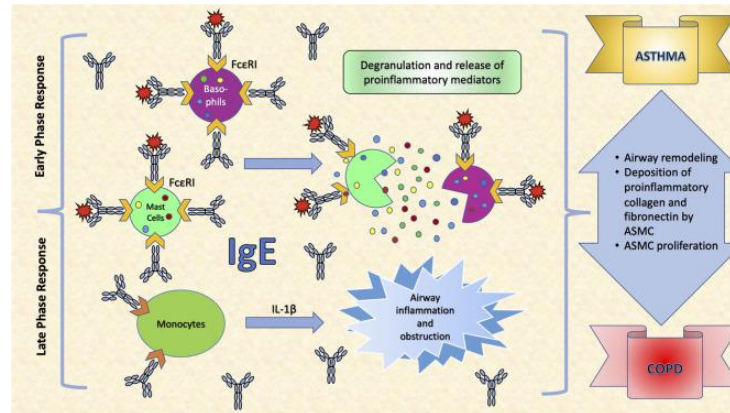


T-celle immunologi, IgE, atopi og allergisk sykdom



Ola Storrø
Spes. allmenntmedisin, ph.d.
Førsteamanuensis, ISM, NTNU

Hvorfor så mange allergiske barn?



Allergi
1906:
«Spesifikt
endret
kroppslig
reaksjon»

Ola Storrø
Spes. allmenntmedisin, ph.d.
Førsteamanuensis, ISM, NTNU

Definisjon 2018:

Allergi er en reproducerbar hypersensitivitets-reaksjon mot vanligvis ufarlige substanser (allergener), utløst av immunologiske mekanismer.

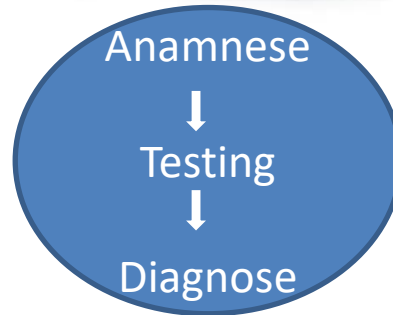




astma



allergisk
rhinitt



atopisk
eksem



anafylakse



matallergi

ALLE TYPER ALLERGISK SYKDOM HAR
LENGE VÆRT ØKENDE I VESTLIGE LAND



1:Hva er årsakene til allergi?

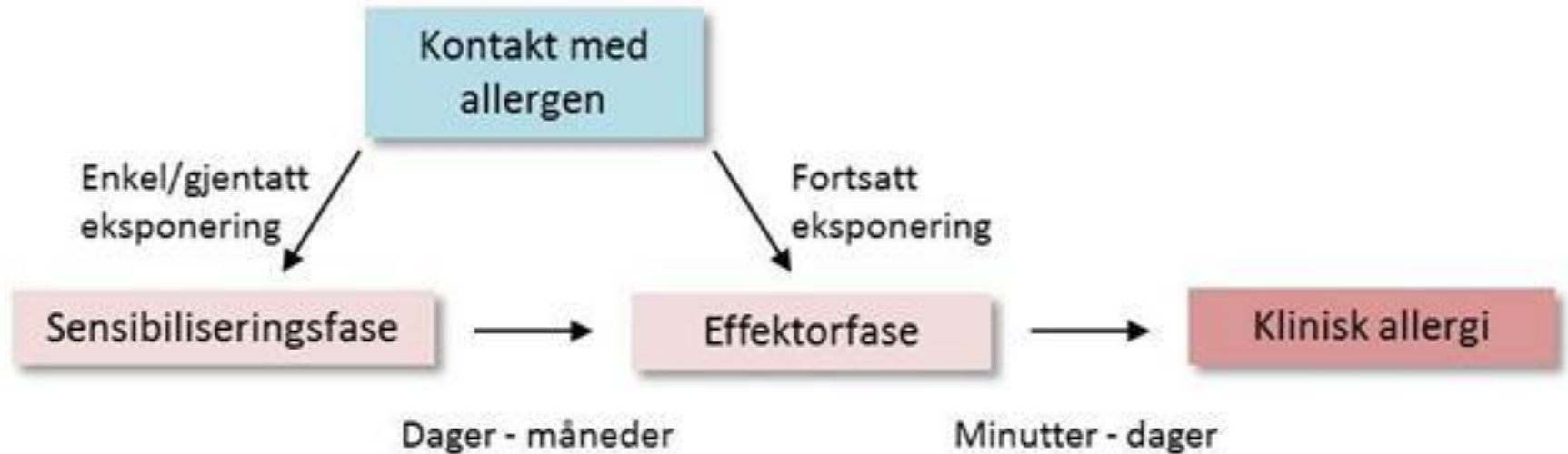


2: Hva er årsaken til økningen av
allergi?

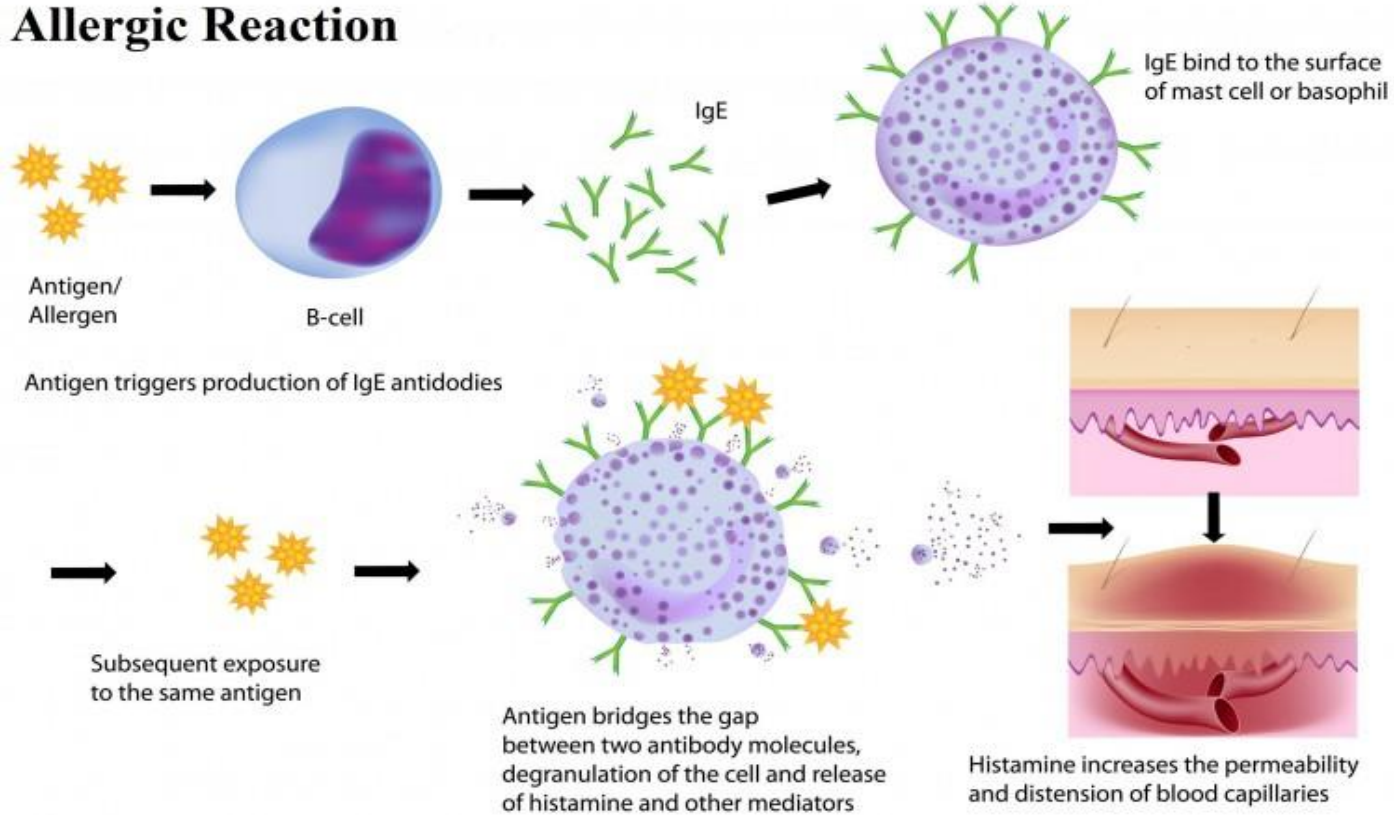


3: Kan økningen og forekomsten av
allergi reduseres?

