

# Allergy: Prevalence and identification of focus areas within prevention

Lotte Husemoen (lloh@glo.regionh.dk)  
Allan Linneberg (allin01@glo.regionh.dk)  
Research Centre for Prevention and Health  
Glostrup Hospital, Denmark

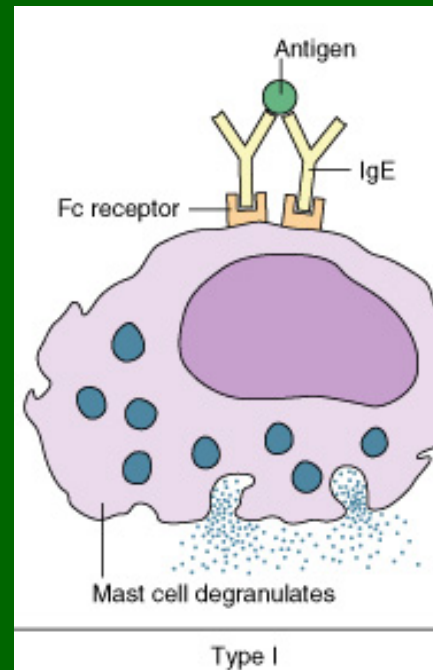
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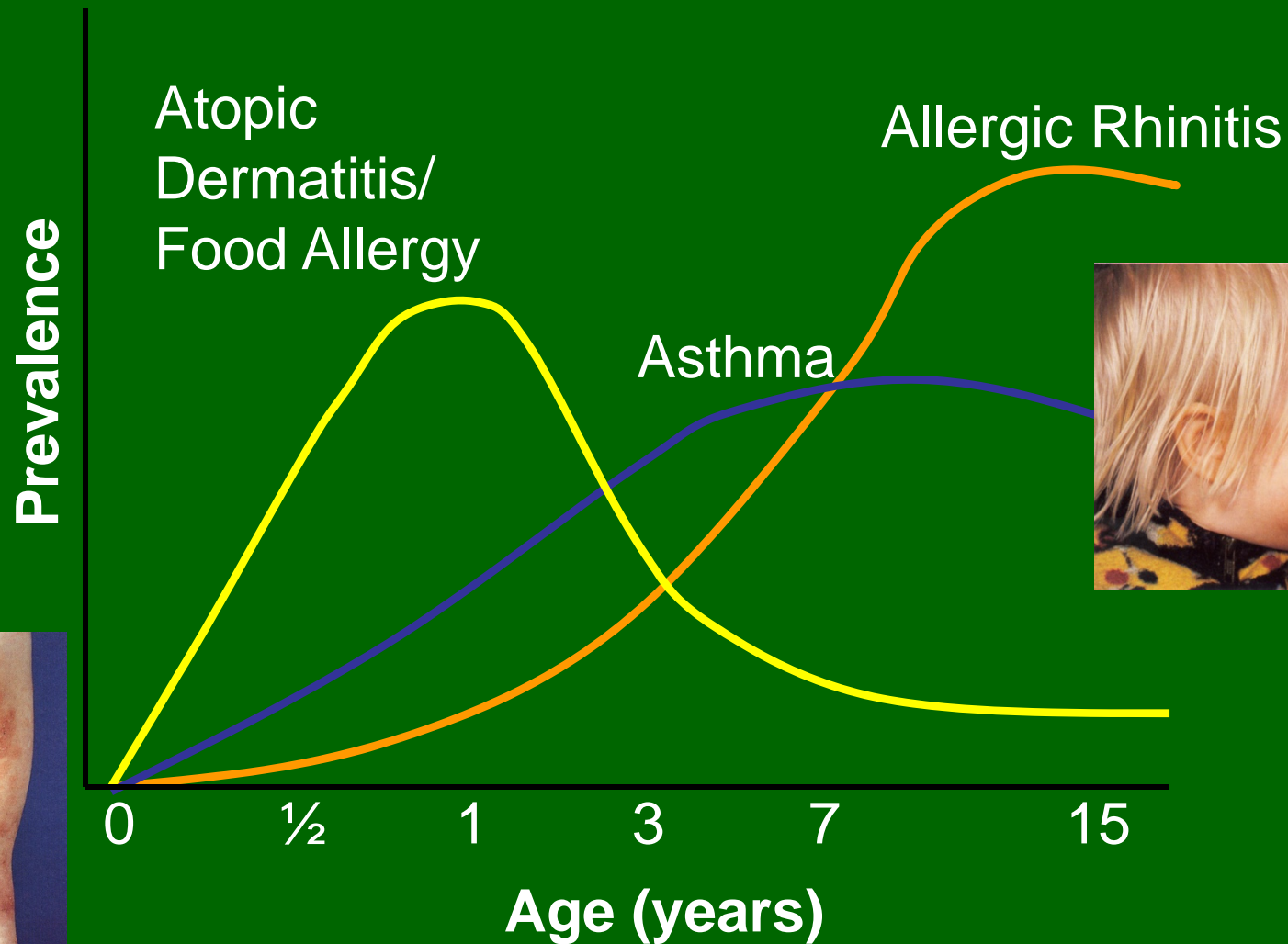
- What are allergies?
- Are the prevalence of allergies increasing?
- Why do we get allergies?

# What Are Allergies?

“Situations where hypersensitivity results from heightened (or ‘altered’ reactivity of the immune system in response to external or ‘foreign’ substances”



# "The allergic march in childhood"



# Allergic rhinitis

Allergic rhinitis is a chronic inflammatory disease of the upper (and lower) airways induced by IgE-mediated allergic reactions against inhaled allergens e.g. from pollen, dust mites, and animals

