

Allergie als Volkskrankheit

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Chronic inflammatory disease

TH1 (or TH17)

- Multiple sclerosis
- Type 1 diabetes

TH1, TH17 or mixed

- Ulcerative colitis
- Crohn's disease

TH1 (?)

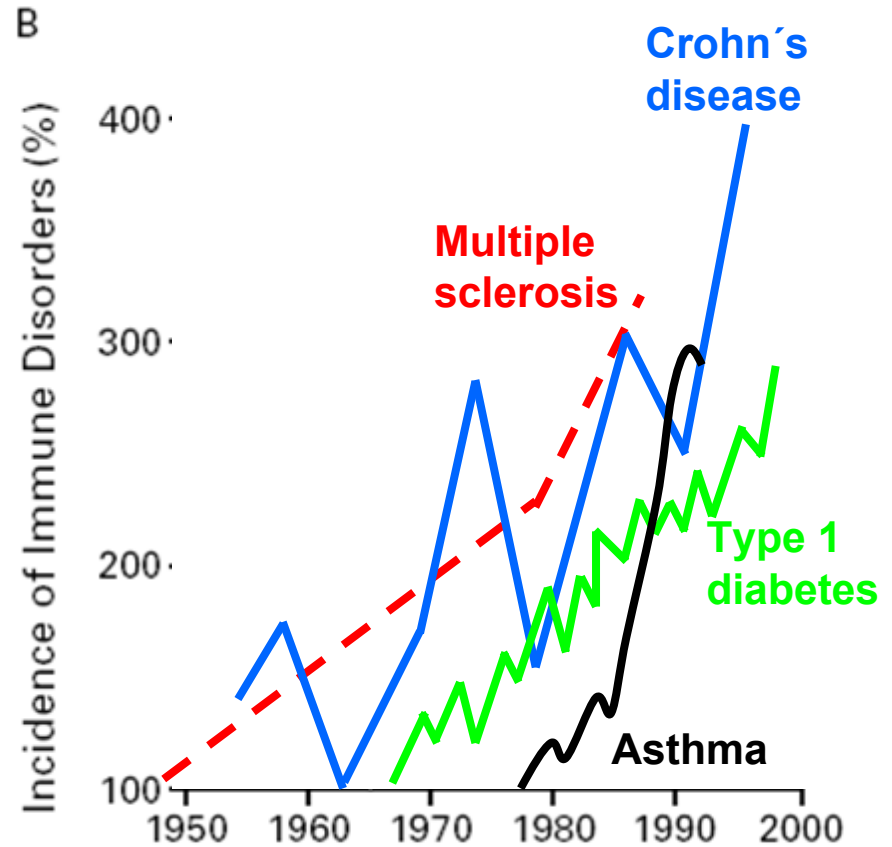
- Artherosclerosis

TH2

- asthma, eczema, hay fever, food allergies

Persistent inflammation (?)

- Alzheimer's
- Parkinson's disease



Allergien und Asthma: Zahlen und Fakten

- **12-16 Mio Bundesbürger betroffen**
- **jedes 3. Baby mit Allergie-Risiko**
- **18 % aller Kinder und Jugendlichen unter 18 LJ an Allergien erkrankt**
- **Heuschnupfen verursacht 1 Mio Fehltage jährlich**
- **in der EU verursachen Allergien ca. 25 Mrd € an direkten und indirekten Kosten**

**Allergien sind vielfältig: 30 – 50 % (24 – 41 Millionen Menschen)
der Bevölkerung sind von mindestens einer Allergie betroffen.**

Atemwegsallergien: 30 % (24 Millionen Menschen)

Nahrungsmittelallergien: 5 – 7 % (5 Millionen Menschen)

Kontaktallergien: 7 % (5,7 Millionen Menschen)

Insektengiftallergien: 2 – 3 % (etwa 2 Millionen Menschen)

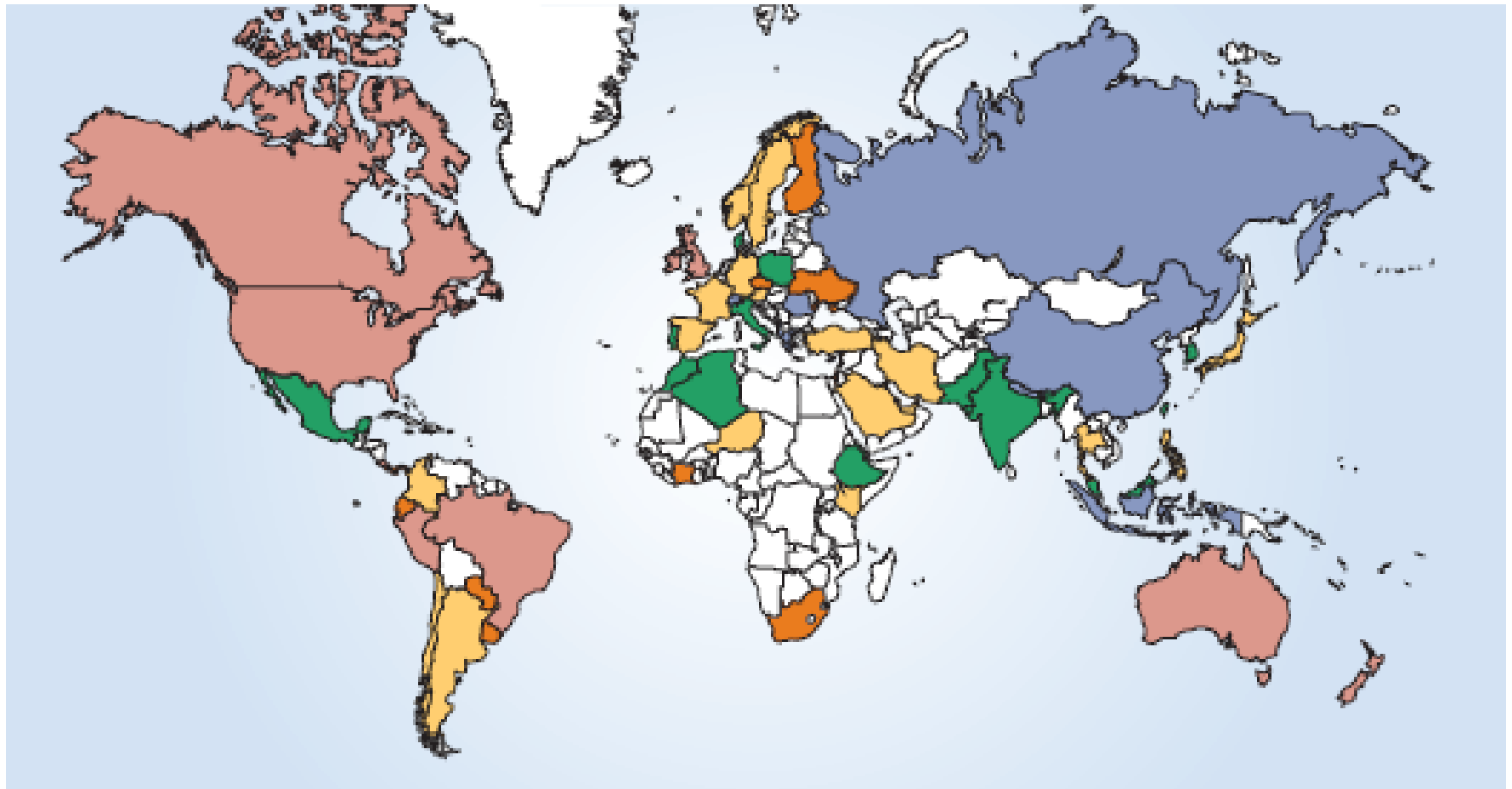
Arzneimittelallergien: 10 % (etwa 8 Millionen Menschen)

