

Wat brengt de toekomst?

Annemie Van den Abeele
microbioloog



Inhoud

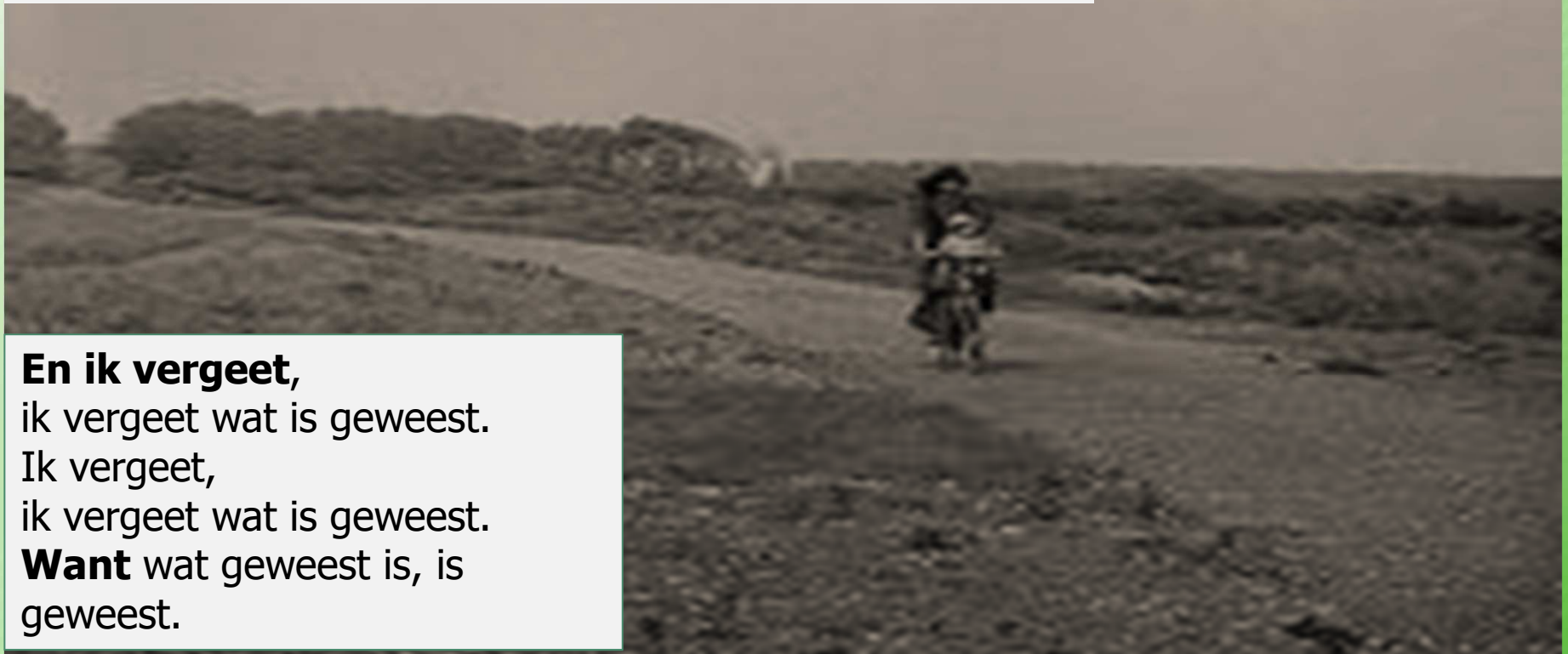
- **Pre-analytisch**
Syndroom gebaseerde aanpak
- **Analytisch**
Culturomics
Combinatie met andere –omics
- **Post-analytisch**
Aangepaste communicatie



Wat geweest is, is geweest?

Hoe sterk is de eenzame fietser
Track 2: Wat geweest is, is geweest
Lennaert Nijgh / Boudewijn de Groot, 1973

En ik vergeet,
ik vergeet wat is geweest.
Ik vergeet,
ik vergeet wat is geweest.
Want wat geweest is, is
geweest.



Bronnen

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Review

Mucosal Immunology (2013) **6**, 876–885; doi:10.1038/mi.2013.50; published online 24 July 2013

New concepts in diagnostics for infectious diarrhea

J A Platts-Mills¹, J Liu¹ and E R Houpt¹

¹Division of Infectious Diseases and International Health University of Virginia Health System, Charlottesville, Virginia, USA

