

Feed4Foodure

Voeding, darmgezondheid en immuniteit (VDI)

2 juli, 2013

Mari Smits



Consortium



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Omvang programma

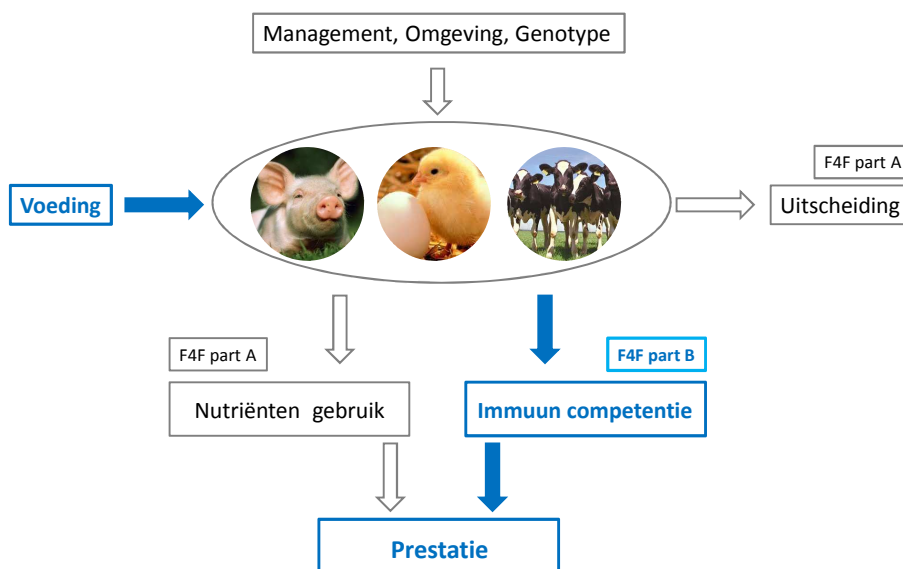


Looptijd: 4 jaar

Financiering 2013			
	bijdrage bedrijven in kind		257.5
	bijdrage bedrijven cash		530
	bijdrage EU		0
	bijdrage Regio		0
	bijdrage overheid DLO / TNO		410
	andere bijdragen overheid		0
	bijdrage NWO		0
Totaal Financiering			1197.5



Focus VDI

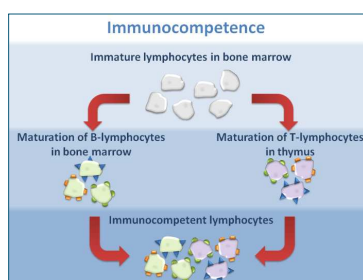


Immuun competentie

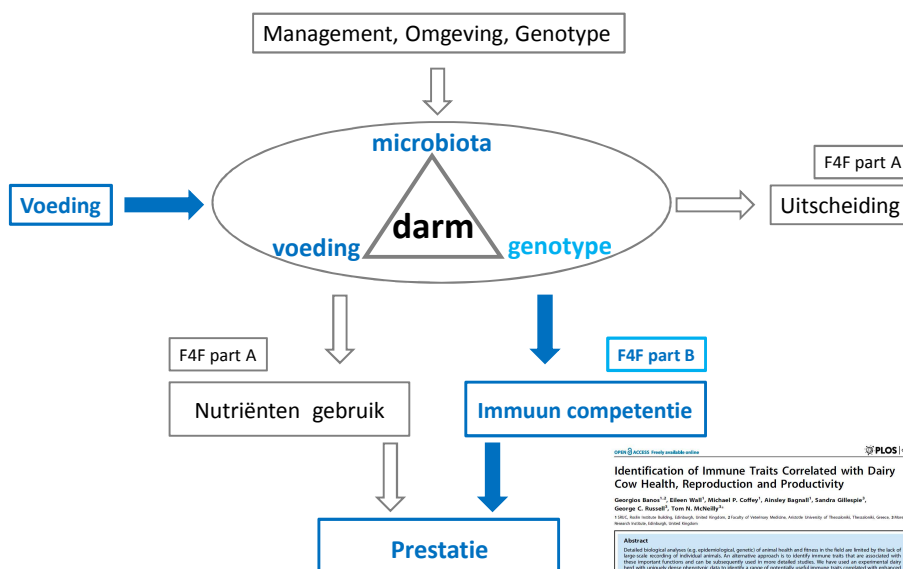


Het vermogen van het immuun systeem om adequaat te reageren op een antigene stimulus door het produceren van een doelmatige immuun respons met een goede balans tussen tolerantie en ontsteking

