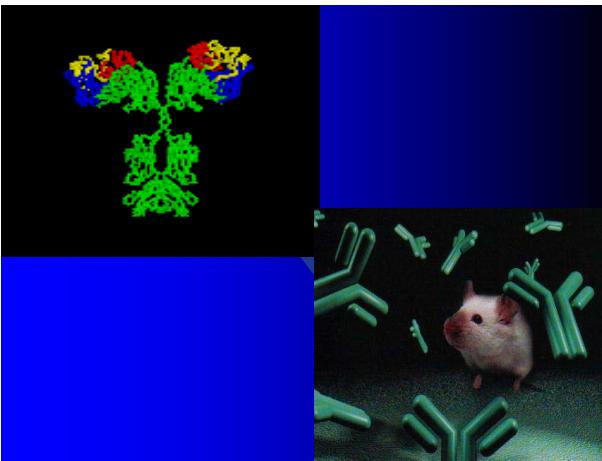


# Higienización, Respuesta Inmune y Probióticos

2005

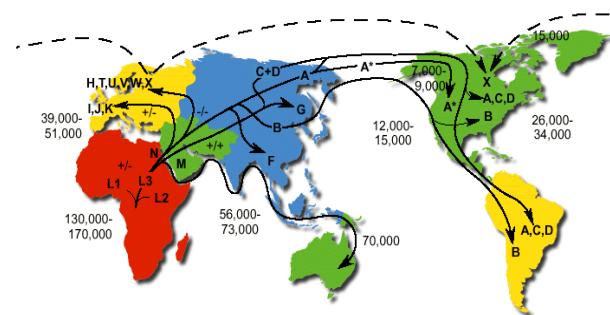
Dr. Oscar Venegas R  
Médico Inmunólogo  
Dpto. Pediatría  
Fac. de Medicina  
Univ. de Concepción



## Human mtDNA Migrations

<http://www.mitomap.org/mitomapWorldMigrations.pdf>

Copyright 2002 © Mitomap.org

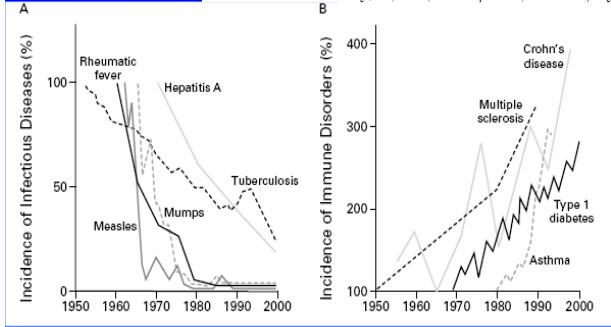


+/-, +/-, or -/- = Dde I 10394 / Alu I 10397  
\* = Rsa I 16329

Mutation rate = 2.2 - 2.9 % / MYR  
Time estimates are YBP

## Cambios epidemiológicos del siglo XX

JEAN-FRANÇOIS BACH, M.D., D.Sc. N Engl J Med, Vol. 347, No. 12 · September 19, 2002 · www.nejm.org



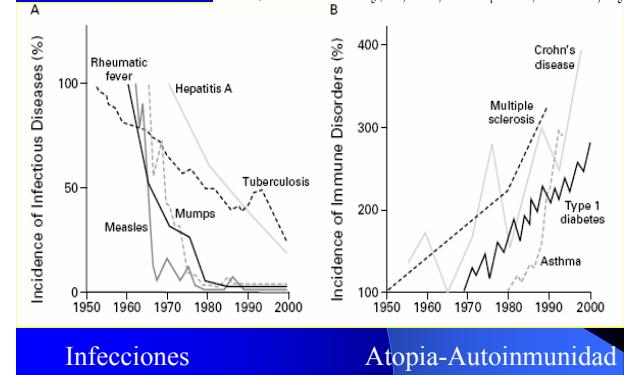
## Impactos positivos relevantes en la salud humana siglo XX (esperanza de vida al nacer)

OMS 2000

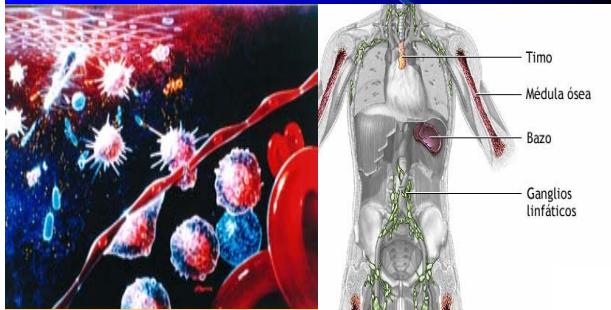
- Beber agua limpia
- Tratar las diarreas agudas con Sol.Rehidr.Oral
- Aplicación de inmunizaciones (PAI)
- Acceso de las mujeres a la educación formal

