





Samen werken aan diergezondheid



Microbiële *Eco-systemen* op *melkveebedrijven*

Ynte Schukken



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Microbiële *Eco-systemen*

- Introductie
- Microbiële Eco systemen
Uier, darm
- Dynamiek van Microbiële Eco systemen
Voeding, Ab, Superinfectie, Omgeving
- Resilience
- Conclusies

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GD

Free available online

Microbial Diversity of Bovine Mastitic Milk as Determined by Pyrosequencing of Metagenomic 16S rDNA

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SCIENTIFIC REPORTS

OPEN Longitudinal metagenomic profiling of bovine milk to assess the impact of intramammary treatment using a third-generation cephalosporin

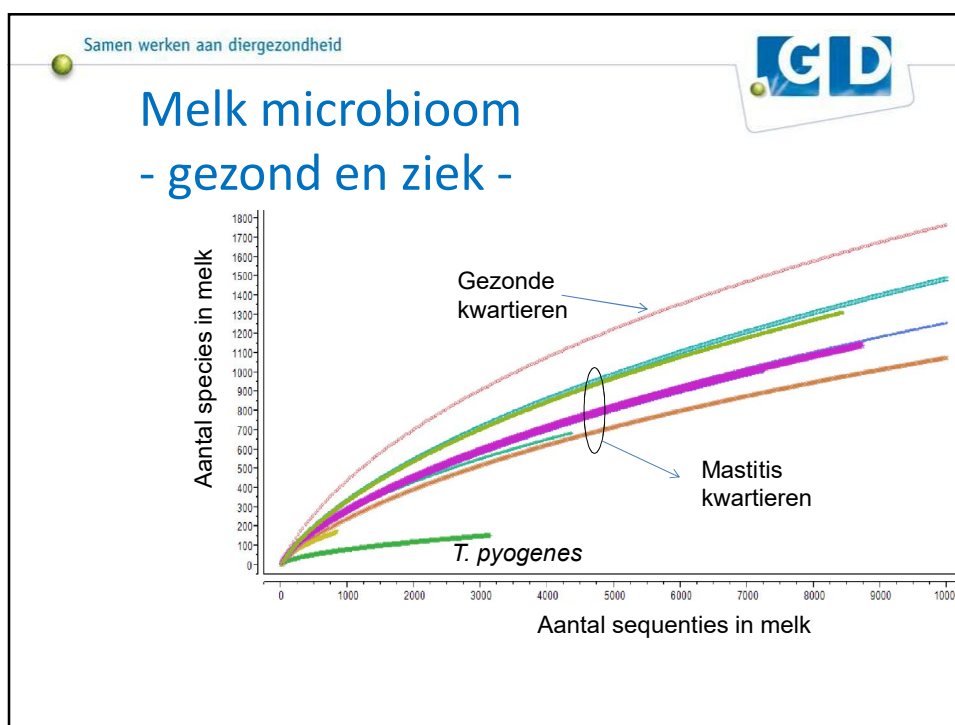
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Antimicrobial usage in food animals has a direct impact on human health, and approximately 80% of the antibiotics prescribed in the dairy industry are used to treat bovine mastitis. Here we provide a longitudinal description of the changes in the microbiome of milk that are associated with mastitis and antimicrobial therapy. Next-generation sequencing, 16S rRNA gene quantitative real-time PCR, microbiome. Cows diagnosed with clinical mastitis associated with Gram-negative pathogens or

Abstract
Dairy cow mastitis is an important disease in the dairy industry and is traditionally diagnosed by culture of bacteria. The results of pyrosequencing of bacterial 16S rRNA genes from dairy cows and compare the results with samples were collected from healthy cows. The most clearly different from the healthy cows were generally among the *Streptococcus* spp. and *Staphylococcus* spp. that are known to be associated with bovine mastitis.

www.nature.com/scientificreports



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Wat is het melk microbioom?

Melk microbieele samenstelling zoals gevonden met next generation of pyro-sequencing.

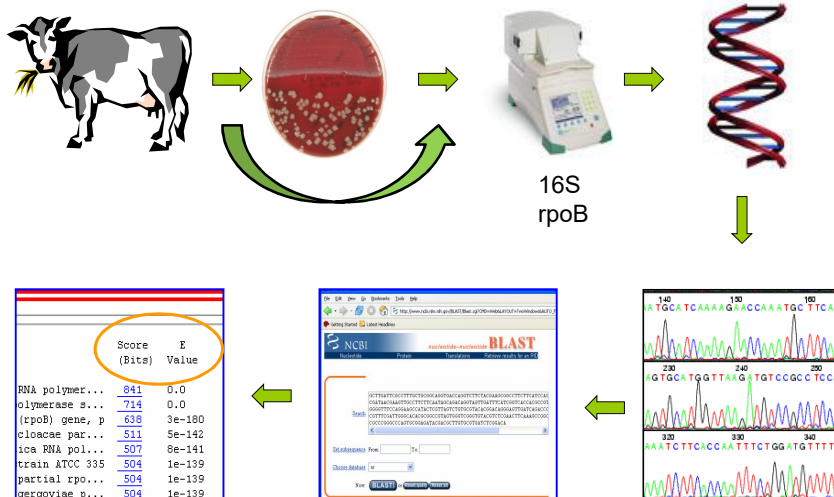
De populatie van bacterieele species gevonden met 16S sequencing van DNA geïsoleerd uit melk

Gemiddeld 7000 bacterieele 16S sequenties corresponderend met ~1000 bacterieele species per melk monster, en waarschijnlijk meer in melk van gezonde kwartieren.

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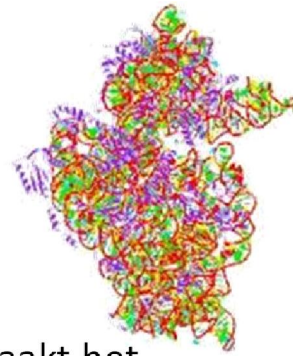


Bacterieele identificatie met 16S DNA Sequencing

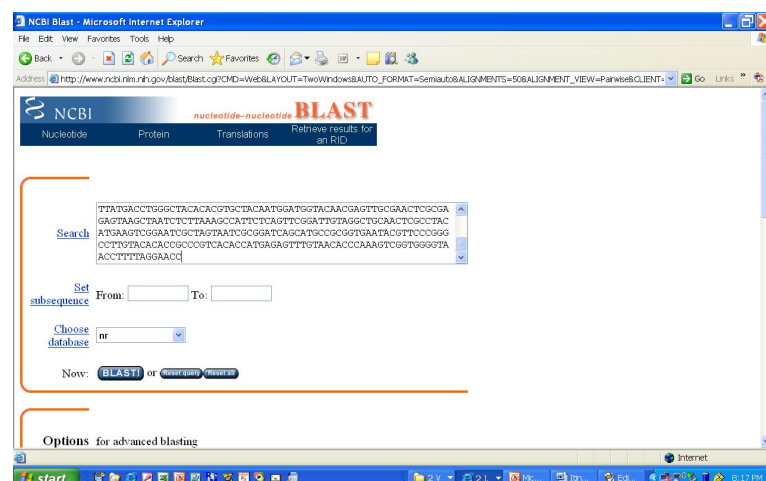


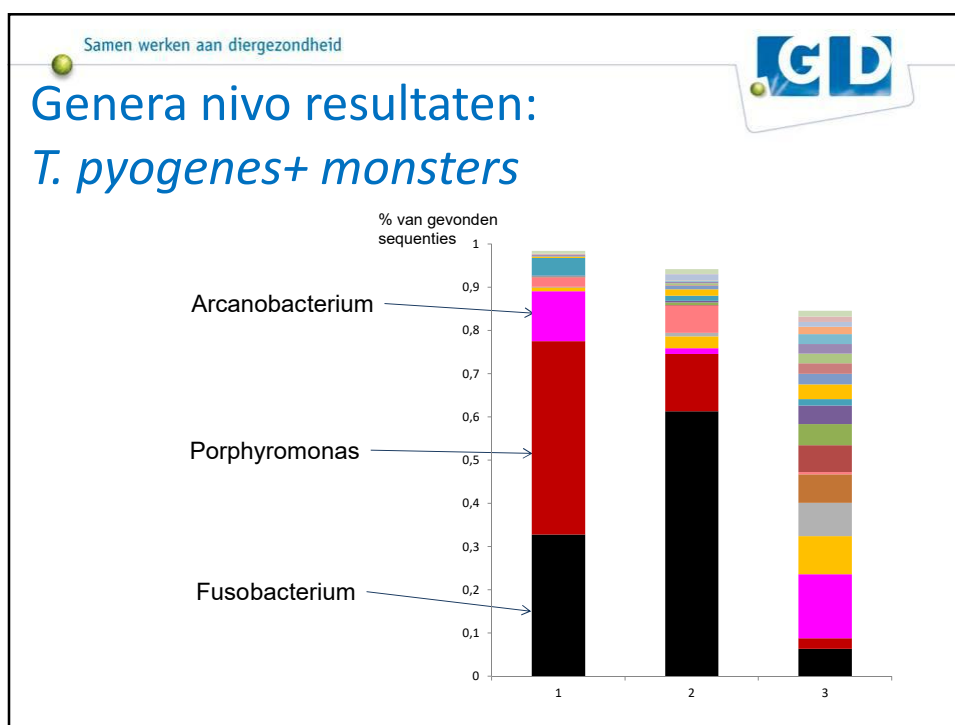
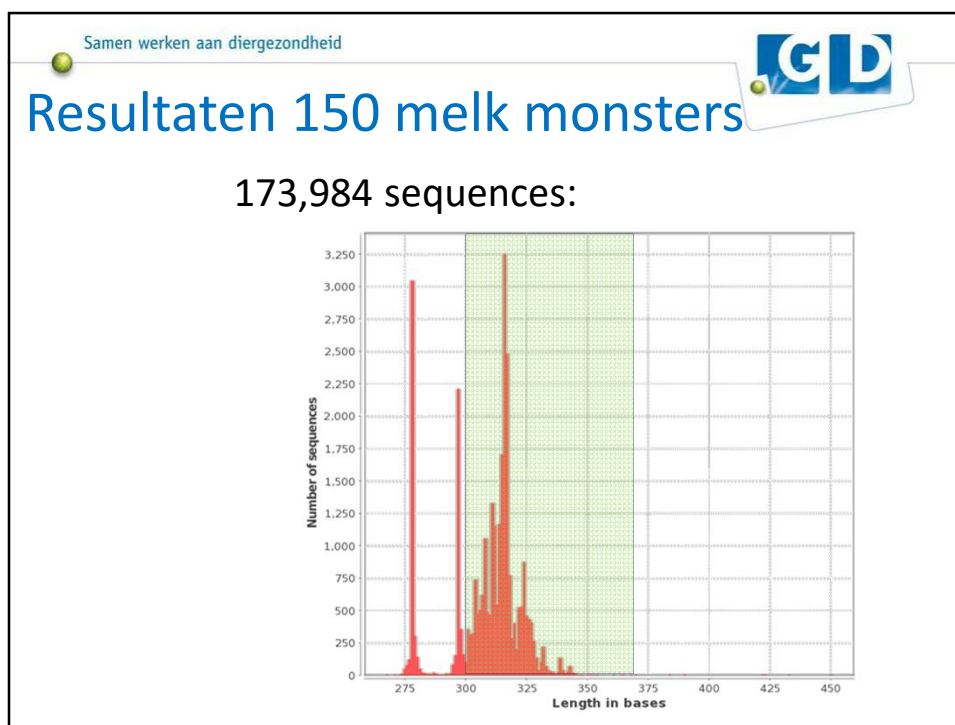
16S ribosomaal RNA

