

Miracles and misadventures

Immune diseases

Function of the Immune System

Denis Wakefield

School of Pathology UNSW, Australia



Immune diseases

- Infections
- Allergy
- Cancer
- Autoimmunity

School of Pathology UNSW, Australia



Immune diseases

The war within

- Physical barriers
- Cells
- Molecules

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Immune diseases

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Miracles and misadventures Immune diseases

Autoimmunity and Allergy

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School of Pathology UNSW, Australia



Immune diseases

- Autoimmunity
- Allergy
- Immunodeficiency
- Transplantation

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AUTOIMMUNE DISEASE

OUTLINE

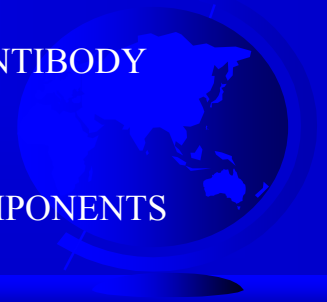
- DEFINITION
- CRITERIA FOR AID
- SPECTRUM OF AID
- PATHOGENESIS
- GENES, GERMS AND GENDER
- AUTOANTIBODIES
- EXAMPLES OF AID



AUTOIMMUNE DISEASE

DEFINITION

- HARMFUL IMMUNOLOGICAL PROCESS
- CHARACTERISED BY EITHER ANTIBODY OR CELL MEDIATED REACTION
- DIRECTED TOWARDS SELF COMPONENTS