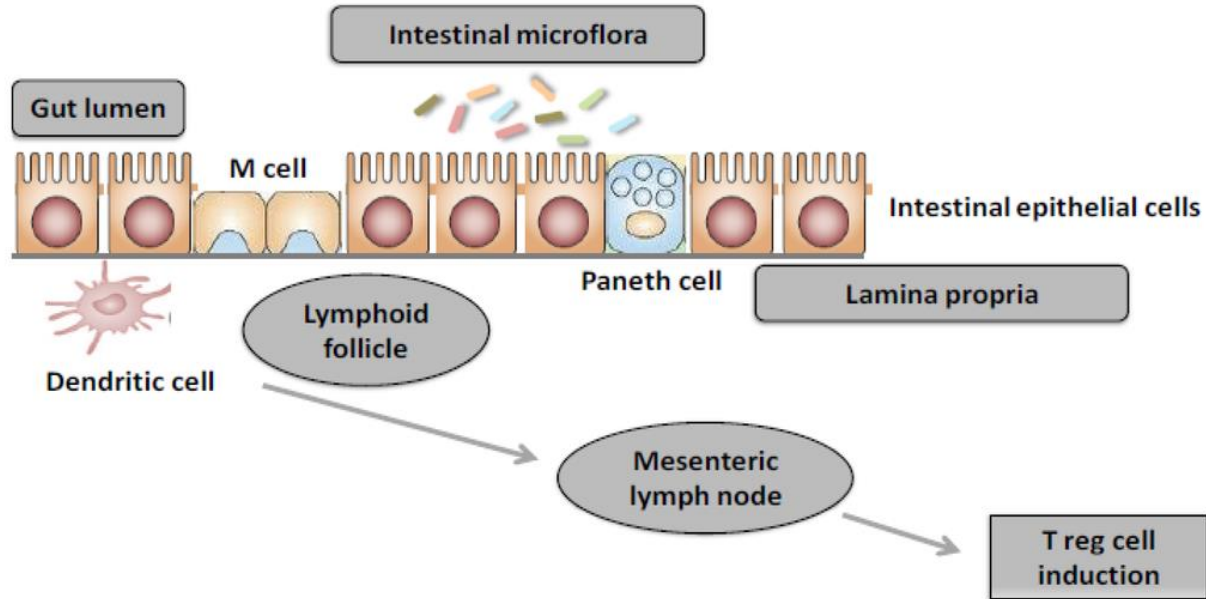
Sensitivisering og allergiutvikling



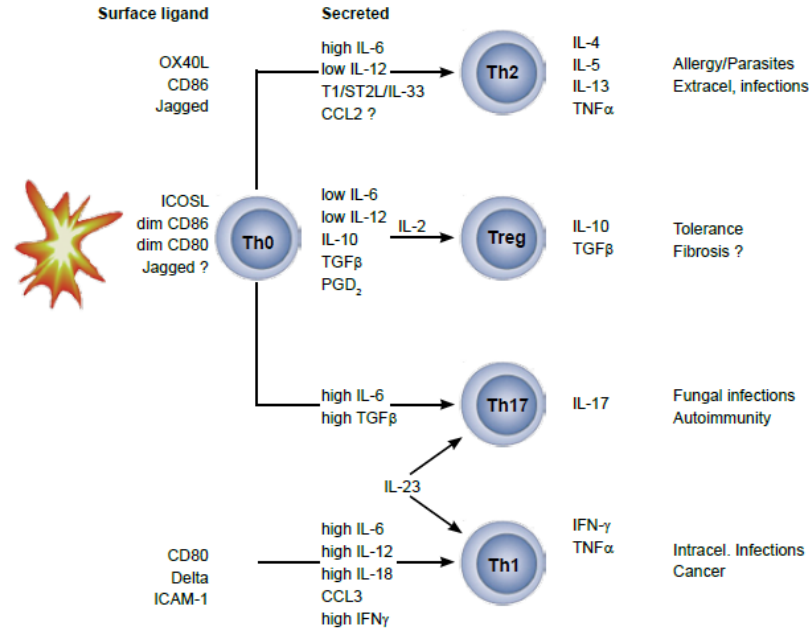
Allergic Reaction



T-celle immunitet

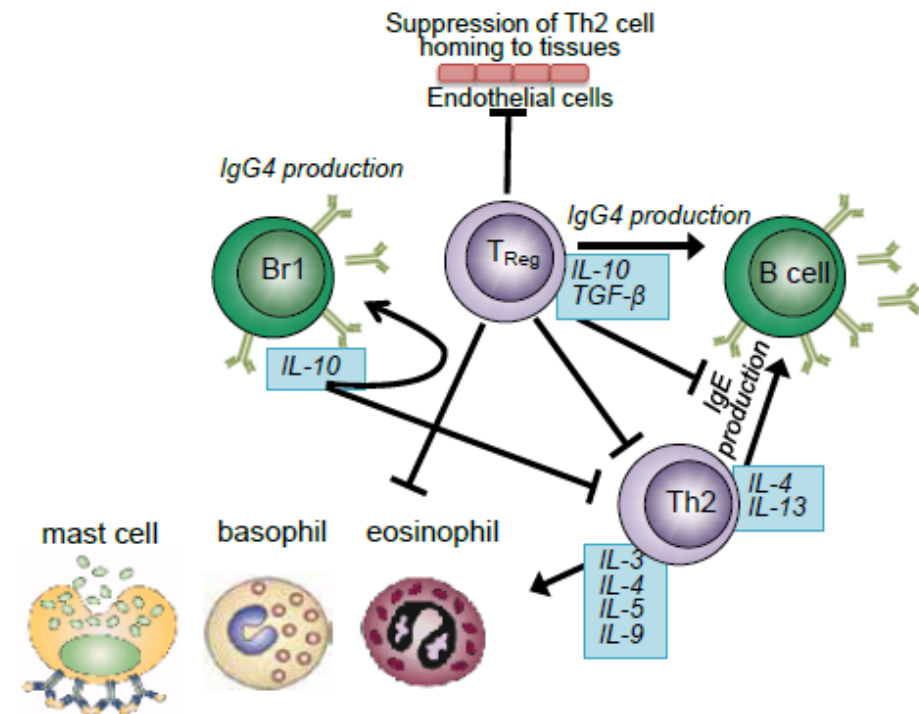


Nutrients **2013**, 5(3), 651-662

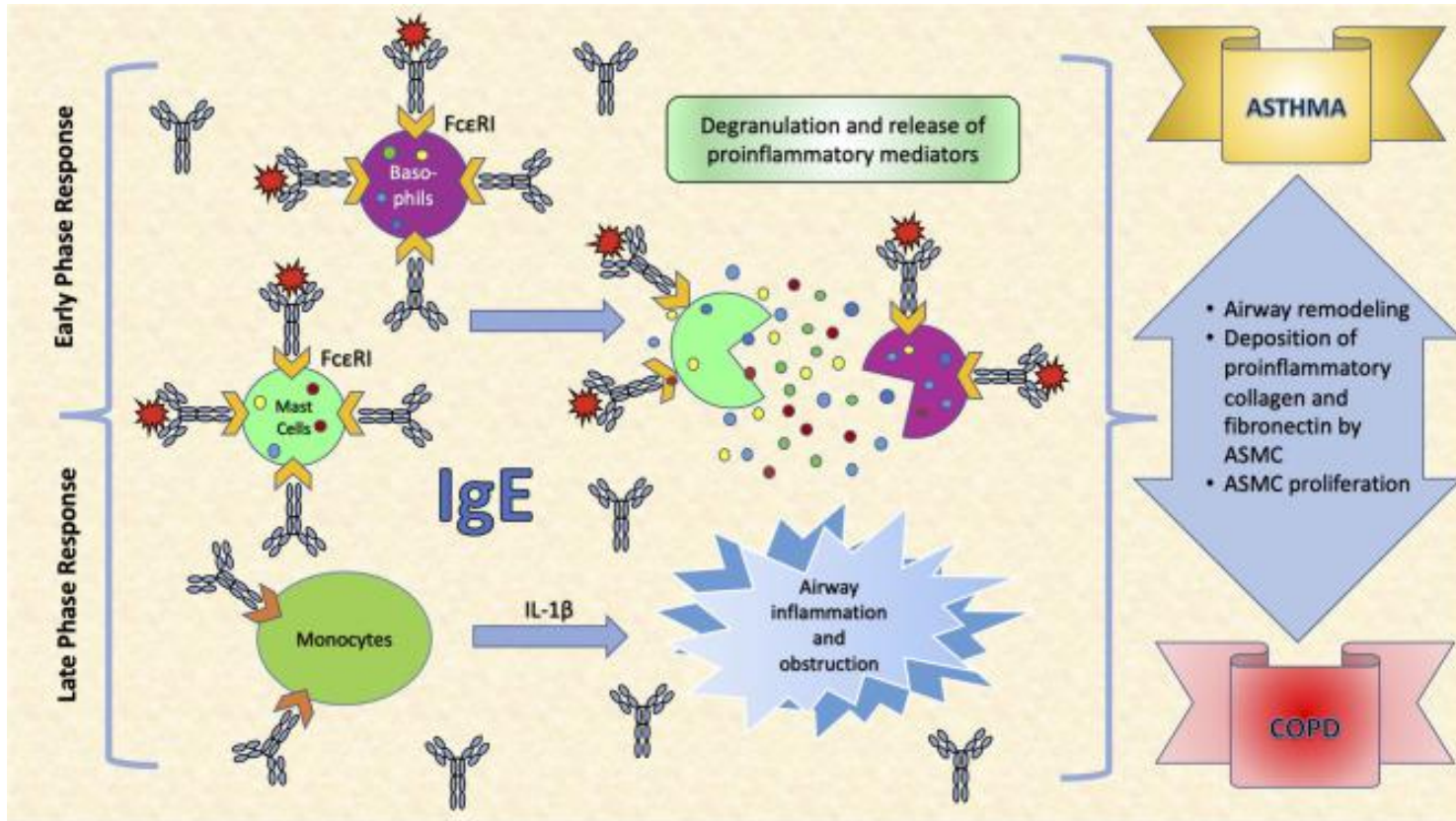


T-celle differensiering

Global atlas of allergy European Academy of Allergy and Clinical Immunology 2014



Direct and indirect suppressive effects on mast cells, basophils and eosinophils



Hvorfor økning i forekomst av allergi

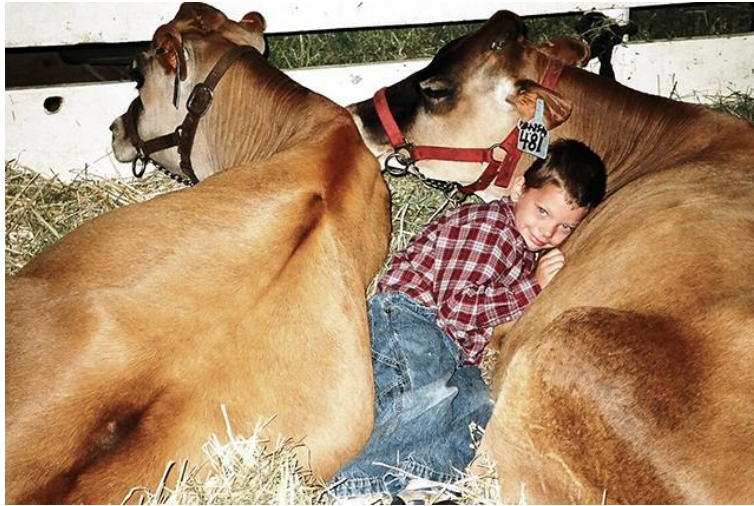


Neppe vesentlig endring i arvelighet i løpet av 40 år.

Enten: Nye stoffer som utløser/trigger allergi

Eller: Beskyttende faktorer har blitt borte.

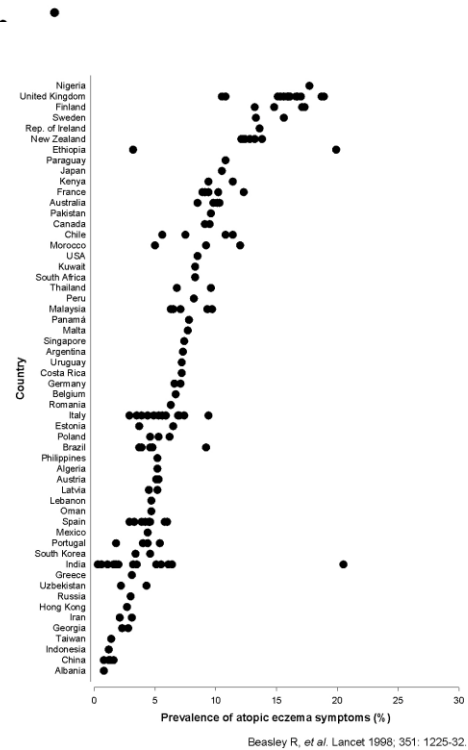
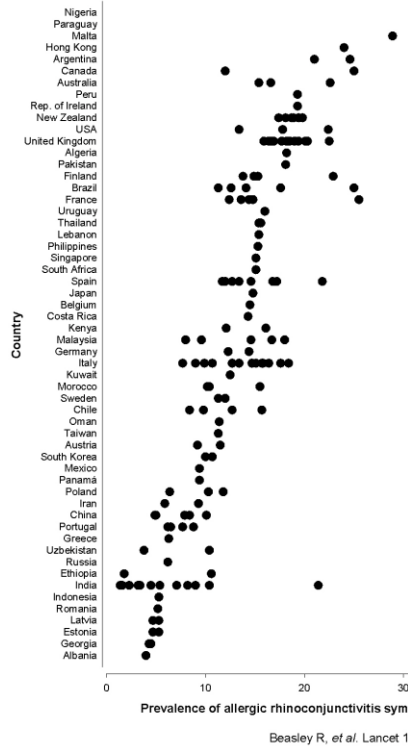
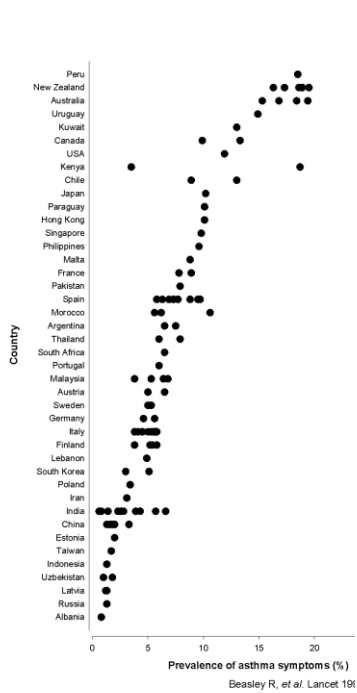
Former farm kids were 54 percent less likely to have asthma or hay fever and 57 percent less likely to have allergic nasal symptoms than the adults who had grown up in an inner city. (Thorax, 2016)



Charles Blackley 1887

“ One very curious circumstance in connection with hay fever is that the persons who are most subjected to the action of pollen belong to a class which furnishes the fewest cases of the disorder, namely, the farming class. This remarkable fact may be accounted for in two different ways: it may, on the one hand, be due to the absence of the predisposition which mental culture generates; or, on the other hand, it may be that in this disease there is a possibility of a patient being rendered insusceptible to the action of pollens by continued exposure to its influence.”