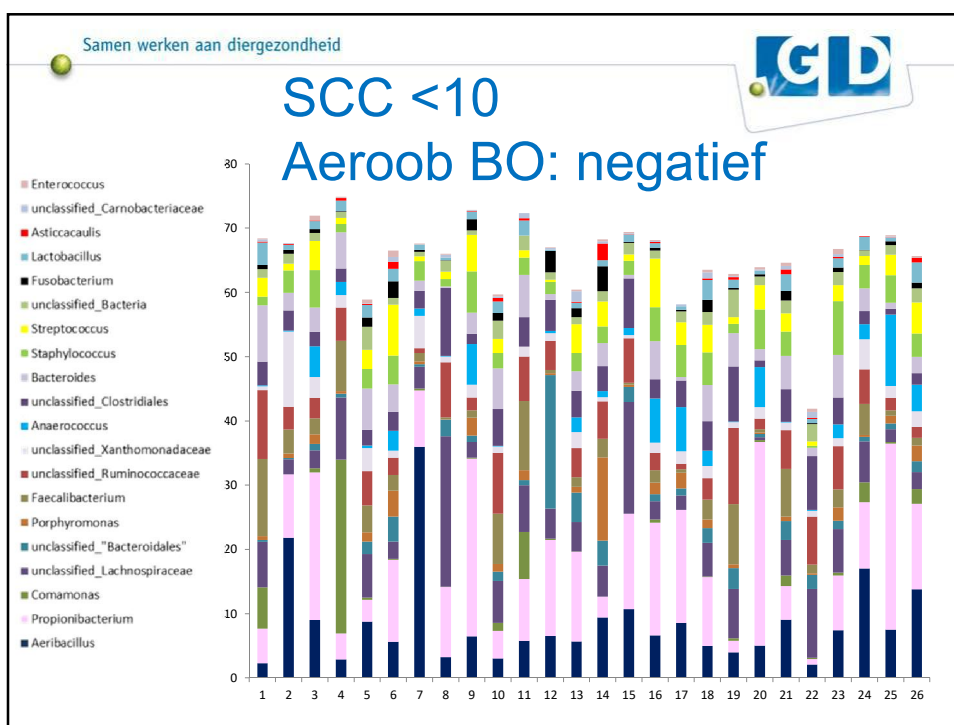
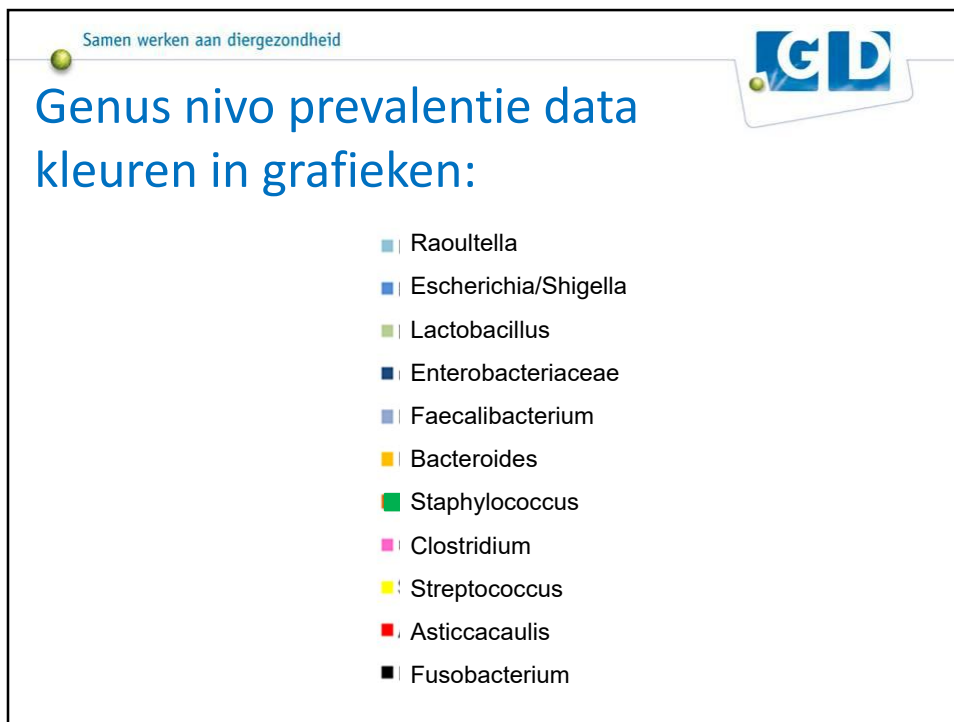
- Hoog geconserveerde regio
 - Gebruikt voor primers
- Variabele regionen
 - Tussen species variatie
- Bruikbaar voor phylogeny
- Next-generation-sequencing maakt het mogelijk grote aantallen te vinden:

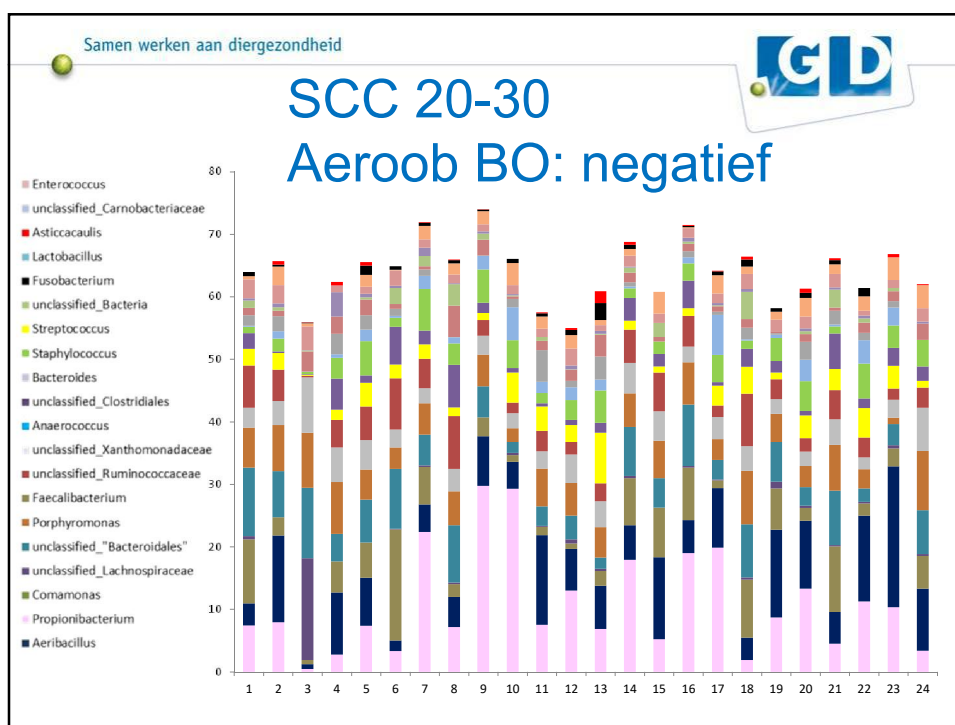
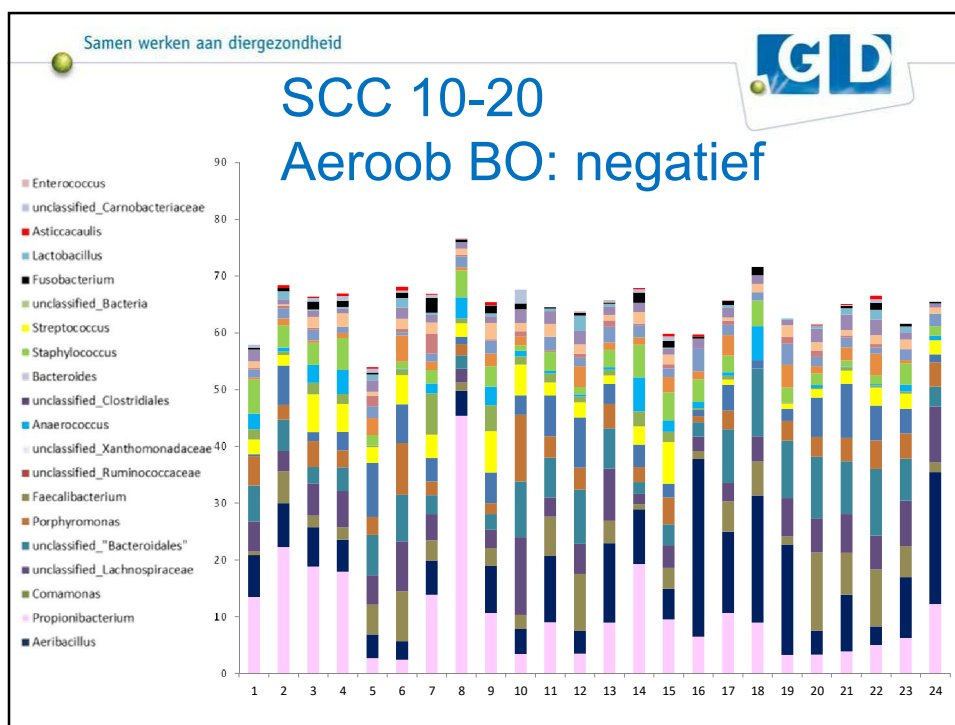


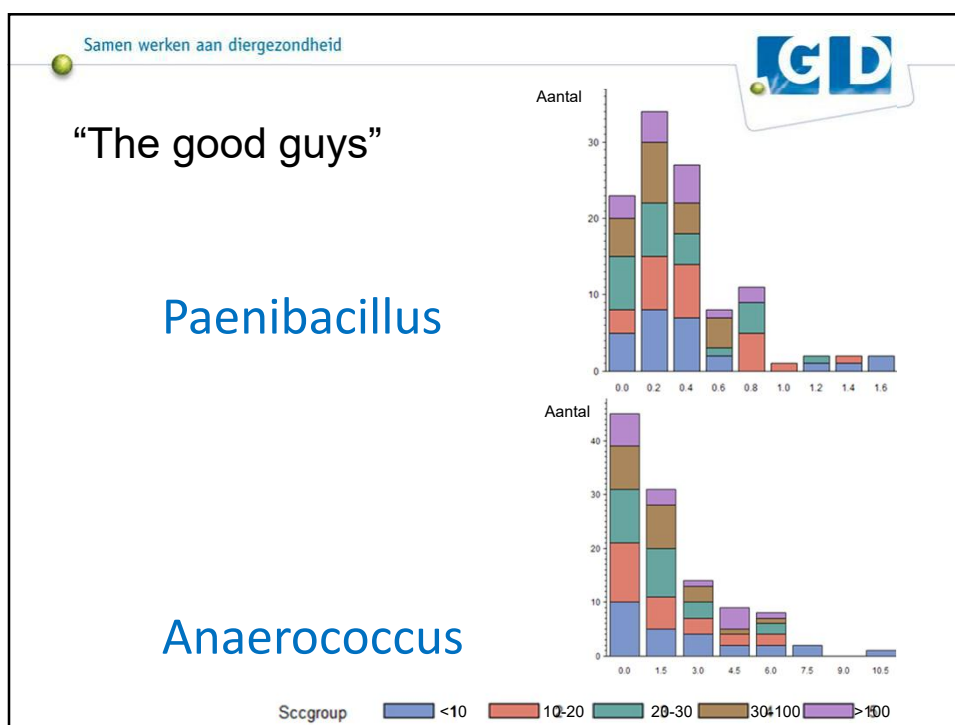
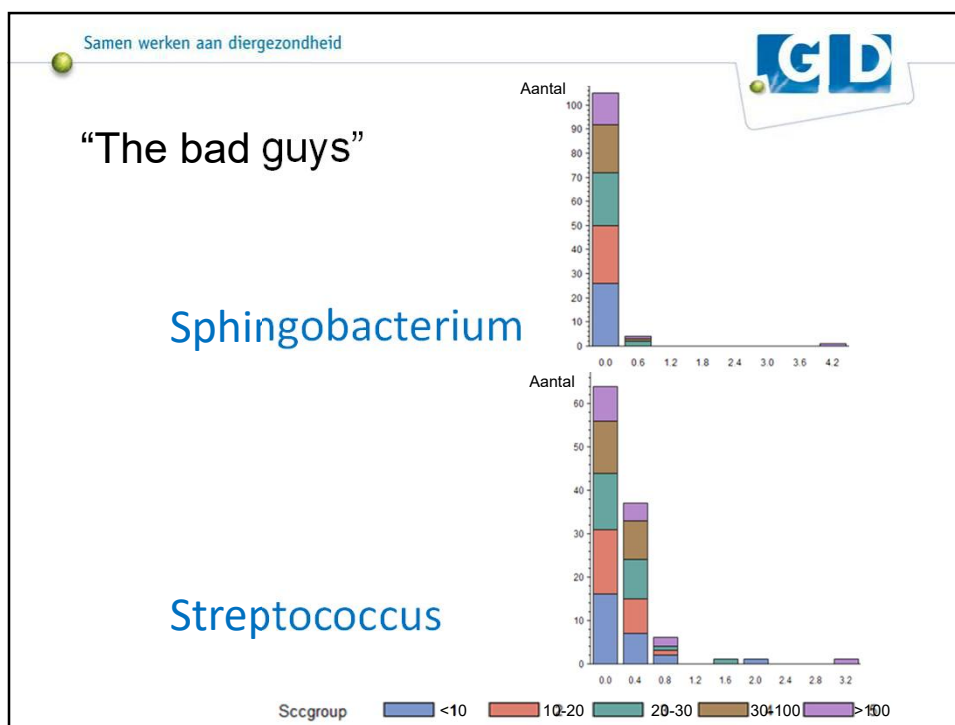
Sequentie resultaten, BLAST