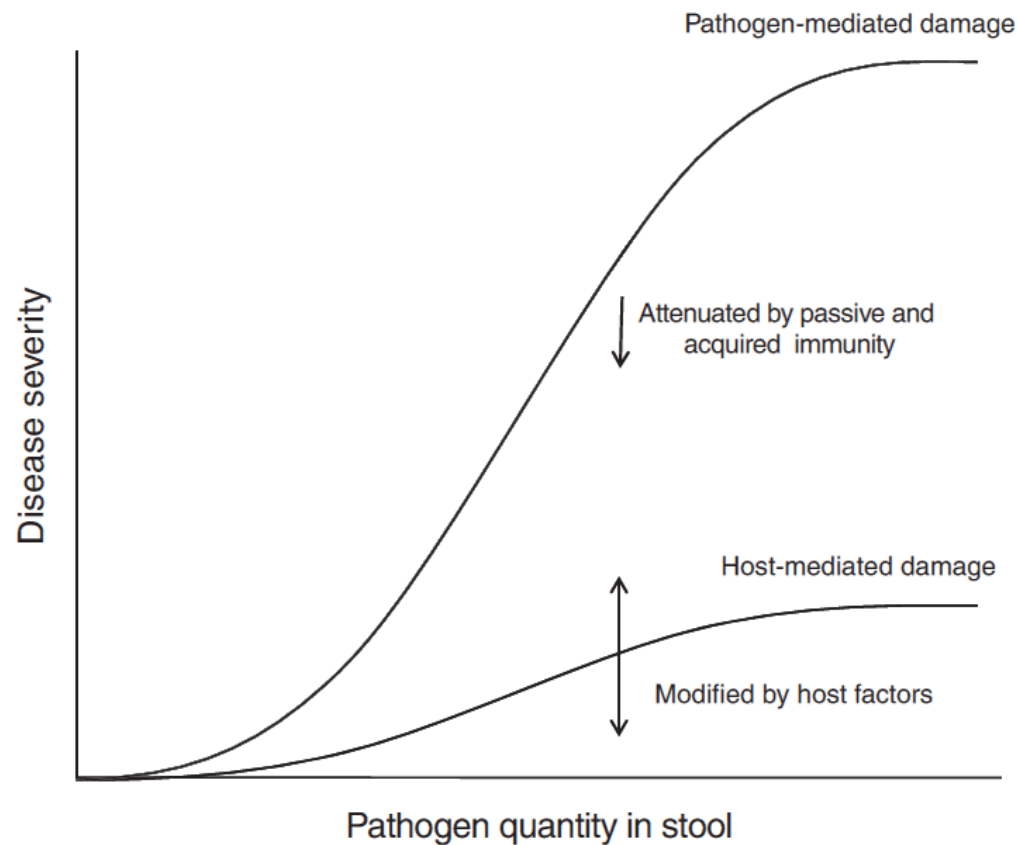
Correspondence: ER Houpt, ERH6K@virginia.edu

Received 2 March 2013; Accepted 11 June 2013
Advance online publication 24 July 2013