## Cambios epidemiológicos del siglo XX

JEAN-FRANÇOIS BACH, M.D., D.Sc. N Engl J Med, Vol. 347, No. 12 · September 19, 2002 · www.nejm.org

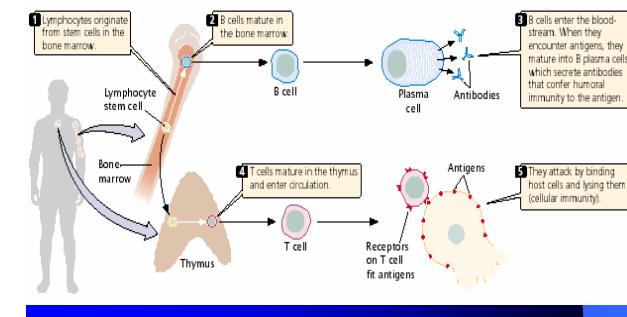


## ¿QUÉ ES EL SISTEMA INMUNE?



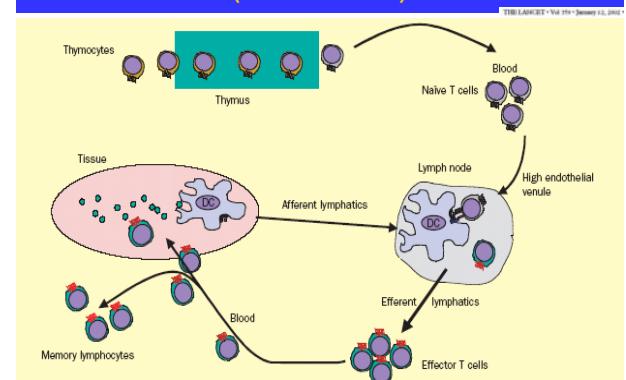
## Sistema Inmune: ontogénesis y funcionalidad

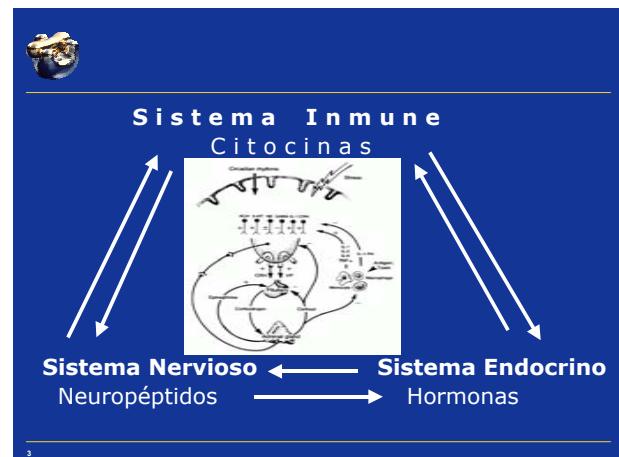
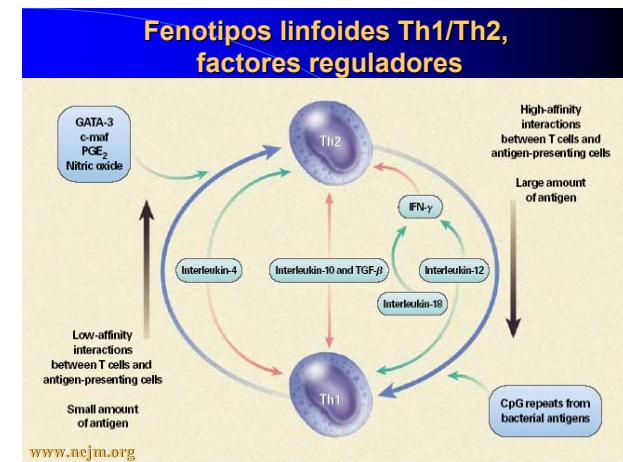
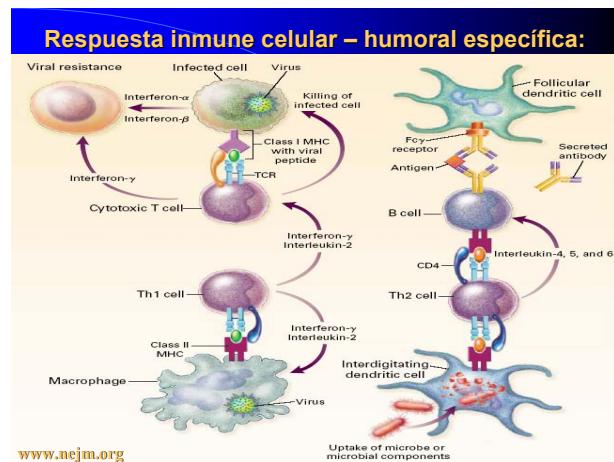
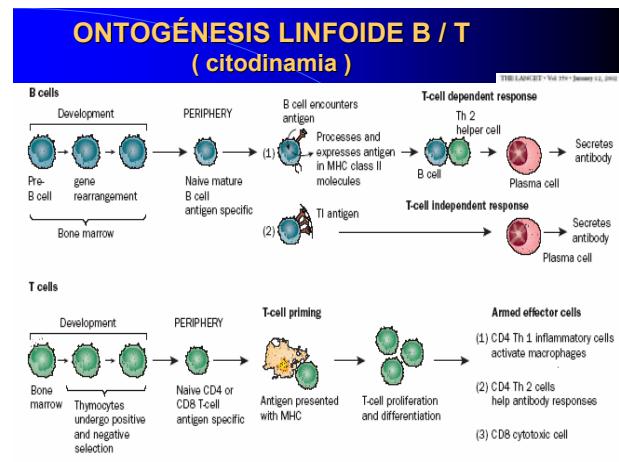
Advanced Topics in Genetics: Developmental Genetics, Immunogenetics, and Cancer Genetics 2003



