

# European Metrology Research Programme



## Health

An overview of the funded projects from the Targeted Programme Health

### Protecting human hearing

Metrology for a universal ear simulator and the perception of non-audible sound (HLT01)

#### Preventing excessive noise exposure

Excessive noise exposure is a major cause of hearing loss, which costs the EU around 200 billion euros per year and reduces the quality of life of sufferers. This project will help to protect hearing by improving our understanding of how we perceive non-audible sound and by establishing effective safety criteria.



### Microvesicle biomarkers

Metrological characterisation of micro-vesicles from body fluids as non-invasive diagnostic biomarkers (HLT02)

#### Early diagnosis of disease

Microvesicles are present in body fluids such as blood and urine and can be used as biomarkers for diseases such as cancer, diabetes and cardiovascular disease. This project will develop reliable, comparable and quantitative analysis of microvesicles, as current techniques are not accurate enough to make a reliable diagnosis.



### Improving and increasing ultrasound treatment

Dosimetry for ultrasound therapy (HLT03)

#### Standardised doses for ultrasound

Ultrasound can treat a range of conditions, with recent developments including new treatments for cancer, stroke and bone repair. This project will support an increase in the use of ultrasound treatments by establishing measurements, reference standards and modelling techniques to build traceability for exposure to ultrasound and the dose to tissue.

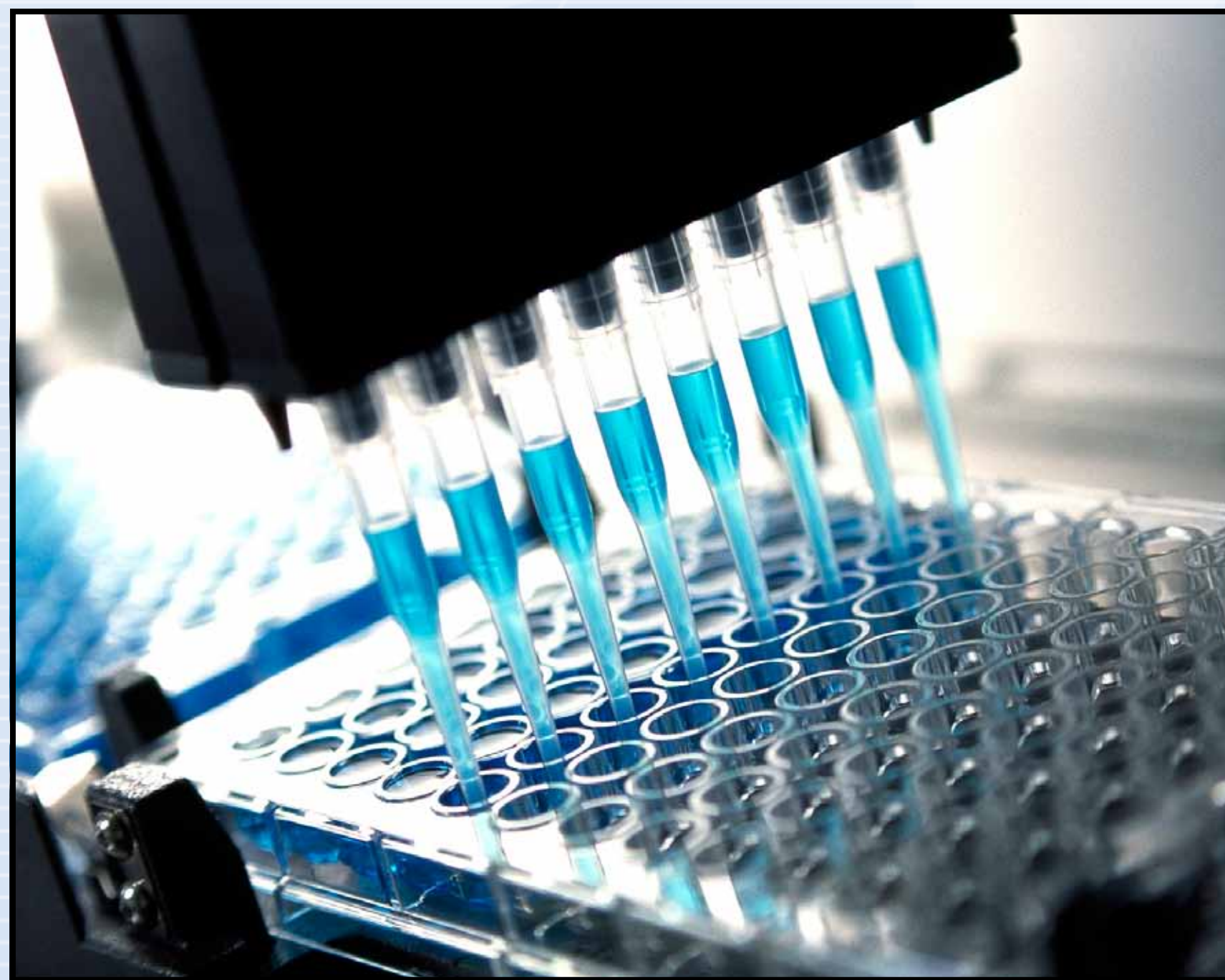
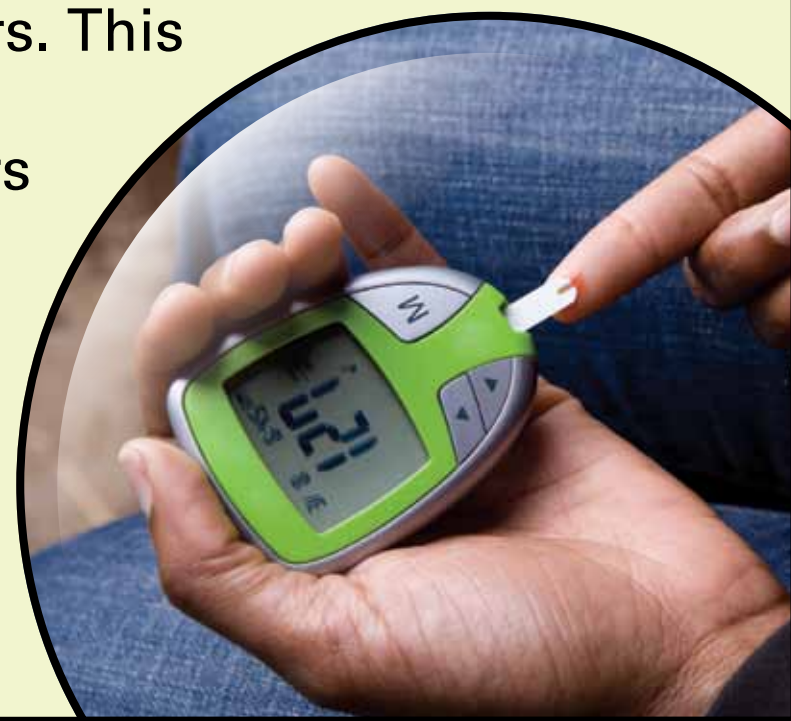