As civilization advance this disease will probably b much more prevalent”



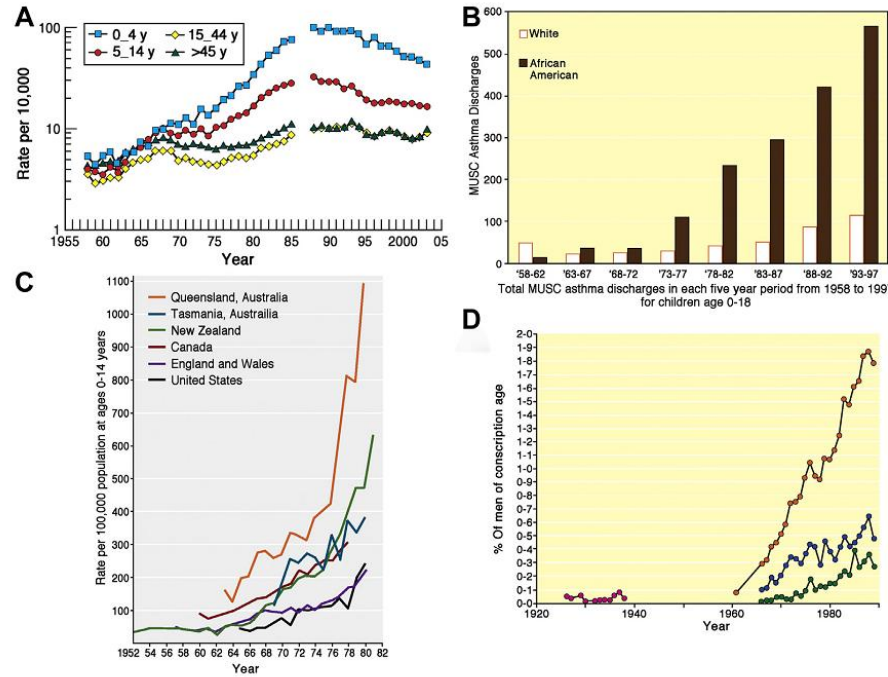
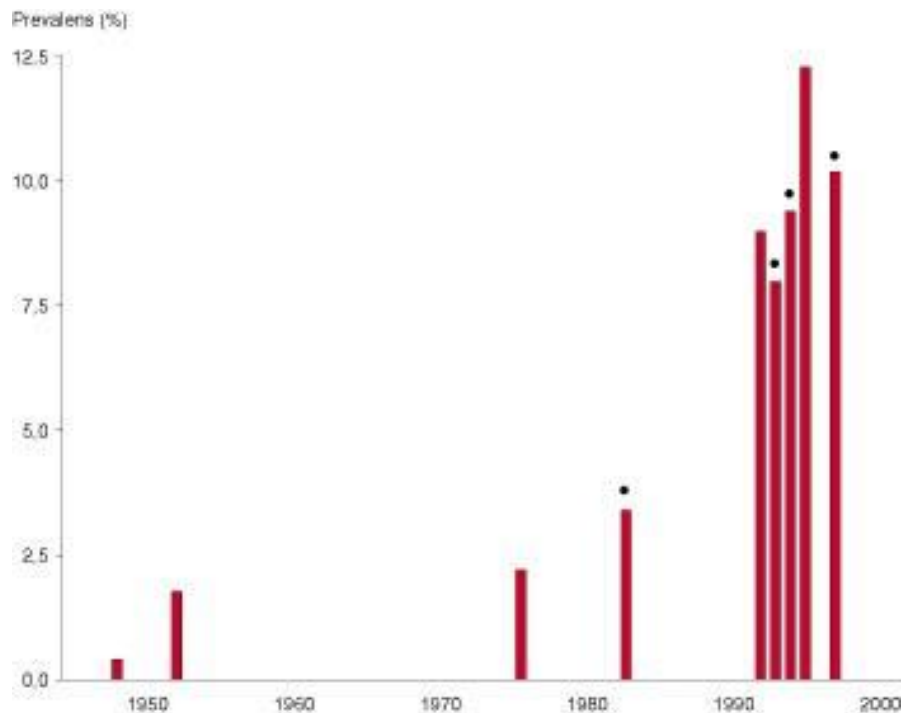
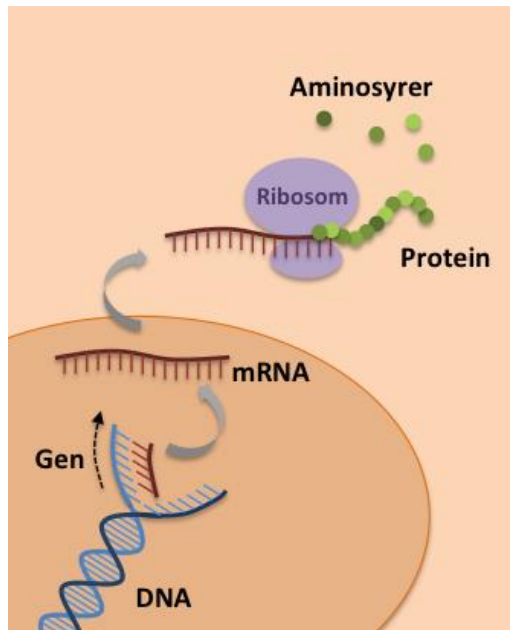


FIG 3. Published data on the increase in hospitalizations of children and young adults caused by asthma in 4 countries during the 20th century: **A**, asthmatic patients in the United Kingdom³⁴; **B**, asthmatic children at the Medical College of South Carolina³⁵; **C**, children in Australia, New Zealand, Canada, and the United States³⁶; **D**, Finnish army recruits.²⁷ All figures are used with permission but have been colored differently than the original source material.

Astmaforekomst hos norske skolebarn



Genetikk ved sensitivisering



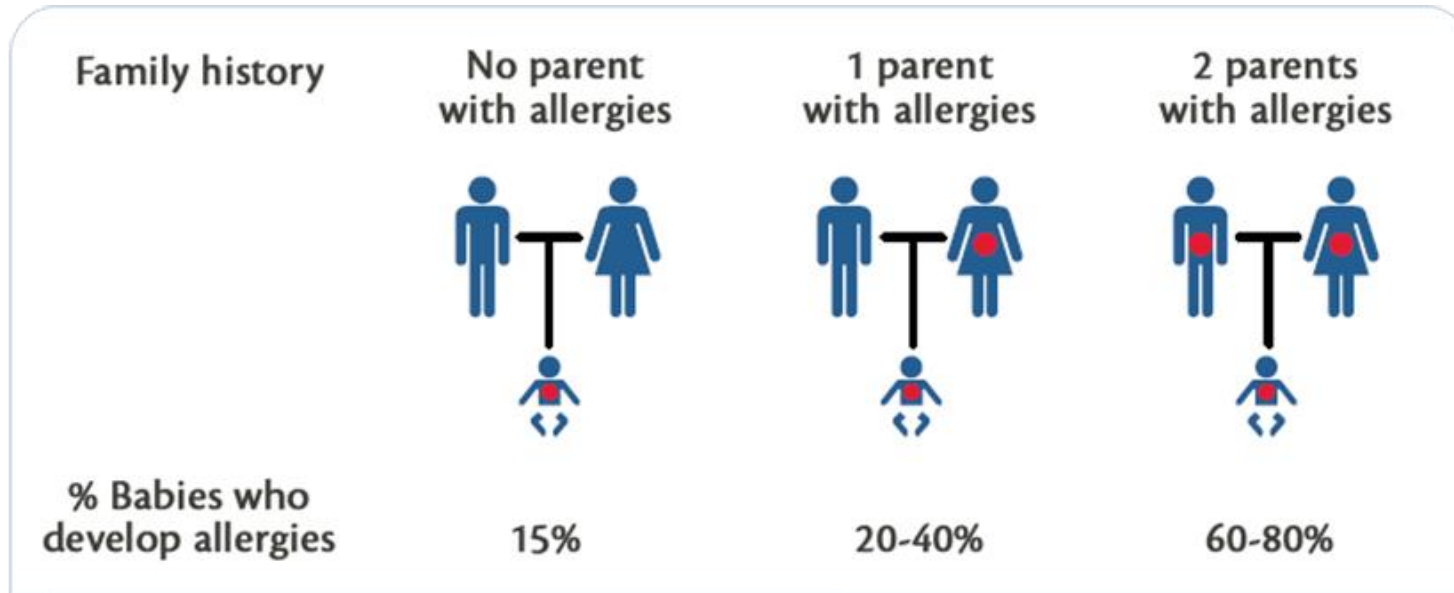
Allergisk sensitivisering har en estimert arvelighet på 0.40–0.85

- Los, H., Postmus, P.E. & Boomsma, D.I. Asthma genetics and intermediate phenotypes: a review from twin studies. *Twin Res.* 4, 81–93 (2001).
- Thomsen, S.F. et al. Multivariate genetic analysis of atopy phenotypes in a selected sample of twins. *Clin. Exp. Allergy* 36, 1382–1390 (2006).

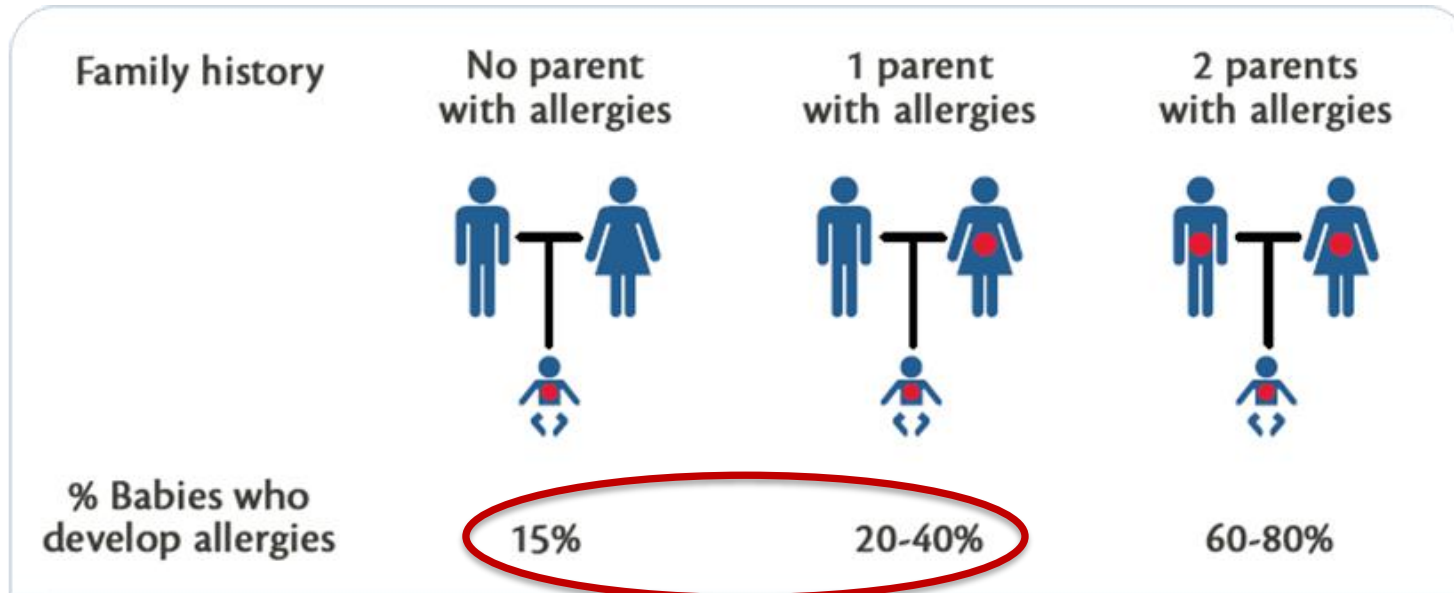
Det som arves er primært et anlegg for å bli allergisk overfor ett eller annet allergen og ikke en spesifikk allergi i seg selv