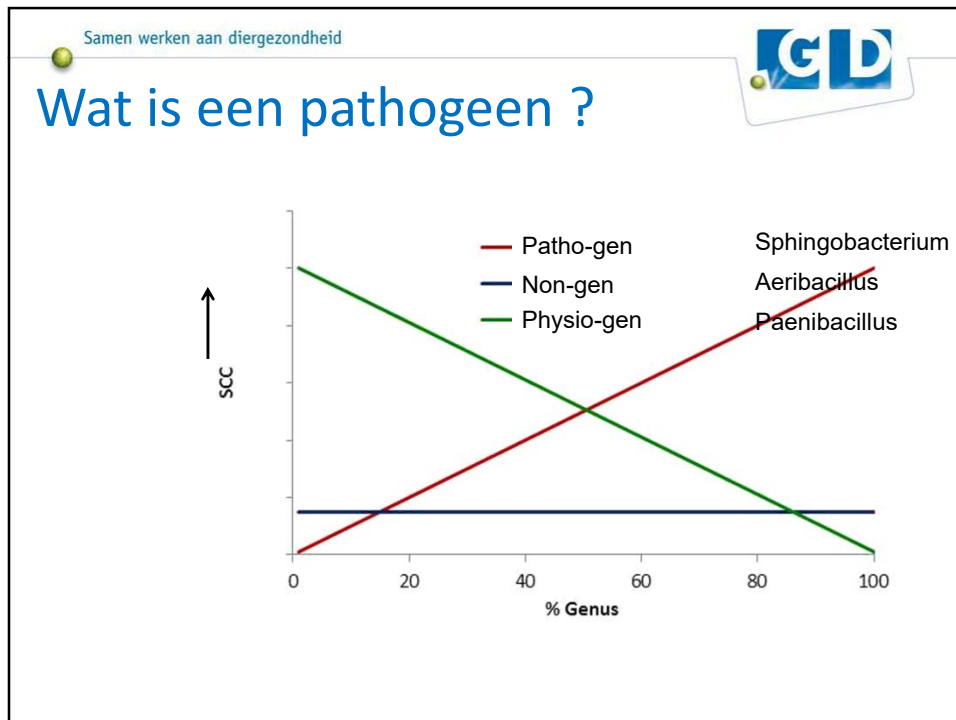




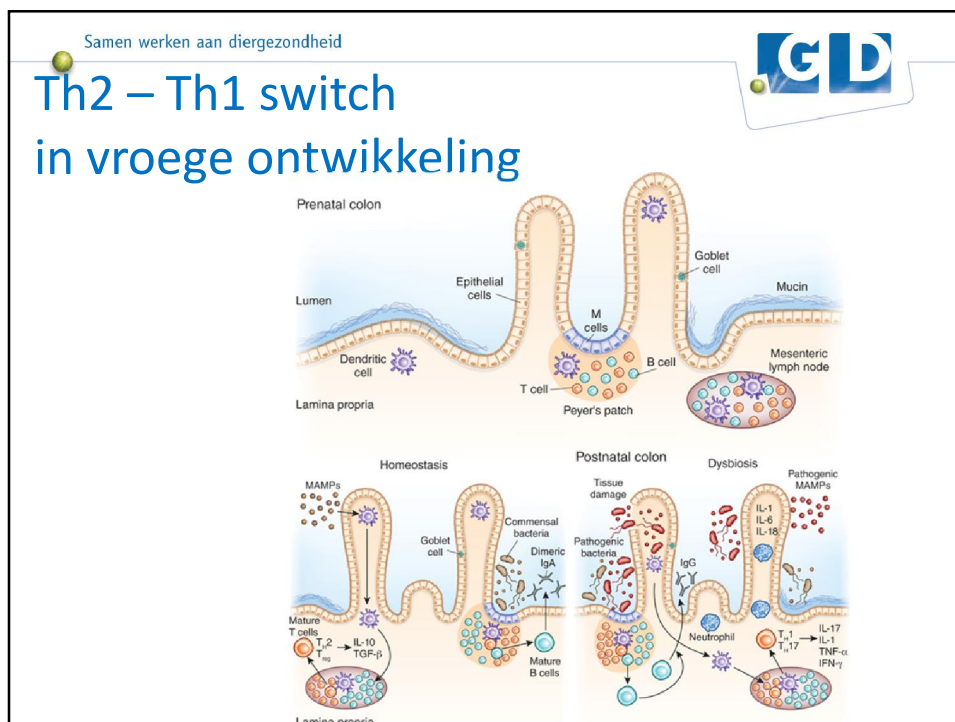
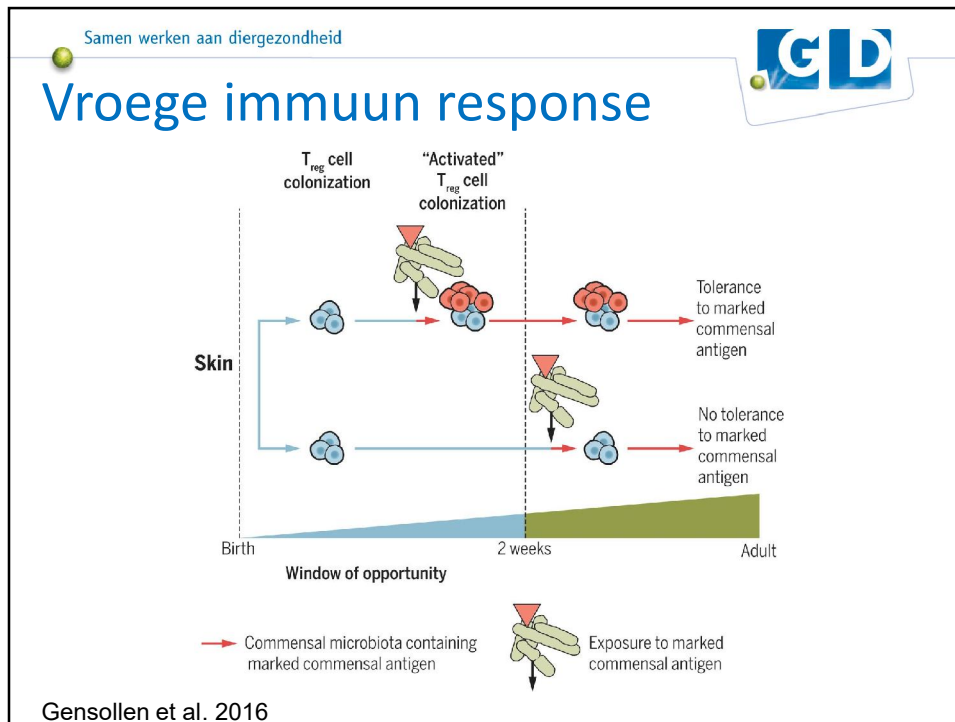


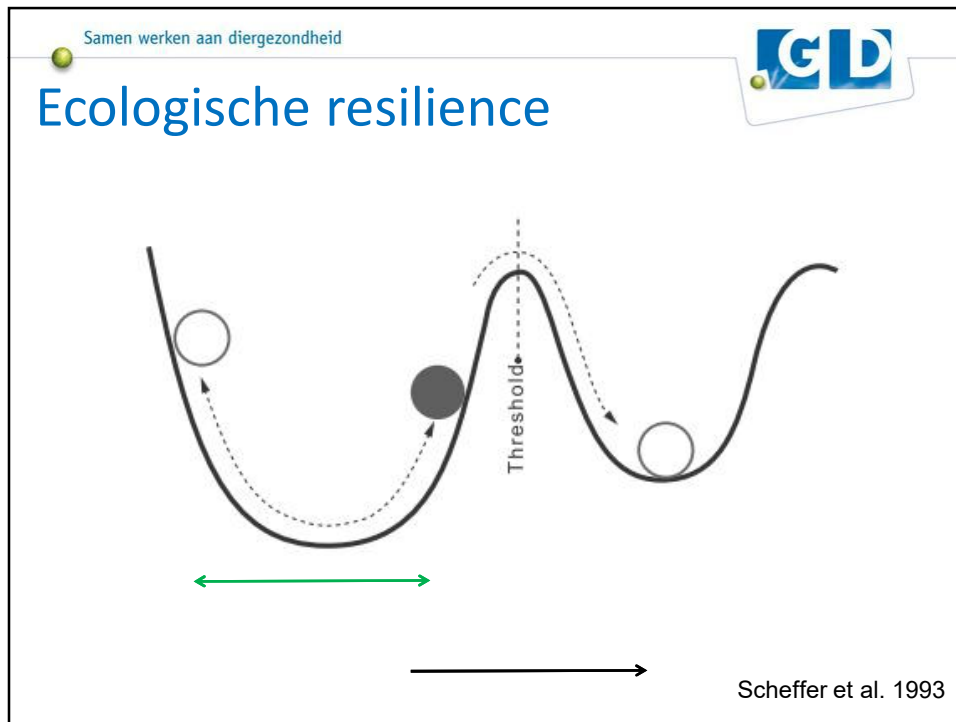






- Samen werken aan diergezondheid
- Self vs non-self**
- Grote aantallen bacterieele species zijn aanwezig in een gezond kwartier met geen aanwijzing voor een immuun response.
 - Zijn dit niet immunogen species of is er een andere reden voor het herkennen van deze 'self' populatie ?