Pre-analytisch

ernst ziekte - aanwezigheid pathogenen



virulentie

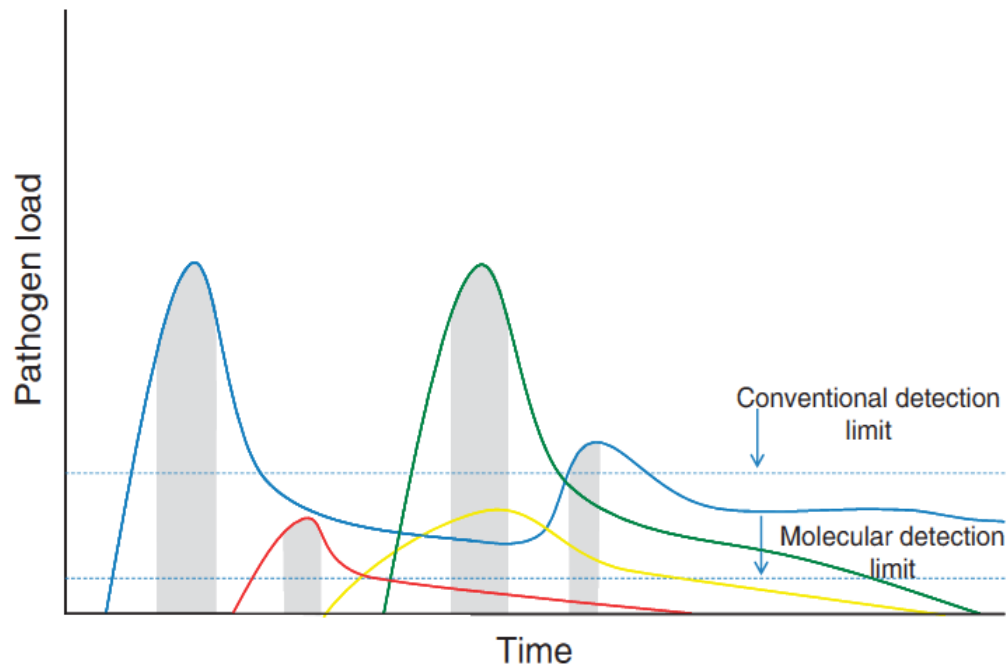
immuniteit

gastheer



Pre-analytisch

symptomatische –asymptomatische infectie



detectielimiet

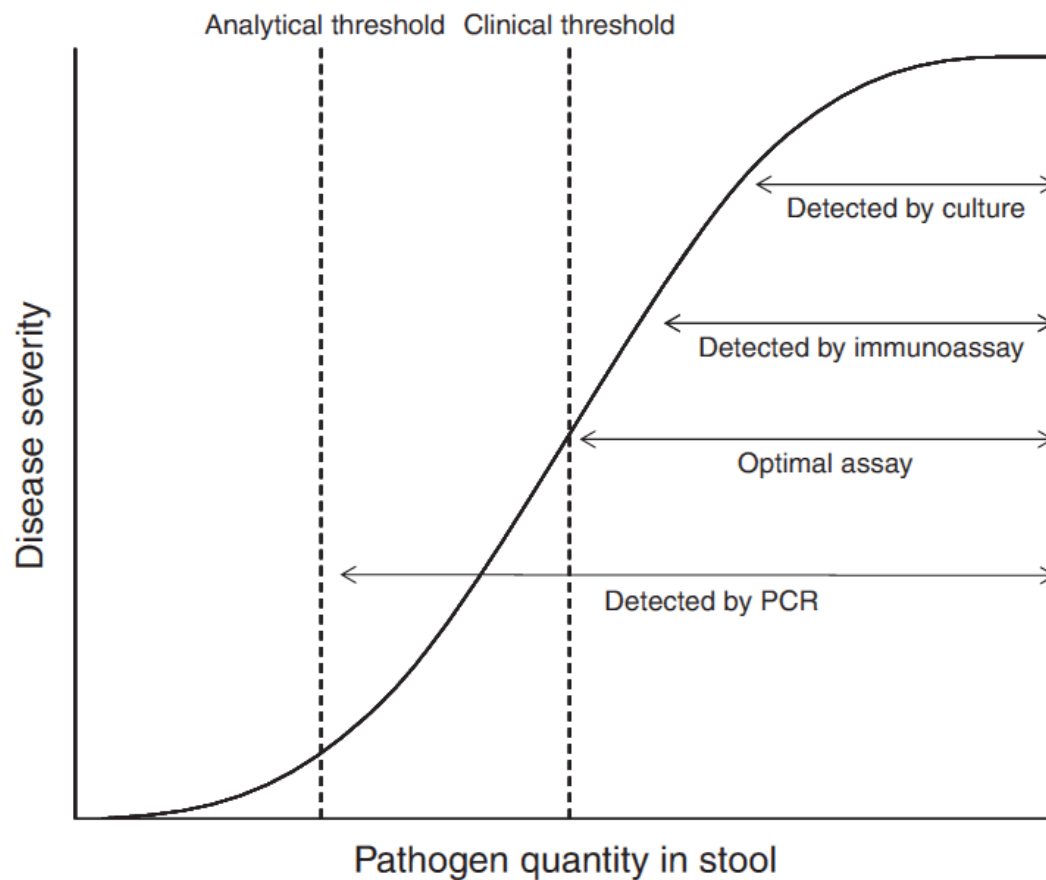
kweek

moleculair



Analytisch

analytische – klinische drempel



cultuur

antigen

optimaal

moleculair



Bronnen

15 August 2017
Volume 65
Supplement 1



Clinical Infectious Diseases

**Emerging Concepts and Strategies
in Clinical Microbiology and
Infectious Diseases**



Analytisch: cultuur is niet overbodig (?)

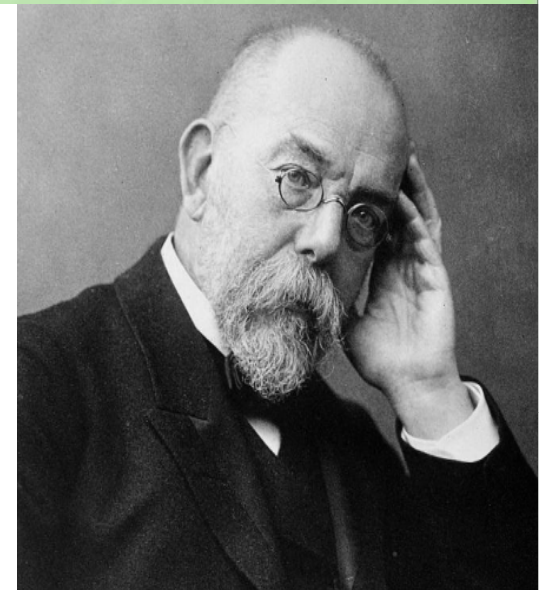
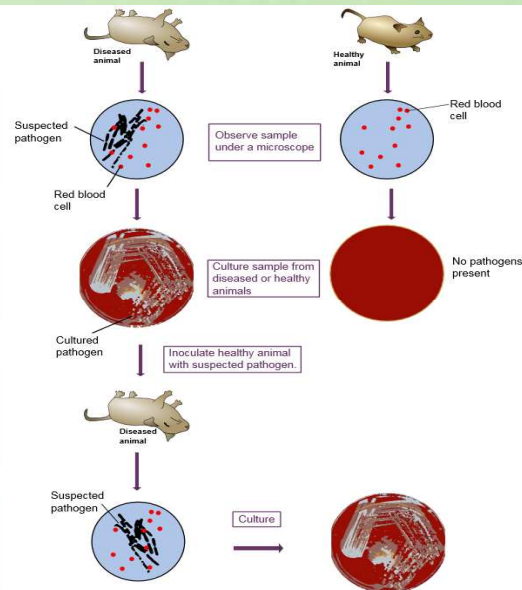
Koch's Postulates:

① The microorganism must be found in abundance in all organisms suffering from the disease, but should not be found in healthy organisms.