Neurodermitis: Ca. 3 %

Heuschnupfen: Ca. 12 %

Quelle: ga2len_Global Allergy and Asthma European Network

Asthma: Weltweites Problem



≥10.1% 7.6–10.0% 5.1–7.5% 2.5–5.0% 0–2.5% No standardized data available

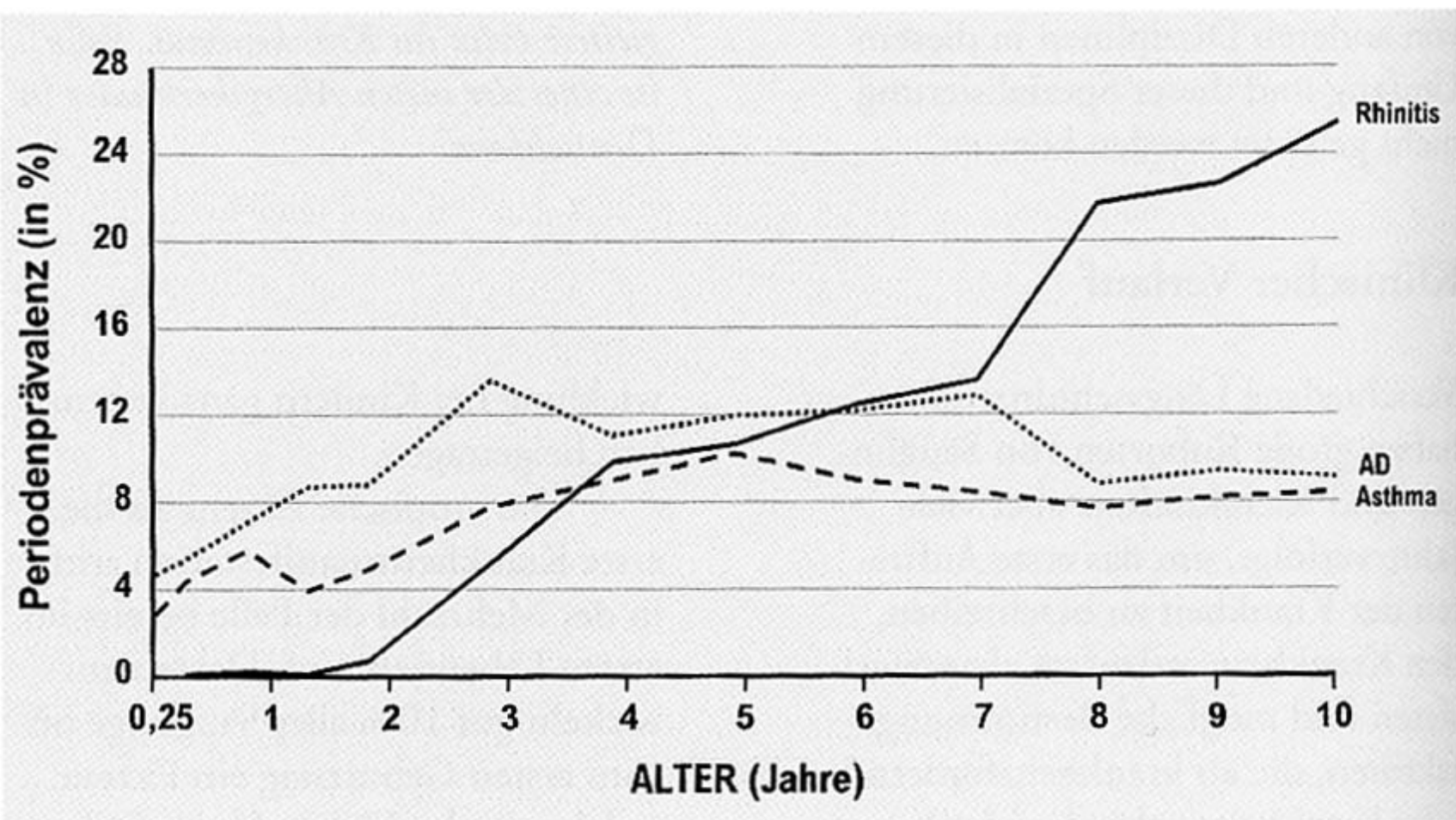
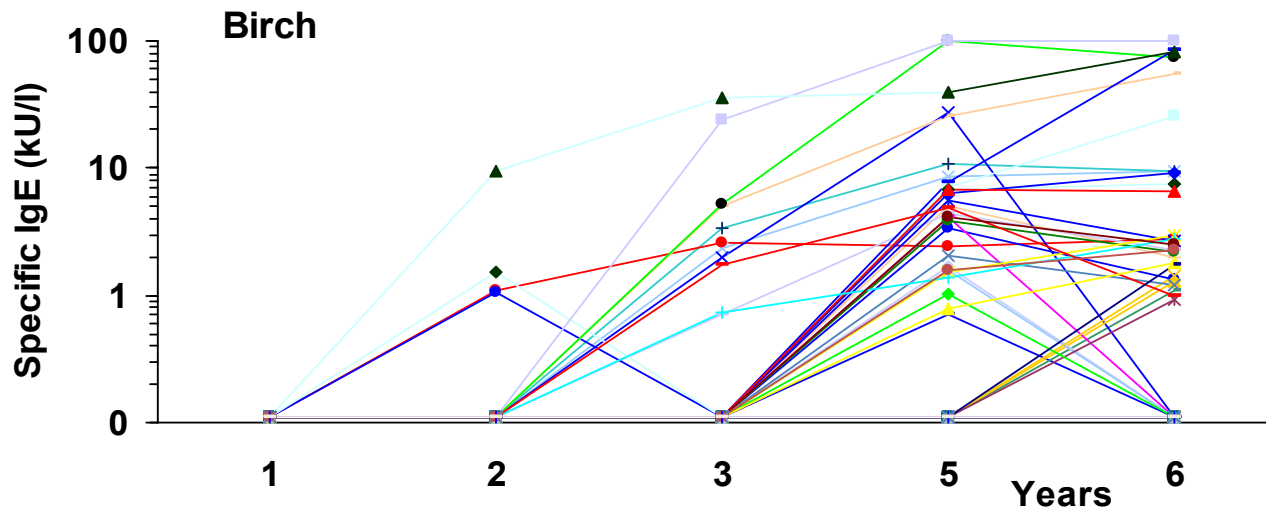
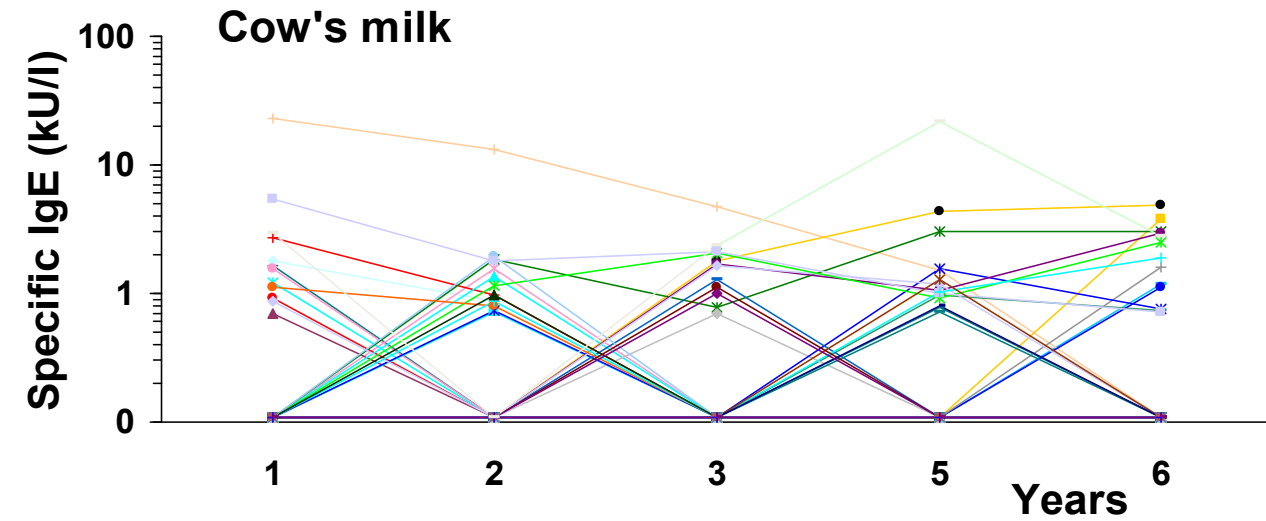


Abb. 1: Periodenprävalenz von atopischem Ekzem (atopischer Dermatitis, AD), Asthma bronchiale und saisonaler allergischer Rhinitis, wie sie aus einer Geburtskohorte der deutschen multizentrischen Allergiestudie vom 1.–10. Lebensjahr registriert wurde.

Natürlicher Verlauf der Sensibilisierung bei Kleinkindern



Tab. 2: Häufigkeiten von Nahrungsmittelallergien (% der Betroffenen).