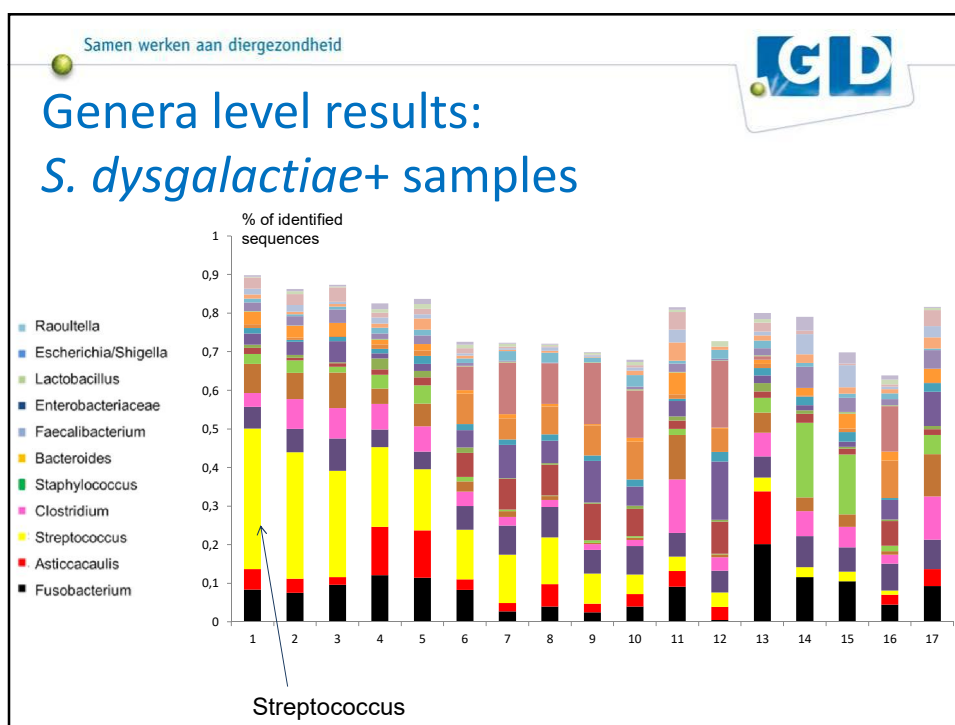
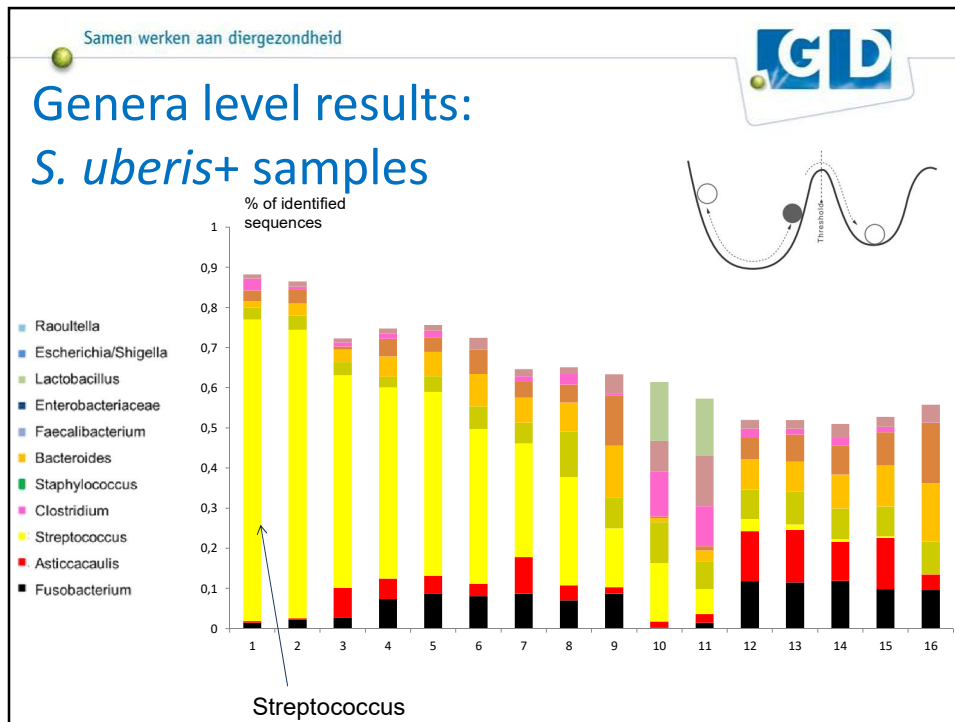


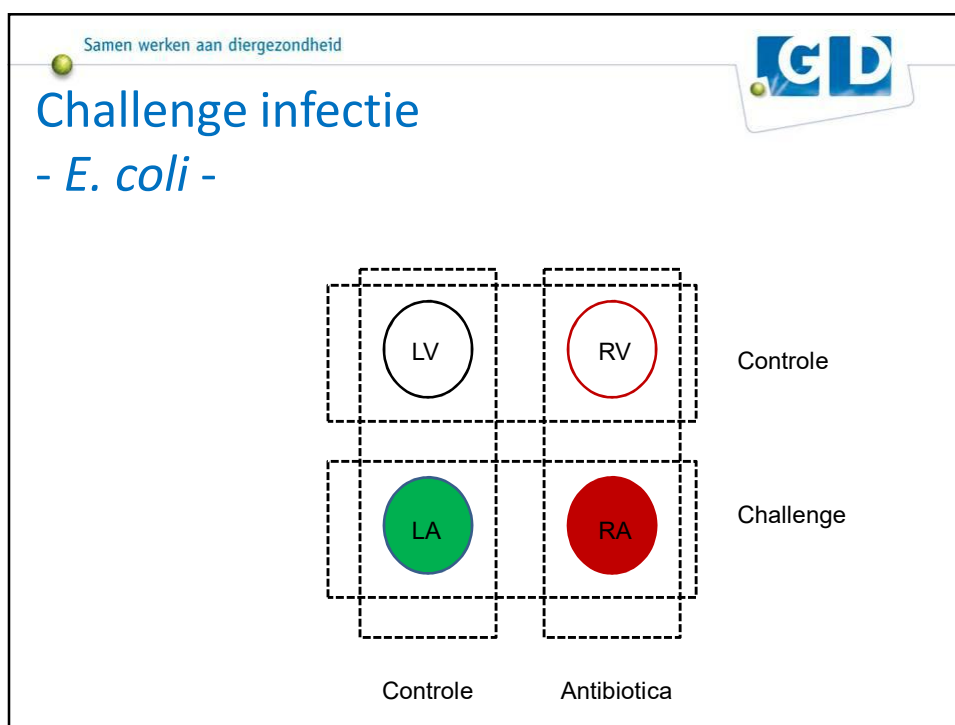
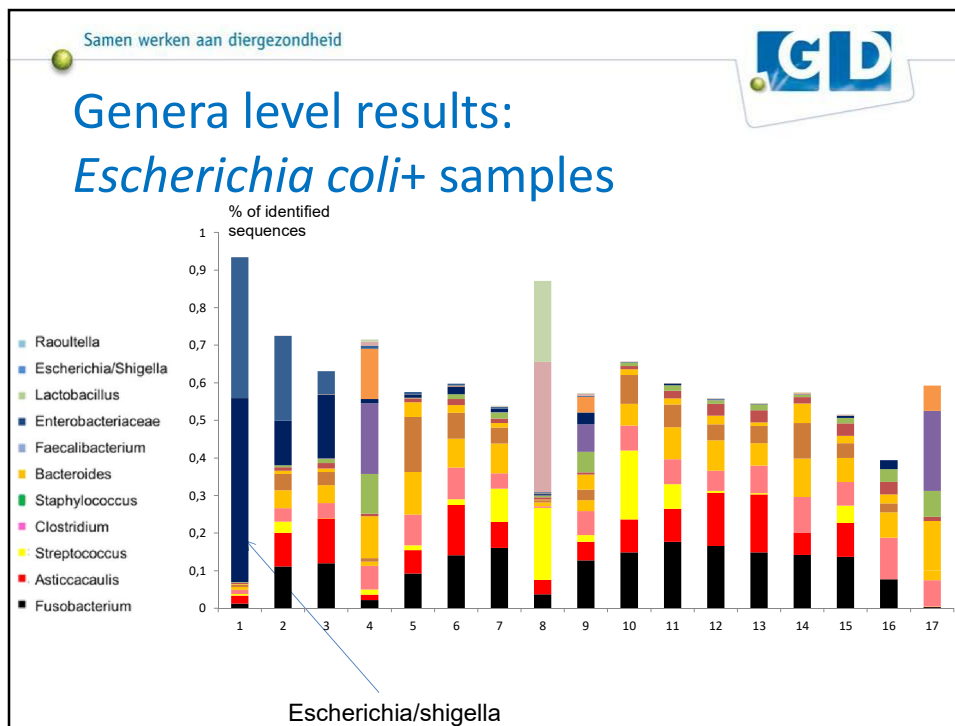


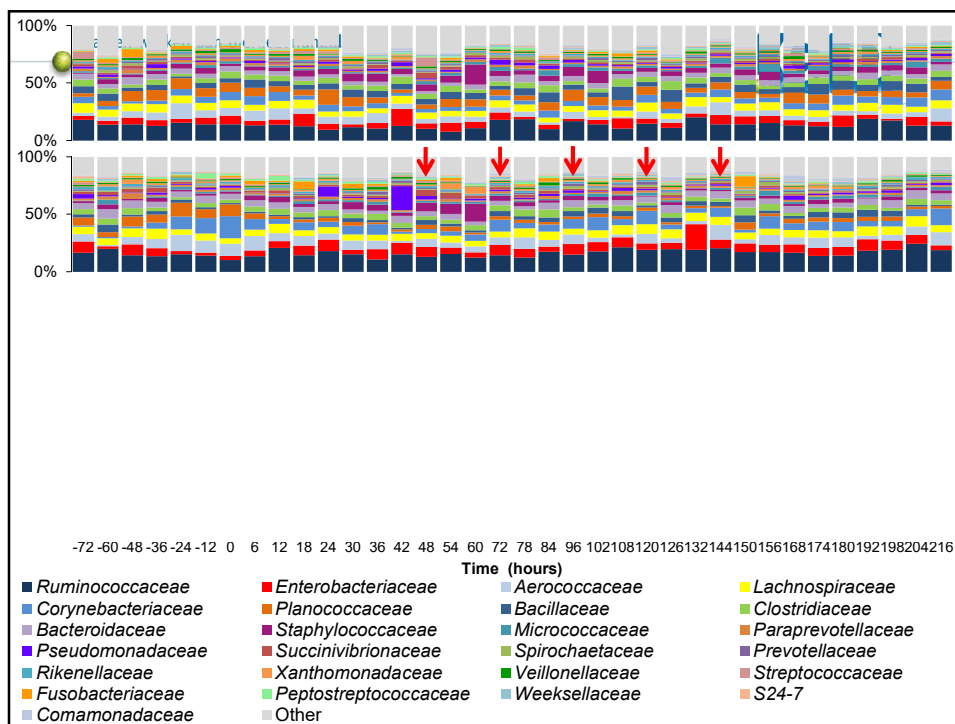
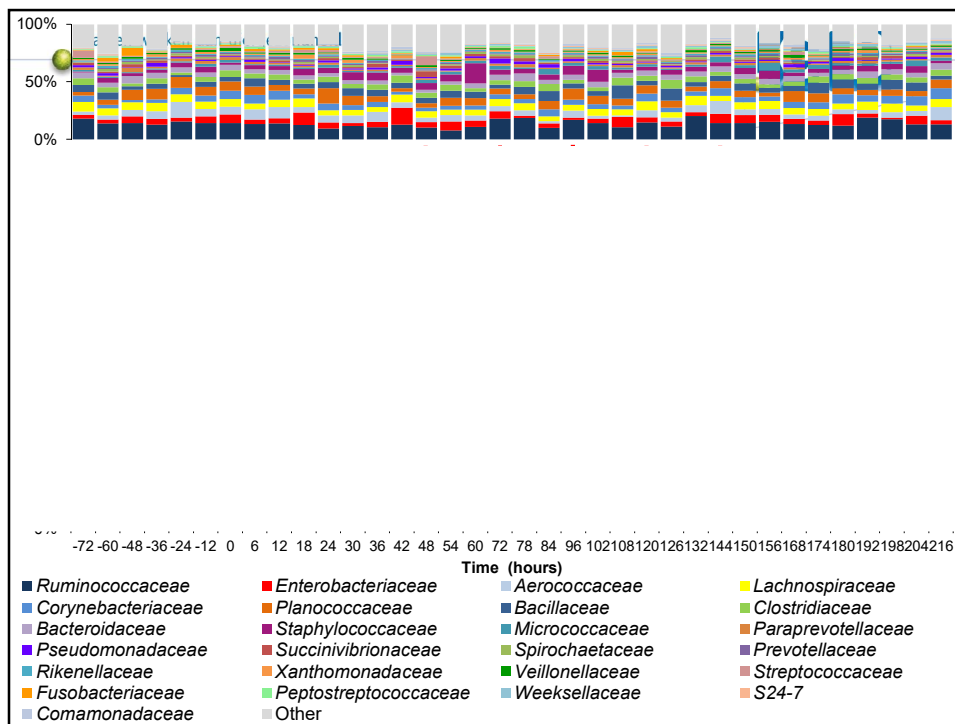
Samen werken aan diergezondheid