② The microorganism must be isolated from a diseased organism and grown in pure culture.

③ The cultured microorganism should cause disease when introduced into a healthy organism.

④ The microorganism must be reisolated from the inoculated, diseased experimental host and identified as being identical to the original specific causative agent.



- Epidemiologie
- Typering isolaten
- In vitro gevoeligheid aan antibiotica



Analytisch

- Agnostisch

JNSP techniek (URMITE Prof. Dr. Didier Raoult)

Je Ne Sais Pas / I don't know what I am growing

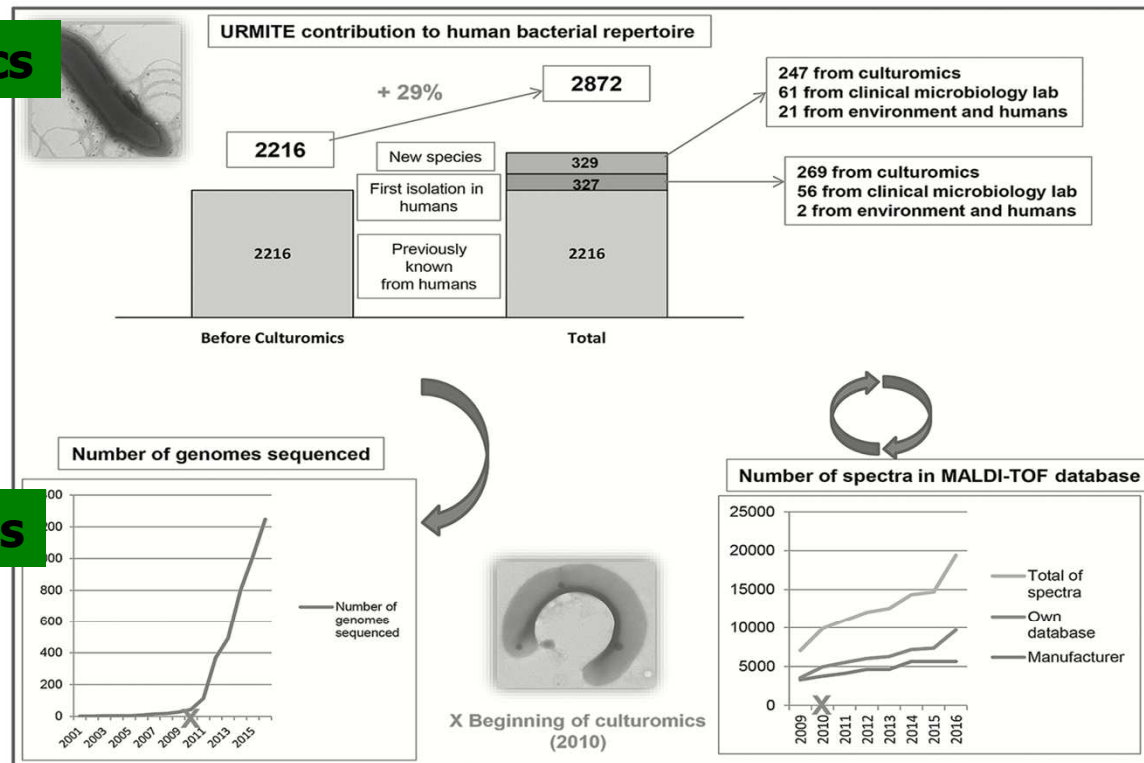
- Culturomics

212 combinatiemethoden?