Er zijn verschillende gradaties van immuun competentie



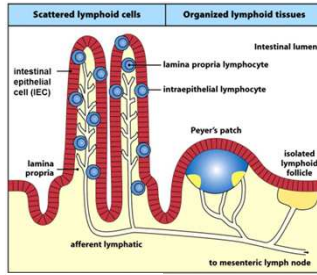
Interacties in de darm



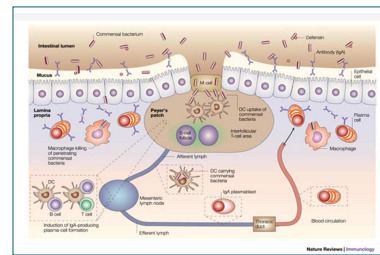
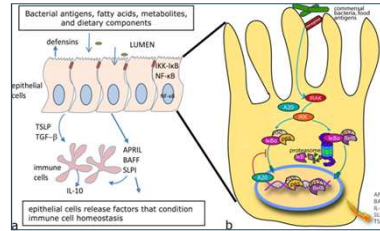
Immuun systeem van de darm



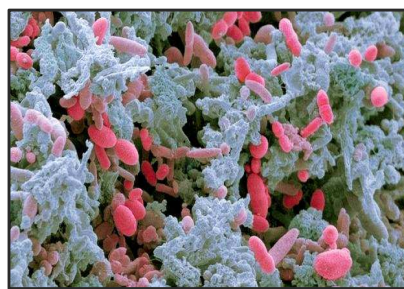
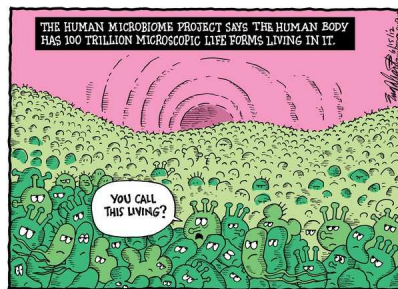
70% van de immuun cellen is geassocieerd met darm mucosa



- GALT**
- Peyer's patches
 - appendix
 - isolated lymphoid follicles
- = T-cell areas
■ = B-cell follicles



Microbiota in de darm



1-1½ kg bacteria
 $n=10^{14}$ (body: 10^{13} cells)
 800-1200 species

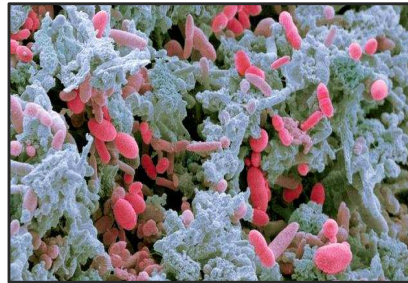
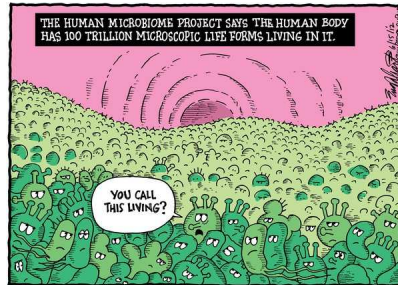
Onbekende functie
 Heilzaam
 Schadelijk