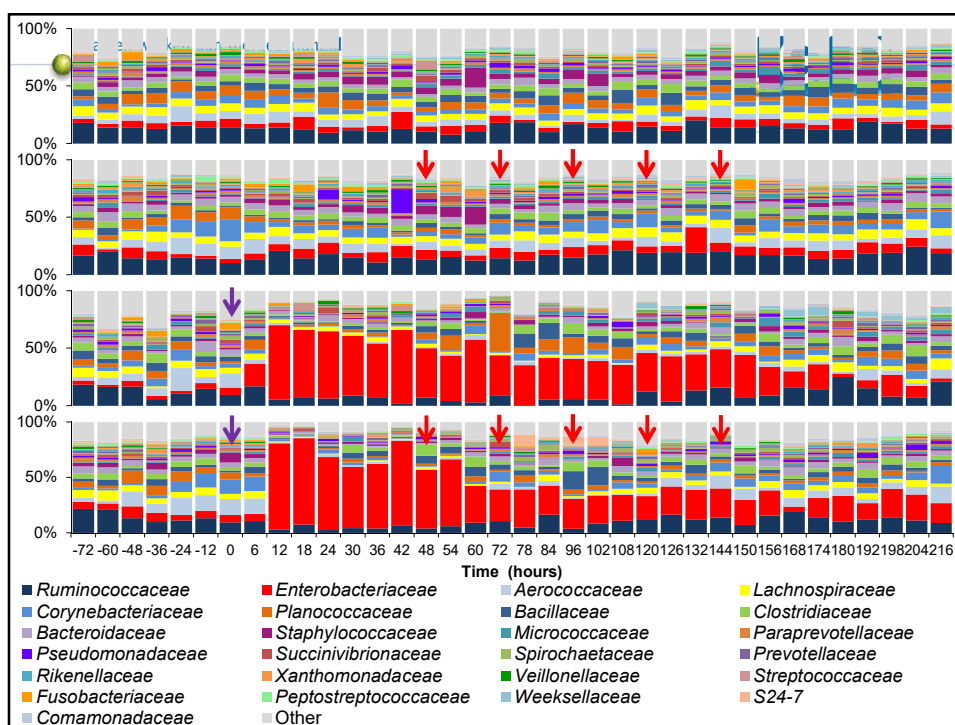
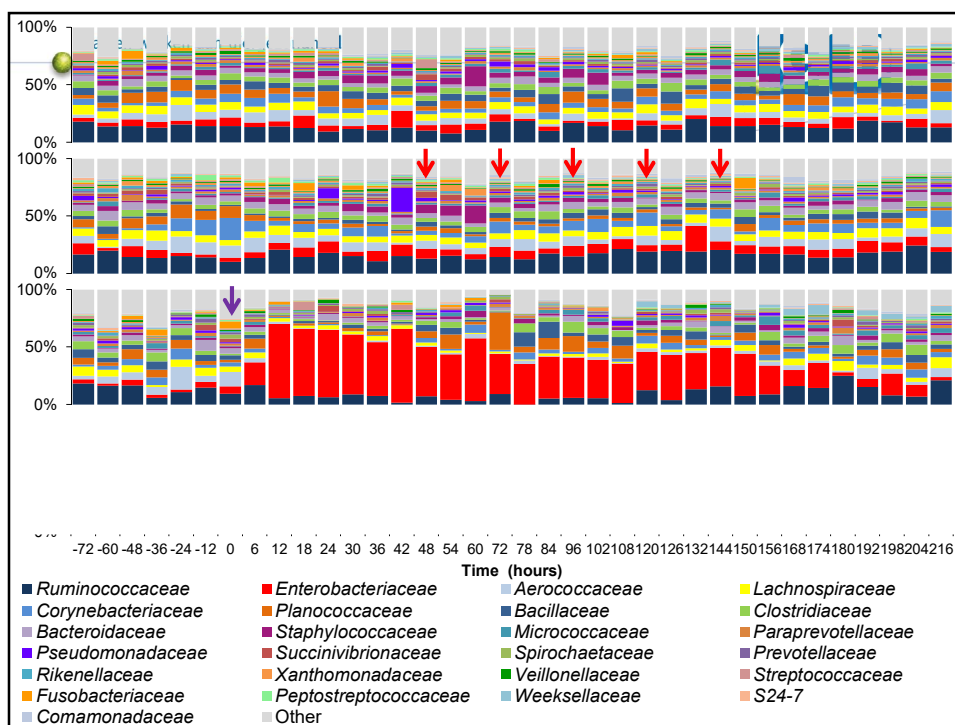
Dynamiek van Eco-systemen

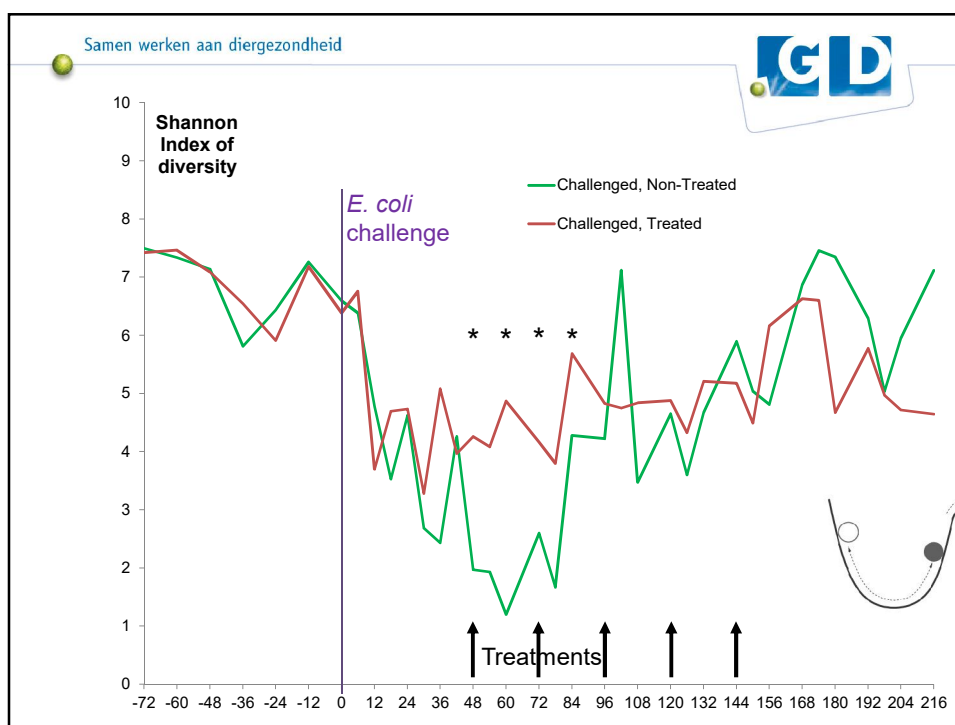
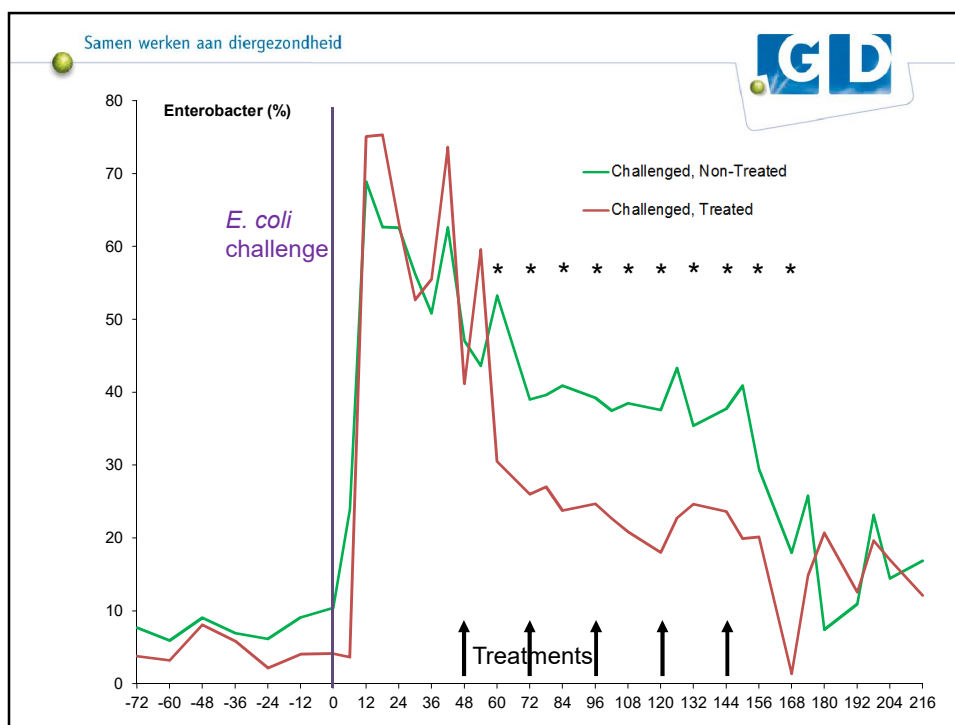
- **Superinfectie met pathogenen**
- Dieet
- Expositie op jonge leeftijd
- Antibiotica
- Gastheer
- Omgeving

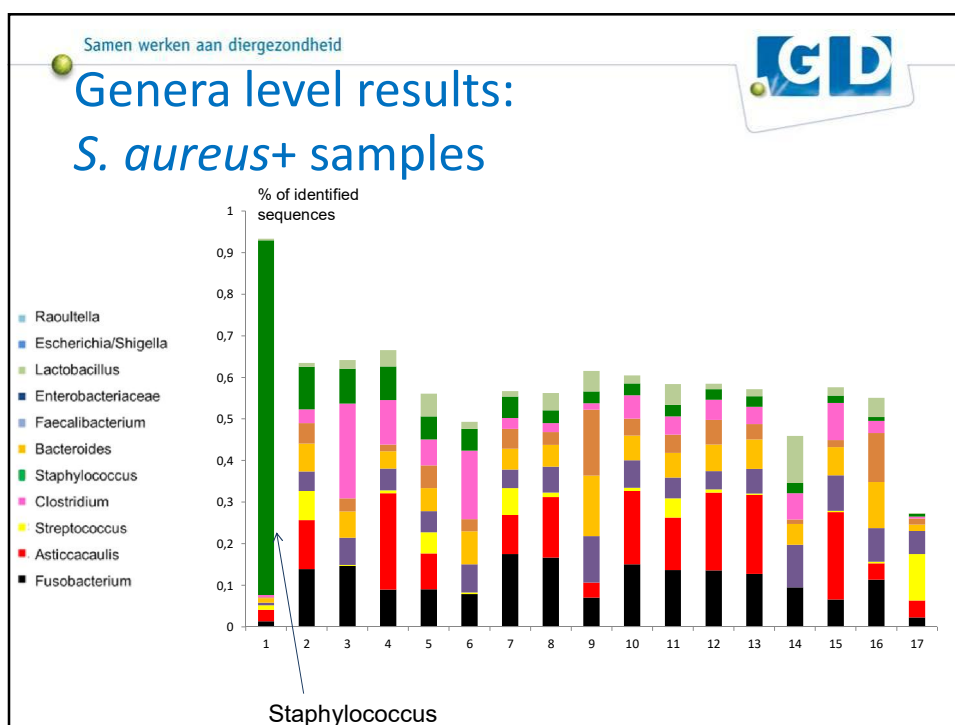
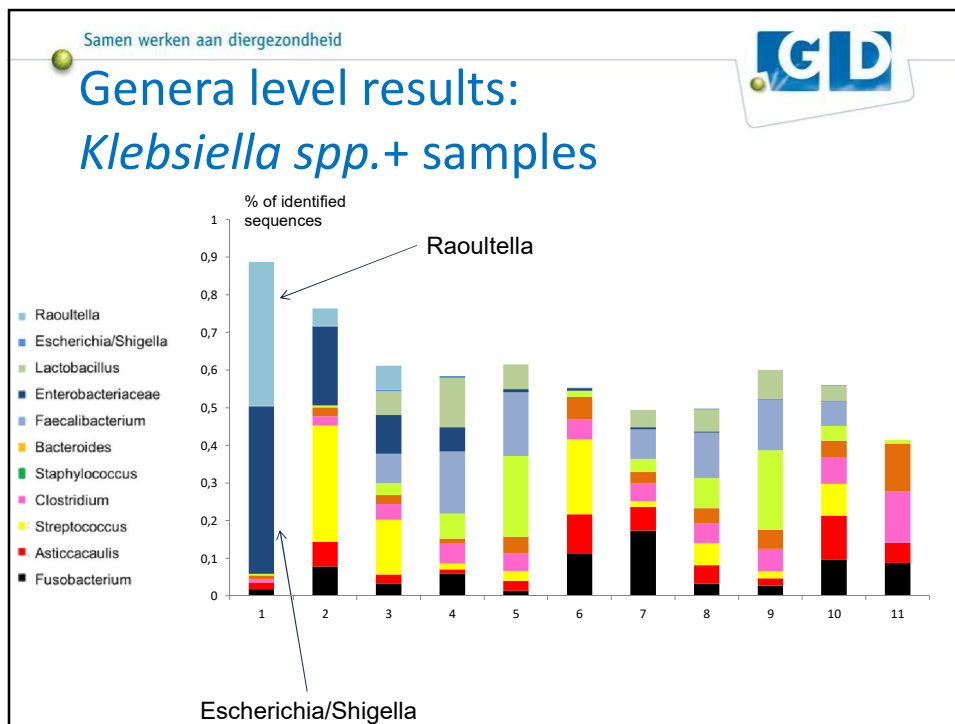


