



# Detection and Identification of Infectious Agents

Innovation Platform



# Detection and Identification of Infectious Agents Innovation Platform

**The Detection and Identification of Infectious Agents Innovation Platform aims to encourage the development, uptake and adoption of clinically useful, commercially viable diagnostics for the detection and identification of infectious agents in humans and animals.**

**The Technology Strategy Board launched the Detection and Identification of Infectious Agents (DIIA) Innovation Platform in October 2008 and will invest up to £50m in activities over five years together with additional funding from government departments, particularly the Department of Health (DH) which will invest up to £5m, and the research councils.**

**More rapid and accurate diagnosis of infectious diseases can lead to targeted and more efficient treatments with improved outcomes that will reduce the social and economic impact of infectious agents and create opportunity and wealth for UK industry.**

## What is an innovation platform?

Global society faces many challenges. By applying technology and innovation we can help to meet these challenges and, at the same time, open up new opportunities for business. Innovation platforms focus on specific societal challenges where Government is taking action through policy, regulation, procurement or fiscal measures.

By improving co-ordination between the key players from industry, academia and Government, innovation platforms can identify barriers to meeting the challenge, map possible routes to overcoming the barriers and align activities to support innovative solutions.

The aim is to deliver a step change in the ability of UK businesses to provide solutions for the global marketplace, boost UK economic performance, and provide higher quality public services.

## Why detection and identification of infectious agents?

In a global setting the UK is faced with the challenge of minimising the impact of infectious disease threats. Worldwide infectious diseases account for over a fifth of human deaths and a quarter of morbidity and can cross the globe in hours. Diagnostic testing accounts for only 1-2% of government healthcare expenditure worldwide, yet influences 60-70% of healthcare decisions.

Infectious diseases are a constant threat to the health and wealth of the nation. In the UK approximately 10% of all deaths and 4% of all hospital admissions are attributed to infectious diseases, and 35% of GP consultations (50% in children) are due to an infection. Hospital-acquired infections cost the NHS around £1bn each year and taking into account loss of national productivity and payment of sickness benefit, the cost is considerably higher.

Animal diseases can be equally costly and serious. The 2001 outbreak of foot and mouth disease cost the UK about £7bn and bovine tuberculosis, the largest endemic animal health issue in Great Britain, cost the taxpayer around £80m in 2007-08 for surveillance, research, testing and compensation.

## Background to the DIIA Innovation Platform

In April 2006, the UK Government published the results from the Foresight study on the detection and identification of infectious diseases. The study was based on findings from over 350 experts and

identified technological capabilities that could improve disease control over the next 10-25 years and beyond. There was broad consensus that this work should be taken forward, which led to the development of this innovation platform.

## Drivers for growth and market trends

In 2009, the global in vitro diagnostics (IVD) market generated US\$38,762m in revenue and this is expected to reach US\$50,379m in 2014. Point-of-care diagnostics has been estimated to be 12% of the market with a market audit of UK clinical sales for IVD, both to the NHS and private healthcare sector, being estimated at £676m.

Point-of-care tests should form part of a toolkit of diagnostic products and capabilities available to help the diagnosis and management of patients and animals. They are important when rapid diagnosis and early treatment intervention are





clinically relevant and can impact on the mortality, morbidity, the economic burden of disease and patient well-being.

There is currently a clear opportunity to develop rapid diagnostic tests, including point-of-care devices, and drivers of growth in this sector include the following:

- restructuring and reform of the healthcare system, including emphasising personalised care, improvements in quality and outcomes and the need to reduce costs
- concern over the spread of infectious diseases
- social pressure including the changing expectations of patients and healthcare professionals
- technology advancements
- growth in IVD markets particularly in the Asia Pacific region, Brazil, India and China
- the need for point-of-care tests in developing countries where lack of infrastructure can make rapid near patient testing attractive and sometimes the only viable option.

## The priorities

The Technology Strategy Board is working closely with the DH and Department for Environment, Food and Rural Affairs (Defra) to prioritise which infectious agents should be addressed and the type of diagnostic device that is needed.

### DH priorities in the DIIA programme

- tuberculosis
- sepsis
- antimicrobial resistance:
  - hospital-acquired infections:
    - MRSA
    - *Clostridium difficile*
    - extended spectrum beta lactamase-producing bacteria

- community-acquired pneumonia
- antibiotic prescribing in primary care (diagnostic tools to reduce the inappropriate prescribing of antibiotics)
- sexually transmitted infections
  - chlamydia
  - gonorrhoea.

Defra's priorities for animal health in the **first competition** run by the Technology Strategy Board (January 2010) were to develop a rapid/point of sampling device to detect the following notifiable infectious agents in animals:

- foot and mouth disease virus
- swine vesicular disease virus
- *Mycobacterium bovis* (in live cattle only)
- bluetongue virus
- classical swine fever virus
- African swine fever virus
- avian influenza virus (H5 and H7).

We are working with Defra to decide future disease and testing priority areas.

## What we have done so far

The first DIIA competition opened in January 2010 and over £12 million was awarded to fund projects to develop rapid/point-of-care devices and improve their uptake in the human and animal healthcare sectors.

This competition was split into three different project types: feasibility studies, fast-track projects and larger collaborative R&D projects and covered the priority areas of DH and Defra.

Health econometrics studies informed the specifications for diagnostic devices.

## The future

Subsequent competitions will continue to address DH and Defra priorities with the next competition expected to focus on sepsis.

## Who are we working with?

Our business engagement continues to encompass both diagnostic companies and companies outside the classical life science and biotechnology community. We work with the knowledge transfer networks (KTNs), in particular the HealthTech and Medicines KTN that delivers a programme of knowledge transfer work packages to support the DIIA Innovation Platform and to engage all the players in this area, including developing a DIIA special interest group.

Our steering group advises us on the best ways to encourage the development, uptake and adoption of clinically useful, commercially viable diagnostics for the detection of infectious agents in humans and animals. The balance of representation on the steering group favours business and business organisations.

In addition, we collaborate with the British In Vitro Diagnostics Association and engage with other trade associations and a variety of UK and international networks.

We liaise across the public sector including with government departments, the devolved administrations, research councils, NHS, the National Institute for Health and Clinical Excellence, agencies involved in human and animal health from national to regional/local level and others.

Defra together with the research councils have further supported the DIIA programme through organised fellowships including a Defra/ Economic and Social Research Council fellowship on attitudes to the use of rapid/point-of-care devices in the control of animal disease and a Defra/ Engineering and Physical Sciences Research Council fellowship on secure storage and transmission/ collection of data from field-based rapid diagnostic devices.



## Further information

Further information is available in the DIIA Innovation Platform section at [www.innovateuk.org](http://www.innovateuk.org) and from [penny.wilson@tsb.gov.uk](mailto:penny.wilson@tsb.gov.uk)

### **Get involved:**

Join the special interest group and knowledge transfer network on \_connect: <https://ktn.innovateuk.org>

*The Technology Strategy Board is a business-led executive non-departmental public body, established by the Government. Its role is to promote and support research into, and development and exploitation of, technology and innovation for the benefit of UK business, in order to increase economic growth and improve quality of life.*

The Technology Strategy Board  
North Star House  
North Star Avenue  
Swindon  
SN2 1UE

Telephone: 01793 442700

[www.innovateuk.org](http://www.innovateuk.org)