## The Allergic Salute



## Symptoms of allergic rhinitis

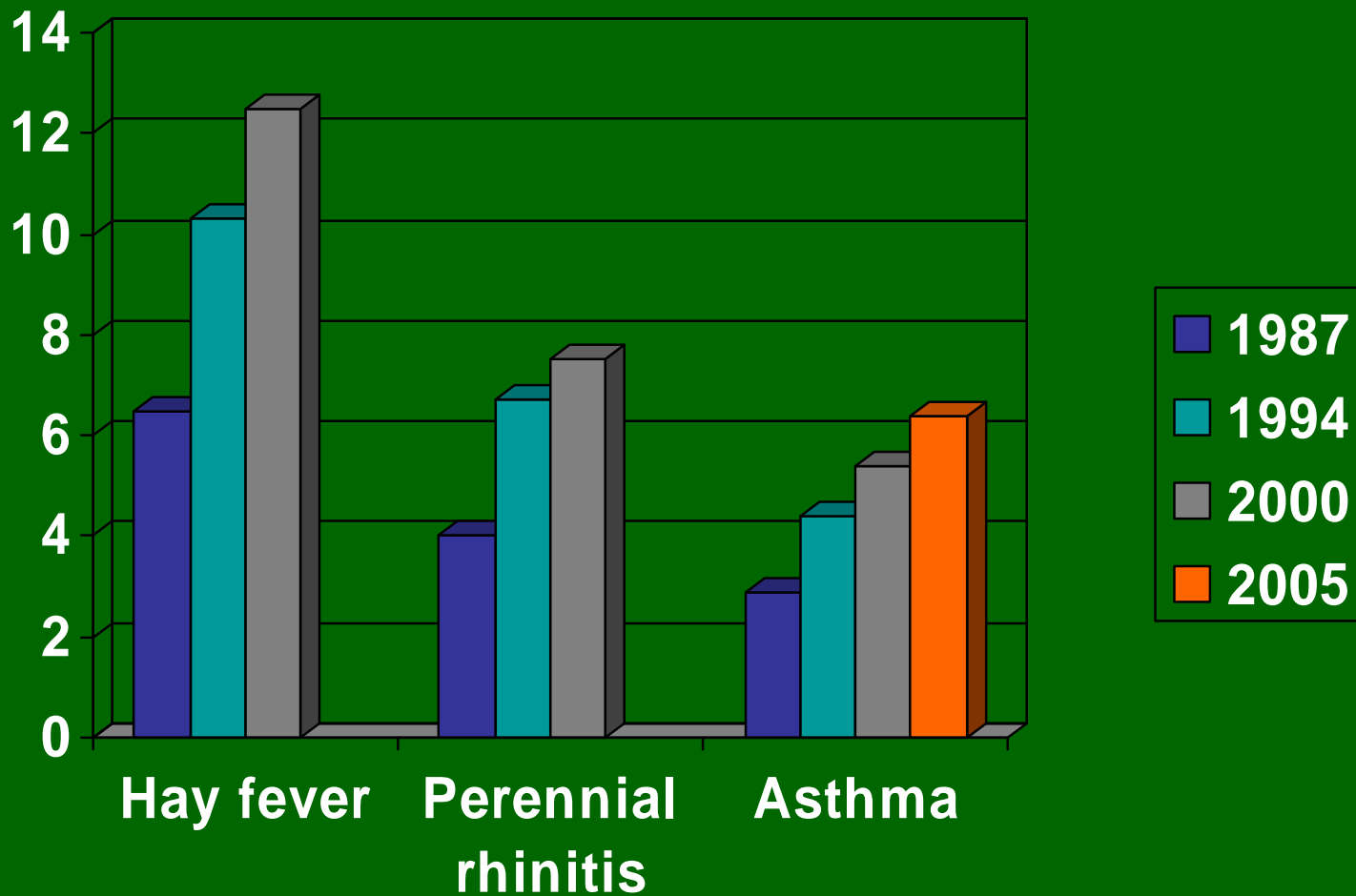
- itchy nose and sneezing
- stuffy and runny nose
- tiredness, headache
- decreased quality of life



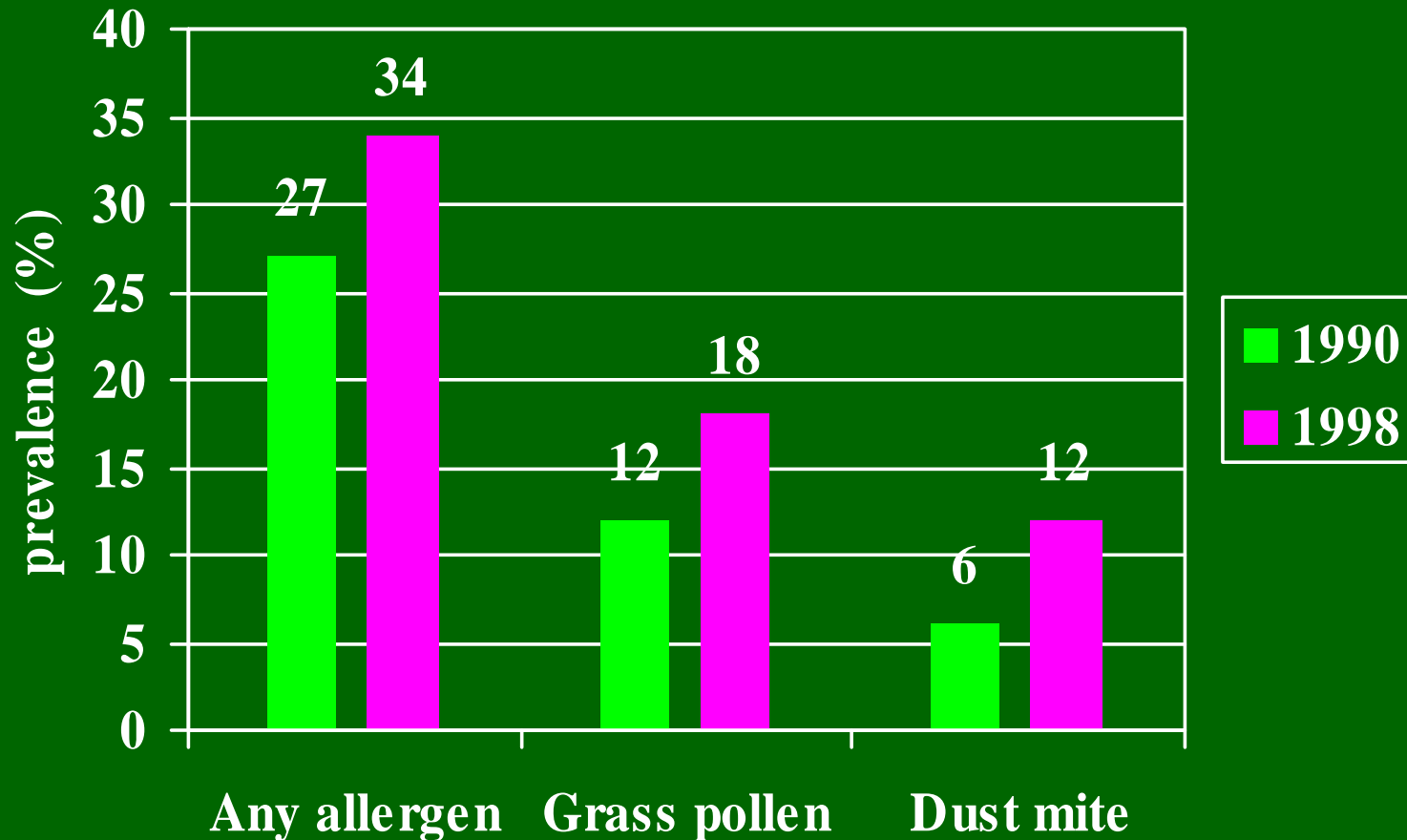
- Are the prevalence of allergies increasing?