## Linfocitos: maduración y diferenciación funcional (histodinámica)

THE LANCET · Vol 359 · January 12, 2002





### SISTEMA INMUNE

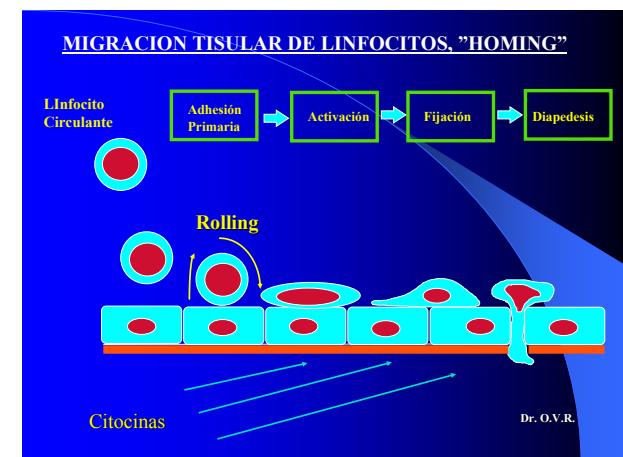
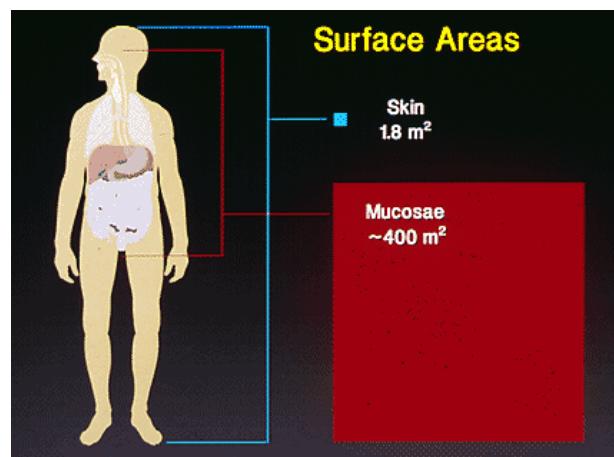
Careciendo de un órgano en la economía corporal que permite definirlo en tal sentido, pues, está compuesto básicamente de un complejo sistema celular y sustancias solubles con una amplia distribución y activa movilización. Es posible intentar definirlo en el contexto de su morofuncionalidad, como un **sistema homeostático**, que brinda la capacidad de diferenciar lo propio de lo no propio, en cuanto a estructuras moleculares de cierta complejidad (secundarias y terciarias), las que son reflejo de la información genética de cada individuo en estrecha relación e influenciada por el Sistema Nervioso y Endocrino; conexión claramente establecida, por medio de la identificación de los diversos receptores, compartidos en los tres sistemas, para los mediadores solubles (citoquinas, neuropéptidos y hormonas), generados en las células que les componen.