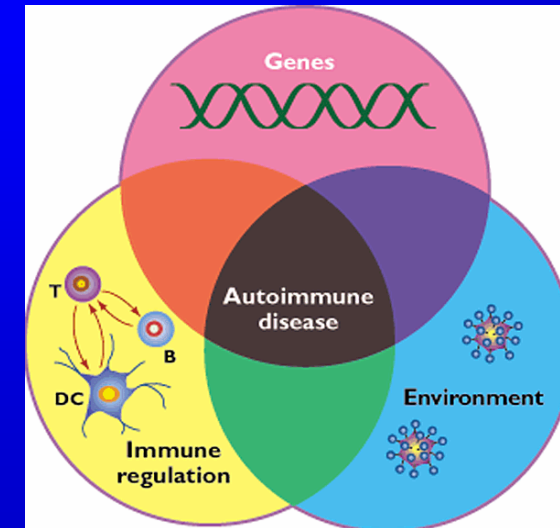


AUTOIMMUNE DISEASE

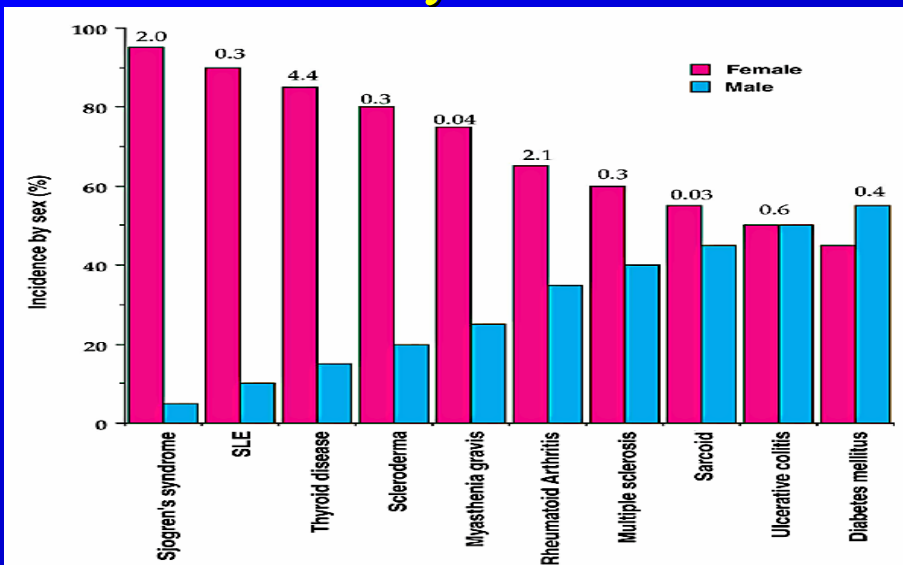
CRITERIA

- PRESENCE OF AUTOIMMUNE RESPONSE
- IMMUNISATION PRODUCES DISEASE
- PASSIVE TRANSFER BY Ab OR LYMPHOCYTES
- RESPONDS TO IMMUNOSUPPRESSION

Autoimmunity



Autoimmunity: sex differences



AUTOIMMUNE DISEASES

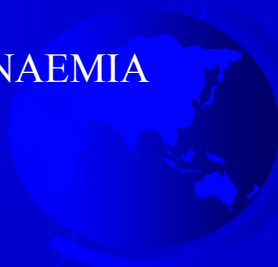
PATHOGENESIS

- ANTIBODY MEDIATED
- IMMUNE COMPLEX MEDIATED
- CELL MEDIATED
- Organ specific V Organ non-specific

AUTOIMMUNE DISEASES

ANTIBODY MEDIATED

- THYROID-Thyrotoxicosis
- GASTRIC- PERNICIOUS ANAEMIA
- MYASTHENIA GRAVIS

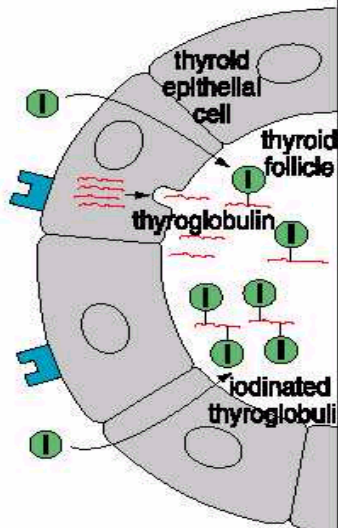


Autoimmune Thyroid diseases

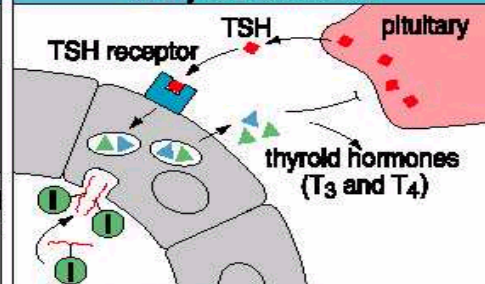


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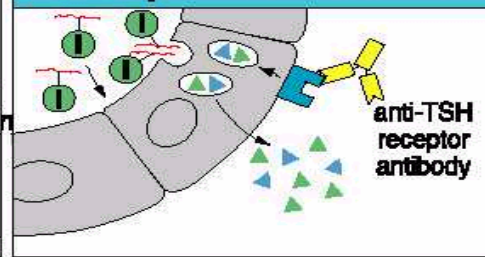
Synthesis and storage of thyroglobulin



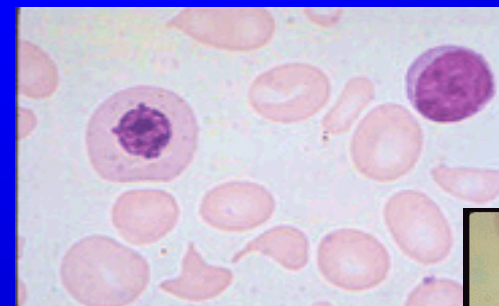
Stimulation by TSH and release of thyroid hormones