# Self-reported allergic rhinitis and asthma within last 12 months in nation-wide representative surveys in Denmark

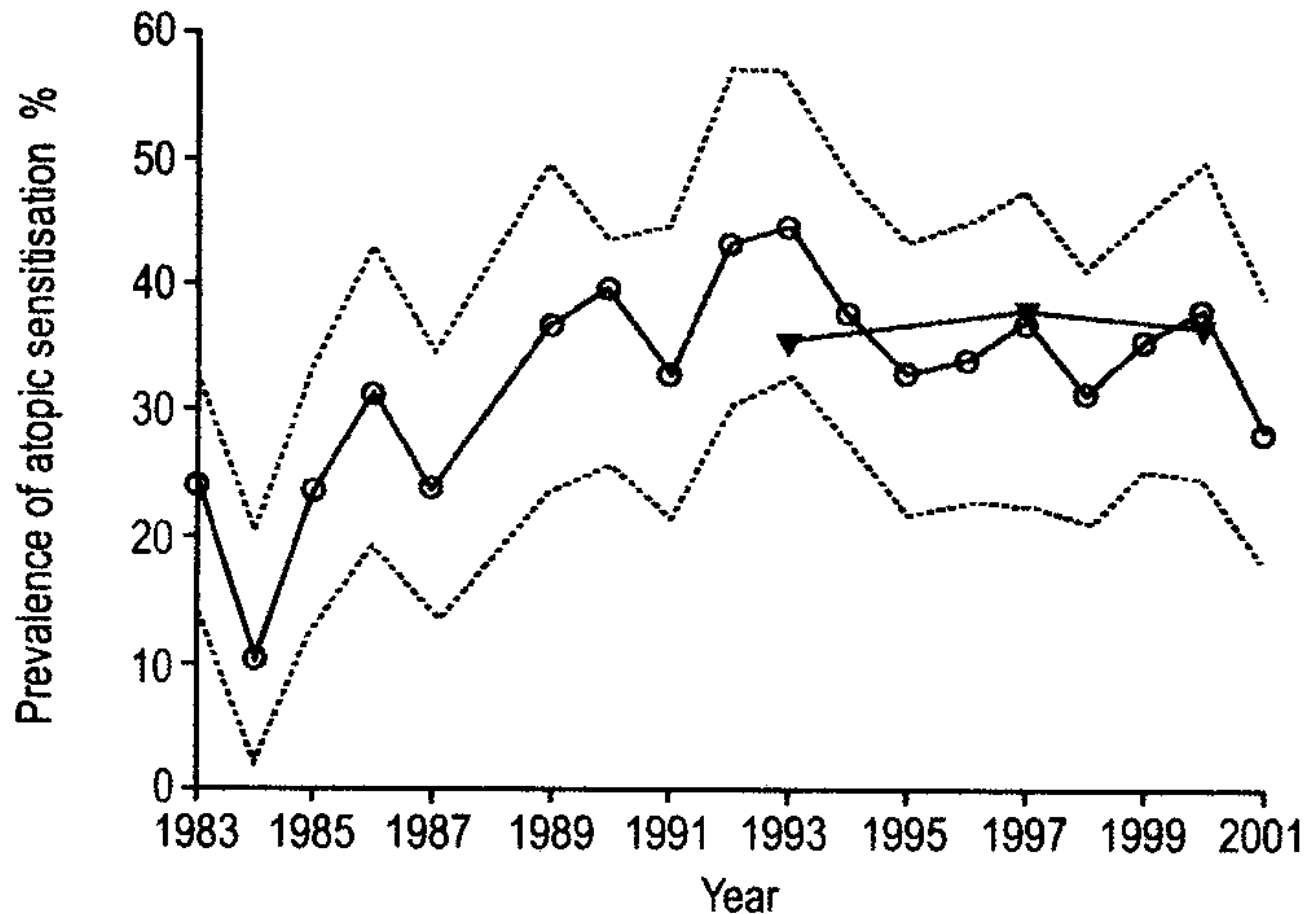


# Trends of allergy (IgE sensitisation) among 15-41-year-olds in Copenhagen



Specific IgE to aeroallergens

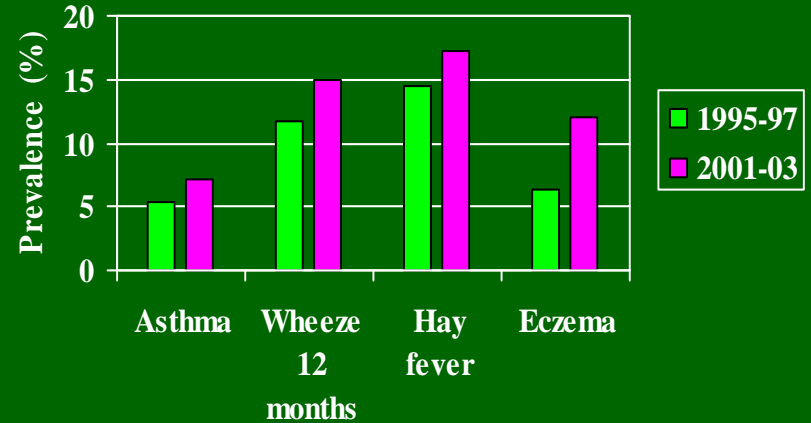
# Prevalence (95% CI) of atopy (IgE sensitisation) in 13-14-year-olds in Switzerland between 1983 and 2001



# Trends in European children?

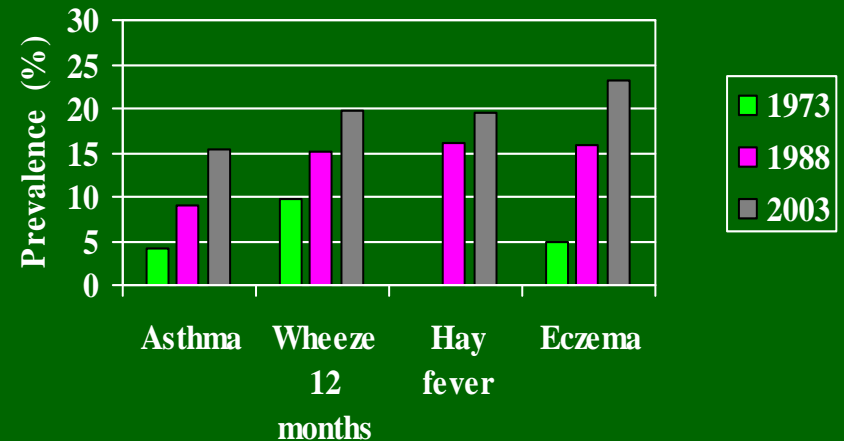
- Continuing increase in Austria from 1995 to 2003  
Schernhammer, *Pediatr Allergy Immunol* 2007

12-14-year-olds in Austria



- Continuing increase in Wales from 1973 to 2003  
Burr, *Thorax* 2006

12-year-olds in Wales





- Why do we get allergies?