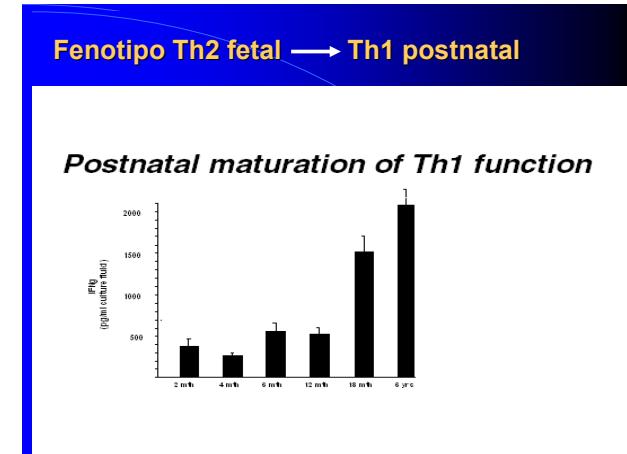
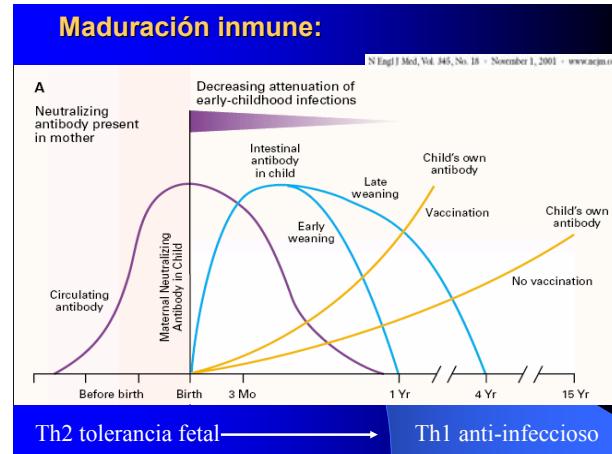
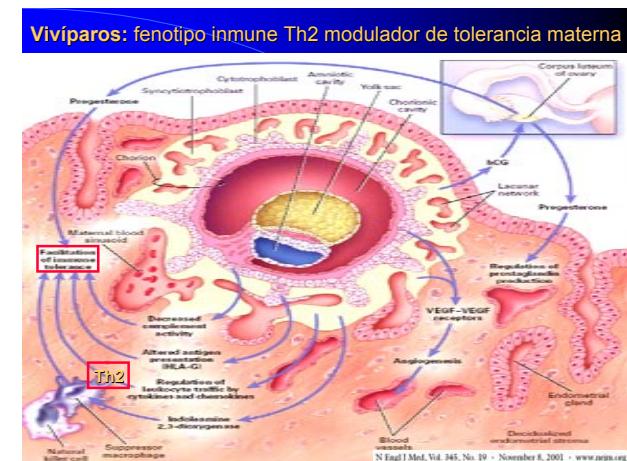
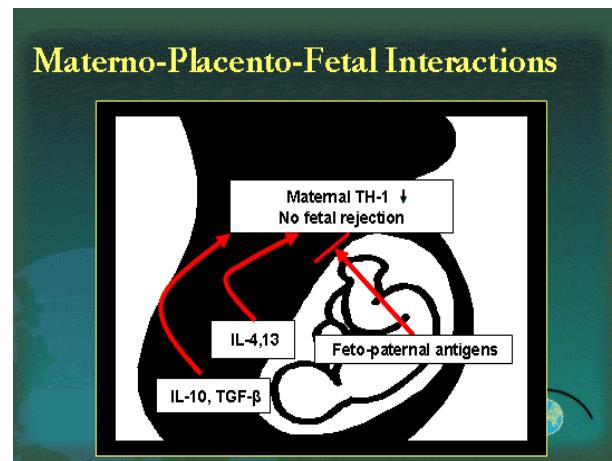
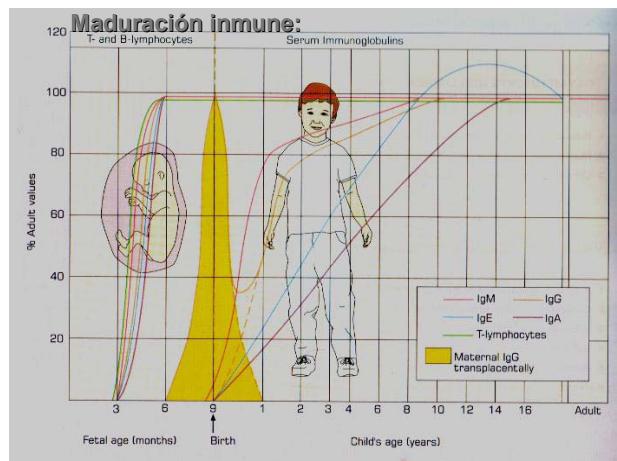