### Improving diagnostic devices

Metrology for the characterisation of biomolecular interfaces for diagnostic devices (HLT04)

#### Delivering cost-effective, point-of-care testing

Diagnosing and managing disease is increasingly reliant upon the detection and measurement of biomarkers. This project will meet the needs of diagnostic device manufacturers by providing guides, standards and protocols, improving in vitro diagnostics for cost-effective healthcare, point-of-care monitoring and personalised medicine.

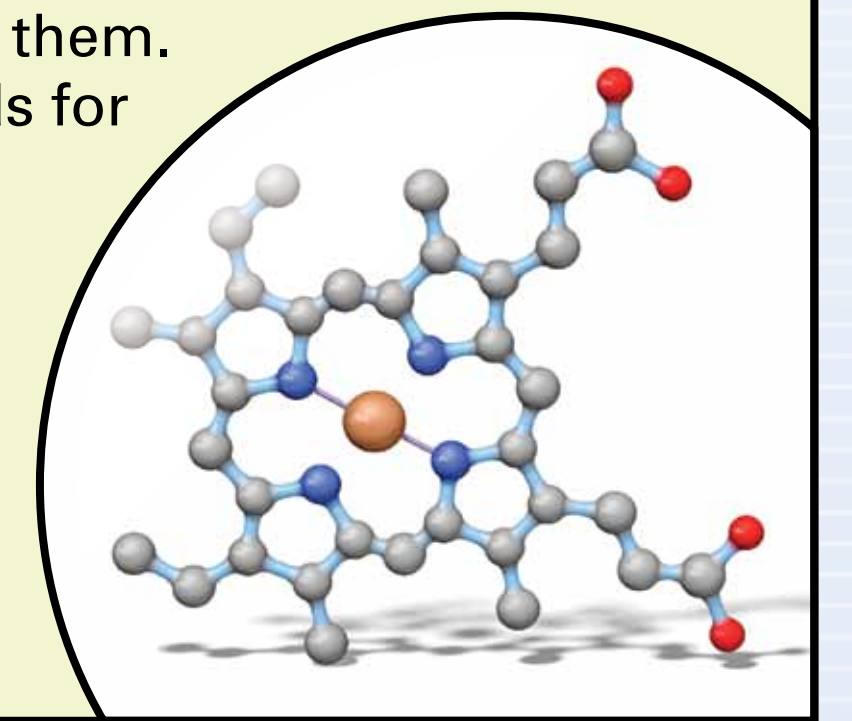


### Diagnosis and treatment using metalloproteins

Metrology for metalloproteins (HLT05)

#### Identifying and quantifying metalloproteins

Metalloproteins are important markers for conditions ranging from deficiency diseases to Down's syndrome but there are no traceable measurement methods available for many of them. This project will create methods for quantifying the many different types of metalloprotein to help meet EU regulations, improve diagnosis and improve the quality of patient care.