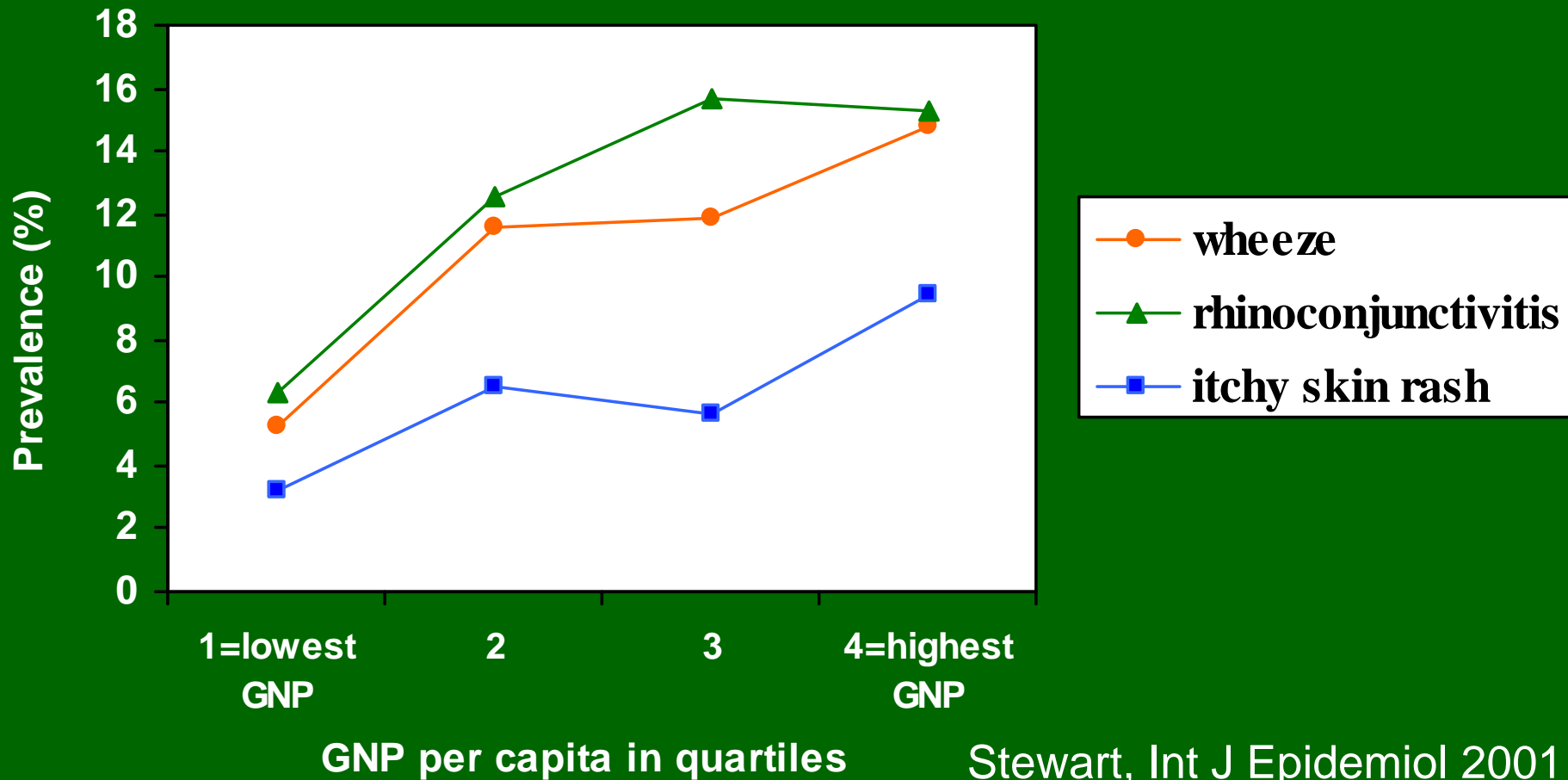
# Affluence

- In 1873, Charles Blackley demonstrated that pollen was the causative agent of Hay fever
- He noted that  
*“hay fever is a rare disorder restricted to the privileged class”*



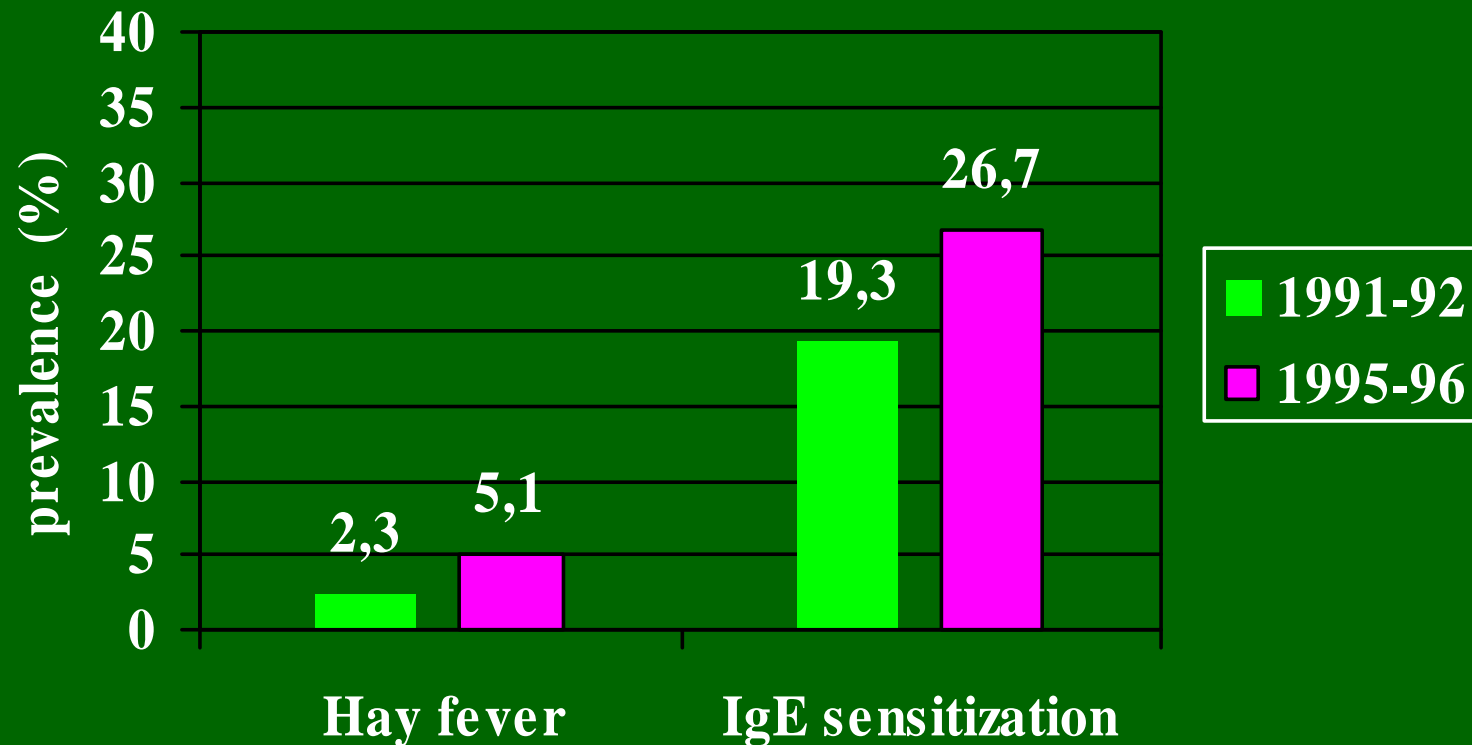
# Affluence

Ecological association of symptoms with Gross National Product (GNP) in 13-14-year-olds (ISAAC study)