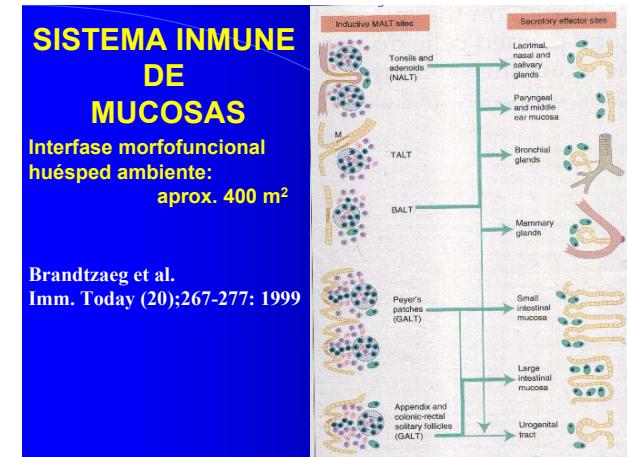
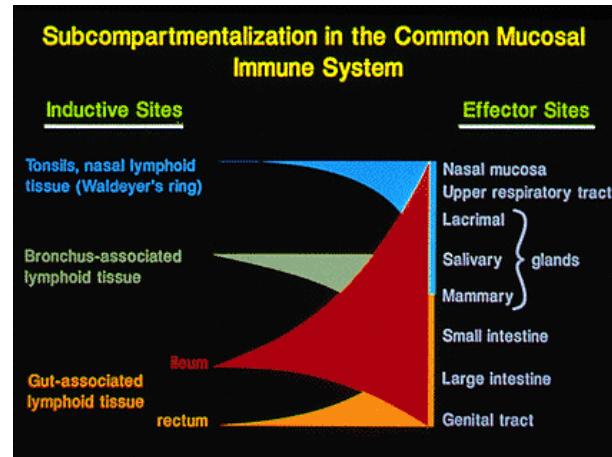
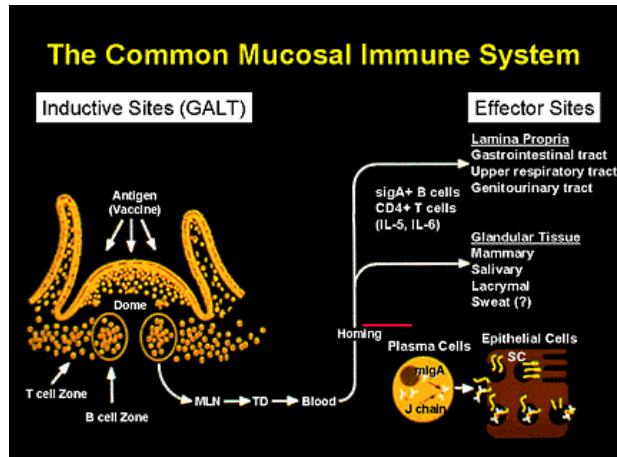
### CARACTERISTICAS DE LA RESPUESTA INMUNE