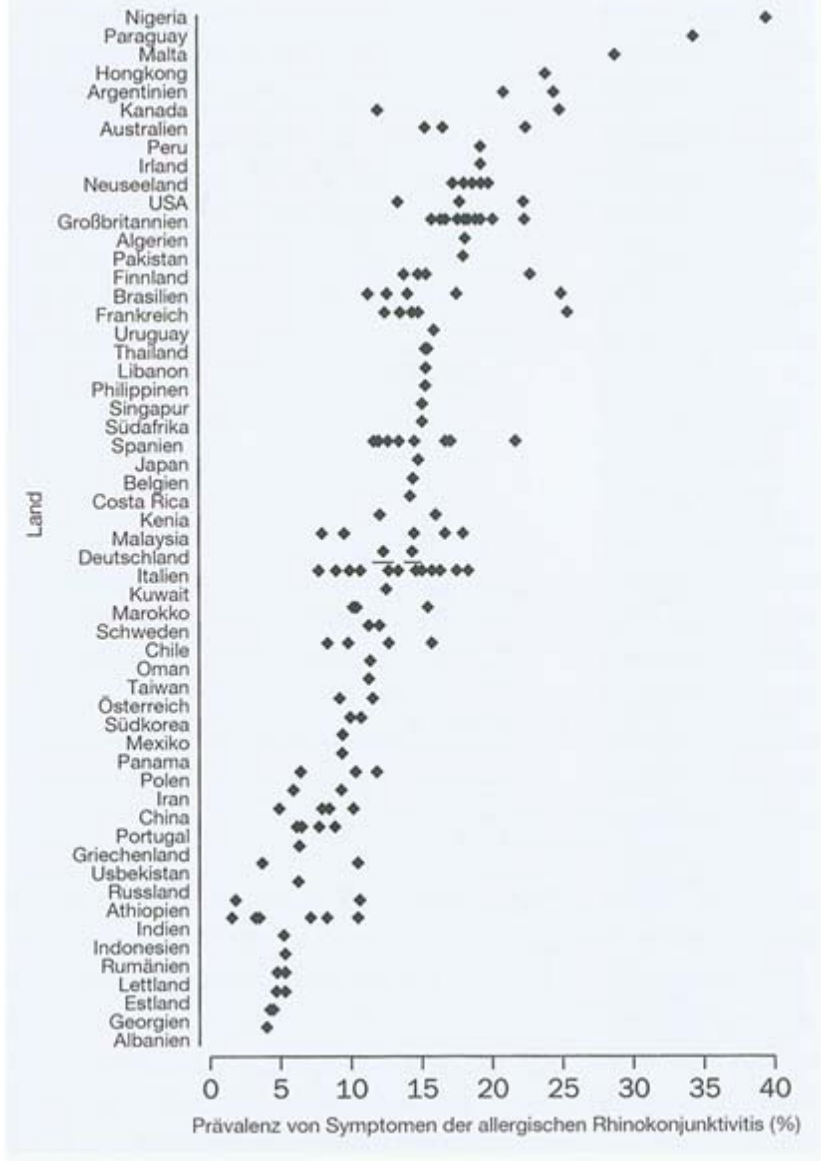
Nahrungsmittel	Erwachsene	Kinder
Früchte	35 (5-75)	8
Nüsse (einschl. Erdnuss ¹)	23 (9-32)	5
Gewürze	18 (2-30,3)	?
Fische, Meeresfrüchte	10 (5,6-15)	5
Getreidemehle	7 (3-39)	4
Kuhmilch	7 (0-16)	70
Hühnerei	4 (0-7)	40

¹ Erdnuss = keine Nuss, sondern Leguminose, also verwandt mit Sojabohne, Erbse.

Registrierte Todesfälle in UK

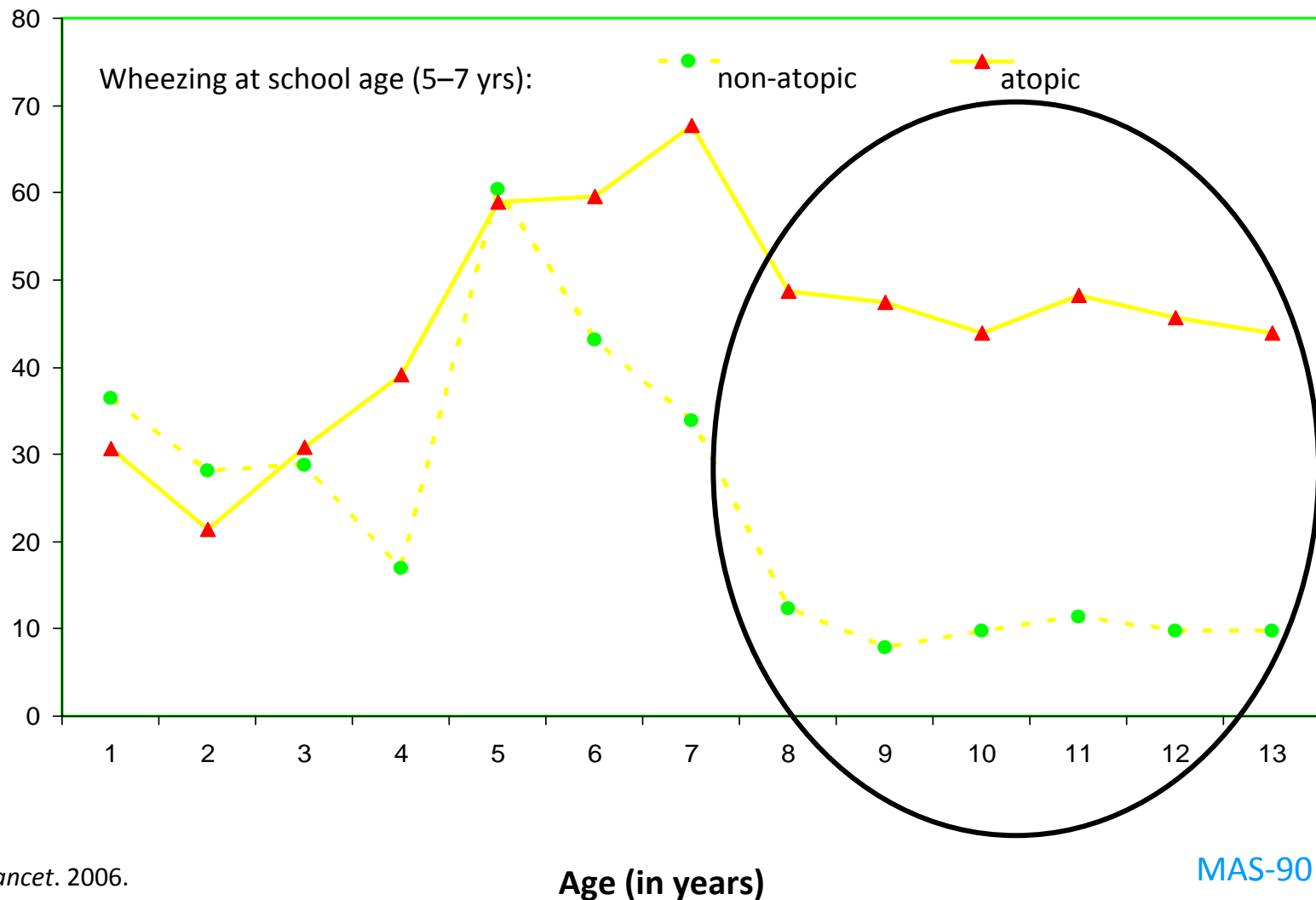
	Cause	Location	Mode
55 iatrogenic	anaesthetic 22 antibiotic 16 other 17	theatre 31 ward/X-ray/A & E 16 home 8	shock 19 respiratory 5 + 5 + 3 combined 23
37 food	peanut 10 walnut 5 nuts 10 chickpea 1 seafood 3 milk 2 banana 1 nectarine 1 uncertain 4	restaurant/bar 13 take-away 6 party food 2 school 2 canteen 3 home 6 other 5	shock 0 respiratory 4 + 14 + 14* combined 5 **
32 venom	bee 4 wasp 18 unidentified 10	house 9 garden 11 fruit picking 2 bee-keeping 1 out and about 9	shock 15 respiratory 6 + 3 + 4 combined 4

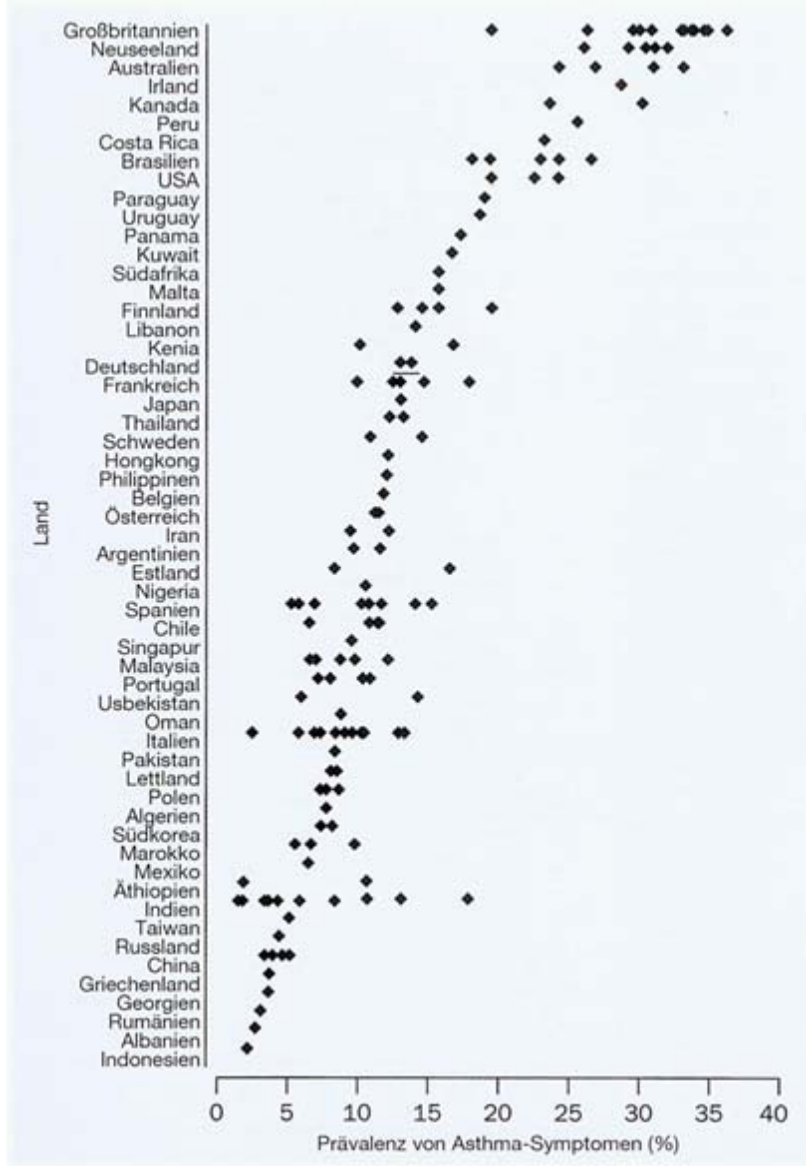
* upper + lower + undefined difficulty of breathing or both upper and lower airways obstruction.
**combination of shock and respiratory difficulty.



