

 LEIDEN UNIVERSITY MEDICAL CENTER

Automation in Clinical Microbiology

Eric C.J. Claas



 *Clinical Microbiology Laboratorium*


- Multidisciplinary
 - Bacteriology
 - Virology
 - Parasitology
 - Serology (B-V-P)
 - Molecular Diagnostics(B-V-P)










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 *Automation of the CML of the LUMC*


- Multidisciplinary
 - **Bacteriology (2011)**
 - Virologie MOLECULAR
 - Parasitologie MOLECULAR
 - Serology
- **Molecular Diagnostics (2014)**

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LU
MC *I: Bacteriology*

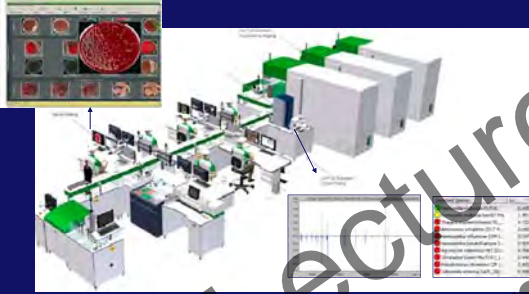
- Pasteur lab: 1880
- LUMC lab: 2008



- Manual, Labor intensive, slowly, expensive....

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LU
MC *Automation in bacteriology: BD/Kiestra*




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LU
MC *Automation of bacteriologic diagnostics*


- Culture proces
 - Inoculation
 - Incubation
 - Reading
- Identification
 - Biochemical (VITEK)
 - Molecular techniques (PCR)
- Susceptibility
 - Diskdiffusion
 - MIC (VITEK, Phoenix, E test)
 - Resistance genes (MDx)

BD / Kiestra Lab Automation

MaldiTof


MDx LUMC

- Increase in portfolio
- Increase in the number of tests


AUTOMATION REQUIRED

Resulting in:

- Increase of Quality
- Increase of Efficiency


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Since 2000: Automation CAP/CTM (Roche)




Screening of blood products for BBV:
 Coming Up Cobas 6800 and 8800

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- Automation for Lab developed tests?

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Robotics and automation

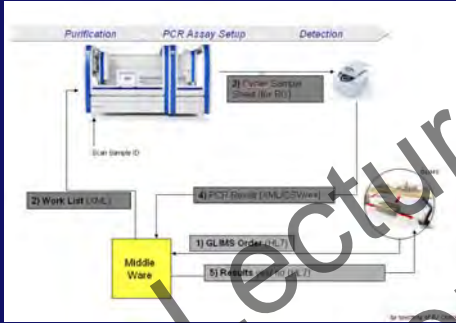
- NA extraction: automated platforms
 - MagNapture, Qiasymphony, EasyMag etc.
- Automated Plate Set Up




- Bidirectional datatransfer to LIS

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Options: Qiagen RGQ Integrated system



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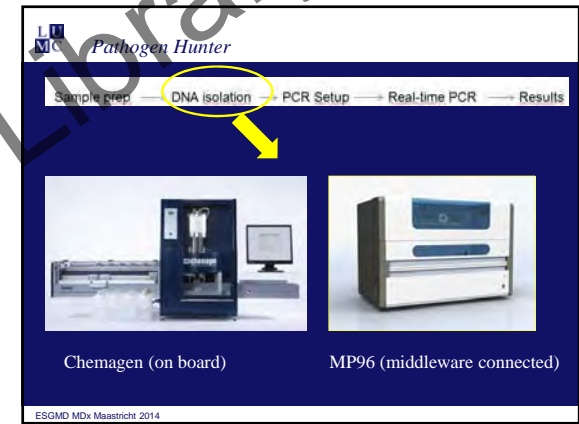
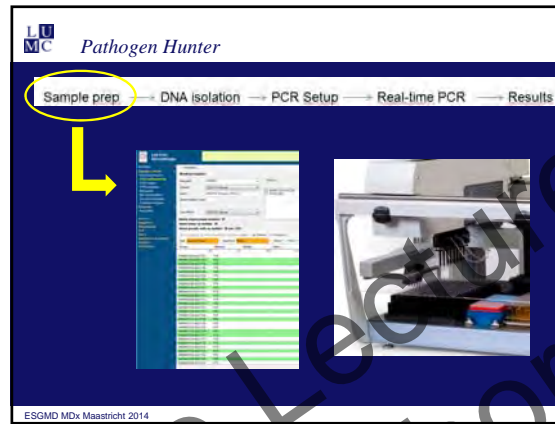

Options: Roche FLOW Integrated system

MIDDELWARE CONNECTIVITY incl. LIS (Sanguin)



Sample Handling MP96 Plate SetUp PCR

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LUMC Pathogen Hunter
 Sample prep → DNA isolation → PCR Setup → Real-time PCR → Results

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LUMC Pathogen Hunter
 Sample prep → DNA isolation → PCR Setup → Real-time PCR → Results

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LUMC Pathogen Hunter: Fully Integrated System

LIS → LIMS LINK → LIS

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LUMC Fully Integrated System

- Datatransfer
- Samples and Assays from LIS
- Pretreatment Samples
- NA extraction
- Assay set-up
- Real-time PCR amplification
- Datatransfer naar LIS

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LUMC Service of the MDx lab

Pathogen Hunter: Optimised, automated, integrated system for bulk molecular assays


- Increase capacity and reliability
- Increase service level: o/n run possible.

Additional system for immediate testing of clinically most relevant samples several times per day

- Sample to Answer system

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MC STA services of the MDx lab



- Coming Up: GenMark, Luminex ,, etc

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- Robotics and Automation will continue to improve the quality, reliability and efficiency of the Microbiology Laboratory

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Questions?

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