5%

100%



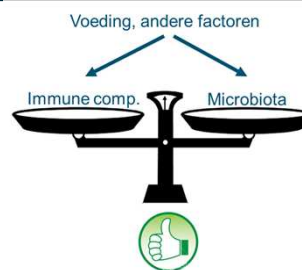
Functies microbiota



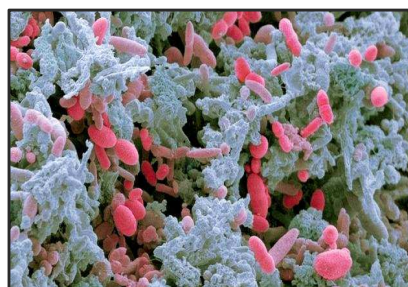
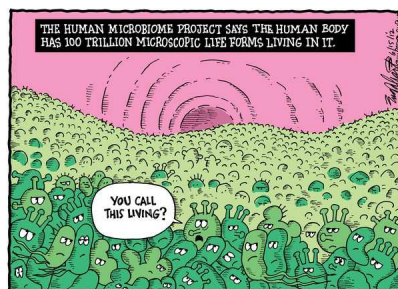
Ontwikkeling immuun systeem
Handhaven immuun competentie
Auto-immuun ziektes

Vertering, groei, obesitas

Welbevinden, depressie



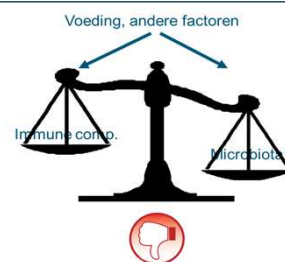
Functies microbiota



Ontwikkeling immuun systeem
Handhaven immuun competentie
Auto-immuun ziektes

Vertering, groei, obesitas

Welbevinden, depressie



Relatie voeding <-> immuun competentie: rol microbiota



nature REVIEWS IMMUNOLOGY

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- Archive
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- Online submission
- Guidelines for referees

Review

Nature Reviews Immunology 12, 696-708 (October 2012) | doi:10.1038/nri3299

Dietary influences on intestinal immunity

Marc Veldhoen¹ & Verena Brückelacher-Waldert¹ [About the authors](#)

The function of the gastrointestinal tract relies on a monolayer of epithelial cells, which are essential for the uptake of nutrients. The fragile lining requires protection against insults by a diverse array of antigens. This is accomplished by the mucosa-associated lymphoid tissues of the gastrointestinal tract, which constitute a highly organized immune organ. In this Review, we discuss several recent findings that provide a compelling link between dietary compounds and the organization and maintenance of immune tissues and lymphocytes in the intestine. We highlight some of the molecular players involved, in particular ligand-activated nuclear receptors in lymphoid cells.

Proc Nutr Soc, 2013 May 21-11. [Epub ahead of print]
Feeding the immune system.