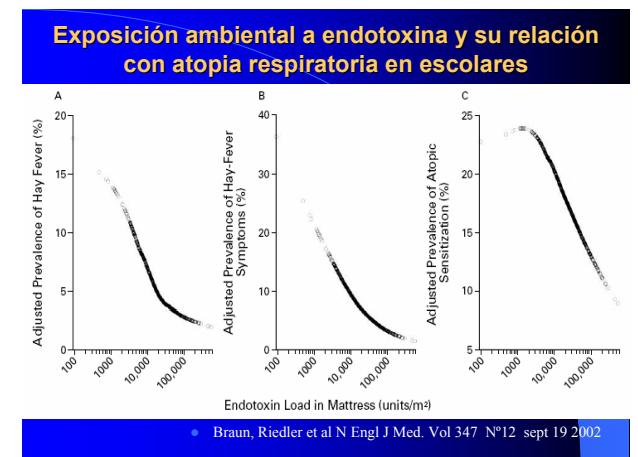
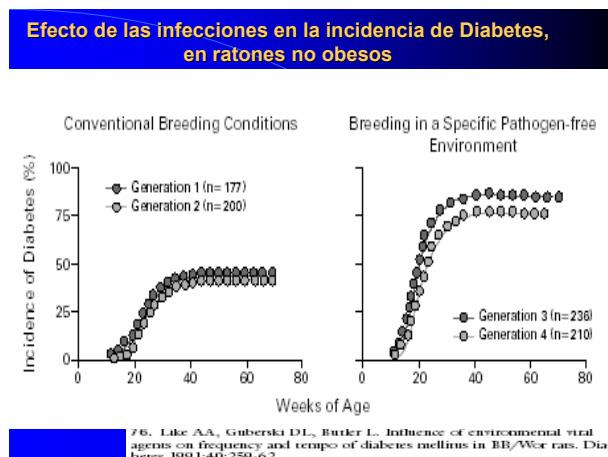
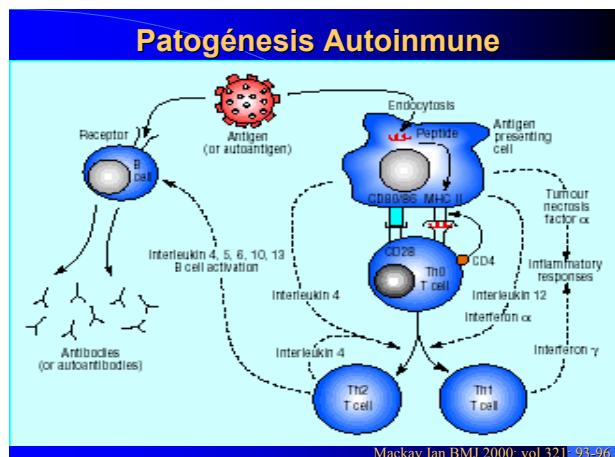
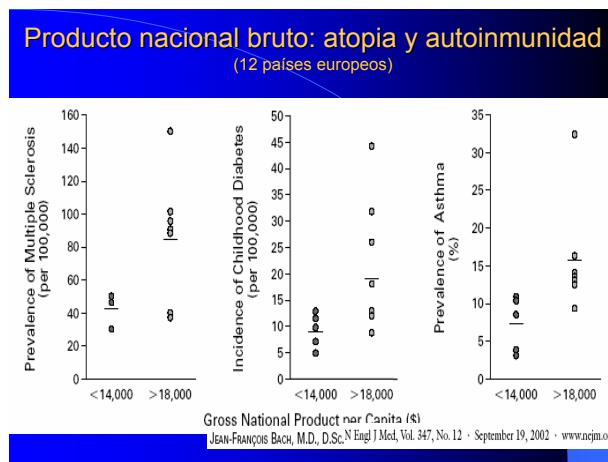
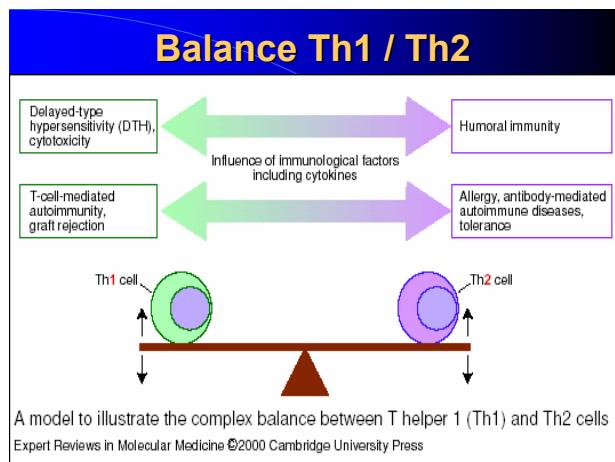
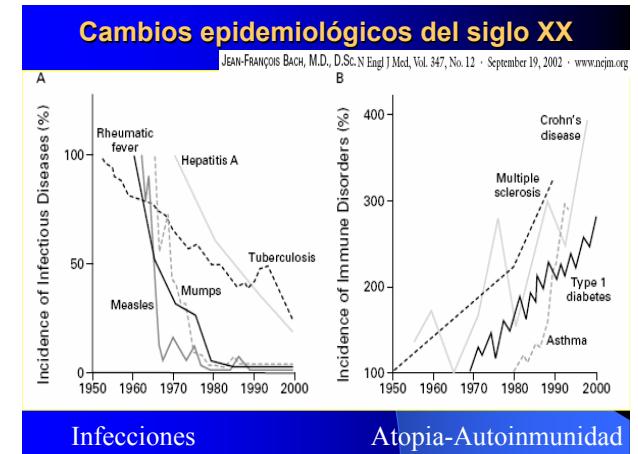
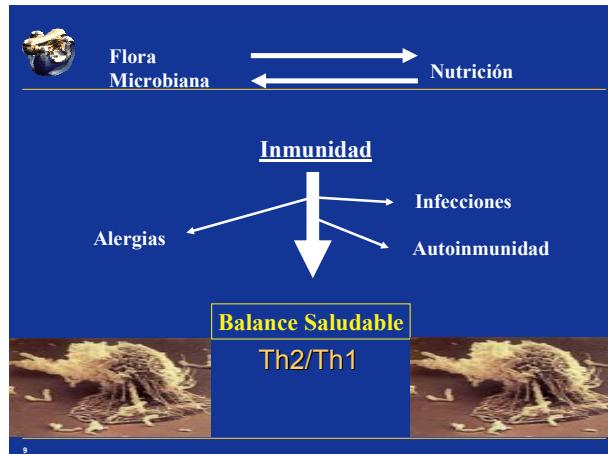
- Diversidad** (Repertorio)
- Especificidad** (Conformacional)
- Memoria** (Respuestas mejorables)
- Redundante** (Causas → Efecto)
- Pleitrópica** (Causa → Efectos)
- Autoregulación** (Redes de mensajeros)
- Influenciable** (Modulación ambiental)

