops used in processed foods, such as soya.



## PLANT HEALTH

OptiGene is fully licensed to manufacture and sell kits for LAMP tests that are used to detect plant diseases and pests. Simple sample preparation, ease of use and fast running time combine to offer distinct advantage over competing technologies. The Forestry Commission and others have deployed the Genie system in forests and woods around the UK to detect the presence of the incurable Ash dieback disease (*Chalara fraxinea*) in order to reduce its spread.



## VETERINARY DIAGNOSTICS

OptiGene's cooperation with international reference laboratories and University veterinary schools has led to the development of many animal disease tests based on the LAMP isothermal method. The test targets have included notifiable diseases, zoonotic diseases (that can be transferred to humans) and animal pathogens. Some tests have been specifically developed for identifying disease in farm animals while others are aimed at companion animal diagnostics.



# COMPANY PROFILE

OptiGene Limited was formed in 2008 to develop and deliver advanced molecular diagnostics solutions for applications across a range of market sectors. The goal was to harness the inherent advantages of isothermal amplification of DNA and RNA to enable testing at point-of-application. OptiGene has brought to market a number of innovative products that support sensitive and specific detection of bacteria and viruses for use in the fields of plant health, food safety, veterinary medicine, environmental monitoring and healthcare. These products support rapid detection from crude samples that require minimal preparation.

OptiGene has exploited its expertise in both instrument design and enzymology to develop a sophisticated open platform that will support all isothermal amplification methods. State-of-the-art instrumentation is supported by specially-designed plastic strips that have lockable caps and reagents that offer world-leading reaction rates. Ultra-sensitive molecular detection that has been constrained to laboratory use by highly-qualified personnel and taking hours to complete can now be deployed to point-of-application and run with very little training, producing results in single minutes.