Stimulation by anti-TSH receptor antibody causes Grave's disease



Pernicious anaemia

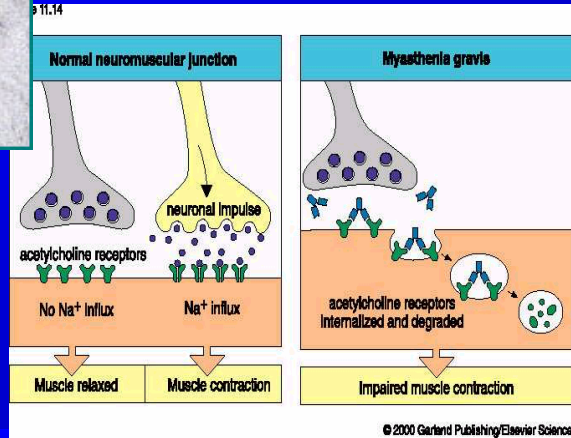


Macrocytic RBC

Hypersegmented PMN



Myasthenia Gravis



AUTOIMMUNE DISEASES

IMMUNE COMPLEX MEDIATED

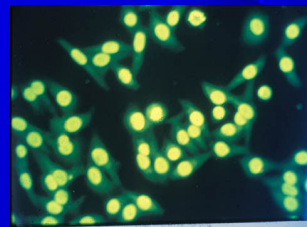
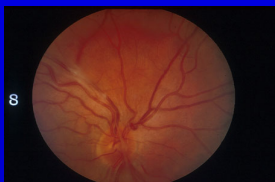
- S.L.E.
- R.A.
- VASCULITIS



Systemic Lupus Erythematosis



A 27 year old woman presented with a visual field defect in the L eye, head-aches and a facial rash. She had a positive ANA and proteinuria.



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Rheumatoid arthritis



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Systemic Vasculitis

- ◆ Rheumatoid arthritis
- ◆ Wegeners granulomatosis
- ◆ Relapsing polychondritis
- ◆ Polyarteritis nodosa
- ◆ Inflammatory bowel disease
- ◆ Systemic vasculitis
- ◆ Systemic infection



AUTOIMMUNE DISEASES

CELL MEDIATED DISEASES

- DIABETES MELLITUS
- MULTIPLE SCLEROSIS



Sjogrens syndrome



Schirmers test

Allergy Definitions

- ◆ Type 1 hypersensitivity
- ◆ Hightened state of reactivity
- ◆ Atopy- genetic predisposition to allergy
- ◆ Hayfever, Asthma, eczema



Allergic conjunctivitis



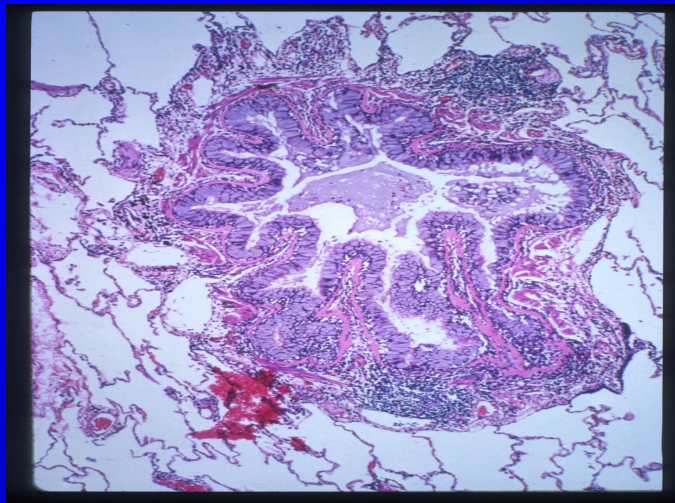
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Angioedema