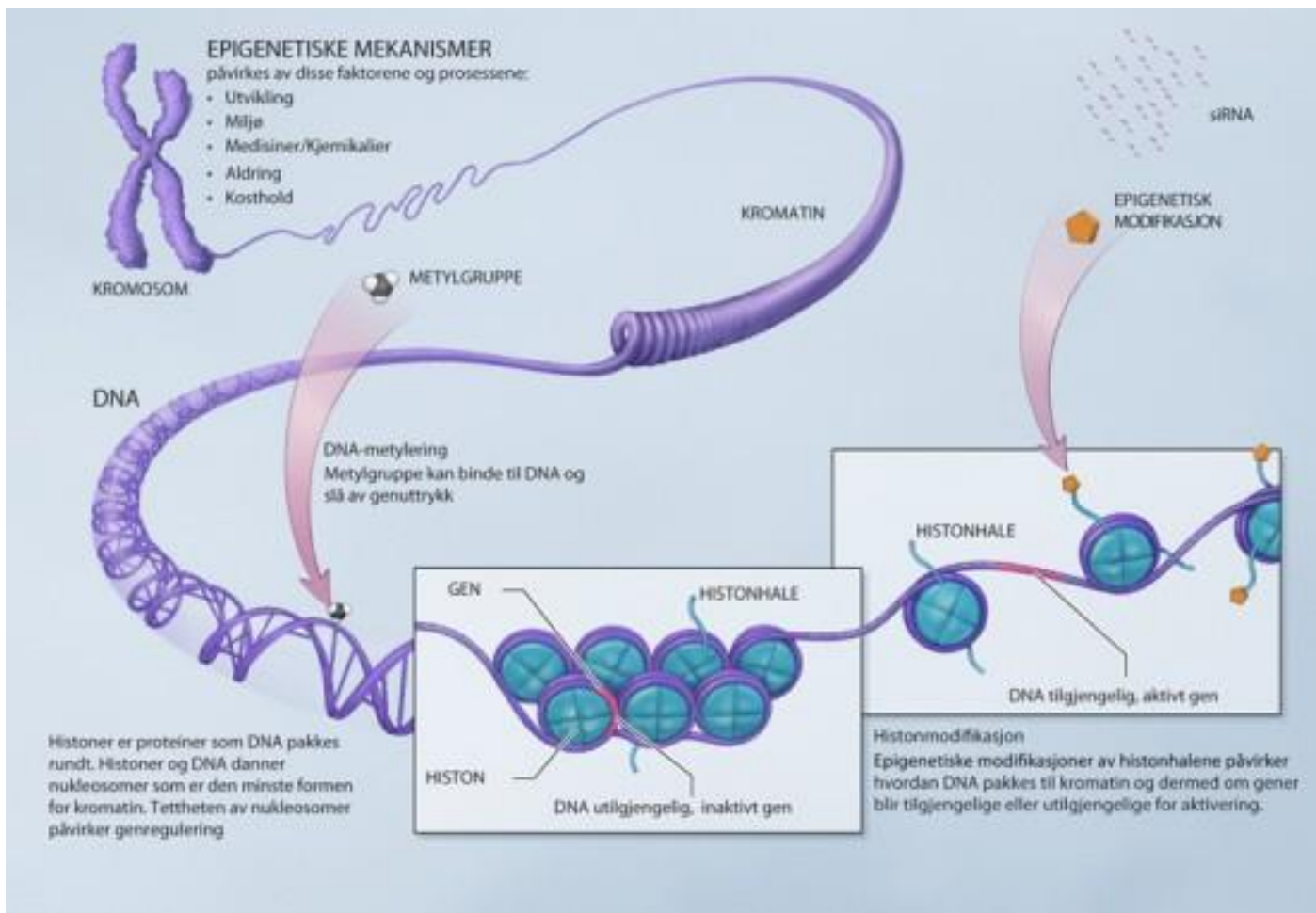
- Thomsen, S.F., van der Sluis, S., Kyvik, K.O. & Backer, V. A study of asthma severity in adult twins. *Clin. Respir. J.* 6, 228–237 (2012). [5](#)

Arv og sykdomsrisiko



Hvor skjer økningen?





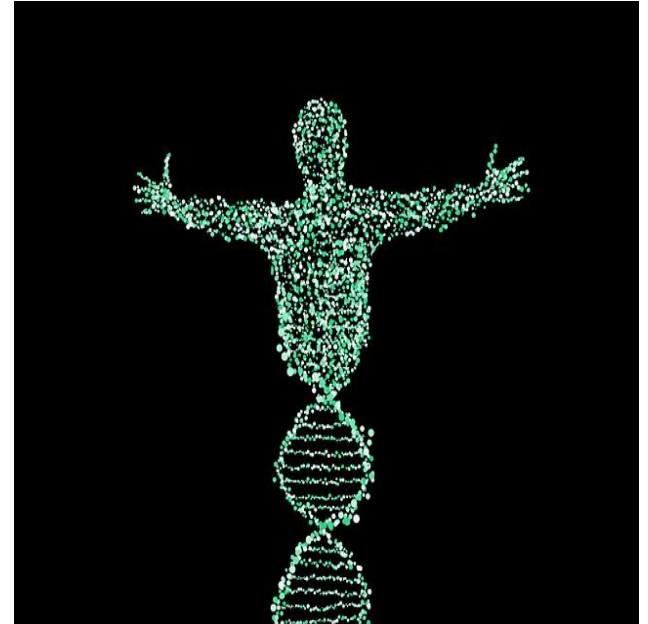
Epigenetikk ved atopi

Gener aktiveres eller inaktiveres ved DNA-metylering og histon-acetyleringsmønstre.

- Epigenetiske endringer skjer i både IL-4- og IFN- γ -genet (både på DNAmetyleringsnivå og på histonnivå) ved Th2-differensiering.
- Medfører bl.a. at IL-4-genet blir «slått på», og IFN- γ -genet blir «slått av».
- Påvirker T-celle-differensieringen og opprettholdelse av denne.
- Overføres genetisk til de neste slektsledd.

Wei G, Wei L, Zhu J, Zang C, Hu-Li J, Yao Z, et al. Global mapping of H3K4me3 and H3K27me3 reveals specificity and plasticity in lineage fate determination of differentiating CD4⁺ T cells. *Immunity* 2009; 30(1): 155–67. 12.

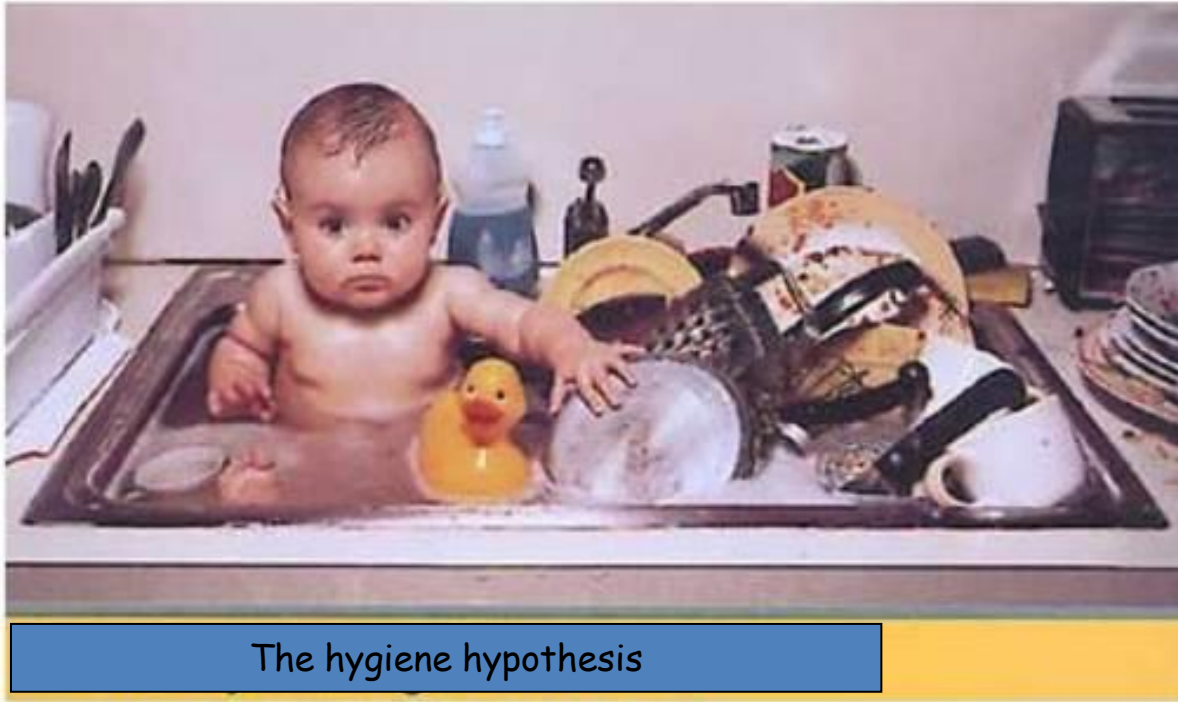
Lee DU, Agarwal S, Rao A. Th2 lineage commitment and efficient IL-4 production involves extended demethylation of the IL-4 gene. *Immunity* 2002; 16(5): 64–9–60.



Hva så med antigenet –allergenet?

Hygienehypotesen

- David Strachan 1989 i BMJ
 - Rhinokinjunktivitt vanligere i små familier enn i store
- Barn med større søsken eller tidlig barnehagestart har mindre sensibilisering og astma



The hygiene hypothesis

Til diversitetshypotesen

- The microbial diversity hypothesis suggests that the diversity and turnover of bacterial species in the gut mucosa and other areas around the body are key factors in the regulation of the immune system.
- This is in contrast to the historical belief that the body showed stable colonization with certain microbial species.

Peyer's patches



Peyer's patches in the distal ileum. PPs seen in a 20-years-old man during ileocolonoscopy. Note that PPs form a lymphoid ring in the distal ileum.

From: *Int J Inflam.* 2010; 2010: 823710

Intestinal mikrobiell diversitet

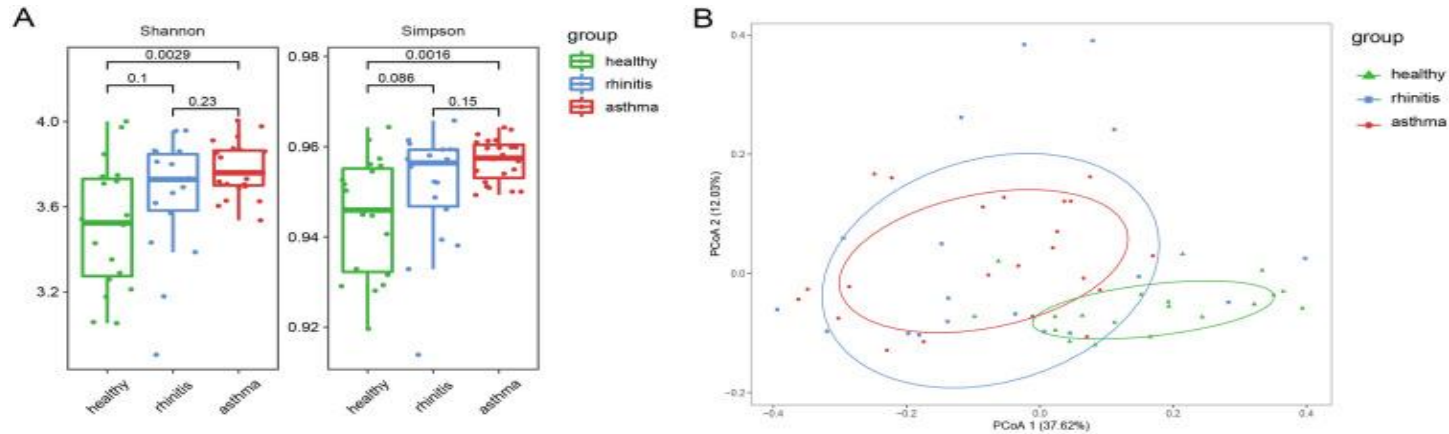
KEY POINTS

- Recent findings support the hypothesis that reduced intestinal microbial diversity is associated with increased risk of atopic sensitization or allergic disease.
- Intestinal microbiota diversity is associated with environmental diversity and regulated by host immunity and host genetics.