## WORLDWIDE DISTRIBUTORS

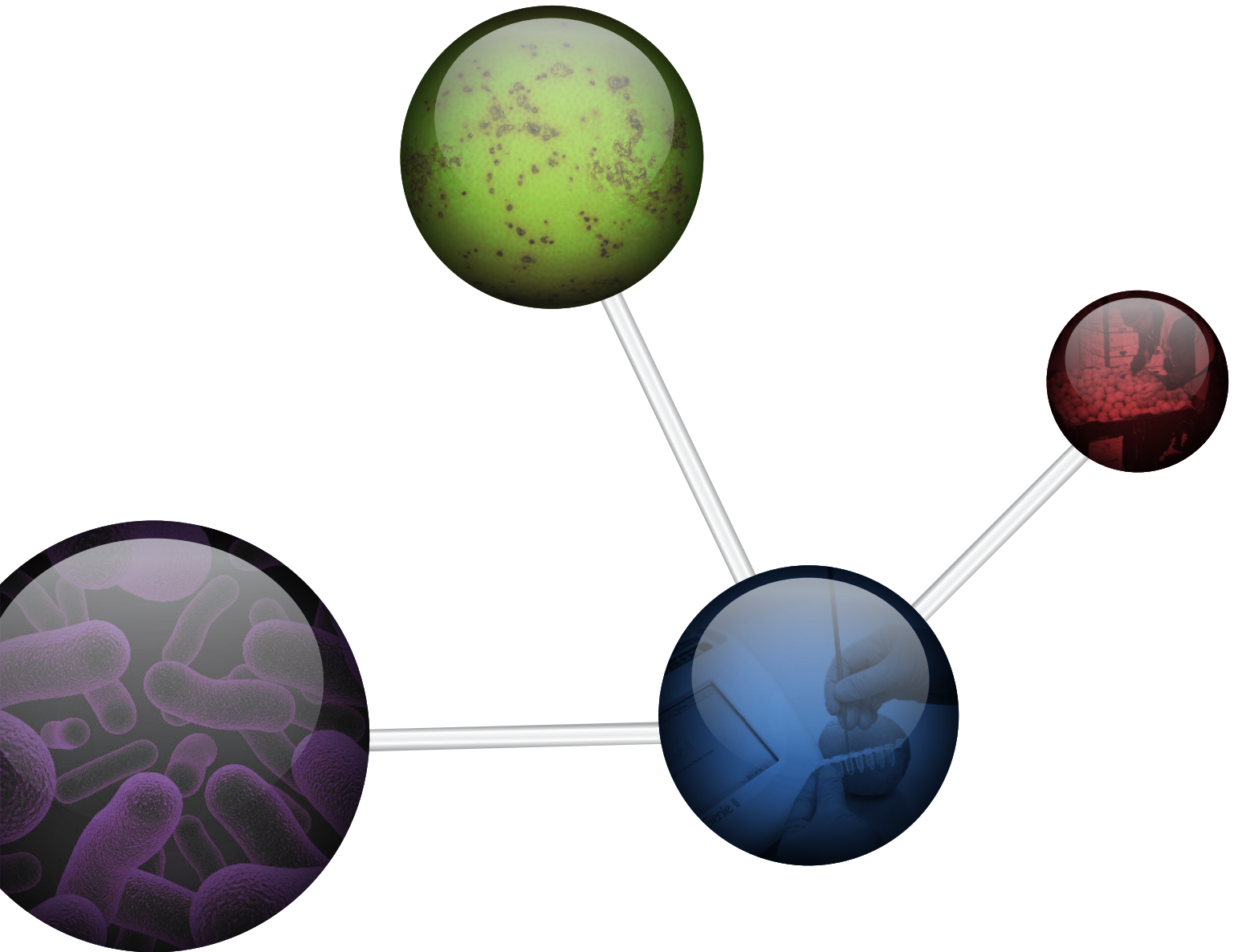
| Country                           | Company                                               | Contact                     |
|-----------------------------------|-------------------------------------------------------|-----------------------------|
| Canada                            | Pro-Lab Diagnostics Inc.                              | www.pro-lab.com             |
| United States                     | Pro-Lab Diagnostics Inc.                              | www.pro-lab.com             |
| China                             | Beijing Suntrap Science & Technology Co., Ltd.        | www.suntrapbj.com           |
| Italy                             | TELTEC srl, BioTeltec div.                            | www.bioteltec.com           |
| Japan                             | Nippon Gene Co., Ltd.                                 | www.nippongene.com          |
| South Korea                       | Chayon Laboratories Inc.                              | www.chayon.co.kr            |
| Poland                            | Novazym Polska                                        | www.novazym.com             |
| Russia                            | InterLabService, Moscow                               | www.interlabservice.ru      |
| Taiwan (ROC)                      | HUI-SHENG International Corporation                   | www.hui-sheng.com.tw        |
| India                             | AmpliGene India Biotech Pvt Ltd                       | info@ampligeneindia.com     |
| Belgium, Luxembourg & Netherlands | Vision4Care                                           | www.vision4care.com         |
| Germany                           | Amplex BioSystems GmbH                                | www.hyplex.de               |
| Austria                           | Amplex BioSystems GmbH                                | www.hyplex.de               |
| Saudi Arabia & UAE                | The Pure Health                                       | contactus@thepurehealth.com |
| Malaysia                          | Chloroslab                                            | Tel: 603-79561308           |
| Australia                         | GeneWorks Pty Ltd                                     | info@geneworks.com.au       |
| New Zealand                       | NGAIO DIAGNOSTICS LTD                                 | info@ngaio.co.nz            |
| Turkey                            | Insko Tibbi Uretim ve Arastirma San. ve Tic. Ltd. Sti |                             |

## SHORTFORM CATALOGUE

| Product                                   | Catalogue No. | Quantity      |
|-------------------------------------------|---------------|---------------|
| Genie II instrument                       | GEN2-02       | 1             |
| Genie III instrument                      | GEN3-01       | 1             |
| Genie tubes small pack size               | OP-0008-50    | 50 strips     |
| Genie tubes large pack size               | OP-0008-500   | 500 strips    |
| Cooling block for setup (Block A)         | GBLOCK-01     | 1             |
| Cooling block for setup (Block B)         | GBLOCK-02     | 1             |
| Cooling block for setup (Blocks A and B)  | GBLOCK-03     | 2             |
| Robust carry case for Genie II            | OP-CASE1      | 1             |
| Robust carry case for Genie III           | OP-CASE2      | 1             |
| Prism mini centrifuge                     | OP-FUGE       | 1             |
| LAMP Designer software (3 users)          | LD1           | 1             |
| Isothermal master mix (standard)          | ISO-001       | 400 reactions |
| Isothermal master mix (standard) - no dye | ISO-001nd     | 400 reactions |
| Isothermal master mix (standard) - dried  | ISO-DR001     | 300 reactions |
| Isothermal master mix (fast)              | ISO-004       | 300 reactions |
| Isothermal master mix (fast) - no dye     | ISO-004nd     | 300 reactions |
| Isothermal master mix (fast) - dried      | ISO-DR004     | 300 reactions |

OptiGene isothermal master mixes are sold for use in LAMP under license from Eiken Chemical Company. Genie is a registered trademark of OptiGene Ltd.