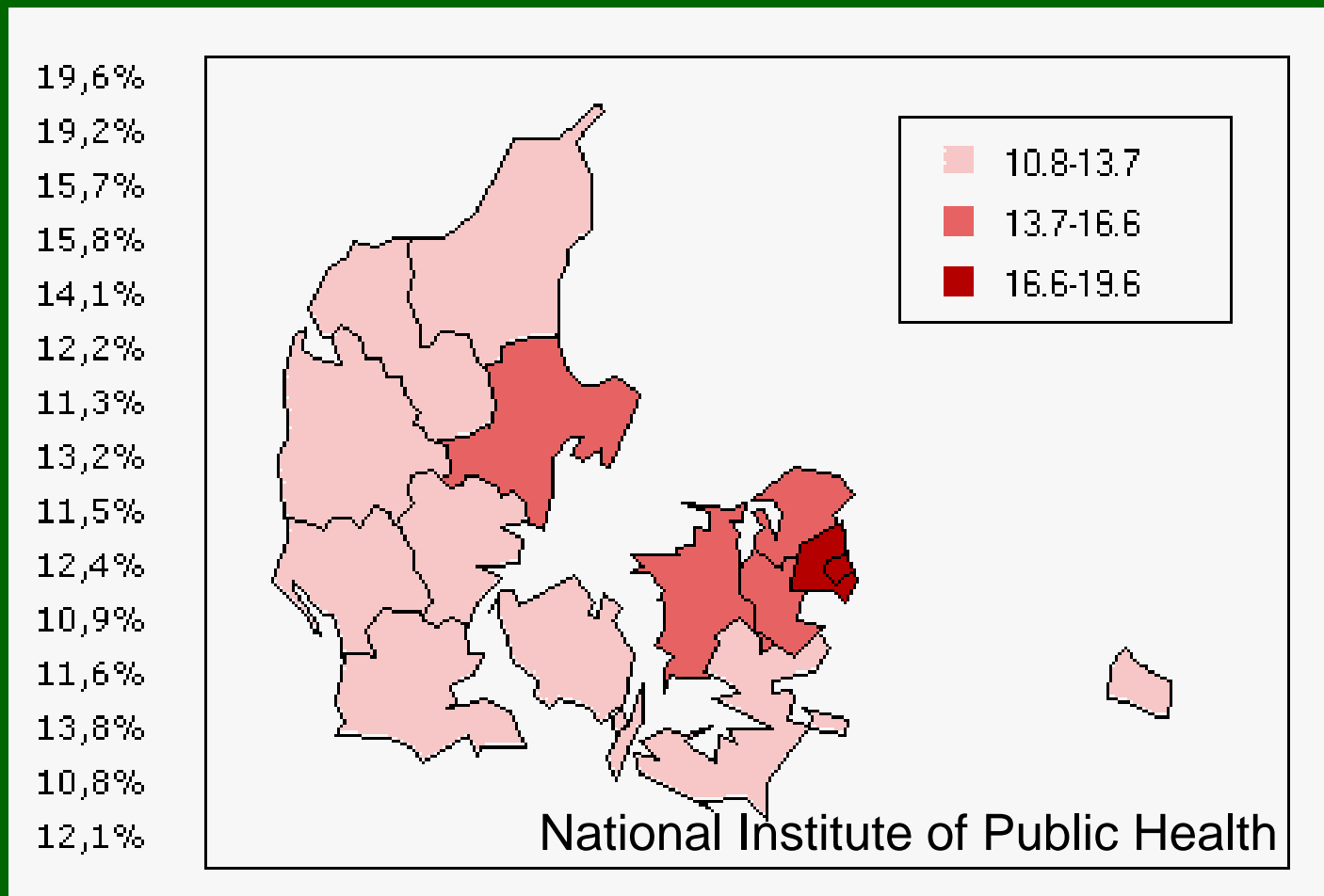
# Westernization

Trends of allergy among schoolchildren in Leipzig (former East Germany) from 1991-92 to 1995-96



# Urbanization

## Prevalence of self-reported allergy in Denmark



What happens when a population adopts a westernized, urban, and affluent lifestyle?

Affluence

Westernization

Urbanization

Diabetes !

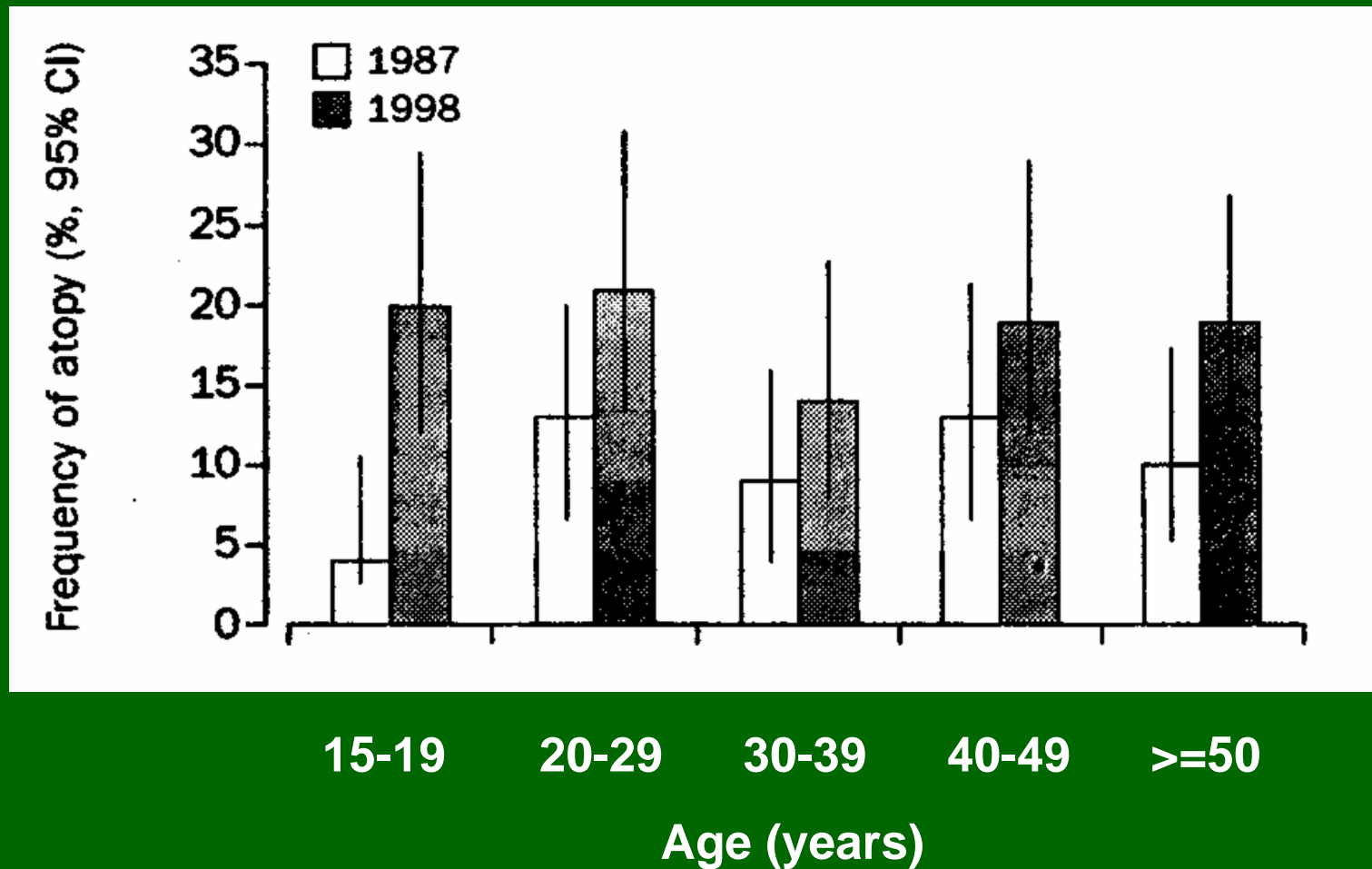
CVD !