### INTERFASE HUESPED - AMBIENTE

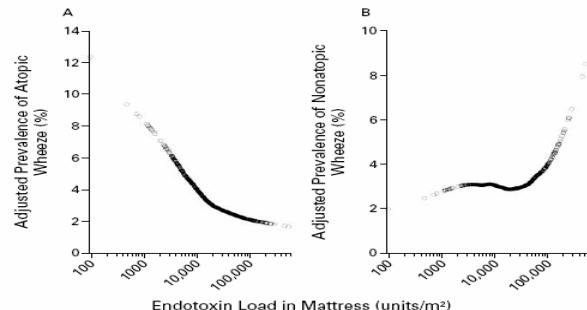
- SISTEMA INMUNE CUTANEO**  
1.5 - 2 m<sup>2</sup>
- SISTEMA INMUNE DE MUCOSAS**  
400 - 500 m<sup>2</sup>





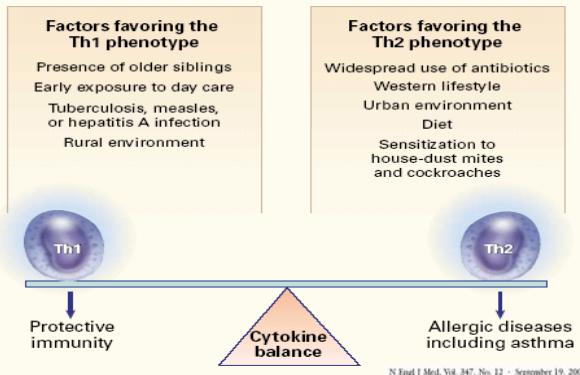


## Exposición ambiental a endotoxina y su relación con atopia respiratoria en escolares



- Braun, Riedler et al N Engl J Med. Vol 347 N°12 sept 19 2002

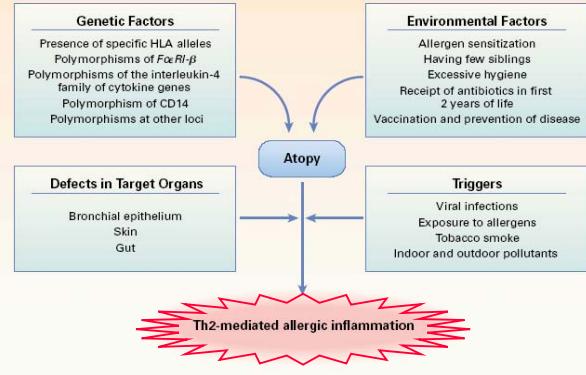
## Higienización y Respuesta Inmune



N Engl J Med, Vol. 347, No. 12 · September 12, 2002

## Factores influyentes en la expresión atópica

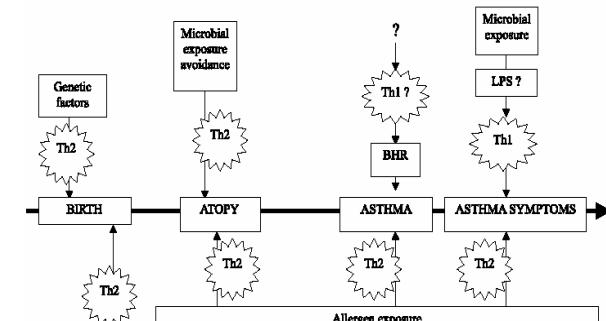
N Engl J Med, Vol. 344, No. 1 • January 4, 2001 • www.nejm.org