Analytisch: culturomics

Taxonogenomics



Proteomics

(meta)Genomics

From: Many More Microbes in Humans: Enlarging the Microbiome Repertoire

Clin Infect Dis. 2017;65(suppl_1):S20-S29. doi:10.1093/cid/cix404

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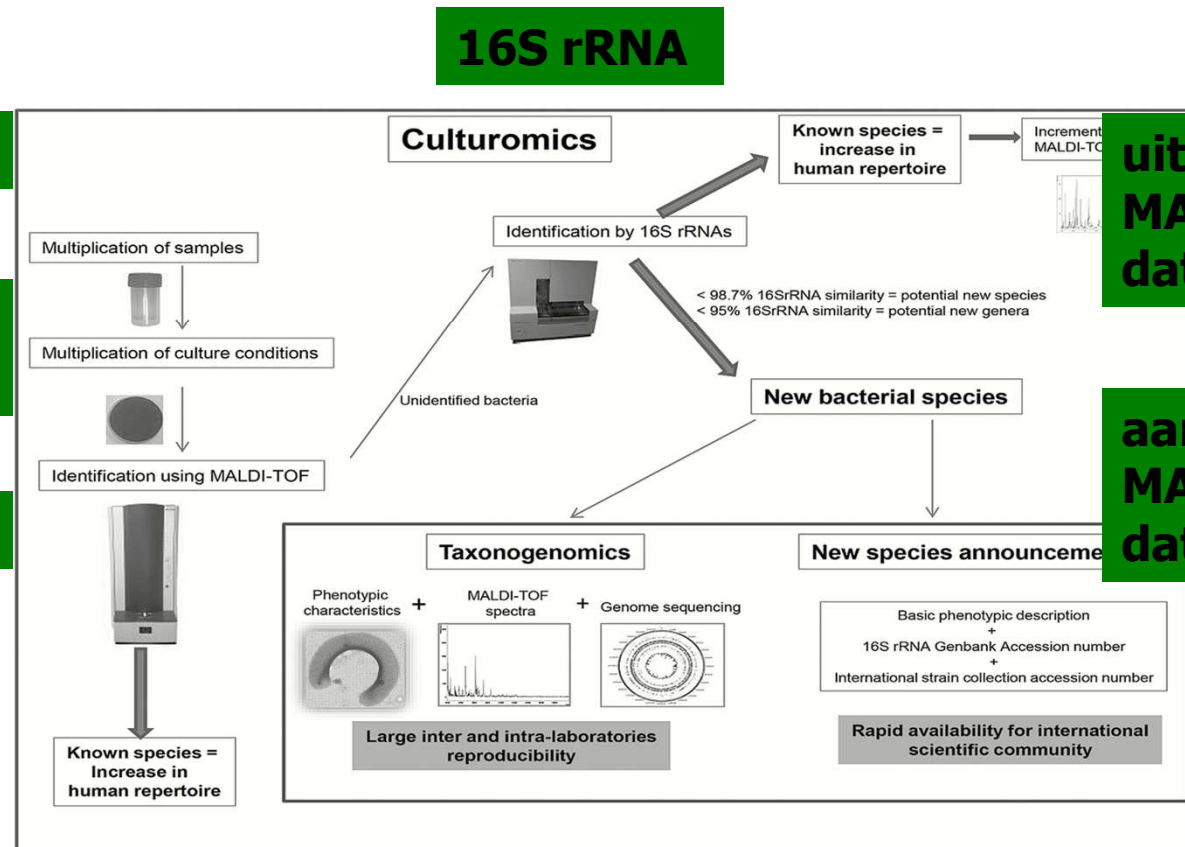
Analytisch: culturomics

16S rRNA

staalsoort

kweek
condities

MALDI-TOF



uitbreiden
MALDI
databases

aanvullen
MALDI
databases

From: Many More Microbes in Humans: Enlarging the Microbiome Repertoire

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Bronnen

CMI
CLINICAL MICROBIOLOGY
AND INFECTION



REVIEW

Spectrum of enteropathogens detected by the FilmArray GI Panel in a multicentre study of community-acquired gastroenteritis

A. Spina¹, K. G. Kerr², M. Cormican³, F. Barbut⁴, A. Eigentler⁵, L. Zerva⁶, P. Tassios⁶, G. A. Popescu⁷, A. Rafila⁷, E. Eerola⁸, J. Batista⁹, M. Maass¹⁰, R. Aschbacher¹¹, K. E. P. Olsen¹² and F. Allerberger¹

1) Austrian Agency for Health and Food Safety, Vienna, Austria, 2) Harrogate & District NHS Foundation Trust, Harrogate, UK, 3) National University of Ireland Galway, Ireland, 4) Hôpital Saint-Antoine, Paris, France, 5) Labor Moest, Innsbruck, Austria, 6) Attikon University Hospital, Athens-Chaidari, Greece, 7) National Institute for Infectious Diseases and Carol Davila University, Bucharest, Romania, 8) Turku University, Turku, Finland, 9) Occidental Hospital Centre, Lisbon, Portugal, 10) Labor Dr Heidrich & Kollegen MVZ, Hamburg, Germany, 11) Laboratorio Aziendale di Microbiologia e Virologia, Bolzano, Italy and 12) Statens Serum Institut, Copenhagen, Denmark