Storrø, Ola^a; Avershina, Ekaterina^b; Rudi, Knut^c Diversity of intestinal microbiota in infancy and the risk of allergic disease in childhood. *Current Opinion in Allergy & Clinical Immunology*: June 2013 - Volume 13 - Issue 3 - p 257-262

Alterations in the Gut Microbiome of Young Children with Airway Allergic Disease Revealed by Next-Generation Sequencing

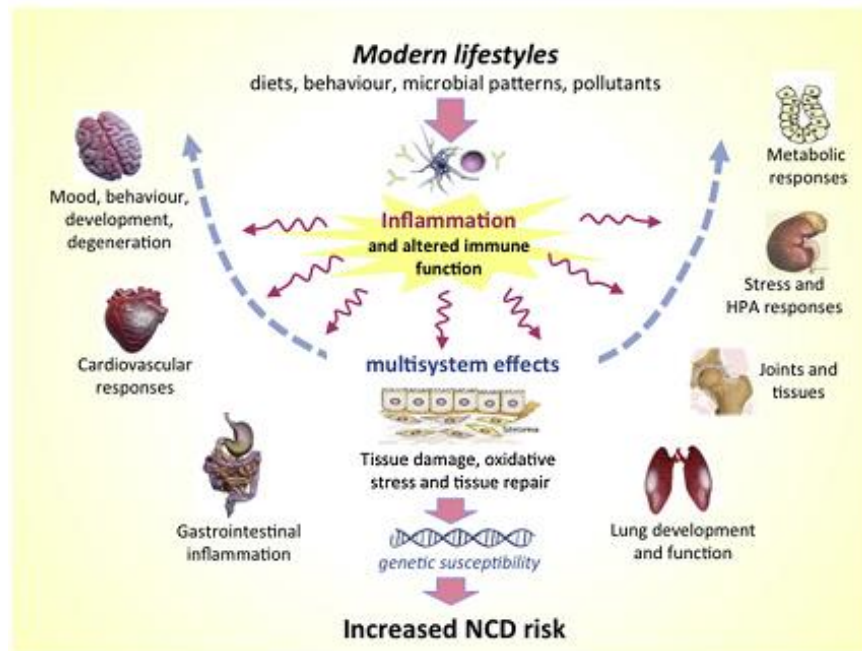
The intestinal microbiota of children with allergic asthma and allergic rhinitis was characterized by increased microbial richness and diversity



Alpha and beta diversity of microbiota. **(A)** Alpha diversity is based the Shannon diversity index and Simpson index. **(B)** Beta diversity is on measured by Bray-Curtis dissimilarities.

Wan J, Song J, Lv Q, Zhang H, Xiang Q, Dai H, Zheng H, Lin X, Zhang W. Alterations in the Gut Microbiome of Young Children with Airway Allergic Disease Revealed by Next-Generation Sequencing. *J Asthma Allergy*. 2023 Sep 7

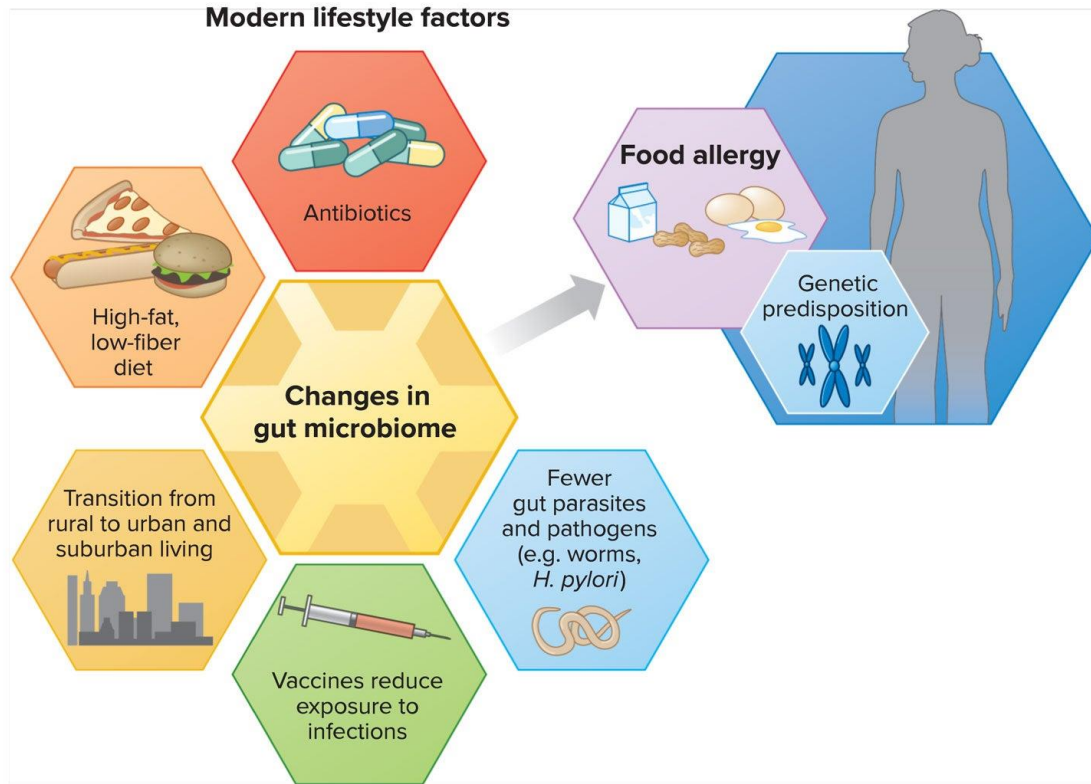




Inflammation: a common element in many NCDs. *HPA*, Hypothalamic-pituitary-adrenal axis.

Prescott, Susan L. Early-life environmental determinants of allergic diseases and the wider pandemic of inflammatory noncommunicable diseases. *Journal of Allergy and Clinical Immunology* 131.1 (Jan 2013): 23-30.

The rise in food allergies: A gut connection?



SOURCE: O.I. IWEALA & C.R. NAGLER / *AR IMMUNOLOGY* 2019

KNOWABLE MAGAZINE

Chen, CC., Huang, JL., Chen, KJ. *et al.* Comparison of 16S rRNA gene sequencing microbiota among children with serological IgE-mediated food hypersensitivity. *Pediatr Res* (2023). <https://doi.org/10.1038/s41390-023-02735-7>

- Children with IgE-mediated FH (in milk, egg white, soy) had significantly lower gut microbiota diversity and richness than healthy children.

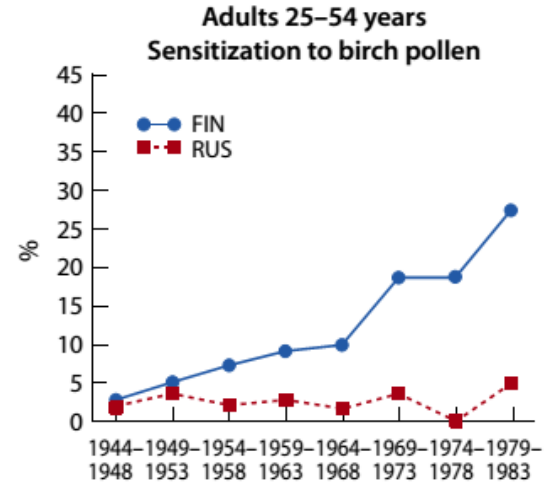
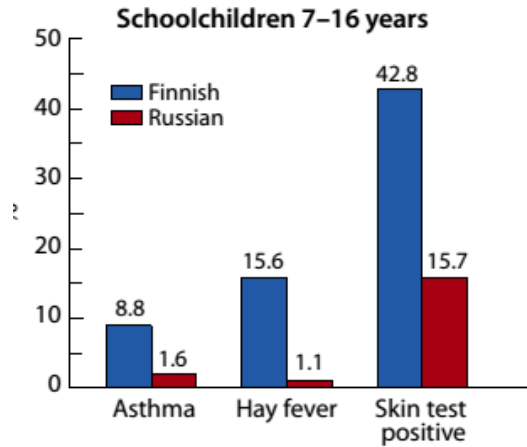
Chen, CC., Huang, JL., Chen, KJ. *et al.* Comparison of 16S rRNA gene sequencing microbiota among children with serological IgE-mediated food hypersensitivity. *Pediatr Res* (2023).

<https://doi.org/10.1038/s41390-023-02735-7>

- These findings identify early evidence of different gut microbiota development/differentiation in children with food hypersensitivity.
- We built a gut microbial profile that could identify toddlers at risk for food hypersensitivity.
- Children with enriched Firmicutes (phylum) with partial different families may be associated with food hypersensitivity.
- Enriched family *Clostridiaceae*, *Ruminococcaceae*, *Lachnospiraceae*, or *Erysipelotrichaceae* in gut microbiota may be associated with specific food hypersensitivities (such as milk, egg white, peanut) in children.

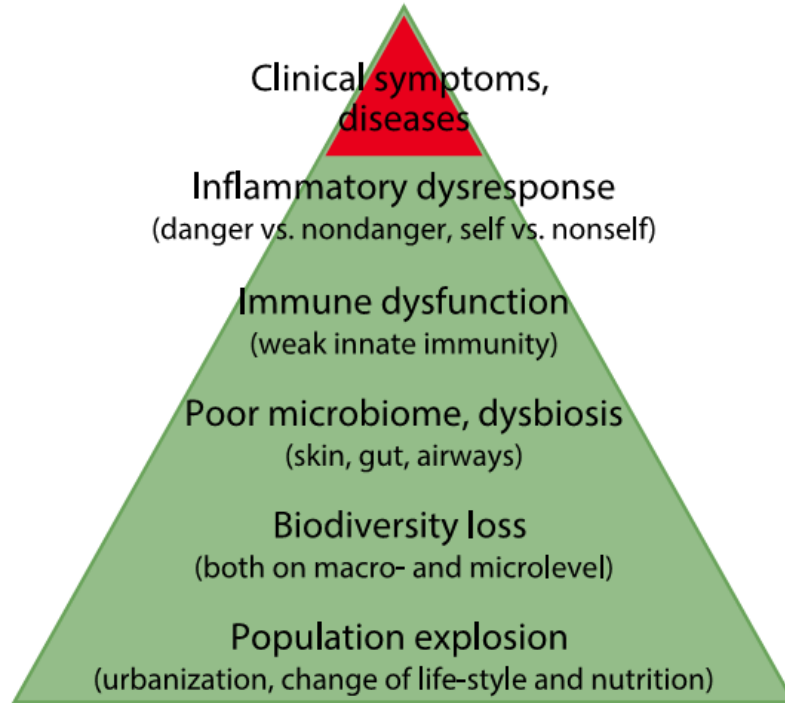


T. Haahela, T. Laatikainen, H. Alenius et. al. Hunt for the origin of allergy—comparing the Finnish and Russian Karelia. *Clinical & Experimental Allergy* 2015 (45) 891–901



T. Haahtela, T. Laatikainen, H. Alenius et. al. Hunt for the origin of allergy—comparing the Finnish and Russian Karelia. *Clinical & Experimental Allergy* 2015 (45) 891–901

Biodiversity hypothesis



T. Haahtela, T. Laatikainen, H. Alenius et. al. Hunt for the origin of allergy—comparing the Finnish and Russian Karelia. *Clinical & Experimental Allergy* 2015 (45) 891–901