Prävalenz von Rhinokonjunktivitis-Symptomen bei 13-14 jährigen Kindern

Prevalence of current wheeze from birth to age 13 years in children with any wheezing episode at schoolage (5 – 7 yrs), stratified for atopy at schoolage





Prävalenz von Asthmasymptomen
bei 13-14 jährigen Kindern

Fakten zu Asthma in Deutschland

2700 Menschen sterben jedes Jahr an den Folgen von Asthma.

Gesundheitsberichterstattung des Bundes 1996:
Durch Asthma gehen jährlich 73500 Lebensjahre verloren
durch Krankheit und Tod.

AOK 2006:

2.7 Millionen Arbeitsunfähigkeitstage durch Asthma

240 Millionen Euro kostete die Arbeitsunfähigkeit im Jahre 2006

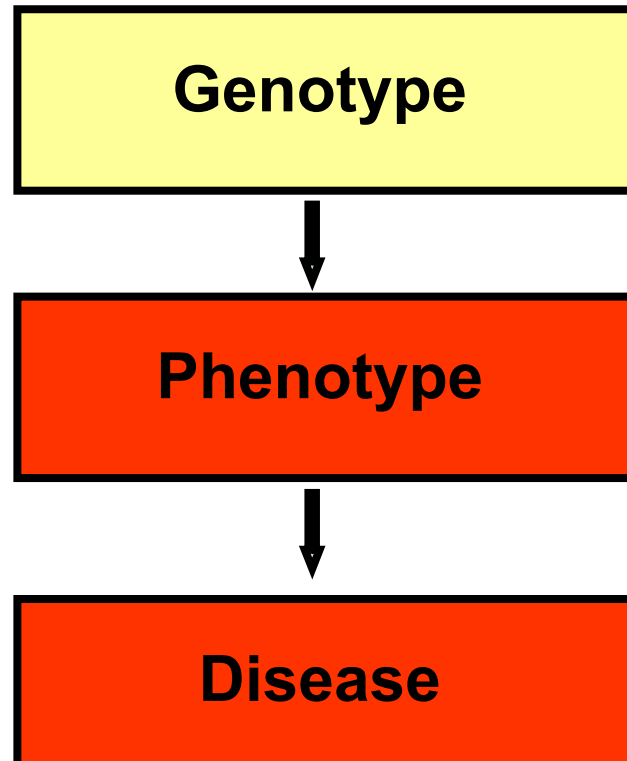
Zu sehen vor dem Hintergrund der Bemühungen des IQWiG bzgl.
inhalativer Kombinationsprodukte!

Gene-environment interaction in chronic inflammatory disease

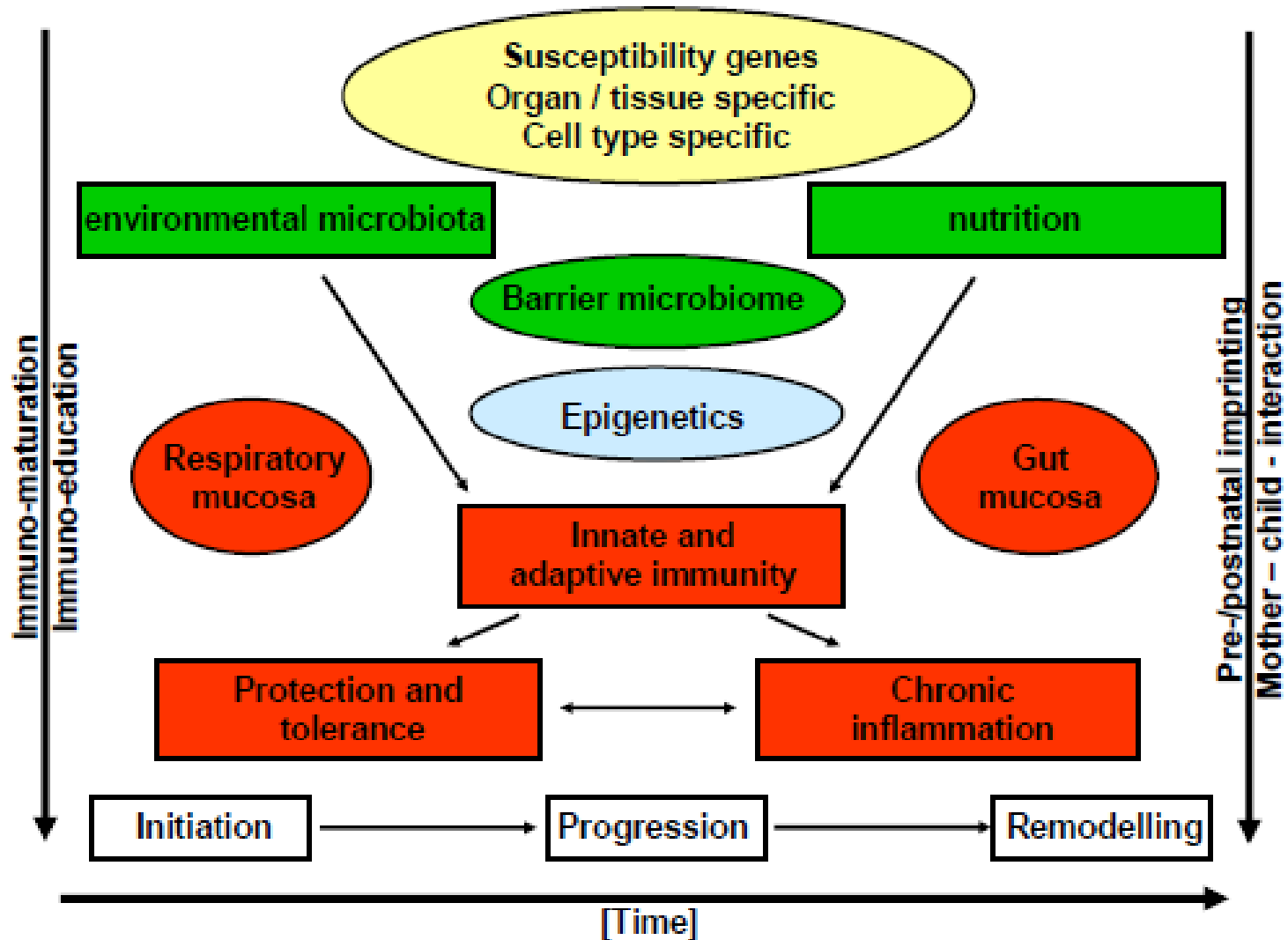


*Renz H, Autenrieth IB, Brandtzeag P, Cookson WO, Holgate S, von Mutius E, Valenta R, Haller D.
JACI 2011;128(6):25-49.*

Traditional concept of disease development



Gene-environment interactions determine development of chronic inflammatory disease