Post-analytisch

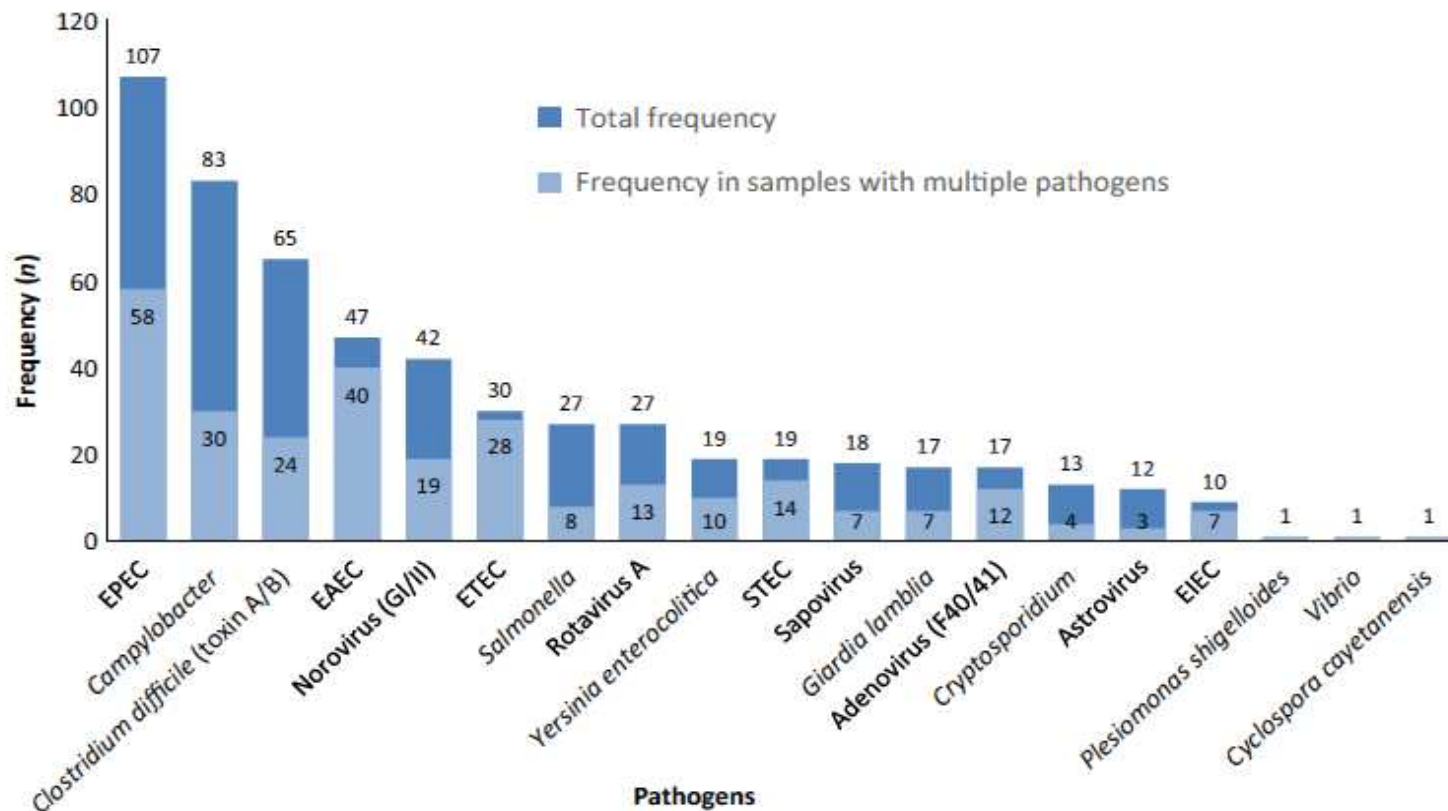
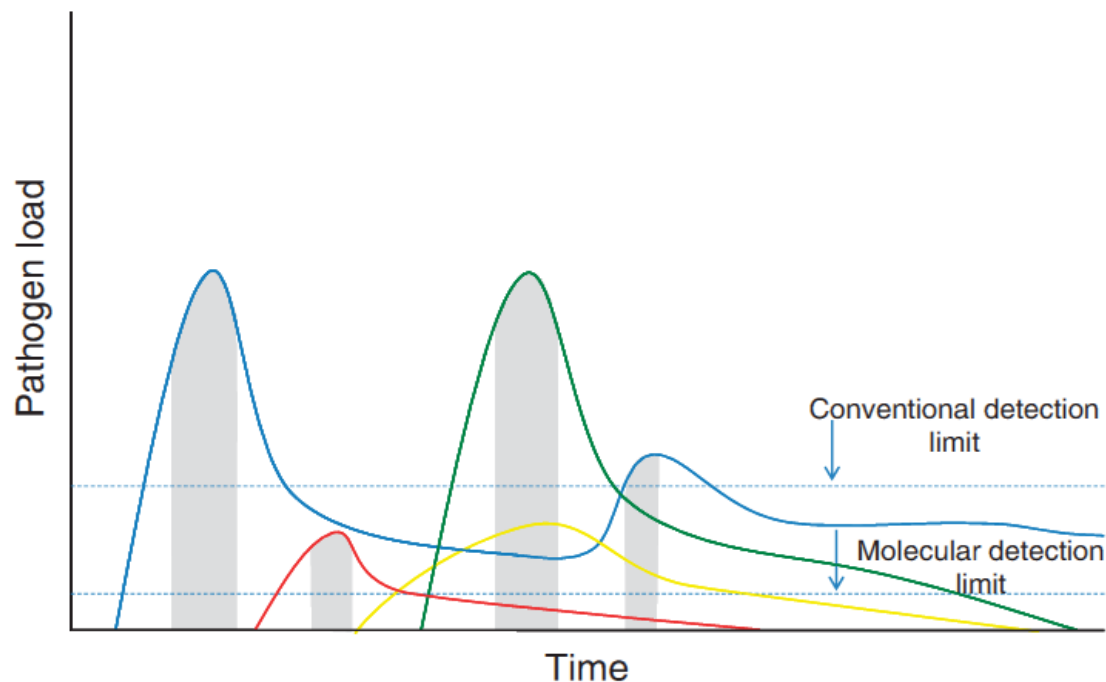