### MRI safety

Metrology for next-generation safety standards and equipment in MRI (HLT06)

#### Improving safety and widening the use of MRI

Magnetic Resonance Imaging (MRI) is an indispensable tool in modern medicine but some new advances have not yet made it into hospitals because of unresolved safety issues. This project will improve MRI risk assessments and provide more complete and robust safety data for patients and medical staff.



### Measuring drug flow rate

Metrology for drug delivery (HLT07)

#### Improving the safety and efficiency of drug delivery

Accurate knowledge of flow rate – how fast a quantity of drug is delivered – is one of the most important aspects of drug delivery for safe and efficient treatment. This project will develop measurement services for low flow rates, where current measurements fall short, and assess the performance of commercial flow meters and drug delivery devices.

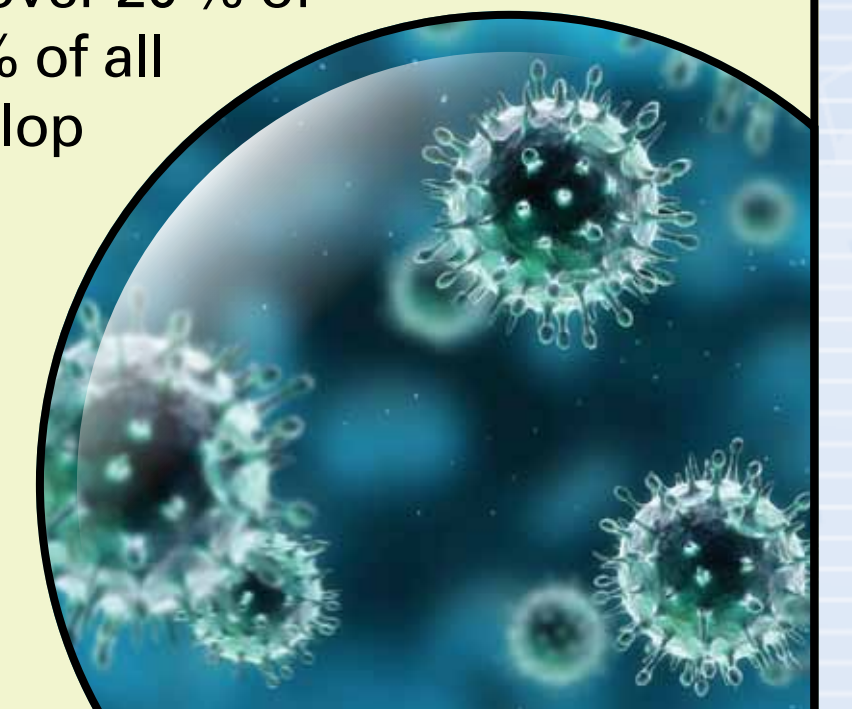


### Detecting and monitoring infectious disease

Metrology for monitoring infectious diseases, antimicrobial resistance, and harmful micro-organisms (HLT08)

#### Improving disease management

Infectious diseases account for over 20 % of human deaths globally and 25 % of all morbidity. This project will develop high accuracy methods for the detection of infectious agents and evaluate new molecular approaches for monitoring infectious disease load and detecting antimicrobial resistance mutations.



### Improving radiotherapy dose

Metrology for radiotherapy using complex radiation fields (HLT09)

#### Ensuring radiotherapy treatment meets international requirements

Modern radiotherapy treatments deliver the highest possible dose to the smallest area by using complex radiation fields, but the measurements of such doses may not be accurate enough to meet international requirements. This project will develop new standards to improve radiotherapy dose measurements and support the updating of international codes of practice.