Asthma !

Allergy !

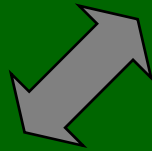


# Prevalence of allergy (specific IgE in serum) in Greenland between 1987 and 1998



# Why is allergy increasing?

Genes



Environment

- Air pollution
  - Allergen exposure
  - Hygiene hypothesis
  - Indoor climate
- .. and more

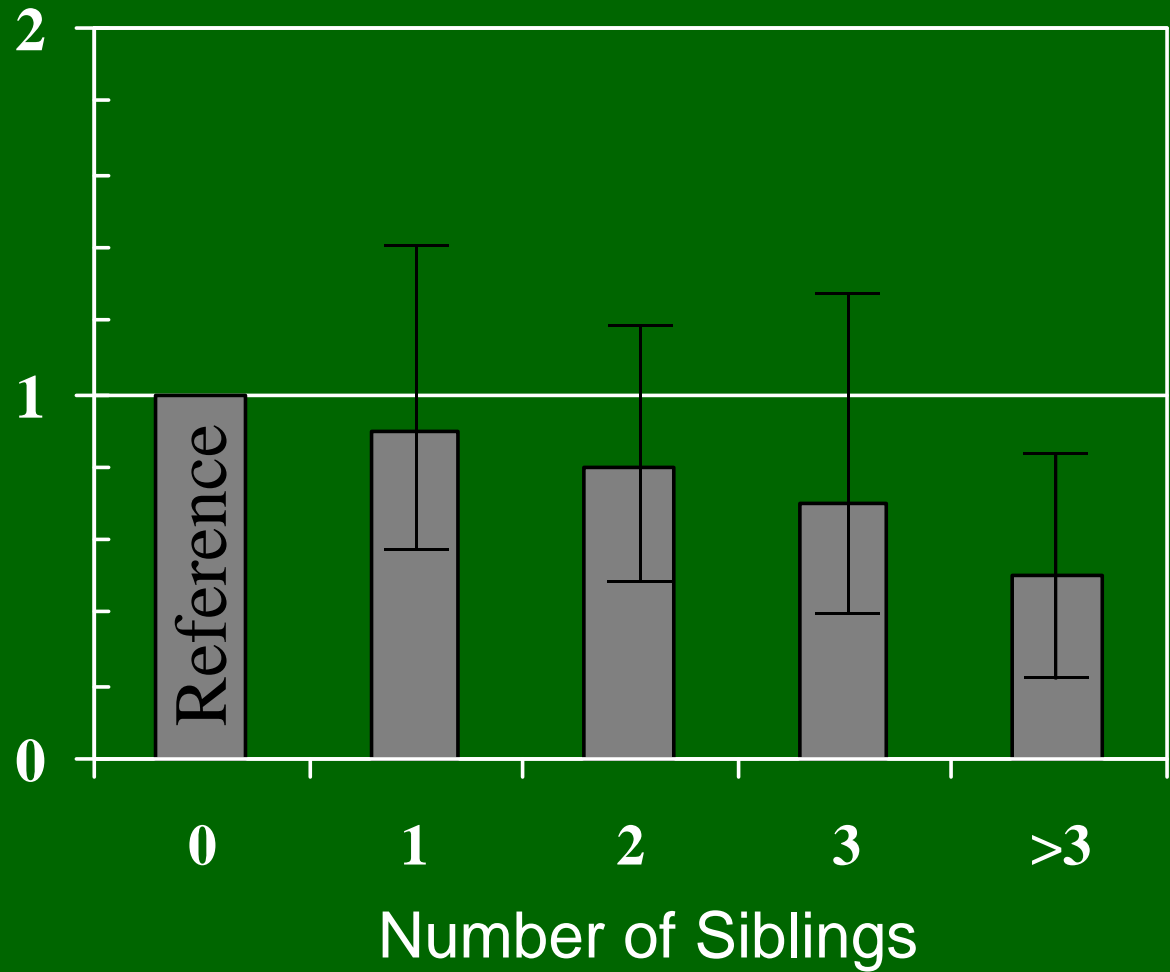




# Number of Siblings and risk of allergy: the birth of the Hygiene Hypothesis

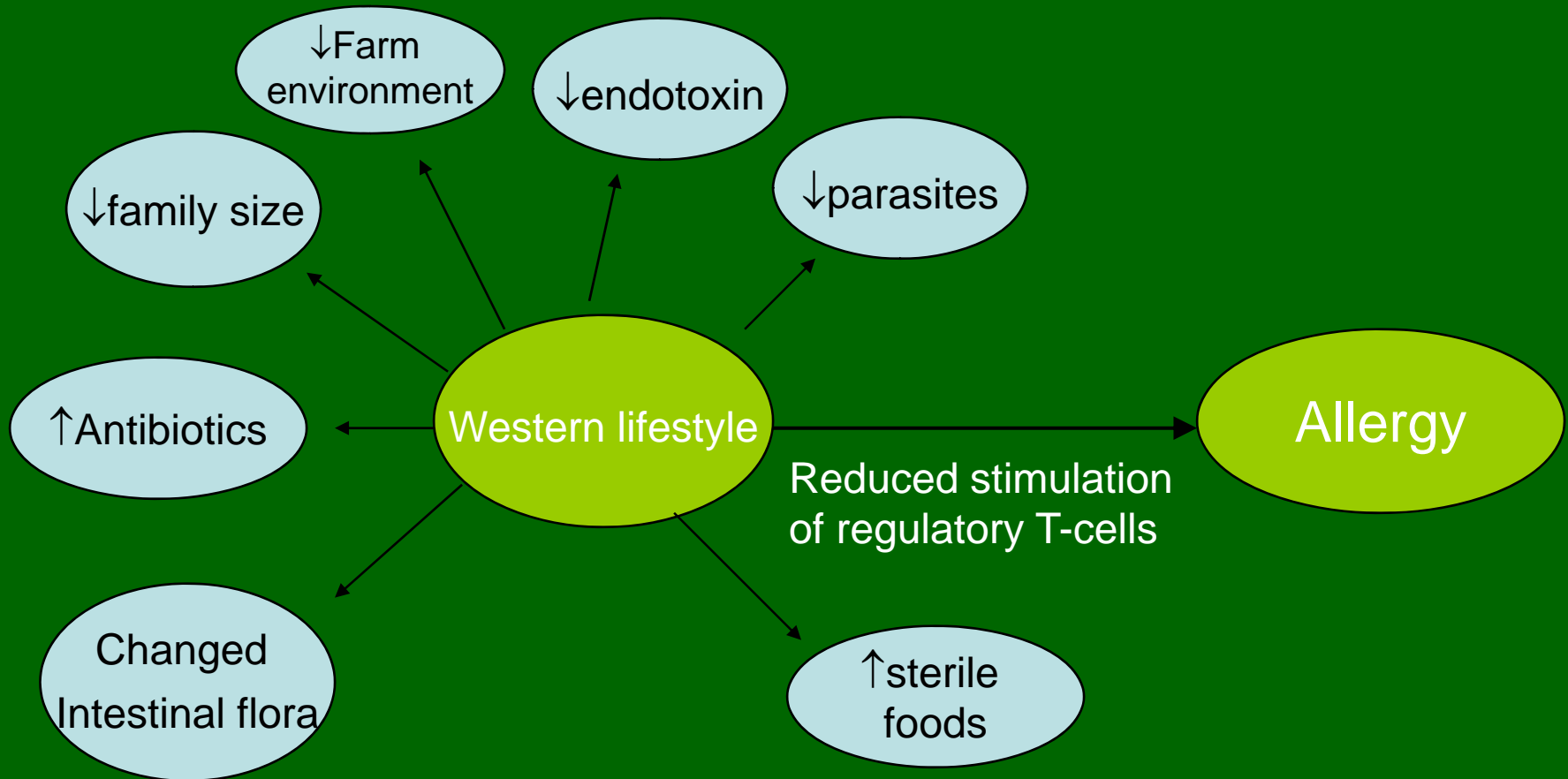
Risk of Atopy

Test for trend:  
 $P < 0.01$