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# MOLECULAR DIAGNOSTICS MADE SIMPLE

ISOTHERMAL AMPLIFICATION OF DNA AND RNA

# INSTRUMENTS

## Genie® II

Genie® II has been the flagship product of OptiGene since its launch early in 2011. It is a compact and portable instrument that supports any isothermal DNA / RNA amplification method. It runs stand-alone without the need for a computer and is operated from a simple user interface from a large touchscreen display. This extremely powerful and flexible platform includes two independent heating blocks, each taking an 8-microtube strip that has been optimised for efficient thermal transfer and sensitive fluorescence measurement. Genie® II has an internal rechargeable battery, allowing operation for a full day without the requirement for mains electricity.

- Isothermal DNA amplification with precise temperature control
- Single channel fluorescence measurement
- Two independent blocks – up to 16 samples
- Compact: 280 mm(W) x 225 mm(D) x 125 mm(H) [11" x 9" x 5"]
- Lightweight: 2.25 kg [5 lb]
- Low power consumption from 24 VDC input
- Internal long-lasting and fast-charging Li-Po battery
- Stand-alone operation via 7" resistive touchscreen
- Internal data storage and upload via USB



## Genie® III

Genie® III is a new addition to the product range of OptiGene and has been available since the beginning of 2014. This instrument was designed with testing at point-of-application in mind. It is smaller and lighter than Genie® II and the enclosure is sealed to IP62 for use in demanding environments. Genie® III accepts a single 8-microtube strip and is also operated from a touchscreen panel. This instrument includes dual channel fluorescence measurement to allow support of internal controls and multiplexed assays. It also features positional information through GPS and offers wireless connectivity in the form of Bluetooth and WiFi. Genie® III has an internal rechargeable battery, allowing operation for a full day without the requirement for mains electricity.

- Isothermal amplification at point-of-application
- Sealed enclosure (IP62)
- Dual-channel fluorescence excitation and measurement
- Single block – up to 8 samples
- Ultra compact: 165 mm(W) x 250 mm(D) x 85 mm(H) [6½" x 10" x 3½"]
- Lightweight: 1.75 kg [4 lb]
- Low power consumption from 19 VDC input
- Internal long-lasting and fast-charging Li-Po battery
- Stand-alone operation via 4.3" resistive touchscreen
- Wireless communications (Bluetooth) & network connection (WiFi)
- Positional information via GPS

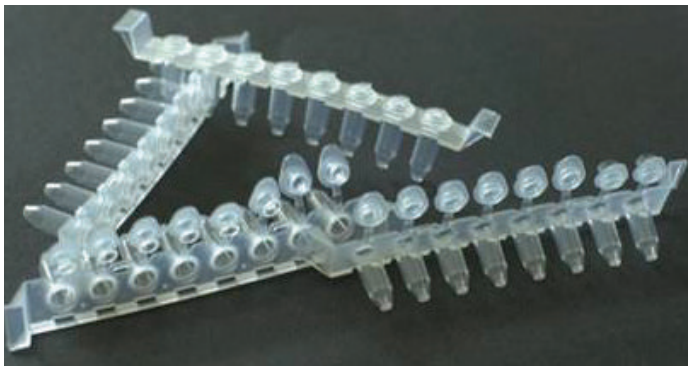


# ACCESSORIES

## Strips

The Genie® instruments use a specially designed strip of 8-microtubes that offers the following features:

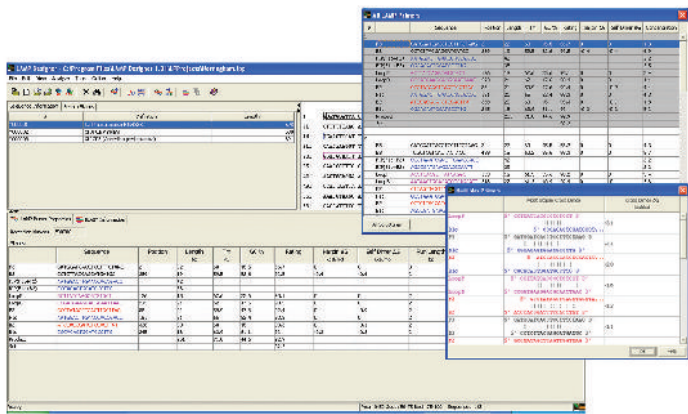
- Seal-and-lock mechanism to prevent contamination
- Individually capped
- Non-fluorescent and optically clear
- Wings for ease of handling
- Working volume of 20 - 150 µl



## LAMP Designer

The LAMP Designer software application is simple to use and designs efficient primers for Loop-mediated isothermal AMplification (LAMP) assays. Once a target DNA sequence is entered, the program will generate several primer sets that can be synthesised for comparison so that the optimum set is selected. Key features include

- Perform a verification BLAST
- Avoid cross homologies
- Design multiplex LAMP primer sets
- Export results
- Database management tools
- Free 7-day trial



## Other

- The Prism™ Mini centrifuge can be used for a wide range of molecular biology separations and quick spins. It has an exceptionally small footprint and includes 2 quick release interchangeable rotors, which spin at up to 6000 RPM.
- The metal Genie® strip holder enables reactions to be set up quickly and easily and can be cooled before use.
- A robust carry case can be supplied for both Genie® II and Genie® III for safe transportation and storage.

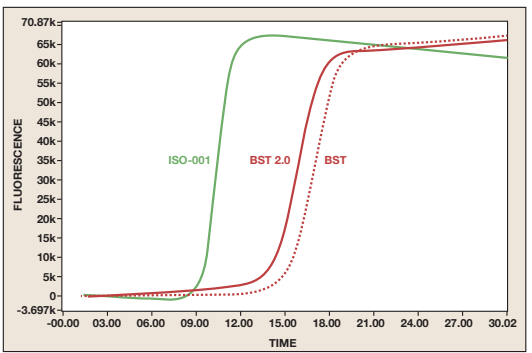


# REAGENTS

## Master mixes

OptiGene offers a convenient ready-to-use master mix kit offering rapid isothermal detection. The user just has to add template (sample) and primers!

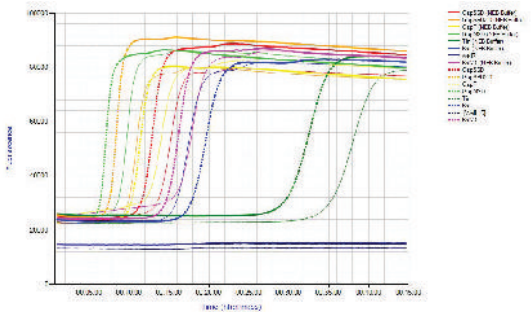
Master mixes provided by OptiGene contain an engineered large fragment DNA polymerase isolated from a proprietary Geobacillus species (GspSSD) This enzyme shows the highest speed in a fluorescent LAMP reaction and is the enzyme of choice for rapid isothermal amplification. OptiGene can also offer master mixes with inherent RT activity and one that includes a thermostable enzyme.



Isothermal Master Mix (ISO-001) vs enzyme competitors

OptiGene isothermal master mixes can be used for RCA, SMAP and many other amplification technologies.

OptiGene's isothermal amplification master mixes allow fluorescence detection of the product on the Genie platforms but may also be used on generic qPCR instrumentation. After amplification, an anneal curve can be generated to confirm the product. This eliminates the need for gel electrophoresis or turbidity detection and allows use of a closed-tube system.



Comparison between OptiGene enzymes and competitors

OptiGene's standard master mix, ISO-001, was launched in 2011. It has strong reverse transcriptase activity and there is no need for a separate thermostable RT enzyme. ISO-001 is offered with or without intercalating dye and is available dried down as well as liquid. An even faster enzyme is included in master mix ISO-004 and this is also available in dried or liquid form.