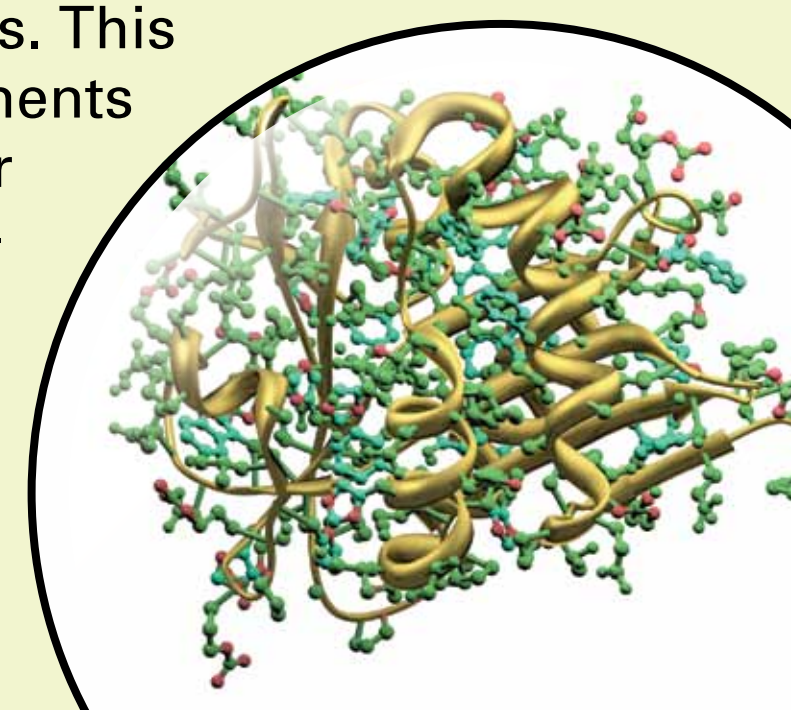


### Measurements in molecular medicine

Metrology for biomolecular origin of disease (HLT10)

#### First design principles for molecular medicine

Molecular medicine could one day address global health issues such as viral epidemics, but first we need to better understand how the structure of a molecule (e.g. a protein) dictates how it behaves. This project will combine measurements and simulations to increase our understanding of the structure-activity relationship for important peptides.

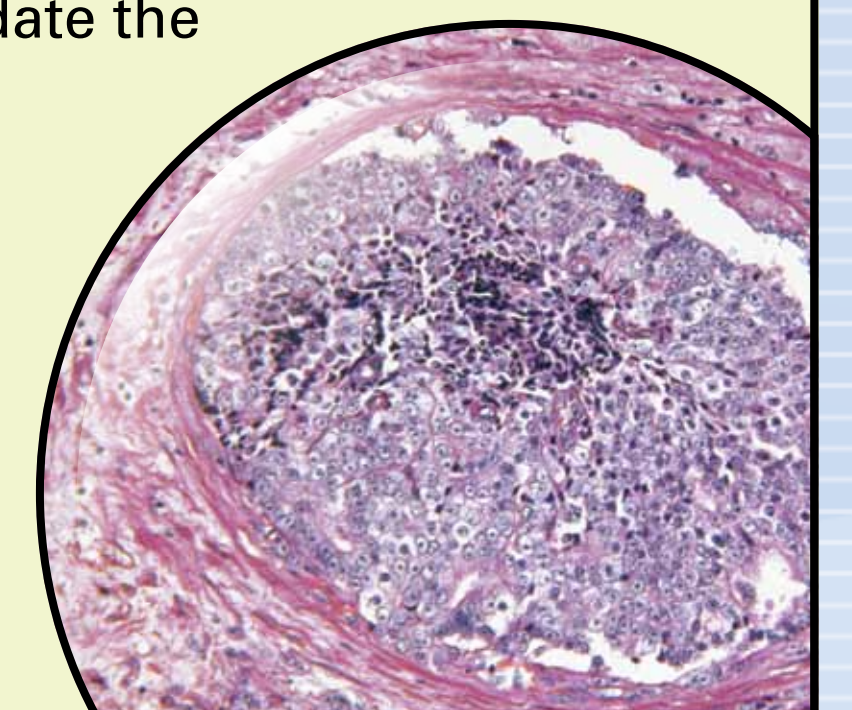


### Controlling molecular radiotherapy

Metrology for molecular radiotherapy (HLT11)

#### Validating the methods used for more targeted therapies

Molecular radiotherapy specifically targets cancerous cells through the use of 'carrier' molecules that either attach themselves to tumours or accumulate in specific parts of the body. This project will validate the methods and analyse the uncertainties involved in molecular radiotherapy procedures, leading to more effective targeted therapy and more effective treatments.



Europe's National Measurement Institutes working together

The European Association of National Metrology Institutes (EURAMET) has implemented the European Metrology Research Programme (EMRP), a programme with a value of over 400 M€, organised by 22 NMIs and supported by the European Union.

Full details can be found at: [www.euramet.org](http://www.euramet.org)

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**EMRP**  
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