Zunahme von Allergien und Asthma

> Umwelt-Hypothese <

Umweltfaktoren als pro-allergische Adjuvantien

- Diesel-Russ-Partikel
- SO₂
- Ozon
- Rauchen

Globalisierung und Klimawandel in der Allergologie

Klimawandel: längerer Pollenflug

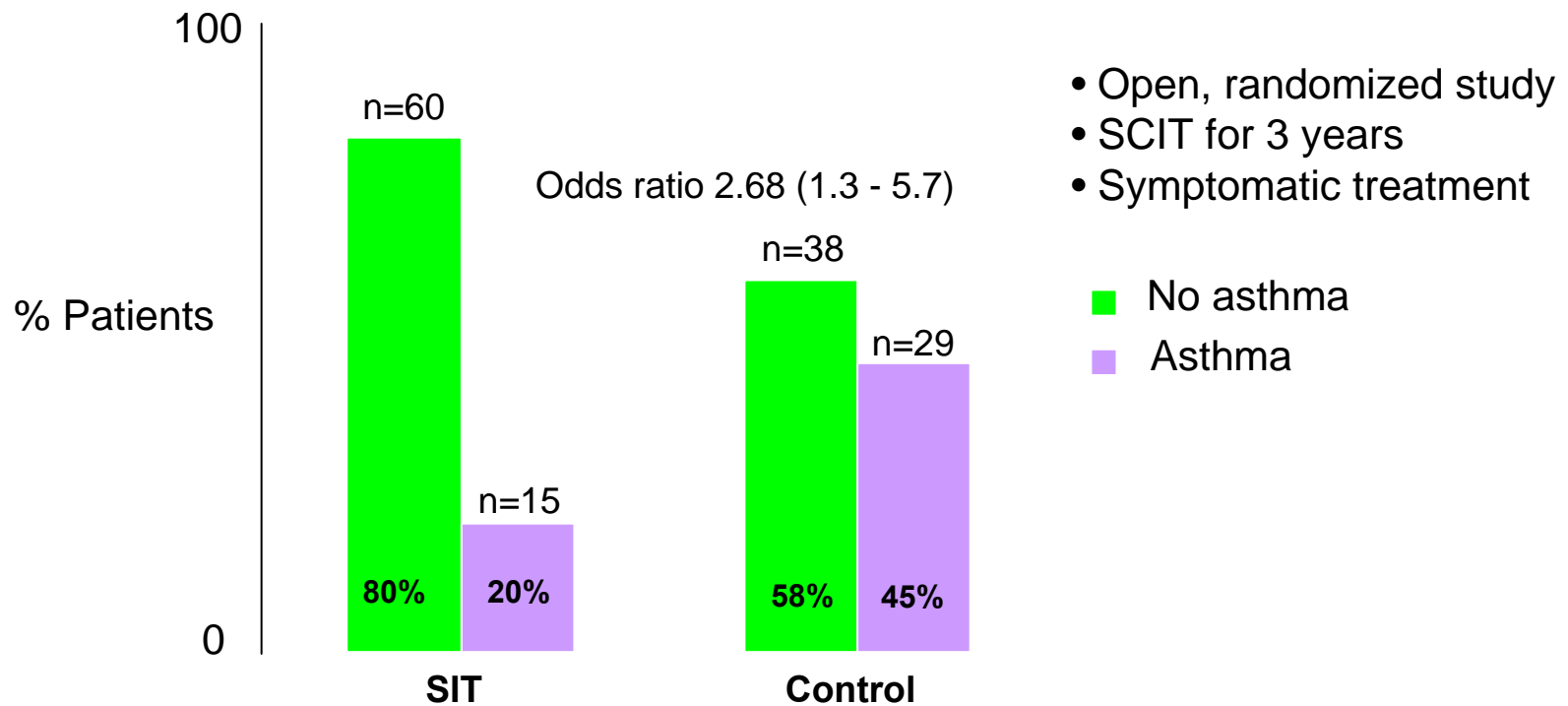
**Globalisierung: Traubenkraut
(Ragweed, Ambrosia)**

Aktueller Pollenflugkalender



SCIT Reduces Risk of Developing Asthma

Children (6-14 years) with moderate/severe Allergic Rhinitis
5-year follow-up (n=142)



* Significant improvement in hay fever symptoms and CPT

* No difference in BR to methacholine

Microbe – host interaction and immuno-programming

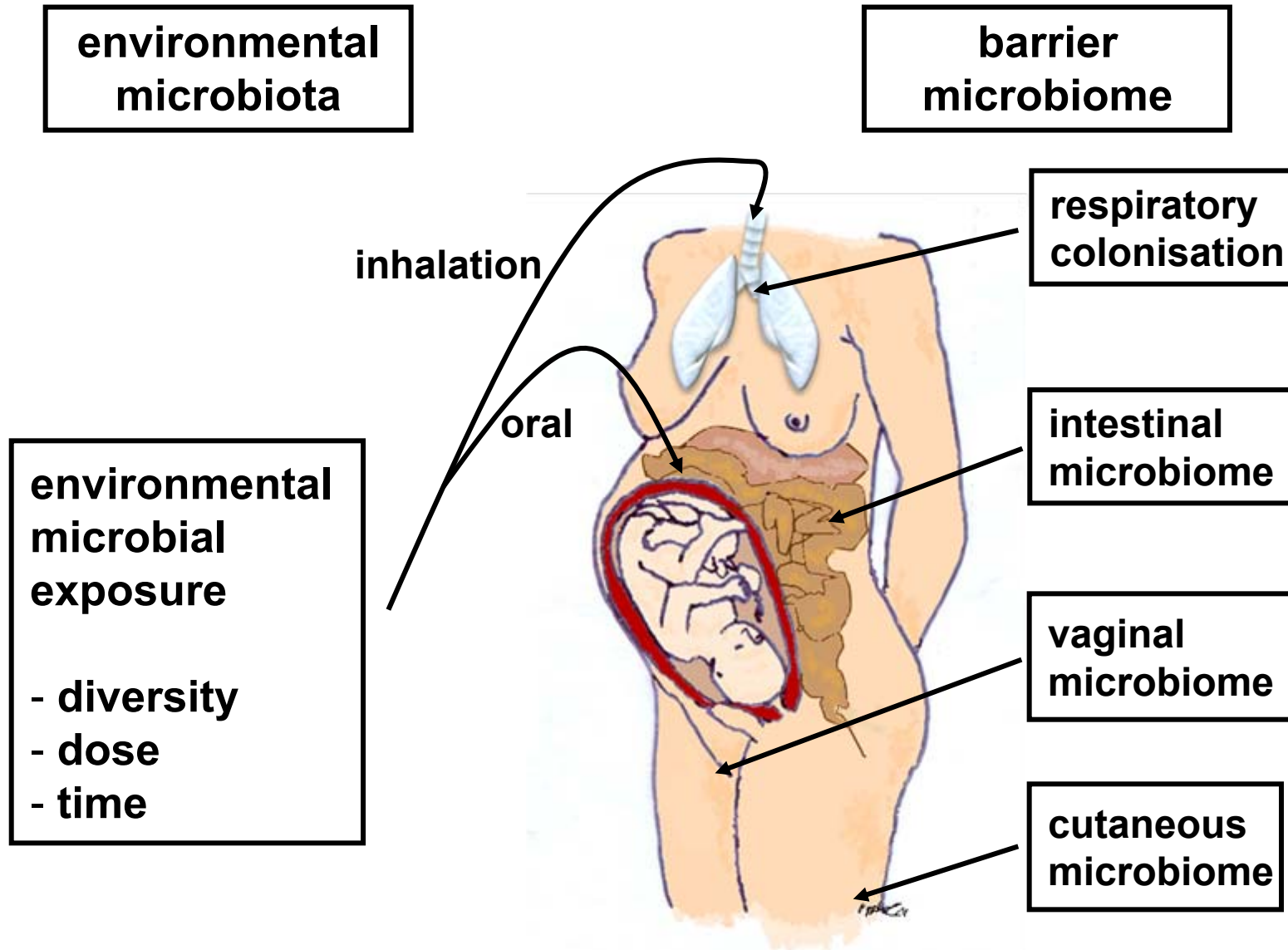


Figure 3

Traditional farming and early immuno-education

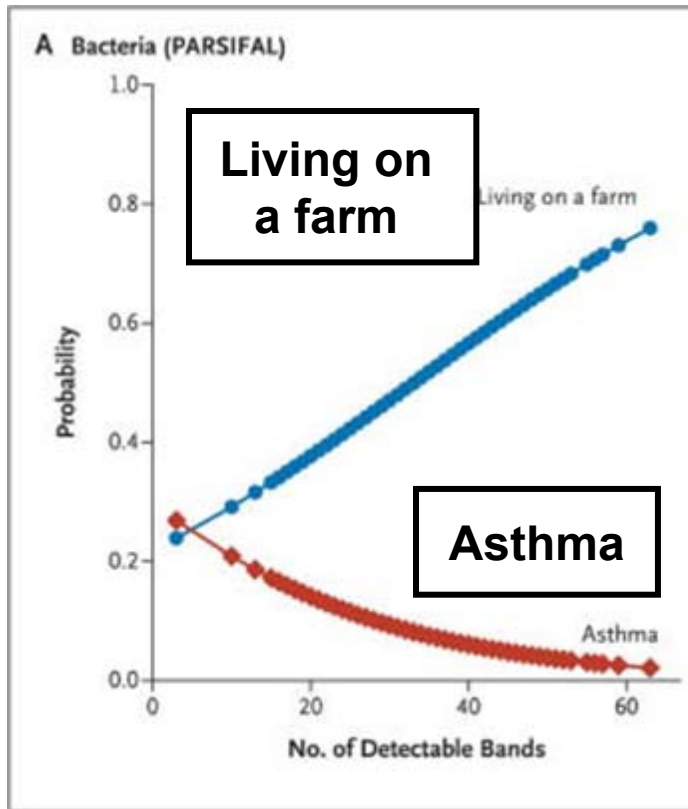


Courtesy: Erika von Mutius

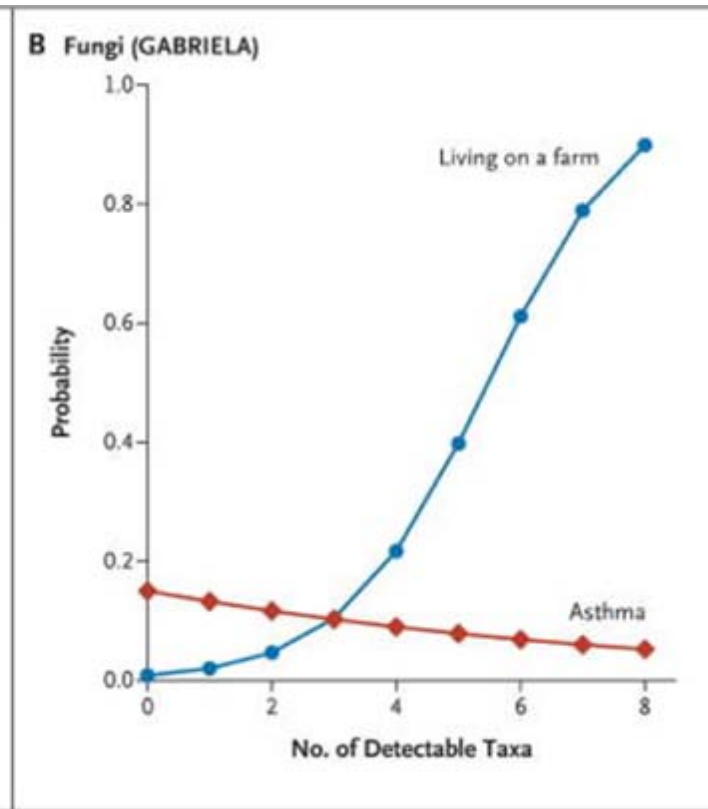
*ALEX-Study (1998 – 2002)
EU-6FWP PASTURE (2002 – 2007)
EU-7FWP PRO-IMMUNE (2008 – 2011)*