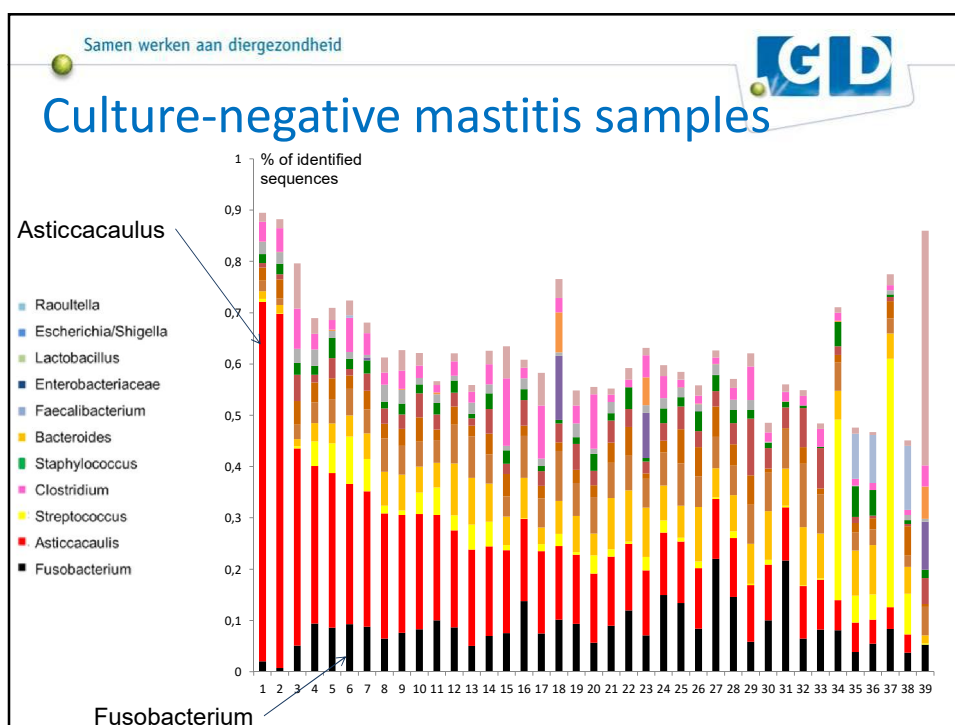
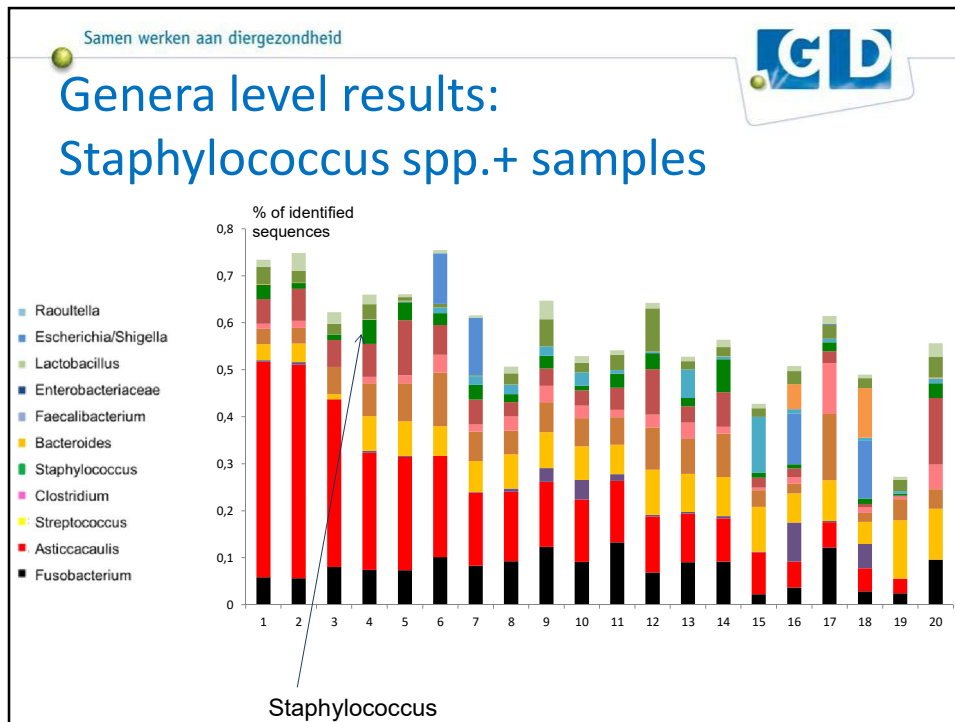


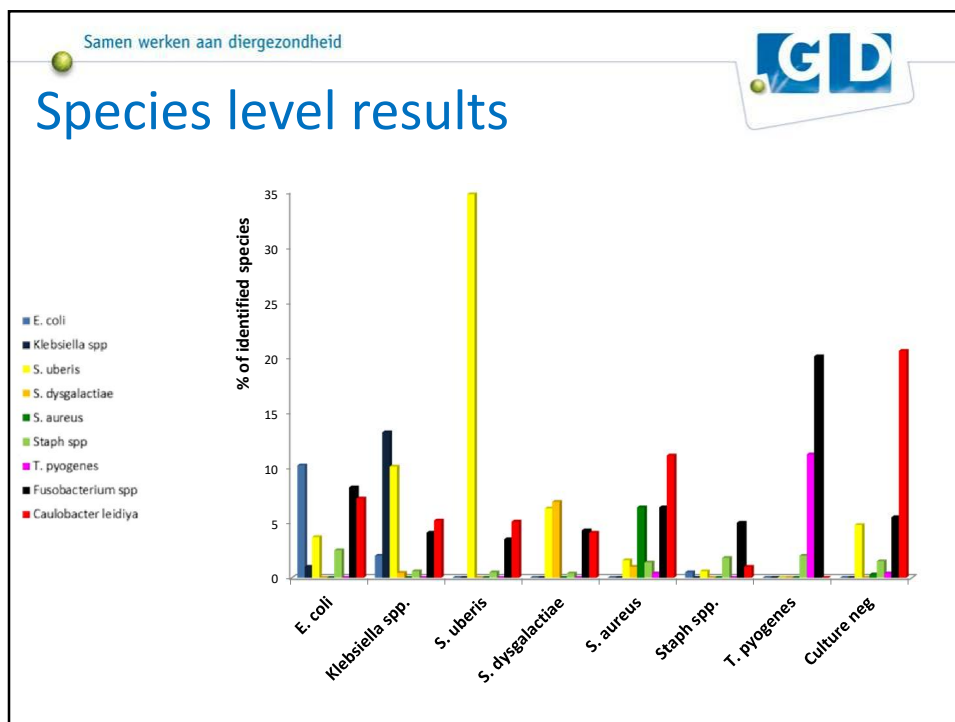
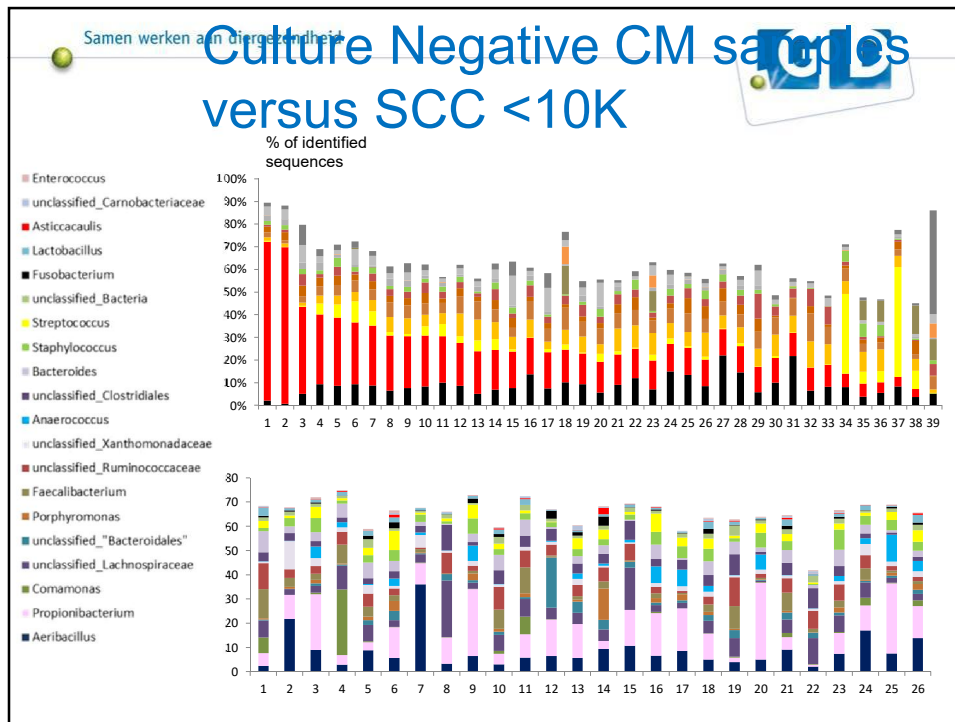