FIG. 2. Overall frequency distribution of pathogens detected and frequency distribution of pathogens that were detected in a sample with multiple pathogens detected (total pathogens = 555). EAEC, enteroaggregative *Escherichia coli*; EIEC, enteroinvasive *Escherichia coli*; EPEC, enteropathogenic *Escherichia coli*; ETEC, enterotoxigenic *Escherichia coli*; STEC, Shiga toxin-producing *Escherichia coli*.

Post-analytisch

Interpretatie- communicatie



kwantiteit

epidemiologie

patiëntenprofiel



Wat brengt de toekomst?

- **Pre-analytisch**
Syndroom gebaseerd
Patiëntengroepen - geïndividualiseerde aanpak
- **Analytisch**
Proteomics en (meta)genomics
Culturomics ondersteunt
- **Post-analytisch**
Aangepaste communicatie?

|



In de praktijk...

EMERGING PATHOGENEN IN GASTRO-ENTERITIS



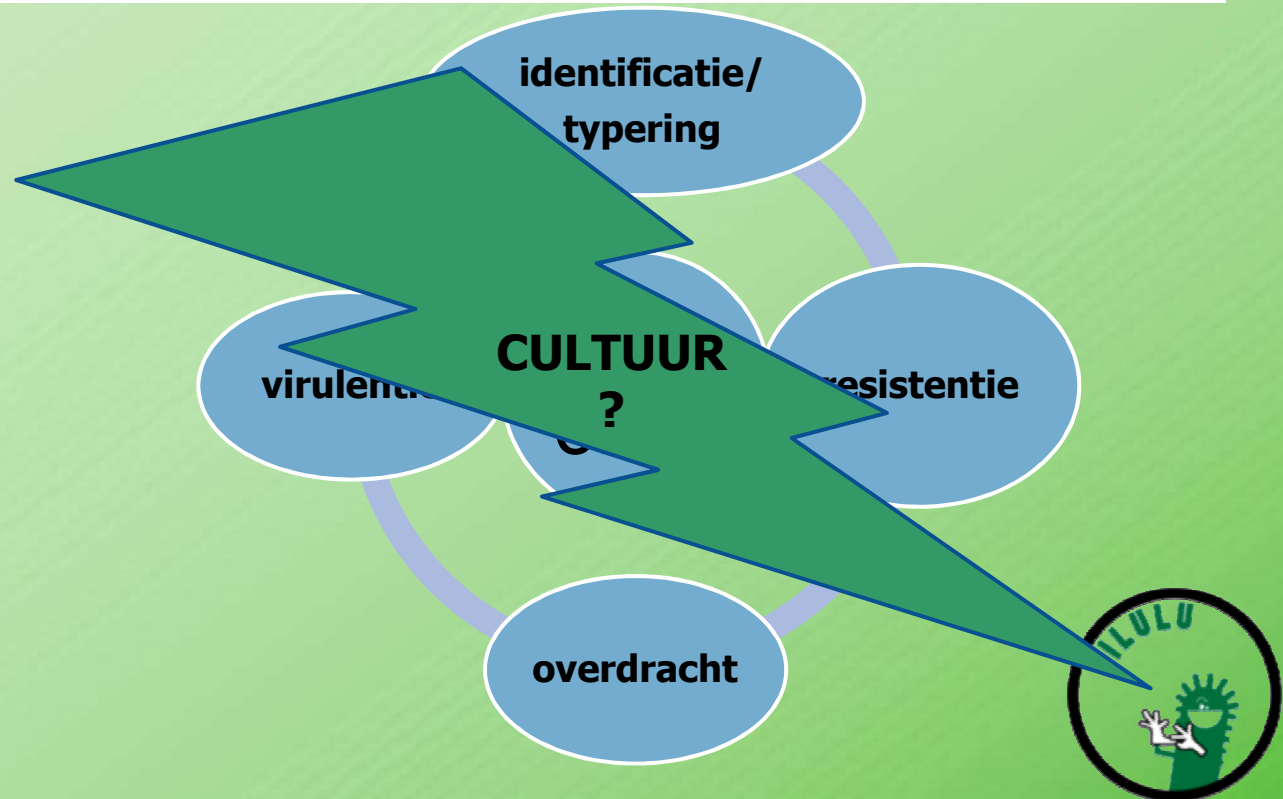
Bronnen

Whole genome sequencing (WGS) for food-borne pathogen surveillance and control – taking the pulse