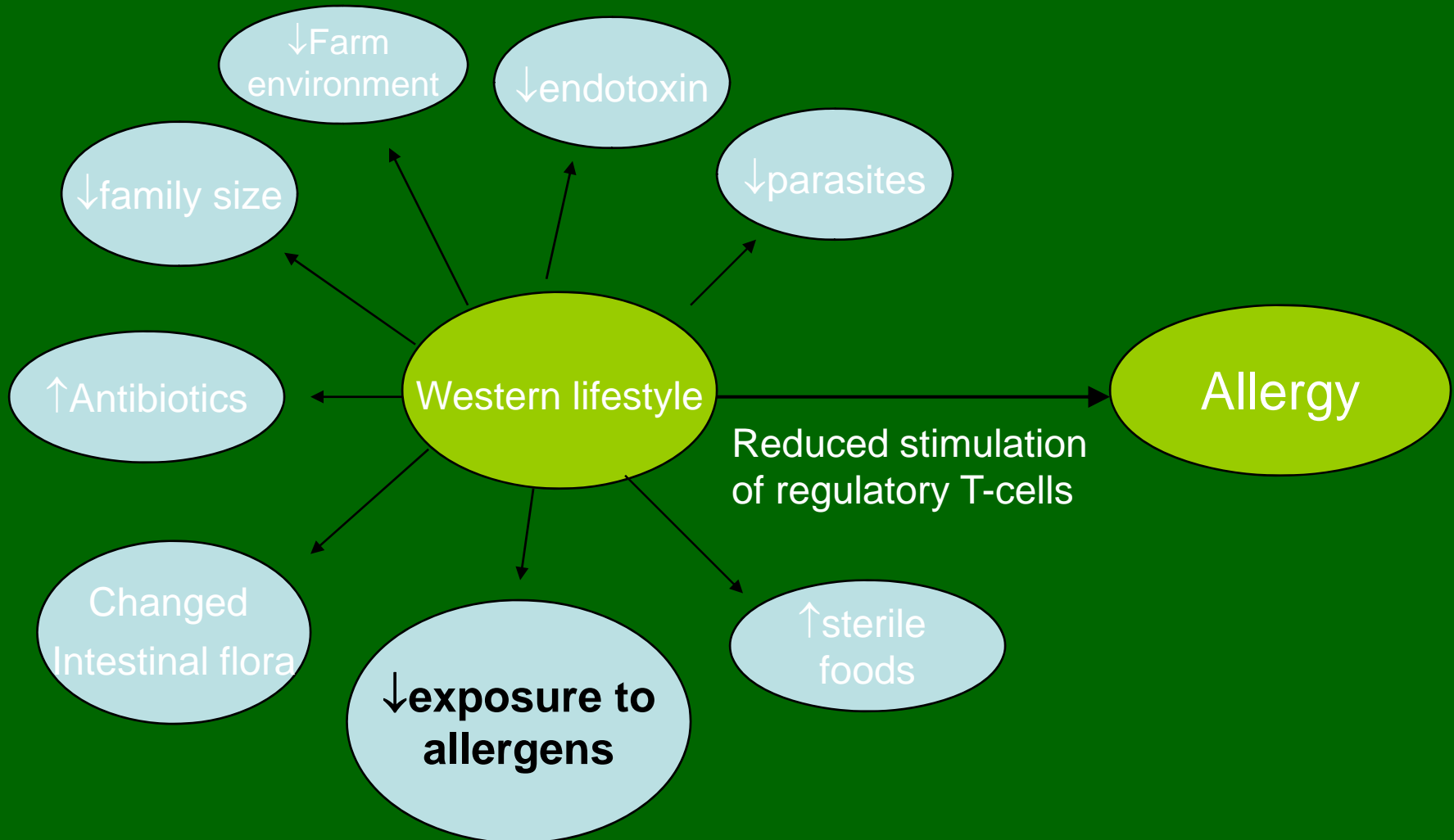
# Hygiene Hypothesis

Changes in microenvironment

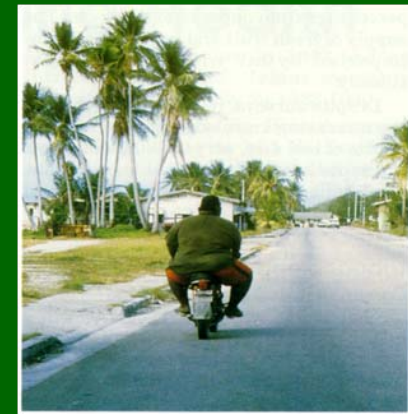
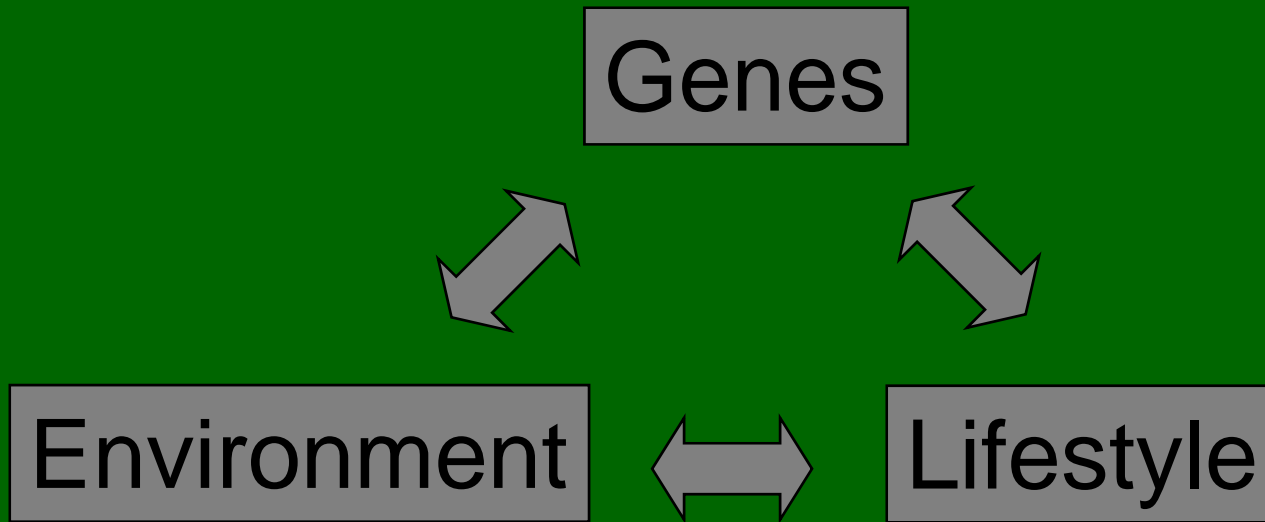


# Hygiene Hypothesis

Changes in microenvironment



# Why is allergy increasing?



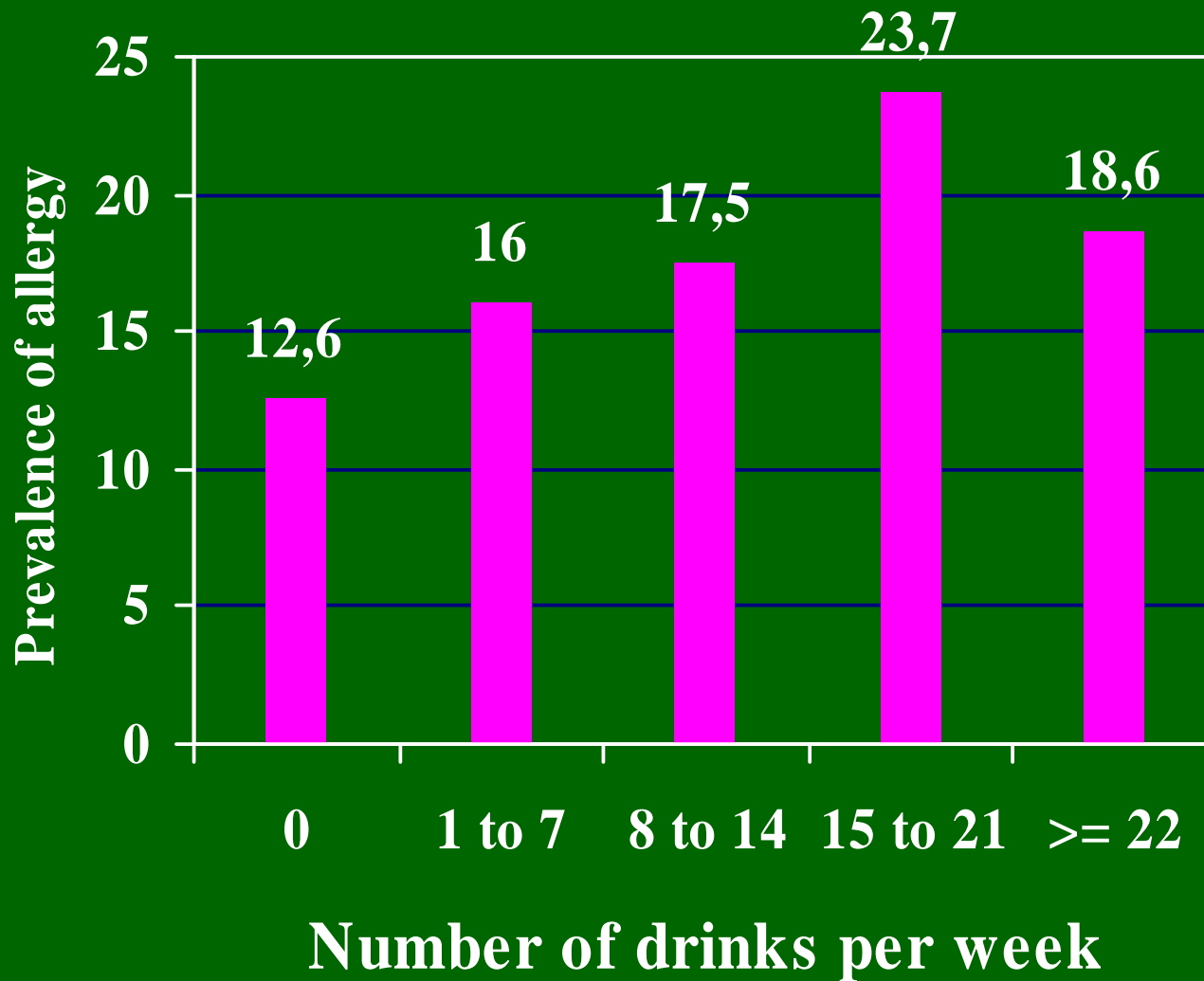
- Air pollution
  - Allergen exposure
  - Hygiene hypothesis
  - Indoor climate
- .. and more



- Diet (e.g. antioxidants)
- Vitamin D
- Obesity and overweight
- Physical inactivity
- Alcohol



# Alcohol consumption and allergy





## Summary

- Type 1 allergy (atopy) is characterised by a an IgE mediated immune response.
- Atopic diseases include asthma, hay fever, atopic dermatitis etc.
- The prevalence of allergies have increased during the last decades.
- The increase is related to affluence, westernisation and urbanisation.
- Environmental factors resulting in low allergen exposure may be responsible (the hygiene hypothesis).
- Lifestyle factors may also play a role (obesity, alcohol etc.)

- Tak for opmærksomheden!