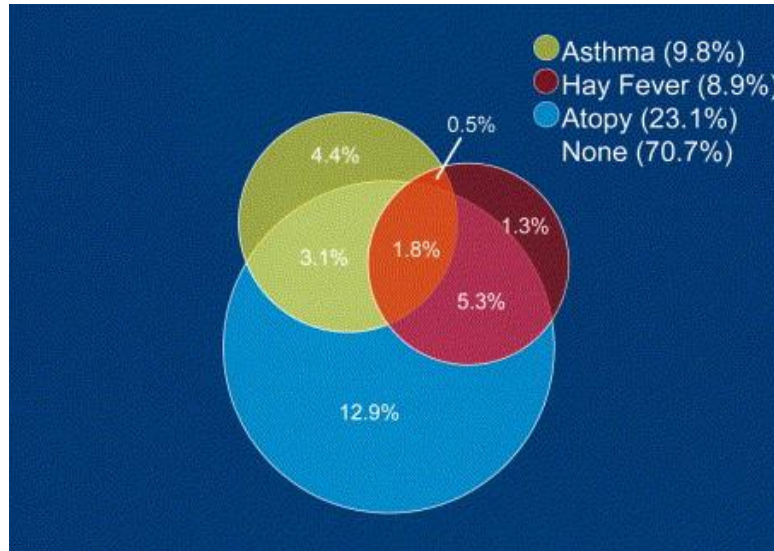
Konklusjoner:

- The study revealed major disparities between the Finnish and Russian house dusts both in microbial quantity and in diversity, which was much greater in Russia.
- The results also supported the general idea that a biologically rich and diverse natural environment enriches the human commensal microbiota and prevents from inappropriate inflammatory responses

T. Haahtela, T. Laatikainen, H. Alenius et. al. Hunt for the origin of allergy—comparing the Finnish and Russian Karelia. *Clinical & Experimental Allergy* 2015 (45) 891–901

- Del 2

Komorbiditet for allergiske sykdommer

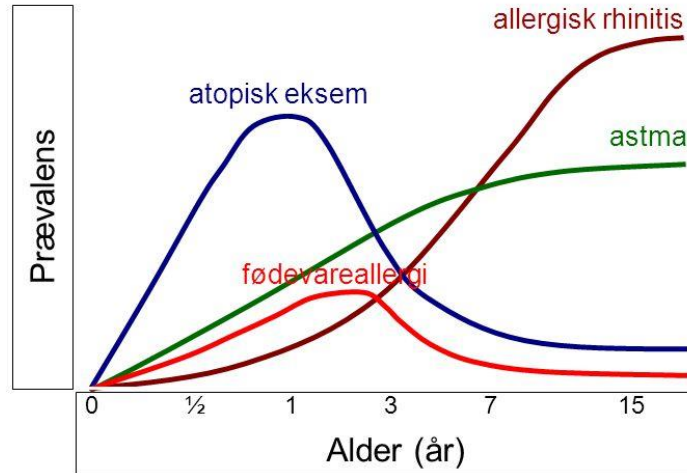


Journal of Allergy and Clinical Immunology, Volume 113, Issue 3, March 2004,

"Den allergiske marsjen"



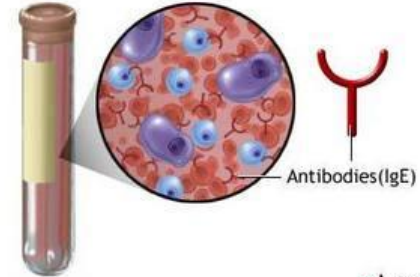
Den allergiske march...



12

Allergidiagnose

Påvisning av sensitivisering



ADAM.



Konsentrasjonen av sIgE og sannsynligheten for IgE-mediert allergisk reaksjon

- sIgE over 0.35 kU/l indikerer sensitivisering, men er *absolutt ikke* synonymt med allergisk sykdom
- Sannsynligheten for allergisk sykdom øker med konsentrasjonen av spesifikk IgE
 - Men sier ingen ting om alvorligheten
 - Er ingen garanti for klinisk allergi

Sannsynlighet (ratio) for klinisk allergi og intervall for spesifikk IgE (sIgE) for gresspollen (rPhl p 1,5,)og bjørkepollen (rBet v 1).

- Likelihood ratio:
 - <0.03 for sIgE <0.1 kU/L,
 - 0.1 - 1.4 for sIgE 0.1 kU/L - 0.35 kU/L,
 - 1.4 - 4.2 for sIgE 0.35 kU/L - 3.5 kU/L,
- very high (∞) for sIgE >3.5 kU/L.

Konklusjon

- Allergi er en klinisk diagnose.
- Betegnelsen "allergi" reserveres for kliniske reaksjoner der en immunologisk mekanisme er dokumentert eller sterkt medvirkende.
- sIgE og prikktest er vanskelig å tolke
- sIgE og prikktest er ikke likeverdige
- sIgE og prikktest er ingen screeningtest ved noen form for allergi
- Meningsløst å gi testresultatene til pasientene til «eget bruk og informasjon»

ASTMA

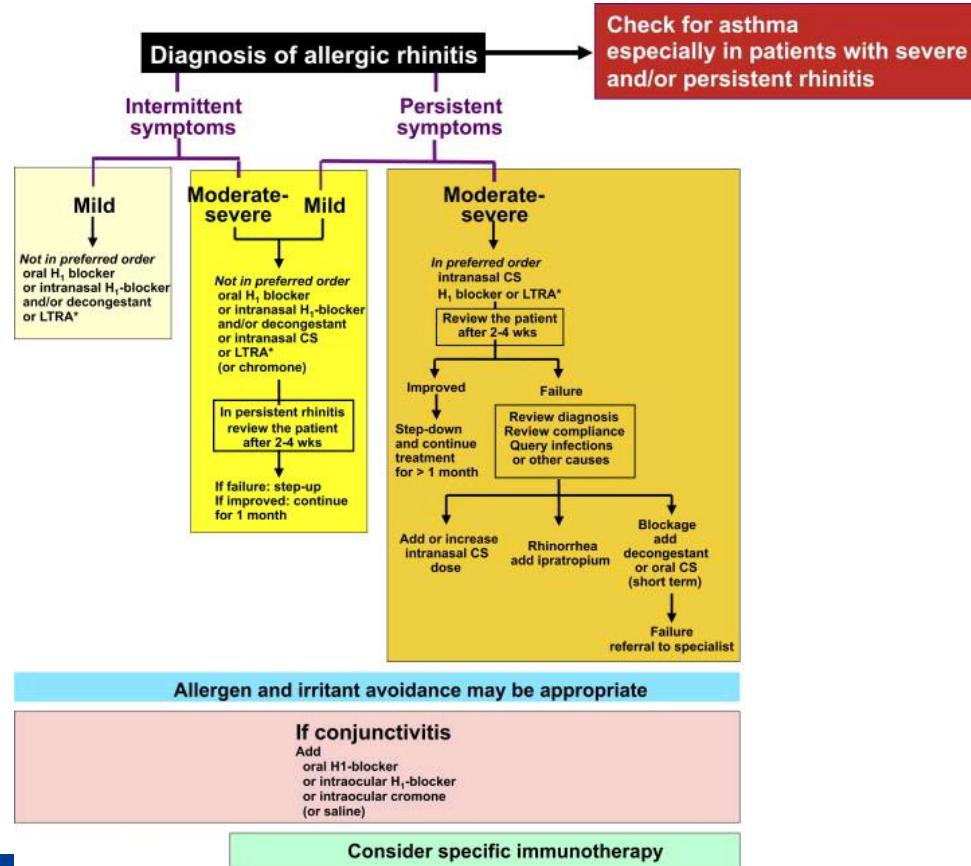
Miljøfaktorer

- Sanere?
- Kjæledyr?
- Skal vi sanere eller eksponere?
- Hvis allergi er påvist skal allergen i størst mulig grad unngås

Allergic Rhinitis and its Impact on Asthma (ARIA): Achievements in 10 years and future needs

Journal of Allergy and Clinical Immunology

Volume 130, Issue 5, November 2012, Pages 1049–1062



Allergen and irritant avoidance may be appropriate

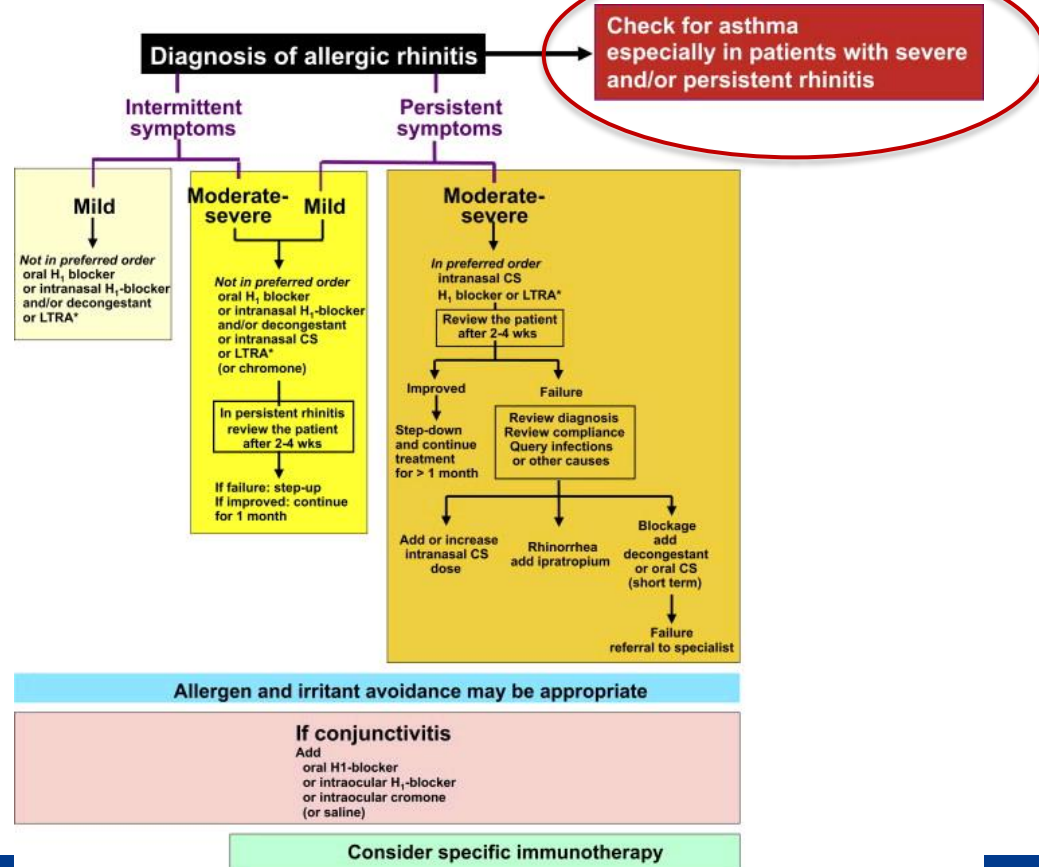
If conjunctivitis
 Add oral H₁-blocker or intraocular H₁-blocker or intraocular cromone (or saline)

Consider specific immunotherapy

Allergic Rhinitis and its Impact on Asthma (ARIA): Achievements in 10 years and future needs

Journal of Allergy and Clinical Immunology

Volume 130, Issue 5, November 2012, Pages 1049–1062



Behandling etter ARIA guidelines

| Effect of therapies on rhinitis symptoms | | | | | |
|------------------------------------------|----------|------------|-------------------|------------|--------------|
| | sneezing | rhinorrhea | nasal obstruction | nasal itch | eye symptoms |
| H1-antihistamines | | | | | |
| oral | ++ | ++ | + | +++ | ++ |
| intranasal | ++ | ++ | + | ++ | 0 |
| intraocular | 0 | 0 | 0 | 0 | +++ |
| Corticosteroids | | | | | |
| intranasal | +++ | +++ | +++ | ++ | ++ |
| Chromones | | | | | |
| intranasal | + | + | + | + | 0 |
| intraocular | 0 | 0 | 0 | 0 | ++ |
| Decongestants | | | | | |
| intranasal | 0 | 0 | ++++ | 0 | 0 |
| oral | 0 | 0 | + | 0 | 0 |
| Anti-cholinergics | 0 | ++ | 0 | 0 | 0 |
| Anti-leukotrienes | 0 | + | ++ | 0 | ++ |

- Utelukk:
 - Infeksjoner
 - Fremmedlegemer
 - Matallergi

- Unngå kjente allergener

Adapted from van Cauwenberge, P., et al., Consensus statement on the treatment of allergic rhinitis. European Academy of Allergy and Clinical Immunology. *Allergy*, 2000; 55(2): p.116-34.