J Moran-Gilad ^{1 2 3}

1. Ministry of Health, Public Health Services, Israel
2. Faculty of Health Sciences, Ben-Gurion University of the Negev, Israel
3. ESCMID Study Group for Genomic and Molecular Diagnostics, Basel, Switzerland

Correspondence: Jacob Moran-Gilad (giladko@post.bgu.ac.il)



Global foodborne disease surveillance

In vivo

In situ

In vitro

In silico

Definities:
Core genoom?
Virulentie genen?



Pre- Analytisch- Post

One world, one medicine, one health?
Rol microbioloog: **Klinische validatie?**

Emerging pathogenen in gastroenteritis:

Non jejuni/coli Campylobacter
Vibrio fluvialis/mimicus

Escherichia coli aIEC,
aEPEC, NTEC

Providencia alcalifaciens

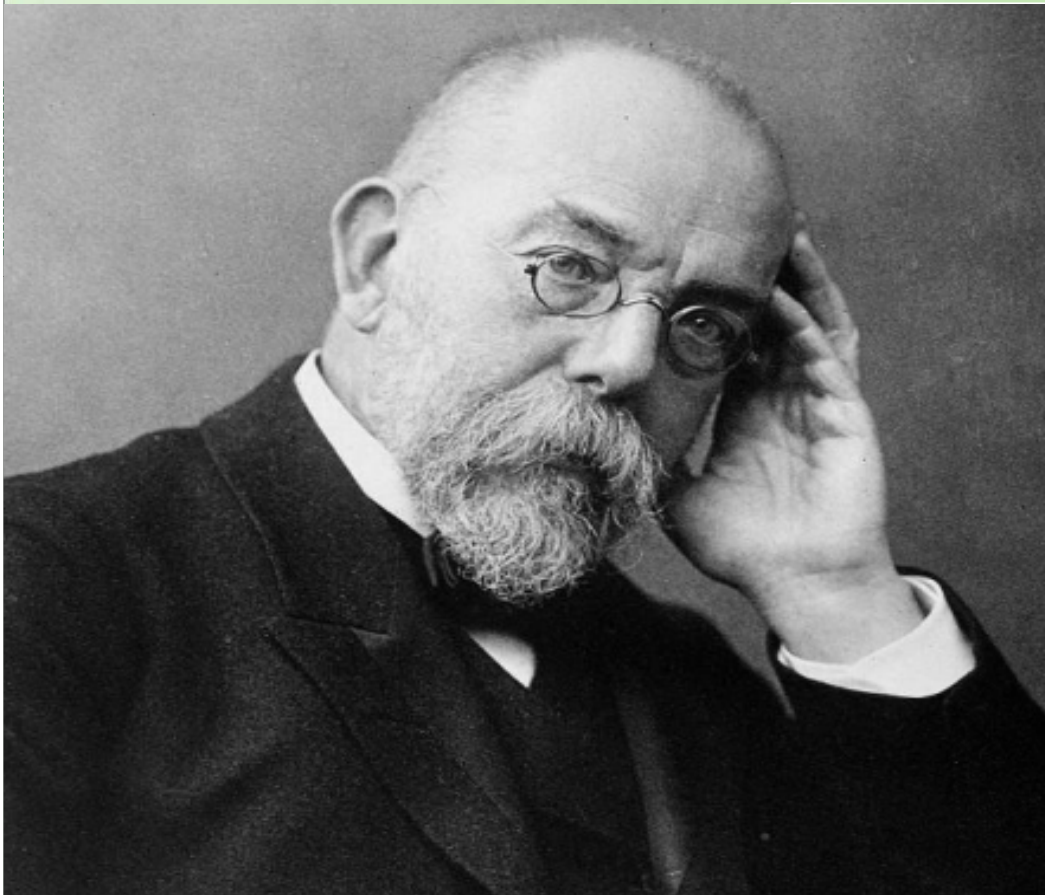
...

Arcobacter spp



Emerging pathogenen in gastroenteritis

Rol van *Arcobacter* in gastro-enteritis bij mensen



Prevalentie

Isolatie

Identificatie

Gevoeligheid

Typering



Wat geweest is, is geweest?

Hoe sterk is de eenzame fietser

Track 2: Wat geweest is, is geweest

Lennaert Nijgh / Boudewijn de Groot, 1973



En ik vergeet,

ik vergeet wat is geweest.

Ik vergeet,

ik vergeet wat is geweest.

Want wat geweest is, is geweest.

En ik neem mee,

ik neem mee wat is geweest.

Ik neem mee,

ik neem mee wat is geweest.

Maar wat geweest is, is geweest