Inverse relationship between microbial exposure and probability of asthma

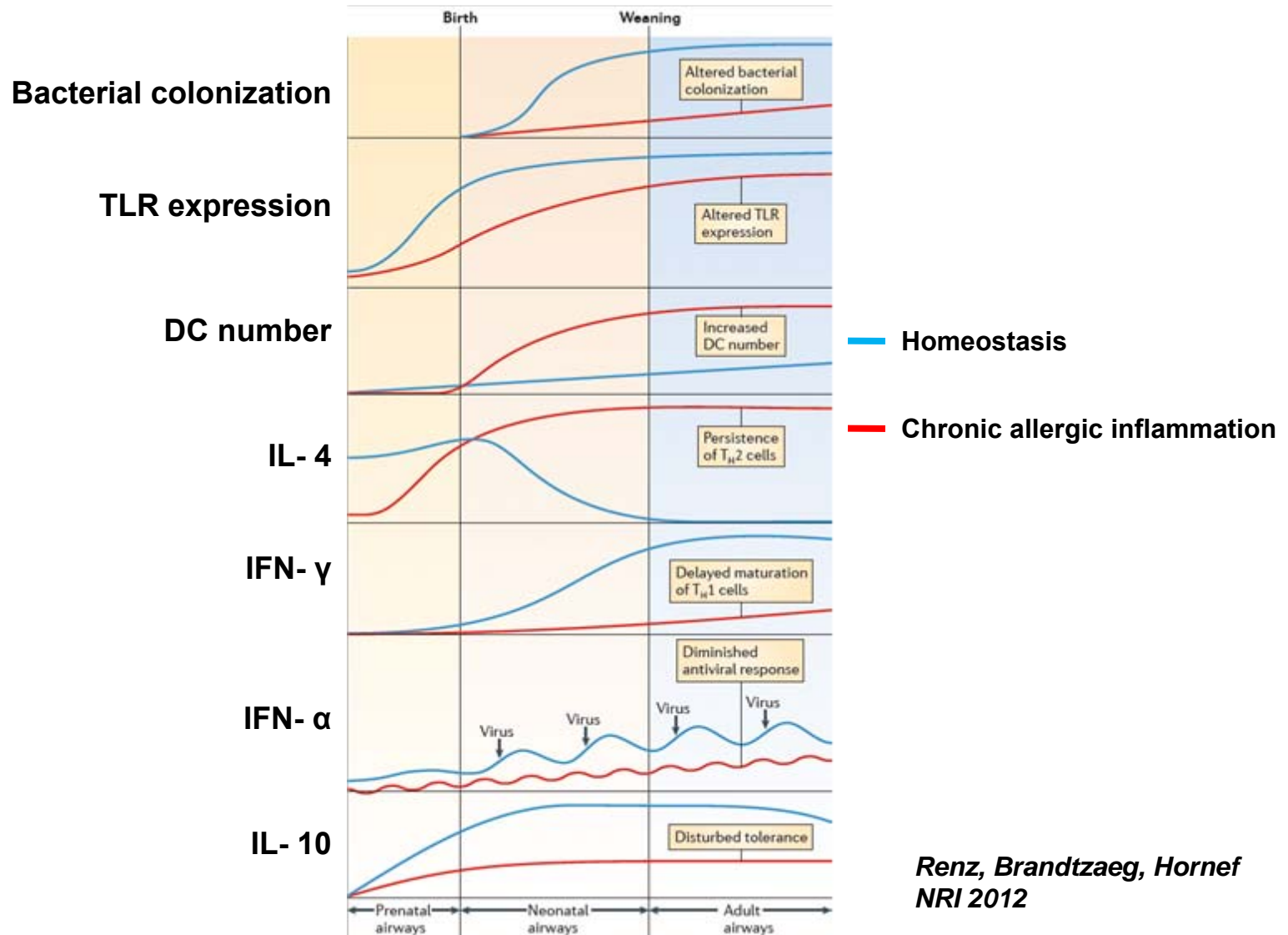
A - Bacteria

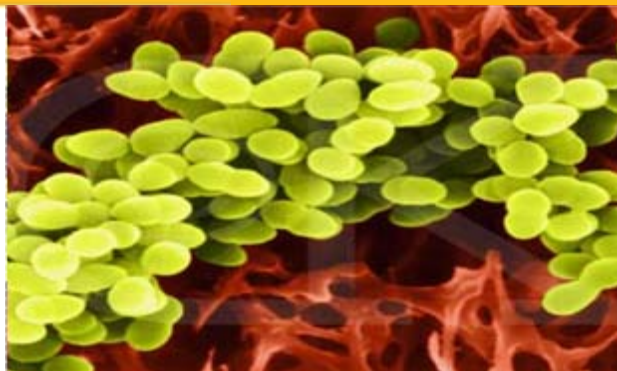


B - Fungi

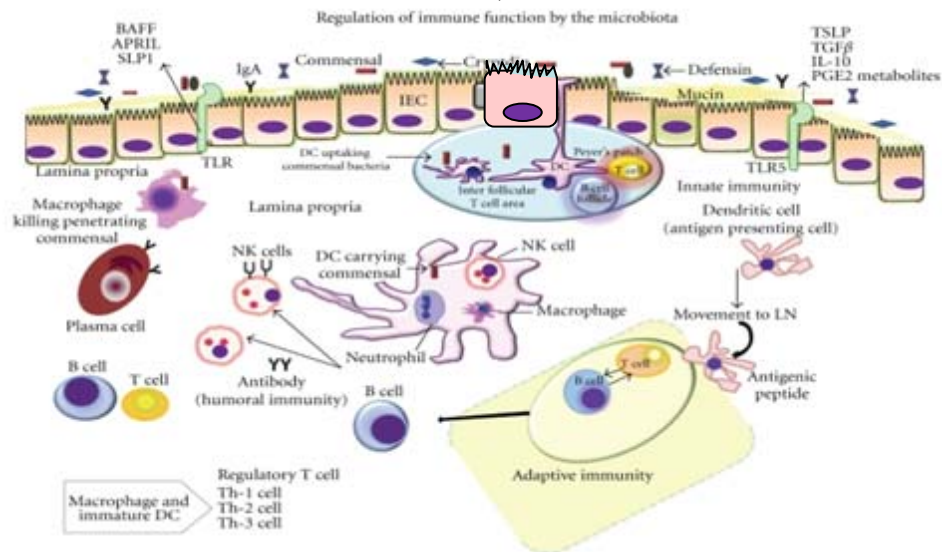


Perinatal immune development in the respiratory mucosa

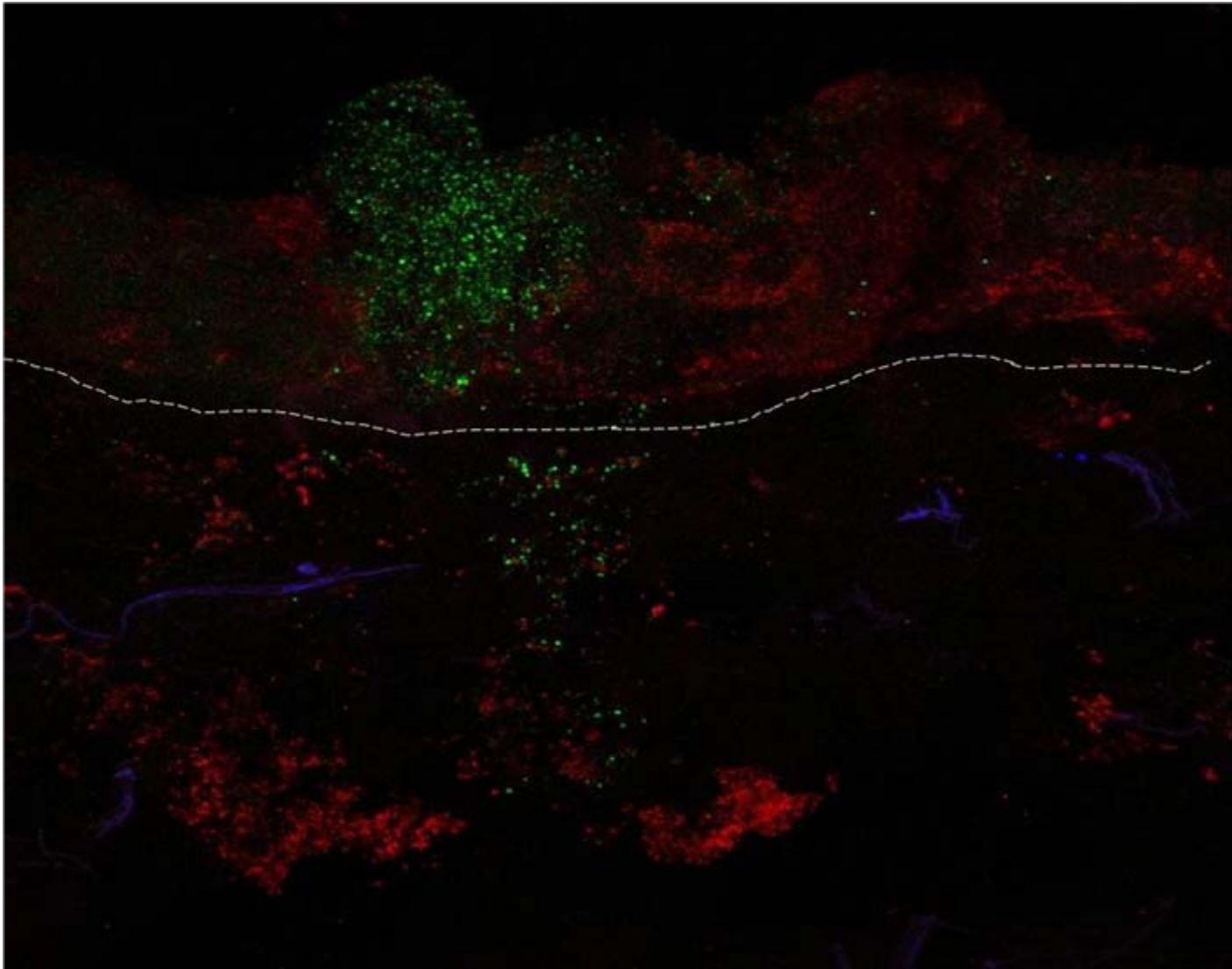




MICROBIOME and MUCOSAL IMMUNITY



C. Bachert,
EAACI London 2010



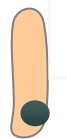