Behandling etter ARIA guidelines

| Effect of therapies on rhinitis symptoms | | | | | |
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| H1-antihistamines | | | | | |
| oral | ++ | ++ | + | +++ | ++ |
| intranasal | ++ | ++ | + | ++ | 0 |
| intraocular | 0 | 0 | 0 | 0 | +++ |
| Corticosteroids | | | | | |
| intranasal | +++ | +++ | +++ | ++ | ++ |
| Chromones | | | | | |
| intranasal | + | + | + | + | 0 |
| intraocular | 0 | 0 | 0 | 0 | ++ |
| Decongestants | | | | | |
| intranasal | 0 | 0 | ++++ | 0 | 0 |
| oral | 0 | 0 | + | 0 | 0 |
| Anti-cholinergics | 0 | ++ | 0 | 0 | 0 |
| Anti-leukotrienes | 0 | + | ++ | 0 | ++ |

- Utelukk:
 - Infeksjoner
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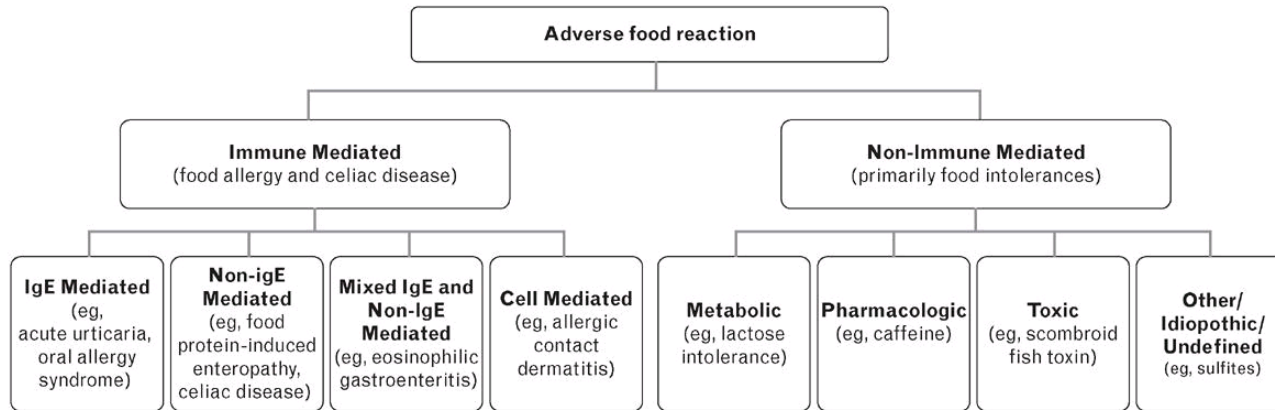
- Unngå kjente allergener

Adapted from van Cauwenberge, P., et al., Consensus statement on the treatment of allergic rhinitis. European Academy of Allergology and Clinical Immunology. *Allergy*, 2000; 55(2): p.116-34.

Matallergi -definisjon

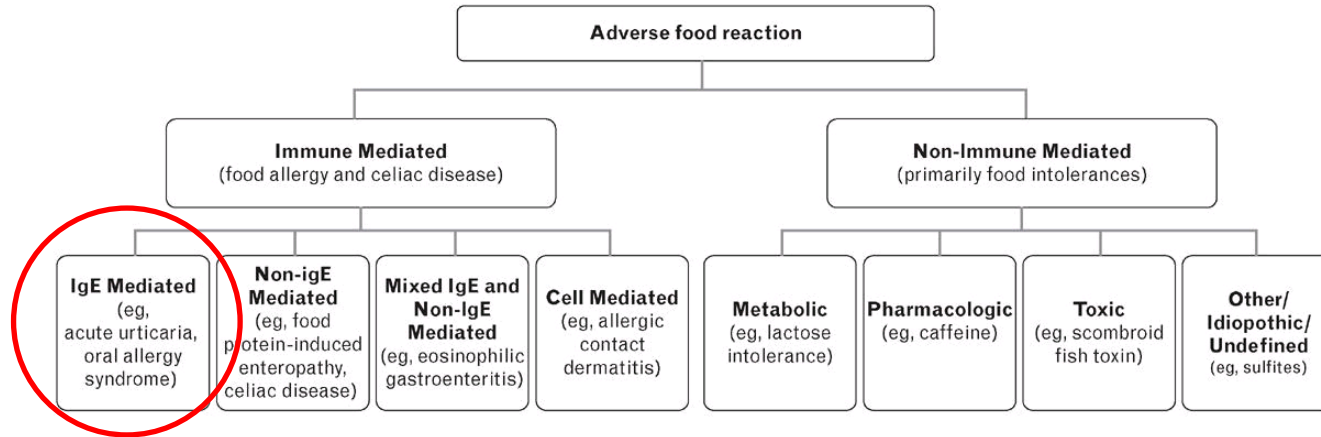
- IgE-mediert hypersensitivitet og allergisk reaksjon mot matvarer.

Definisjon av reaksjoner (adverse reactions) mot matvarer jfr. US NIAID guidelines



Venter, C . Arshad, SH. Curr Opin Allergy Clin Immunol 2012, 12:302–315

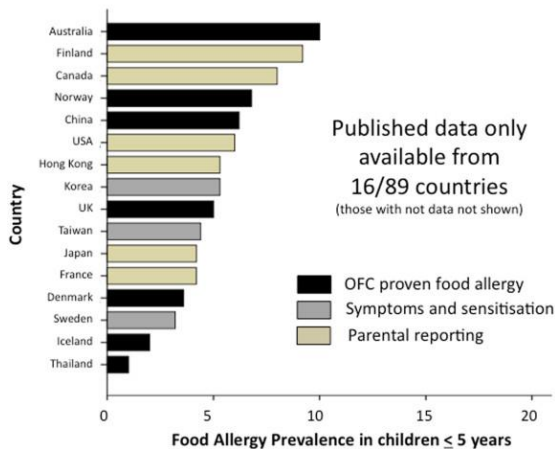
Definisjon av reaksjoner (adverse reactions) mot matvarer jfr. US NIAID guidelines



Venter, C . Arshad, SH. Curr Opin Allergy Clin Immunol 2012, 12:302–315

Prevalens av matallergi

Studies reporting Food Allergy Prevalence
in preschool children ≤ 5 years



~ 6% (2015)

6%-13% of the global population (2019)

Økning: 1,2 prosentpoeng/10 år siden 1990

Prescott et al. *World Allergy Organization Journal* 2013 6:21

Forskerne ved Universitetet i Umeå

foreldrene til 2585 barn i alderen 7-8 år til å delta i studien om matallergi. 96% pos. svar

Spørreskjema til foreldrene: 21 % av disse barna en eller annen form for matallergi.

Da barna var blitt 11-12 år gamle, oppfølgingsstudie. Foreldrene rapporterte nå om enda høyere overfølsomhet for matvarer hos ungene sine. En god del av barna fikk verken melk, egg, fisk eller hvete som en del av kostholdet.

De antatt matallergiske barna ble deretter invitert av forskerne til å delta en egen klinisk studie, for å finne ut om de virkelig var allergiske mot en eller flere matvarer. I alt 94 barn var med på det som kalles en dobbeltblind studie. De ble utsatt for ulike matvarer de kunne være allergiske mot.

Bare ni av disse 94 barna hadde en matallergi.

Forslag til håndtering



Alle med mistanke om overfølsomhet for matvarer skal tilbys utredning

Hos barn bør dette gjentas fordi allergien kan gå tilbake

Dette kan gjentas flere ganger i løpet av barneårene

Fødevareprovokasjon er helt OK som metode

Matallergi definisjon: IgE-mediert hypersensitivitet og allergisk reaksjon mot matvarer.

Kommer raskt (fra minutter opp til 2 timer) etter antigen eksponering

Symptomer er

- urticaria,
- angioødem,
- nausea,
- kløe i halsen,
- gastrointestinale og respiratoriske symptomer,
- potensielt fatal systemisk anafylaksi.

Patogenese

- ENTEN: Manglende induksjon av oral toleranse før første eksponering av matallergen.
- ELLER: Nedbryting av initialt etablert oral toleranse

Klinisk diagnose av matallergi

Anamnese

DBPCFC

Andre eliminasjons- og provokasjonstrategier.

Eliminasjons- og provokasjonstester

- Gullstandard: The double-blind placebo-controlled food challenge (DBPCFC)
 - Tidkrevende og dyr. "Ugjennomførbar?"
 - Egentlig forbeholdt kliniske studier.
- Observed food challenges (OFC)
 - Inkonklusiv anamnese
 - Positiv sensitivisering (slgE og/eller SPT)
 - Strukturert introduksjon av ett og ett fødeemne
- Vår tvilsomme(?) praksis: Anamnese som kan tyde på allergi
 - Bekreftelse med slgE og/eller SPT

Positiv prediktiv verdi av konsentrasjonen av sIgE (Ku/l) mot matvarer (ImmunoCAP)

| ALLERGEN | SPESIFIKK IgE (KU/L) | PPV |
|-----------------------|----------------------|-------------|
| Kumelk (alder > 2 år) | 15 | 95% |
| (alder ≤ 2 år) | 5 | 95% |
| Egg (alder > 2 år) | 7 | 98% |
| (alder ≤ 2 år) | 2 | 95% |
| Fisk | 20 | 100% |
| Peanøtter | 14 | 100% |
| Soya | 30 | 73% |
| Nøtter | 15 | 95% |
| Hvete | 26 | 74% |

Sampson HA. Update On Food Allergy. J Allergy Clin Immunol 2004; 113:805–819
WAO/WHO

Naturlig forløp og forebygging av matallergi

- 70–80 % av barn med allergi mot egg, melk, hvete og soya er kvitt dette I tenårsalder.
- ~ 50 % har vokst av seg egg- og kumelkallergi ved 6 års alder.
- Bare 20 % av barn med peanut-allergi, og bare 10 % med hassel- eller valnøttallergi vokser den av seg.

Nwaru BI, Hickstein L, Panesar SS, Roberts G, Muraro A, Sheikh A, et al. Prevalence of common food allergies in Europe: a systematic review and meta-analysis. *Allergy*. 2014;69(8):992–100

Keet CA, Savage JH, Seopaul S, Peng RD, Wood RA, Matsui EC. Temporal trends and racial/ethnic disparity in self-reported pediatric food allergy in the United States. *Ann Allergy Asthma Immunol*. 2014;112(3):222–9.



Greer FR, Sicherer SH, Burks AW, American Academy of Pediatrics Section on A Immunology. Effects of early nutritional interventions on the development of atopic disease in infants and children: the role of maternal dietary restriction, breastfeeding, timing of introduction of complementary foods, and hydrolyzed formulas. Pediatrics. 2008;121(1):183–91

Før: Fullamning lengst mulig, og egg, fisk, kumelk, nøtter først etter 1-2 års alder.

Epidemiologiske studier 2000-2008:

**Tidlig introduksjon av allergen
mat forebygger allergi**

Egg og kumelk

- Kokt egg ved 4-6 måneder assosiert med redusert risiko for eggallergi enn ved 10-12 mnd. eller senere.

Koplin JJ, Osborne NJ, Wake M, Martin PE, Gurrin LC, Robinson MN, et al. Can early introduction of egg prevent egg allergy in infants? A population-based study. *J Allergy Clin Immunol.* 2010;126(4):807–13.)

- Ikke-allergiske barn gitt kumelkbasert morsmelkerstatning+ morsmelk ved 2 uker ga mindre kumelkallergi sml. med barn som fikk erstatning først ved 3.5–6.5 mnd. alder.

Katz Y, Rajuan N, Goldberg MR, Eisenberg E, Heyman E, Cohen A, et al. Early exposure to cow's milk protein is protective against IgE-mediated cow's milk protein allergy. *J Allergy Clin Immunol.* 2010;126(1):77–82.