Treatment	Percentage (%)
Placebo	~48
Lactobacillus	~22

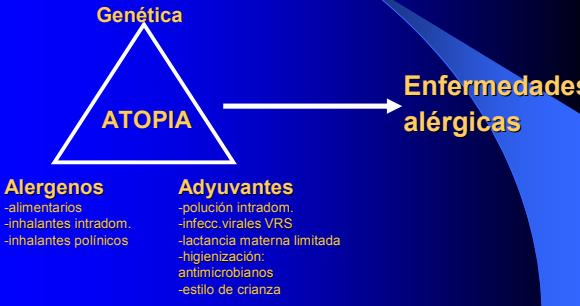
Kolb-Kiewitsch et al. / *J Psychol* 2001;252:1025-1026

## Higienización – Atopia y Asma



• M El-Bjaze, F Boniface et al. Allergy 2003; 58: 844-851

## ¿Por qué no hay más alergias?

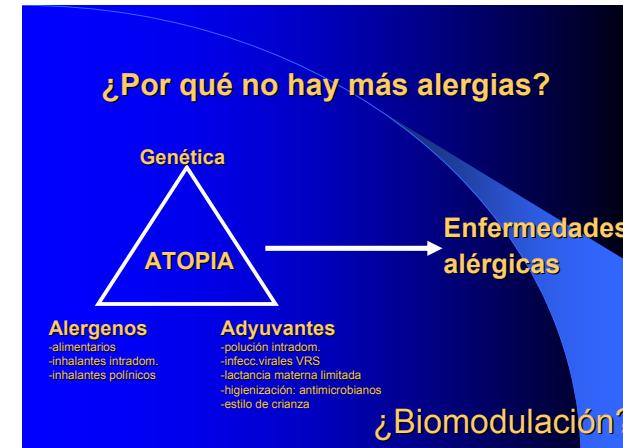


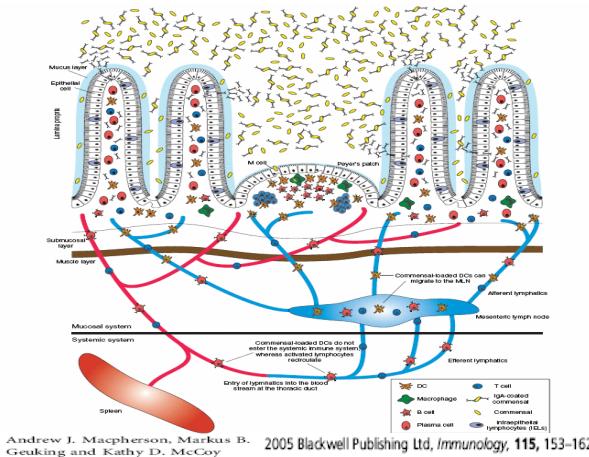
Milestones in the evolution of the hygiene hypothesis from 1989 to 2003

Year	Finding (ref.)
1989	Family size and atopy inversely related (45)
1994	Exposure to <i>Mycobacterium</i> may provide protection against atopy (144)
1995	The overall microbial stimulation especially by the gut flora important in the normal maturation of the immune system (47)
1996	Exposure to measles (59), hepatitis A (60) and <i>M. tuberculosis</i> (61) may confer protection against atopic disease
1997	
1999	Commensal bacteria may have a role in the development of atopy (102)
	Growing up on a farm may confer protection against atopy (114)
	Exposure to pets (cats and dogs) in early life may confer protection against atopy (123)
2000	Exposure to LPS in home dust may confer protection against atopy (93)
	Exposure to helminths may confer protection against the expression of atopic disease (134)
2001	Helminths and regulatory T cells may be involved in the protection against atopic disease (54, 128)
2002	Regulatory T cells can prevent airway inflammation (140, 145)

## **Primeros planteamientos:**

**Hipótesis de la Higiene** actual:  
Infecciones oro-fecales, helmintos  
exposición a LPS y mascotas,  
infancia rural, composición flora  
microbiota, ecología microbiana  
Linf. T reguladores, Toll-like recep





## Natural Immunomodulation

- Avoidance of allergen
- Avoidance of Th-2 biasing agents
- Exposure to high dose allergen
- Exposure to allergen with innate immune system stimuli
- Use of probiotics

World Allergy Organization



**ALLERGY AND ASTHMA CONNECTION –**  
from the American Academy of Allergy, Asthma and Immunology

**Hipótesis de la Higiene**

According to one study, children who grew up on farms, where they were exposed to many farm animals, were 40% less likely to have developed asthma by their teenage years.

The presence of older siblings at home and the attendance of daycare centers during the first 6 months of life may protect against the development of asthma.

Asthma Magazine [www.aaaai.org](http://www.aaaai.org)  
2002 - 2004