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Asthma



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Allergic dermatitis: excema



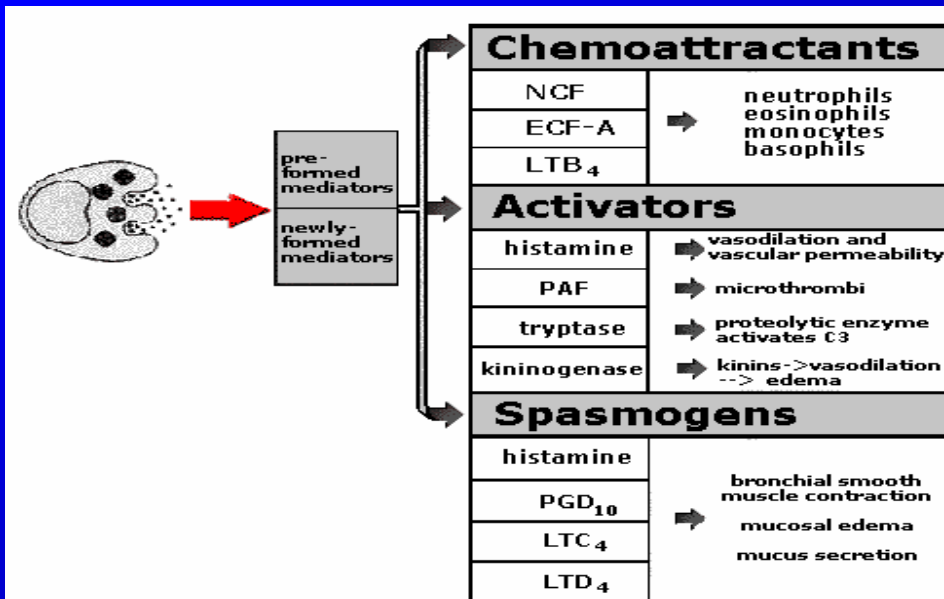
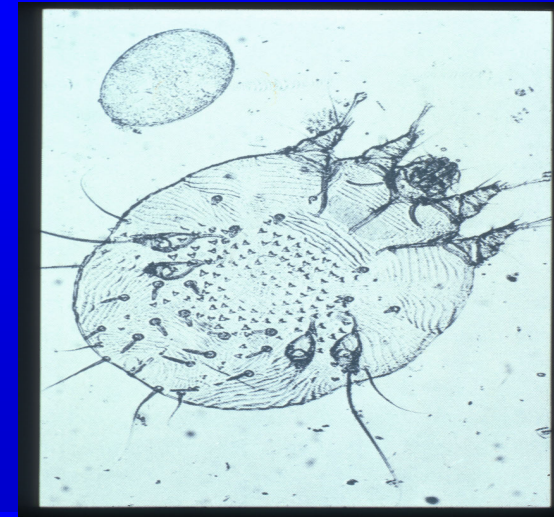
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Allergy Common Allergens

- ◆ House dust and house dust mite
- ◆ Pollens
- ◆ Animal danders
- ◆ Moulds and fungi
- ◆ Foods
- ◆ Drugs
- ◆ Insects

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Allergy-HDM

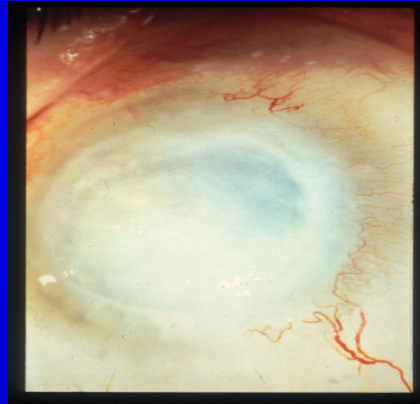


- ## Transplantation Aims
- Preservation of organ function
 - Preservation of quality of life
 - Prevention of rejection-acute/chronic
 - Prevention of treatment complications

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Transplantation

- Kidney, heart, lung, liver
- Bone marrow
- Cornea



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Transplantation

Key Elements

- Foreign HLA antigens
- Immune response
- Rejection
- Life long immunosuppression