Peanøtter

- 10 ganger så mye peanøttallergi blant jødiske barn i UK sml. m. Israel (justerte data)
- Israelske barn 8-14 mnd gamle spiste gj.sn. 7,1g pr. mnd, UK: 0 g
- Learning Early about Peanut Allergy (LEAP) study.

Du Toit G, Roberts G, Sayre PH, Bahnson HT, Radulovic S, Santos AF, et al. Randomized trial of peanut consumption in infants at risk for peanut allergy. *N Engl J Med.* 2015;372(9):803–13.

Tidlig introduksjon av mat kan forebygge matallergi hos barn



- Små mengder matvarer me peanøtt, egg, melk og hvete fra 3 mndr alder kan redusere risiko for allergiutvikling.
- Skjerven, H. O., Lie, A., Vettukattil, R., Rehbinder, E. M., LeBlanc, M., Asarnoj, A., ... & Carlsen, K. C. L. (2022). Early food intervention and skin emollients to prevent food allergy in young children (PreventADALL): a factorial, multicentre, cluster-randomised trial. *The Lancet*, 399(10344), 2398-2411.

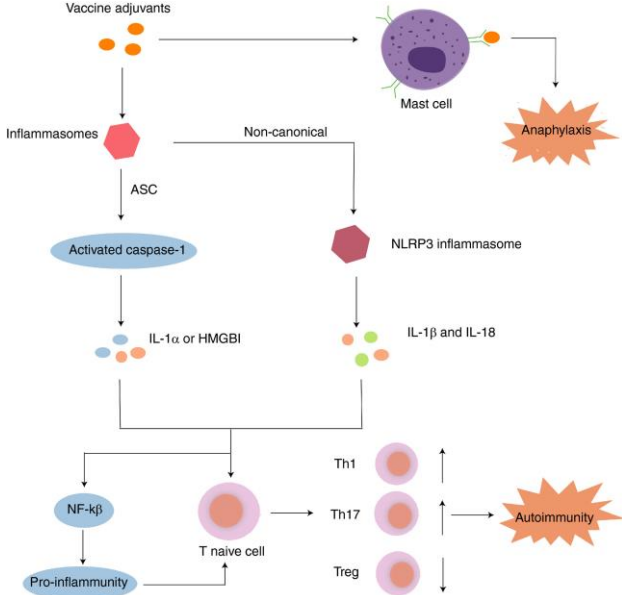
Nye tester ved mistenkt matallergi

- Component-resolved diagnostics (CRD)
 - sIgE mot *spesifikke komponenter* av et allergen
 - Stert assosiert med klinisk sykdom
 - Sterkt assosiert med alvorlighetsgrad

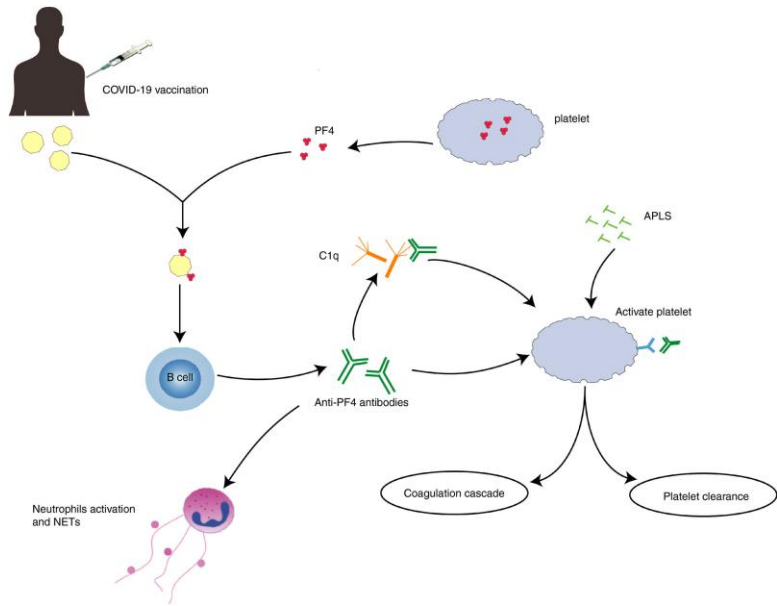
Ikke validerte tester

- IgG and IgG4 produseres av immunceller I tarmmucosa mot alle slags proteiner, patogener og ikke-patogener
- Spesifikk IgG mot matvarer er normalt.
 - Betyr bare at individet har konsumert en viss mengde av et gitt fødemiddel
- Predikerer ikke på noe vis hypersensitivitet mot mat
- Andre kvasimedisinske tester:
 - Kinesiologi
 - Cytotoxic tests
 - Electrodermal testing

New-onset autoimmune phenomena post-COVID-19 vaccination



New-onset autoimmune phenomena post-COVID-19 vaccination



Idiotiske allergitester

- En industri
- Villedende, ikke veiledende
- Overdiagnostikk og Overbehandling
- Underernæring
- Feilernæring
- Potensielt farlig

At Home Allergy Testing

fauquierent.blogspot.com/2013/06/at-home-allergy-testing.html

Recently, a new [at-home allergy test](#) can be found on store shelves throughout the United States as well as [Amazon.com](#). It is called "[MyAllergyTest](#)"

" produced by ImmuneTech Corporation and it is FDA approved. The way it works is that you place a few drops of blood into the collection kit which is then mailed to a lab in a pre-paid, pre-addressed envelope.

Results are then obtained via internet or by certified mail in about one week.

What's tested? Only ten things (IgE only):

- Timothy Grass • Bermuda Grass • Mountain Cedar • Short Ragweed • Alternaria Mold • Cat Dander • Mite pternoyssinus • Egg White • Wheat • Milk

As such, if testing comes back normal, it does not mean you do not have allergies... It just means that you do not have allergies to these 10 things only... You could be allergic to other non-tested substances.

A report is produced listing what you are allergic to and how badly:

How accurate is the testing? Apparently, it is comparable to Pharmacia CAP system (specific IgE FEIA).

In terms of actual numbers, the test has a sensitivity 88%, specificity 94%, and accuracy 91%.

Source:

[FDA.gov](#)

[Company Website](#)



| Test Results | | | | |
|-----------------------|--------|-------|-------------------|--|
| Allergen | IU/mL | Class | Allergic Response | |
| +++ Timothy Grass | 14.93 | 3 | Moderate / High | |
| + Bermuda Grass | 0.37 | 1 | Very Low | |
| - Caster | < 0.35 | 0 | Negative | |
| - Ragweed | < 0.35 | 0 | Negative | |
| +++ Alternaria (Mold) | 71.17 | 5 | High | |
| +++ Milk | 48.83 | 4 | High | |
| - Egg White | < 0.35 | 0 | Negative | |
| - Wheat | < 0.35 | 0 | Negative | |
| - Cat | < 0.35 | 0 | Negative | |
| + Household Mite | 0.57 | 1 | Very Low | |

| Allergen-Specific IgE Concentration IU/mL, Class, Test Result, Allergic Response | | | | |
|----------------------------------------------------------------------------------|-------|-------------|-------------------|--|
| IU/mL | Class | Test Result | Allergic Response | |
| < 0.35 | 0 | Negative | Negative | |
| 0.35 - 0.69 | 1 | Borderline | Very Low | |
| 0.70 - 3.49 | 2 | Positive | Moderate | |
| 3.50 - 17.49 | 3 | Positive | Moderate / High | |
| 17.50 - 48.99 | 4 | Positive | High | |
| 49.00 - 100 | 5 | Positive | High | |
| > 100 | 6 | Positive | High | |

(IU/mL) = ImmuneTech Units per mL

ALCAT

WORLDWIDE



- Blood Draw and Nutritional Consultation included FREE with
- Platinum Panel only.



Symptomer

Hodepine/migrene
Kronisk tretthet
IBS
ADHD
Eksem
Astma
Vektøkning
Fedme
Arthralgier

List Price:
\$1,099.00

List Price:
\$425.00

Add:

Om Yorktest Nordic

**Er det maten din som gjør deg syk?
Har du plager du ikke finner en årsak til?**

Matintoleranser kan stå bak:

**Mage- og
tarmproblemer**

Hudproblemer

Nevrologiske plager

Muskel- og leddplager

Smerter

Tretthet

Fordøyelsesproblemer

Psykiske plager

Andre plager

Felles for disse:

- Måler (i beste fall) IgG
- En enkelt bloddråpe på et filterpapir
- Tester 120-150 ulike matvarer
- Koster kr.1.200, - 2.400,- pr test
- Svar hjem i posten
- Tilbyr kosttilskudd

Take home message

- Alle pasienter med plager som KAN skyldes overfølsomhet trenger utredning
- Alltid en klinisk diagnose
- Diagnosen stilles IKKE med en blodprøve alene
- Blodprøvesvar krever tolking
- –IKKE SEND BLODPRØVESVAR HJEM TIL PASIENTEN UTEN FORKLARING
- Diagnosen kan være krevende
- God veiledning kan være krevende
- Behandlingen ofte enkel

- REVIEW ARTICLE
- Can food allergy be cured? What are the future prospects?
- [Vanitha Sampath, Sayantani B. Sindher, Andres M. Alvarez Pinzon, Kari C. Nadeau](#)
- First published: 16 November 2019

Behandling av matallergi med AIT (Allergisk immunterapi)

Subkutan immunterapi (SCIT)

Oral immunterapi (OIT)

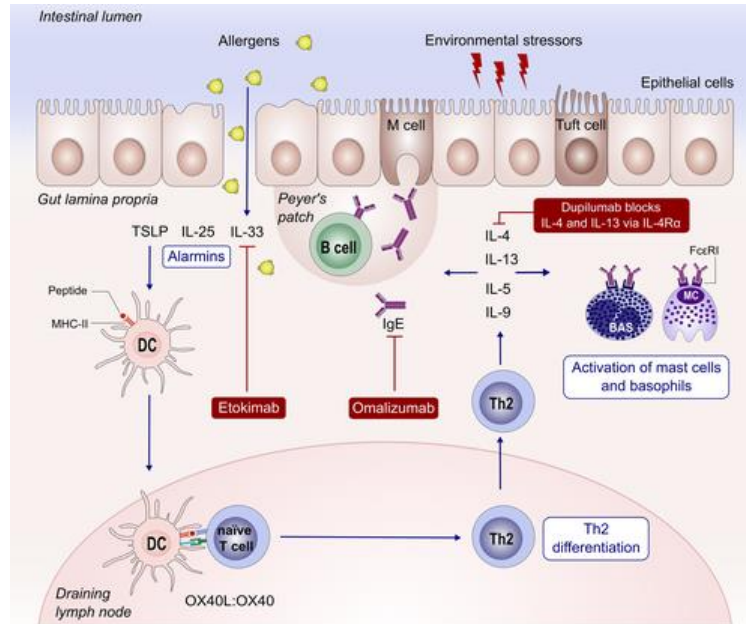
Sublingval immunterapi (SLIT),

Epikutan immunterapi (EPIT).

SCIT og OIT

- SCIT for allergisk rinitt i over 100 år. Kun få studier for matallergi
- Den første studien:
Oppenheimer JJ, Nelson HS, Bock SA, Christensen F, Leung DY. Treatment of peanut allergy with rush immunotherapy. *J Allergy Clin Immunol.* 1992; **90**: 256- 262.
 - 11 pasienter med peanøttallergi
 - 4 fullførte (3 aktiv beh. 1 placebo)
 - Symptomreduksjon (DBPCFC) fra 67% reduksjon til fullstendig symptomfrihet
- Den første OIT studien på matallergi publisert 1998. Problemer med anafylaksi ved denne metoden

Monoklonale antistoff



THM!

- Matallergi er økende (reelt)
- Overdiagnostikk (og underdiagnostikk)
- Forebygging er viktigst av alt.
- Bruk sIgE med stor forsiktighet og grundig forståelse/tolkning
- Alle med mistenkt hypersensitivitet fortjener en grundig utredning! (for å bekrefte eller avkrefte diagnose!).

Takk for oppmerksomheten !!