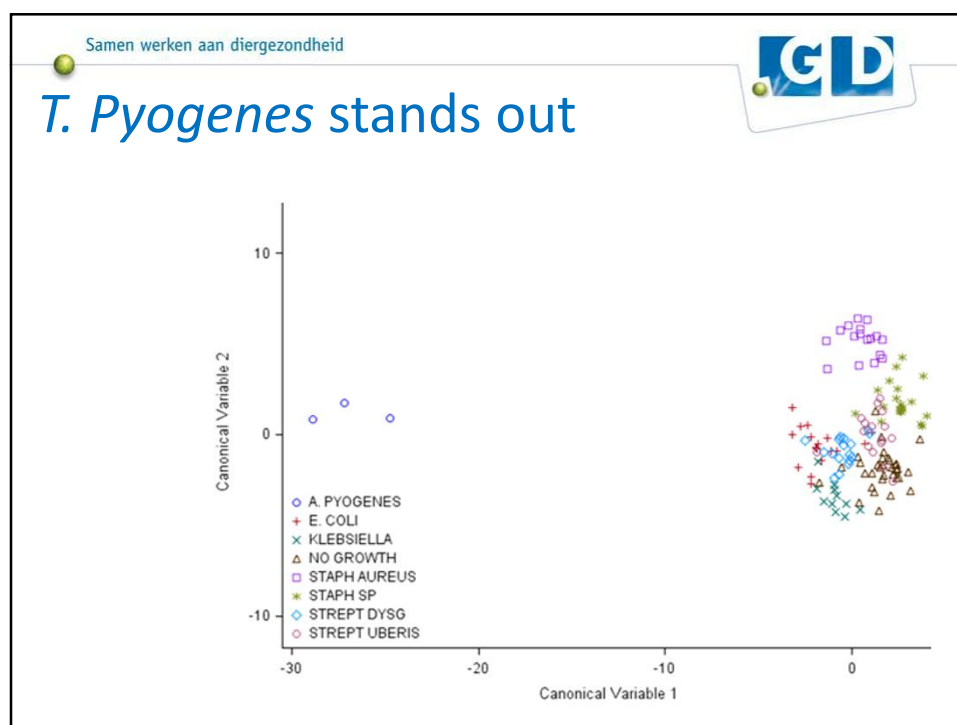
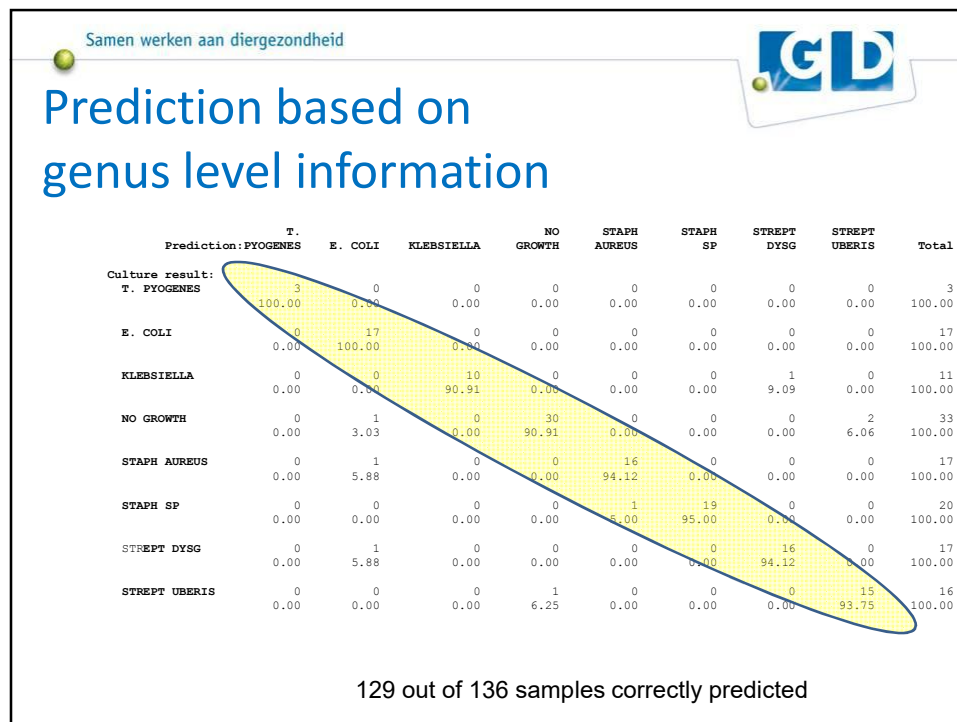


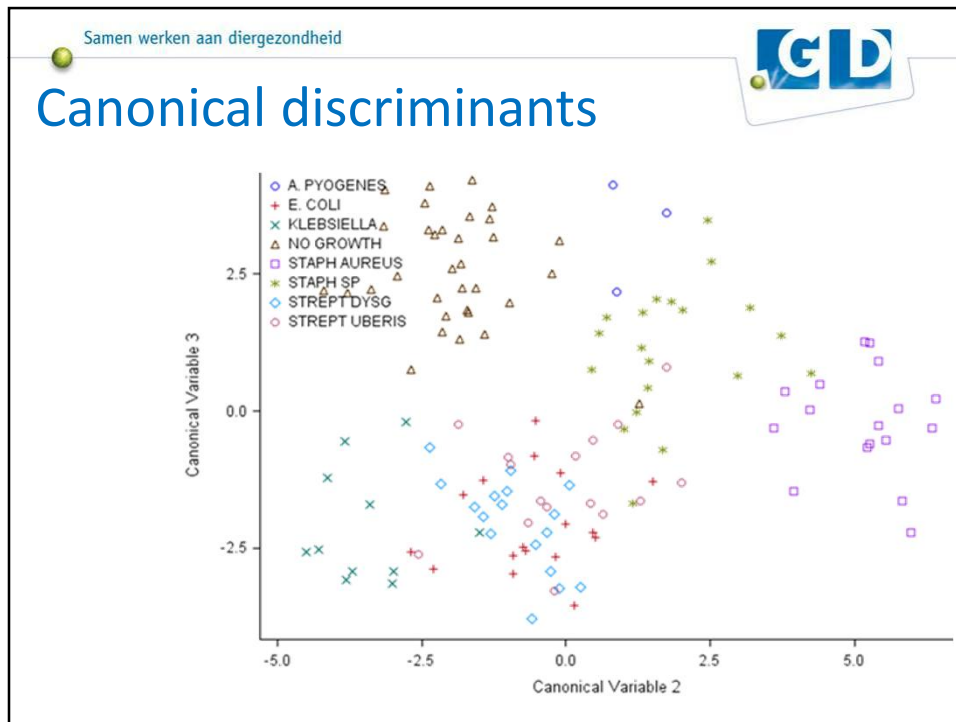










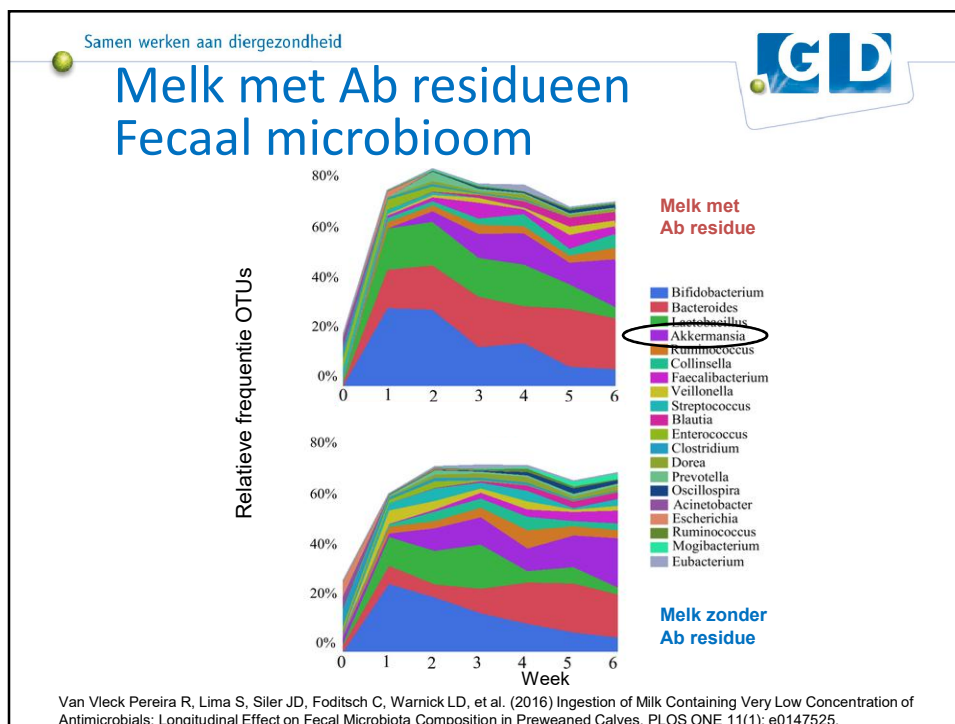
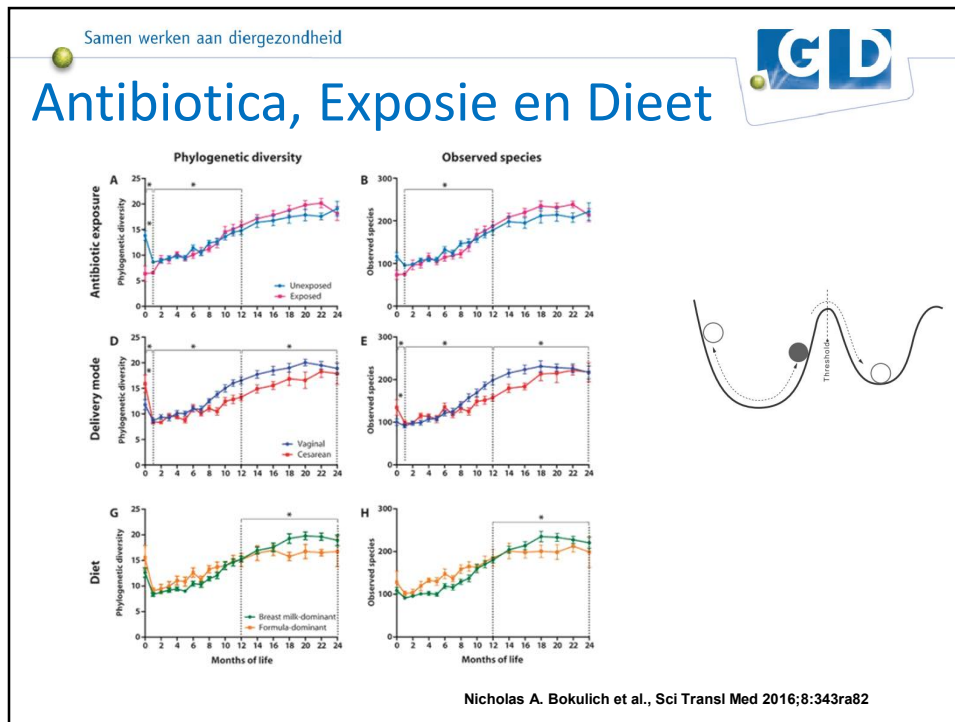