Inferior turbinate from a nasal polyp patient, incubated with Staph aureus (green) and RV16 (red) for 24 hours. Courtesy of Nan Zhang, URL, University of Ghent

S. aureus superantigens as disease modifiers

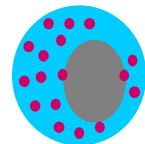
Epithelial damage
(barrier dysfunction)

↓
colonisation

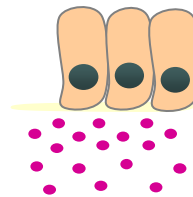
Superantigens



Fibroblast
PGE2 prod.



Mast cell degranulation



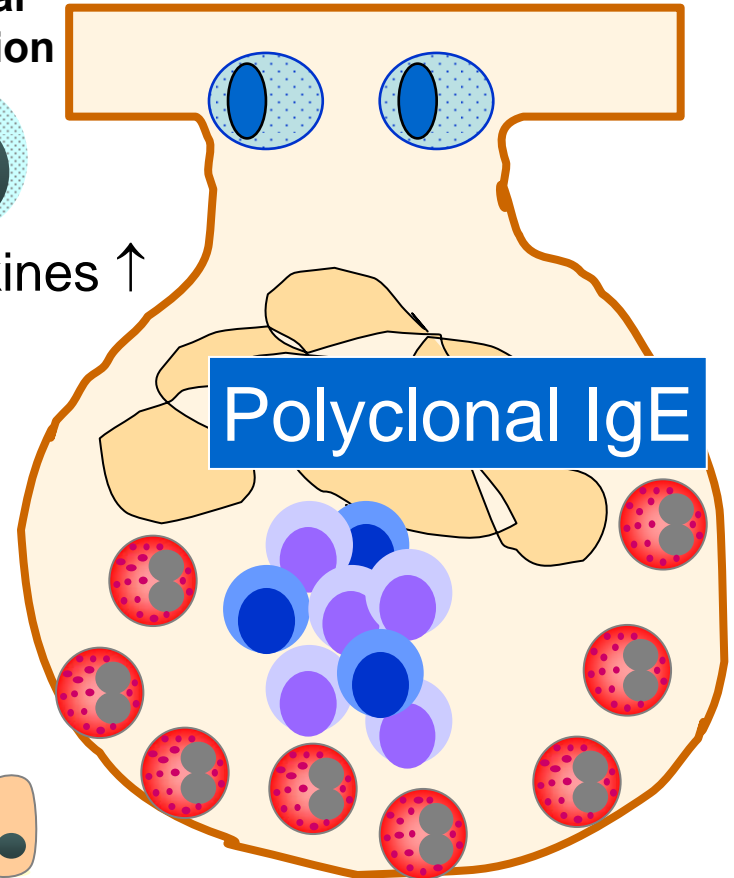
Chemokines

Eosinophil
survival

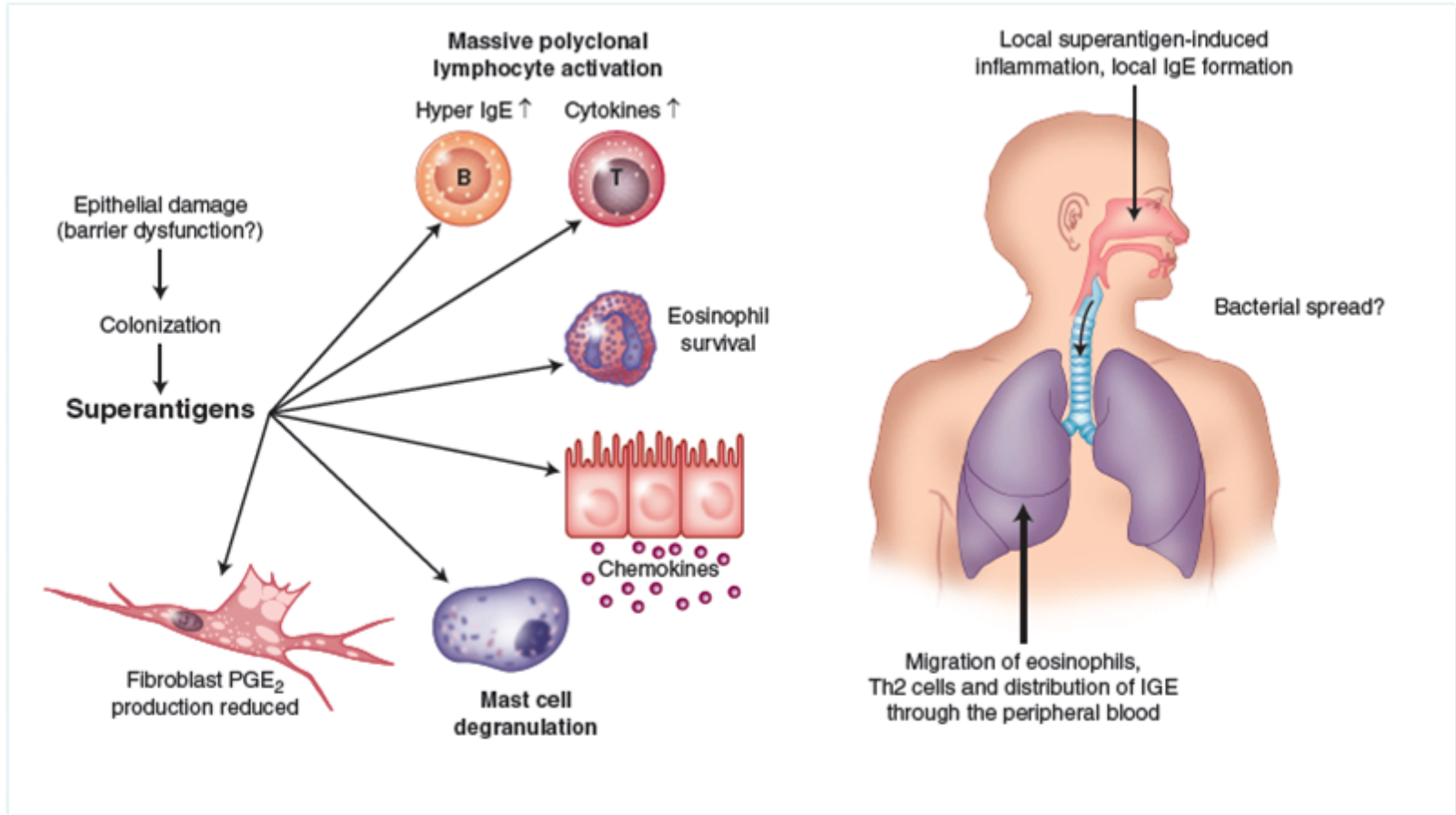
Massive polyclonal
lymphocyte activation



