

## Timeline of developments changing practice in Microbiology.

By IBMS History Committee.

Decade	Developments in microbiology changing laboratory practice	Other important developments
1950s	<p>Elizabeth Joan Stokes bacterial sensitivity method introduced. The first method to include a control on the same plate.</p> <p>First strains of MRSA detected.</p>	<p>HeLa cell line derived from cervical cancer cells from Henrietta Lacks.</p> <p>Watson and Crick describe the structure of DNA and publish the landmark paper in the journal Nature.</p> <p>The “Coulter Principle” patented.</p> <p>Automated Continuous Flow Analyser invented by William Skeggs and patented by Technicon Corp.</p> <p>Glucostix for testing urinary glucose introduced.</p>
1960s	<p>Experimental automated bacterial identification and sensitivity systems introduced.</p> <p>Mouth pipetting and needle stick injury shown to be major causes of laboratory acquired infections.</p> <p>“Australia antigen” discovered in cases of Hepatitis B.</p> <p>Biological Safety Cabinet design improved.</p> <p>Gas-Liquid Chromatography (GLC) used for help in identifying anaerobic bacteria.</p> <p>First automated blood culture system introduced.</p> <p>Commercial strip identification systems introduced.</p> <p>Isolation of viruses by cell culture introduced.</p>	<p>NHS Cervical Screening commences</p>

<p><b>1970s</b></p>	<p>Engvall and Perlman describe the enzyme-linked immunosorbent assay (ELISA) improving serological methods for diagnosis.</p> <p>Ericsson method for bacterial sensitivity testing introduced.</p> <p>Automated identification and sensitivity systems improved.</p> <p>First automated blood culture system introduced.</p> <p>First outbreak of Legionnaire's disease described. <i>L. pneumophila</i> identified as the cause.</p> <p>Commercial development of reagents and commercial cell lines for virology developed.</p> <p>Fluorescent in-vitro Hybridisation (FISH) developed.</p> <p>First commercially produced anaerobic chambers developed.</p> <p><i>Campylobacter jejuni</i> shown to be a major cause of diarrhoea.</p>	<p><b>Health and Safety at work Act extended to NHS laboratories.</b></p> <p>Glass transfusion bottles replaced by plastic blood bags in Britain.</p> <p>CAT Scanner patented.</p> <p><b>Dangerous Pathogens Advisory Group (DPAG) formed.</b></p>
<p><b>1980s</b></p>	<p>Human Immunodeficiency virus (HIV) described.</p> <p>Hepatitis C virus described.</p> <p>MALDI-ToF developed.</p> <p>Improvements in automated blood culture systems.</p> <p>E-Test sensitivity testing strips developed.</p> <p>Lab-on-a-chip development begins.</p> <p><i>Helicobacter pylori</i> shown to be the major cause of gastric ulcers.</p>	<p>Polymerase chain reaction (PCR) developed by Kary Mullis.</p> <p><b>Advisory Committee on Dangerous Pathogens (ACDP) formed.</b></p>

<p><b>1990s</b></p>	<p>Further improvement in automated identification and sensitivity systems by adding Mass Spectrometry (MS).</p> <p>E-test strips become commercially available.</p> <p>Chromogenic culture media introduced for help in identifying medically important bacteria and fungi.</p> <p>Advanced blood culture systems introduced.</p> <p>Dipsticks for the rapid detection of Malaria introduced.</p> <p>PCR's developed for multiple pathogen detection.</p>	<p>Clinical Pathology Accreditation (CPA) formed.</p>
<p><b>2000 – to date</b></p>	<p>MALDI-ToF systems introduced for bacterial identification.</p> <p>British Society for Antimicrobial Chemotherapy (BSAC) introduce a standardised disc sensitivity testing method for bacteria.</p> <p>Lab-on-a-chip and cells-on-a-chip commercially become available.</p>	<p><b>Queen Elizabeth II's Platinum Jubilee.</b></p> <p>Human Genome sequenced.</p> <p>Health Protection Agency (HPA) formed, then becomes Public Health England (PHE) then UK Health Security Agency (UKHSA).</p> <p>NHS blood and transplant authority established.</p> <p><b>COVID/SARS-CoV-2 pandemic occurs</b></p>