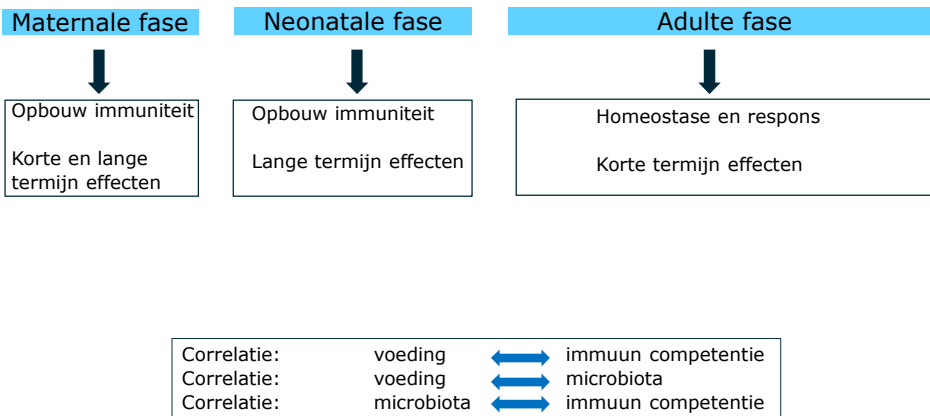
Editor FC

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Abstract

A well-functioning immune system is key to providing good defence against pathogenic organisms and to providing tolerance to non-threatening organisms, to food components and to self. The immune system works by providing an exclusion barrier, by identifying and eliminating pathogens and by identifying and tolerating non-threatening sources of antigens, and by maintaining a memory of immunological encounters. The immune system is complex involving many different cell types distributed throughout the body and many different chemical mediators some of which are involved directly in defence while others have a regulatory role. Babies are born with an immature immune system that fully develops in the first few years of life. Immune competence can decline with ageing. The sub-optimal immune competence that occurs early and late in life increases susceptibility to infection. Undernutrition decreases immune defences, making an individual more susceptible to infection. However, the immune response to an infection can itself impair nutritional status and alter body composition. Practically all forms of immunity are affected by protein-energy malnutrition, but non-specific defences and cell-mediated immunity are most severely affected. Micronutrient deficiencies impair immune function. Here, vitamins A, D and E, and Zn, Fe and Se are discussed. The gut-associated lymphoid tissue is especially important in health and well-being because of its close proximity to a large and diverse population of organisms in the gastrointestinal tract and its exposure to food constituents. Certain probiotic bacteria which modify the gut microbiota enhance immune function in laboratory animals and may do so in human subjects.

VDI onderzoek focust op 3 levensfasen



Nieuwe projecten



Titel deelproject	Nummer
Voeding, Darmgezondheid, Immuniteit	VDI
Inventarisatie van interventies	VDI-1
Maternale effecten op darmgezondheid en immuniteit van de nakomelingen	VDI-2
Neonatale modellen	VDI-3
<i>In vitro</i> modellen	VDI-4
<i>Ex vivo</i> en <i>in vivo</i> modellen	VDI-5
Ontwikkeling toetsingsmodel	VDI-6
Mathematisch model	VDI-7
Indicatoren voor diergezondheid	VDI-8

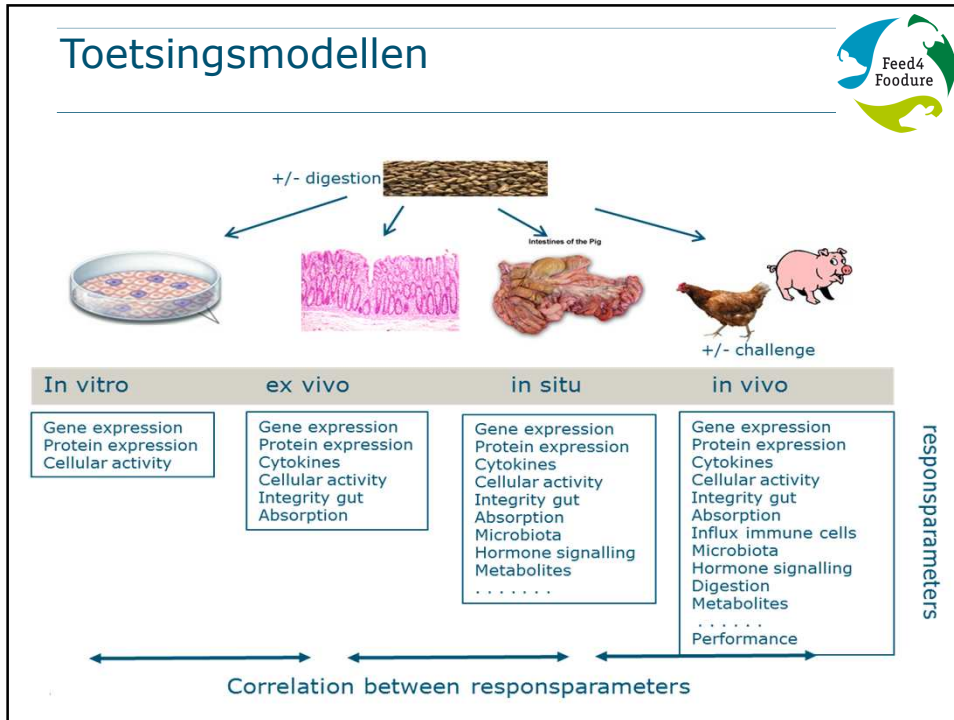
Wat levert het op?



Precompetitieve kennis:

- Parameters die immuun competentie meetbaar maken
- Interventies die de immuun competentie beïnvloeden
- Kennis over maternale effecten op immuun competentie
- Toetsingsmodellen met voorspellende waarde voor interventies op immuun competentie
- Eerste generatie wiskundig model t.b.v. computer simulaties van het immuunsysteem in de darm
- Indicatoren voor (darm)gezondheid.





Dank voor uw aandacht



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