Hyper IgE ↑ Cytokines ↑



Polyclonal IgE



Bachert C, SEM Claeys, P Tomassen, T van Zele, J Bousquet, N Zhang.
Rhino-sinusitis and Asthma: A Link for Asthma Severity. Current Allergy and Asthma Reports 2010

Specific IgE against *Staphylococcus aureus* enterotoxins: An independent risk factor for asthma

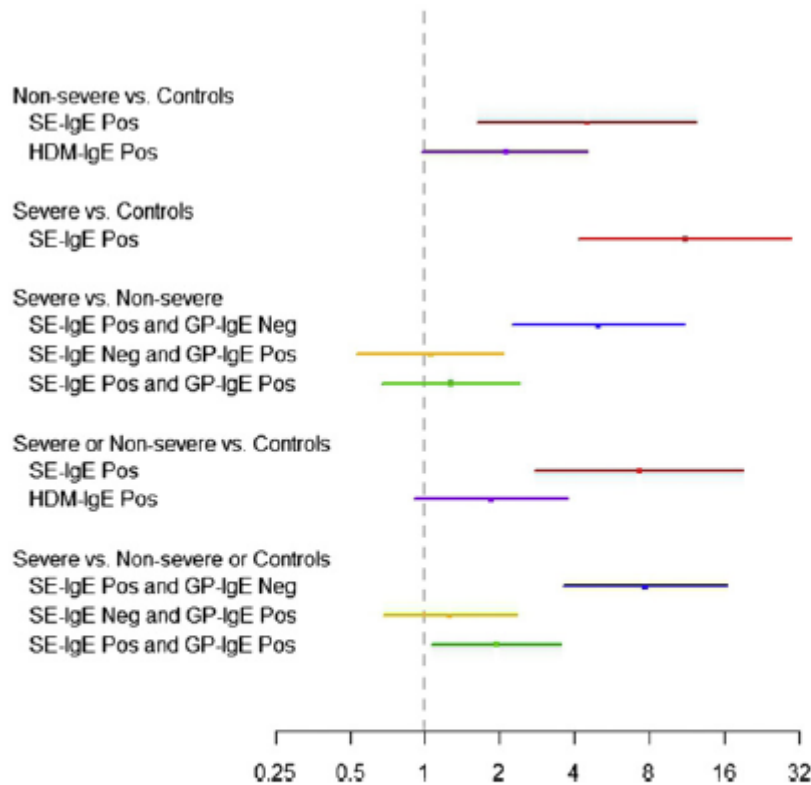


FIG 1. Logistic regression models for disease severity. ORs and 95% CIs are represented for the different comparisons. SE IgE levels in serum were associated with a significantly increased risk of asthma (OR, 7.26; 95% CI, 2.76-19.13; $P < .001$) and especially severe asthma (OR, 11.09; 95% CI, 4.14-29.68; $P < .001$).

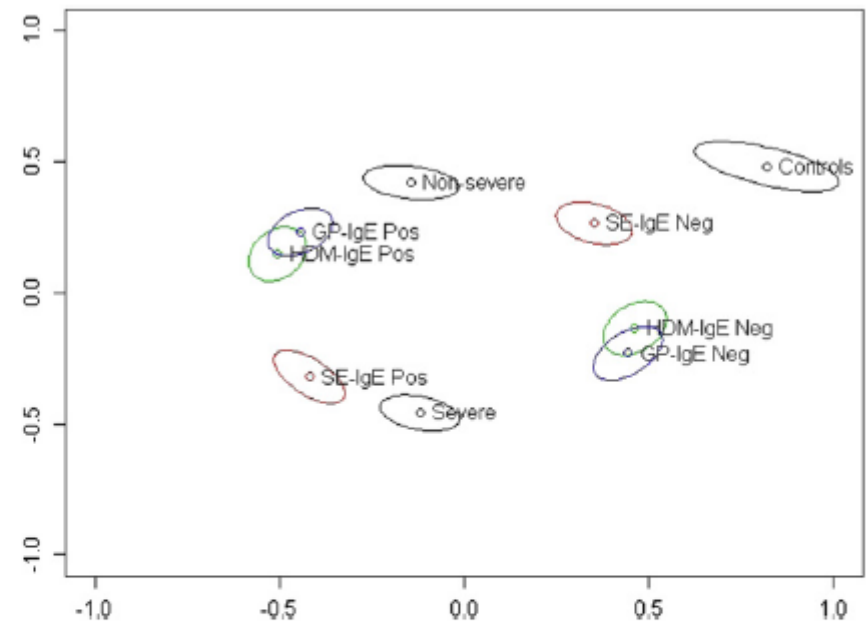
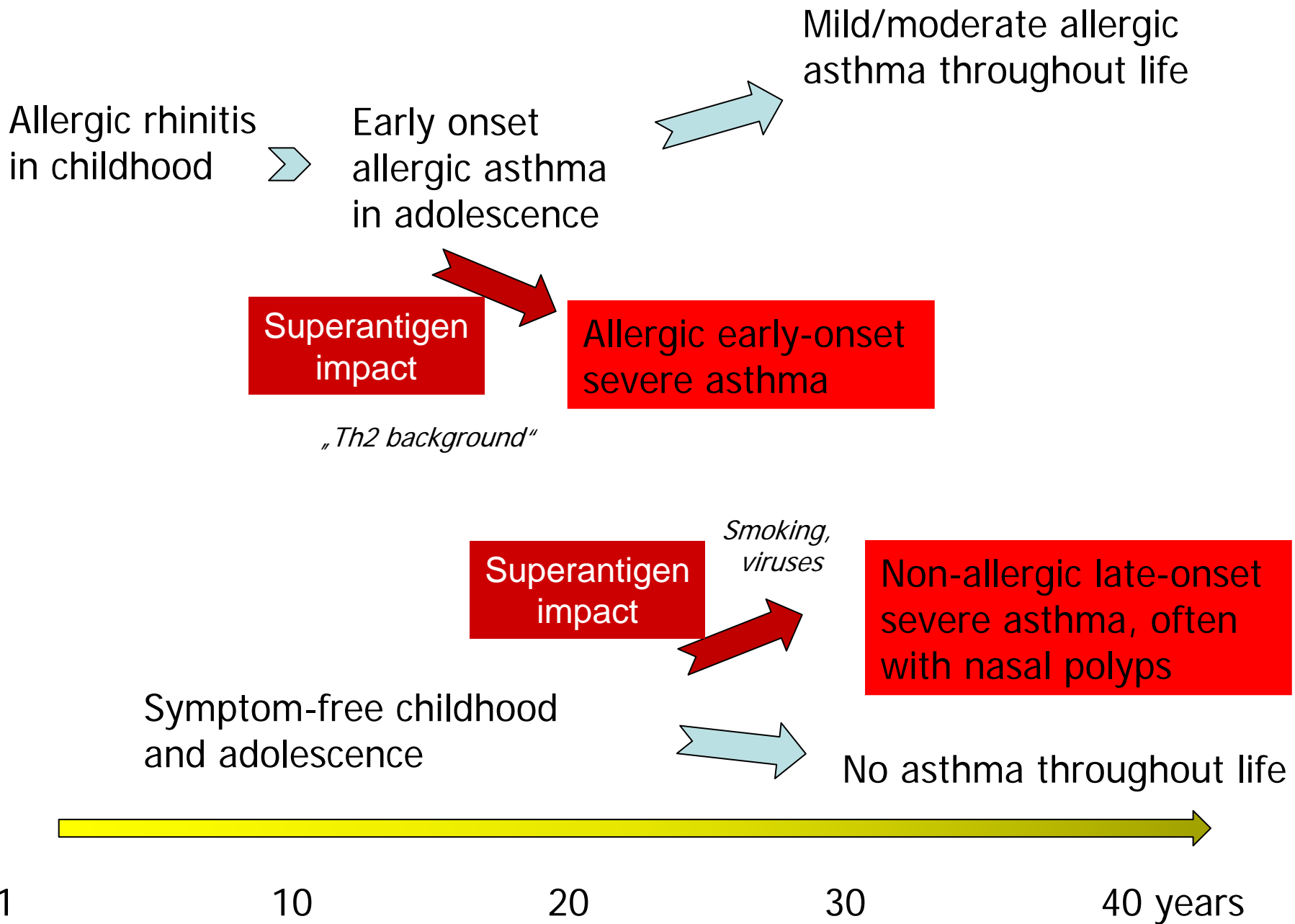


FIG 2. Multiple correspondence analyses factor map with 95% confidence ellipses situating relationships between parameters and disease severity. SE IgE is situated near severe asthma, whereas GP and HDM IgEs are situated near nonsevere asthma.

Bachert C et al, JACI 2012



Allergie:

Der am besten bekannte medizinische Terminus!

17/20 der 7- bis 8-Jahre alten Kinder kennt den Begriff "Allergie"

① Ich kenne das Wort
Allergie.

② Wen man gegen Tier
haare niesen muss.

1. Ich kenne das Wort Allergie
2. Wen man was nist und
das weiß wird

Ich kenne das wo
H Allergie
eine Allergie ist
eine Krankheit
die Juckt

1. Ich kenne das Wort Allergie.

2. Das sind

2. Das sind Hautkrankheiten.