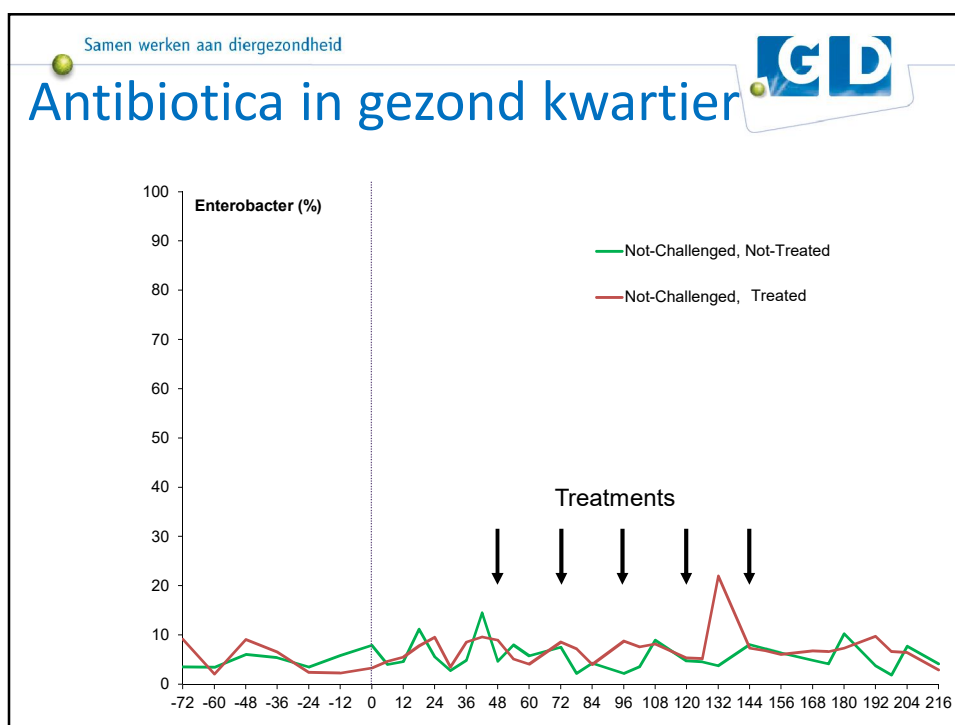
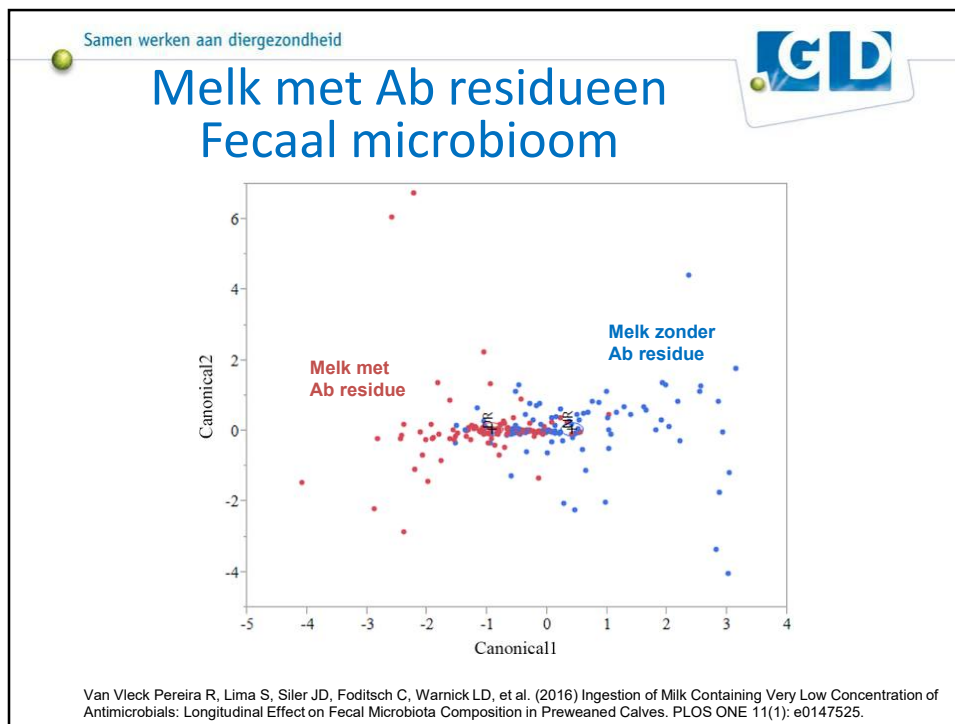
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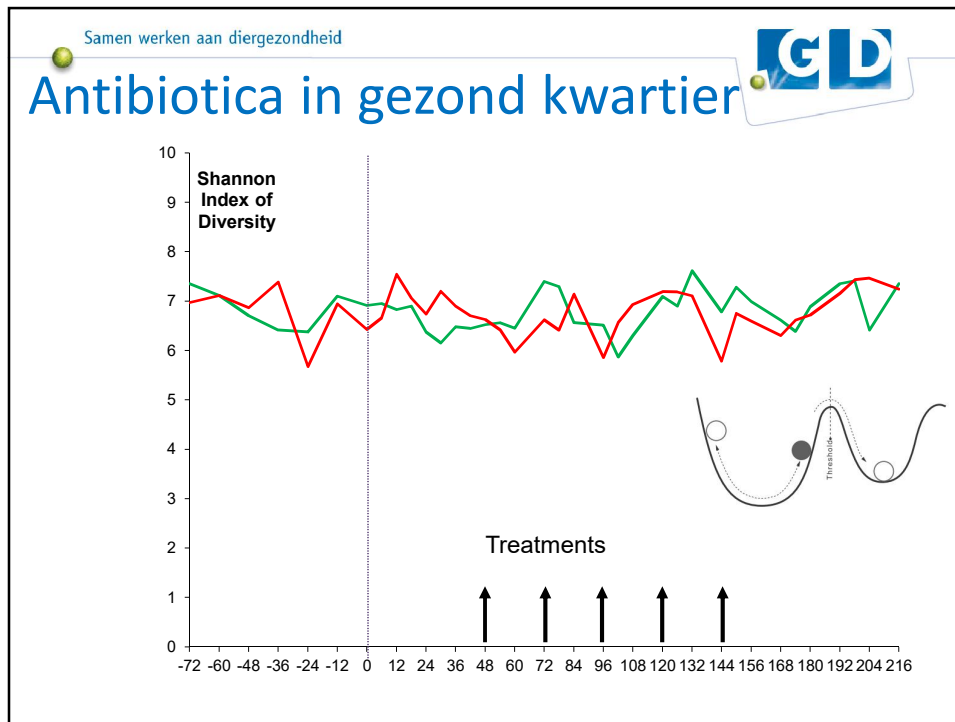
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Dynamiek van Eco-systemen

- Infectie met pathogenen
- **Dieet**
- **Exposie op jonge leeftijd**
- **Antibiotica**
- Gastheer
- Omgeving



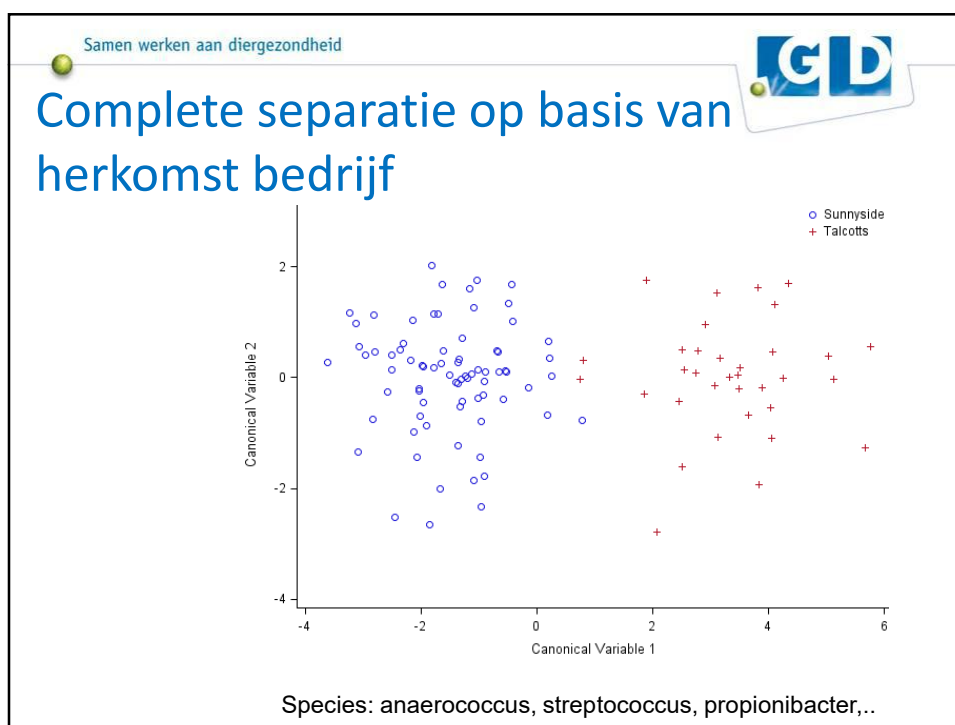
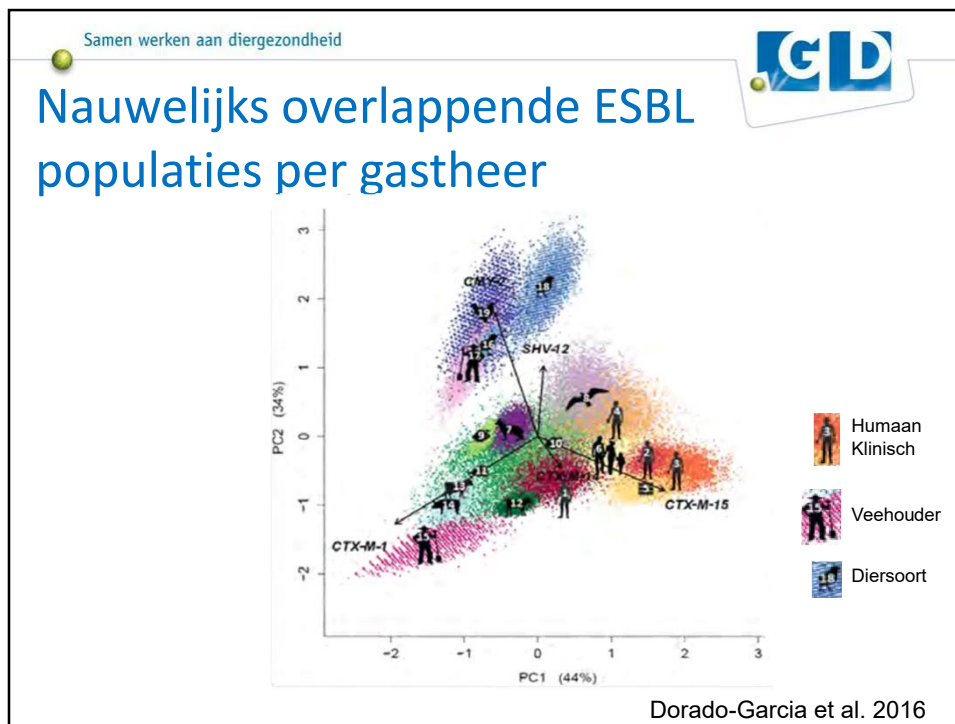


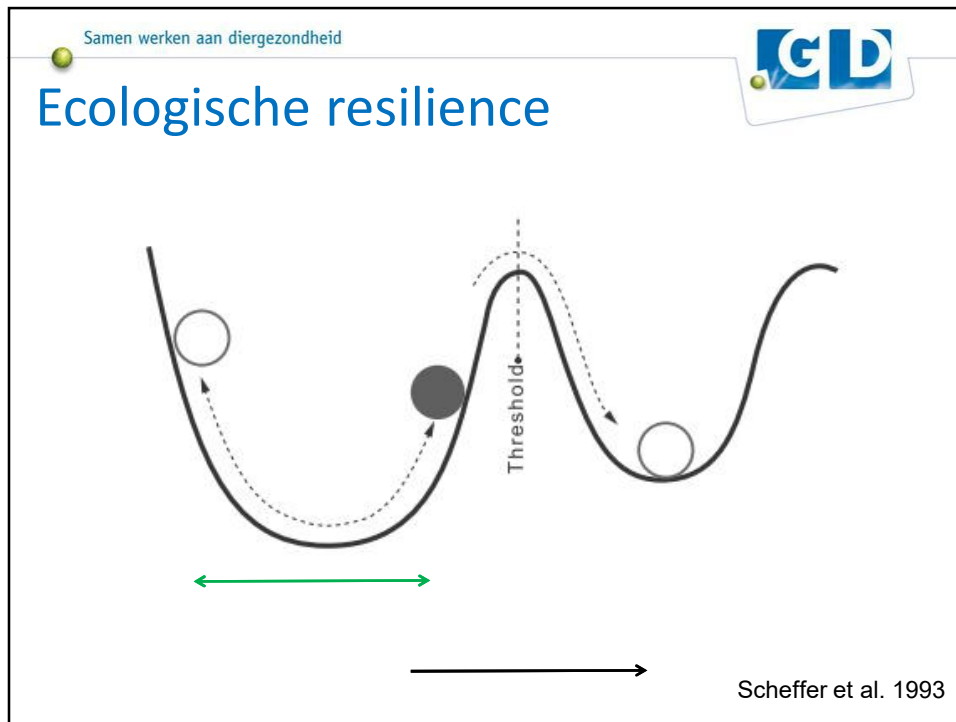


Samen werken aan diergezondheid

Dynamiek van Eco-systemen

- Infectie met pathogenen
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- Antibiotica
- **Gastheer**
- **Omgeving**





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Microbiële Eco-systemen

- *Management van microbioom versus bestrijden van pathogenen.*
- *Microbiële Eco-systemen spelen een belangrijke rol in uier, darm, ...*
- *Belangrijke beïnvloeding door:*
 - Voeding, omgeving, superinfecties, Ab, gastheer, ...
- *Belangrijke kiemen:*
 - *Paenibacillus, Akkermansia*
- *Veel mogelijkheden voor nieuwe benaderingen, focus op **Eco-systeem management***