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Immunosuppression

Transplantation

- Steroids
- Imuran, cyclosporin, mycophenolate
- Anti-Tcell antibody

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Immune diseases

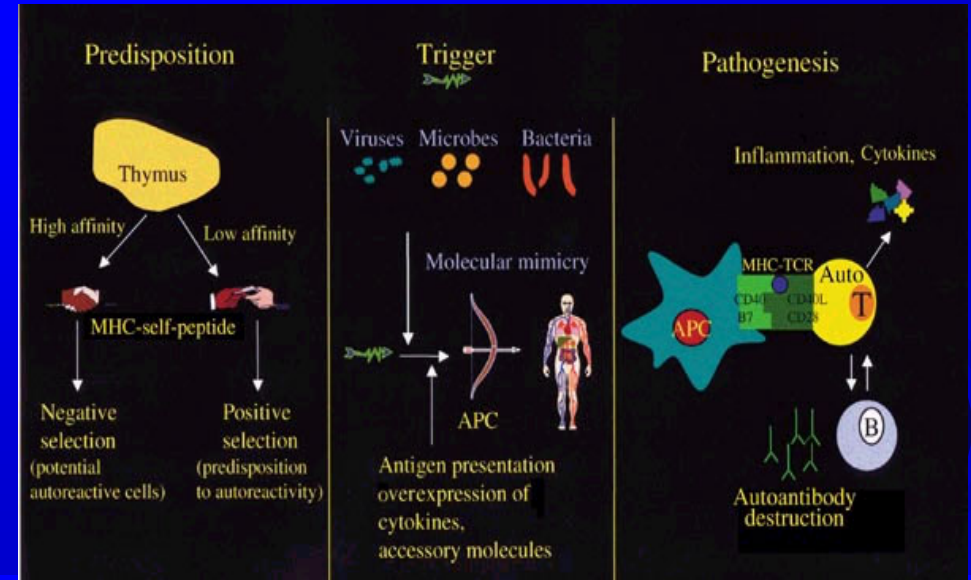
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Autoimmunity



Autoimmunity



Autoimmunity

Organ Specific v Non-Organ specific

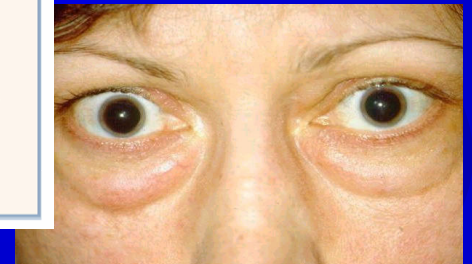
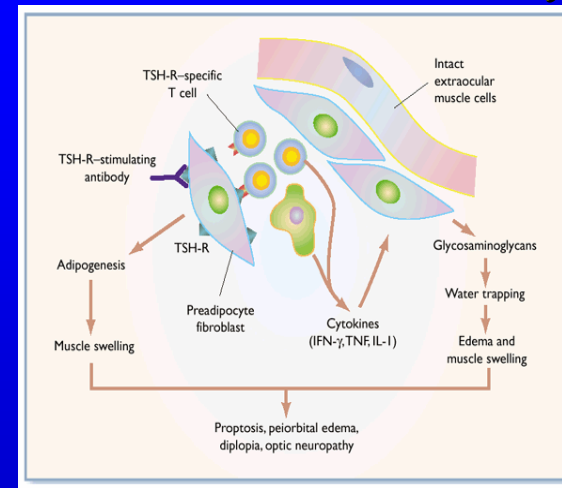
Thyroid
Pancreas
Adrenal
Muscle



Joints
Blood vessels
Exocrine glands
Nerves

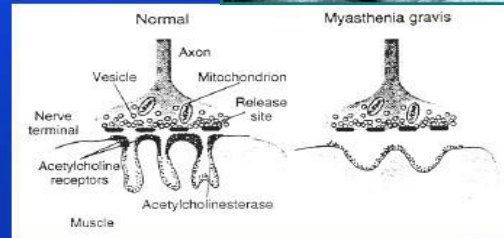


Autoimmune thyroid disease

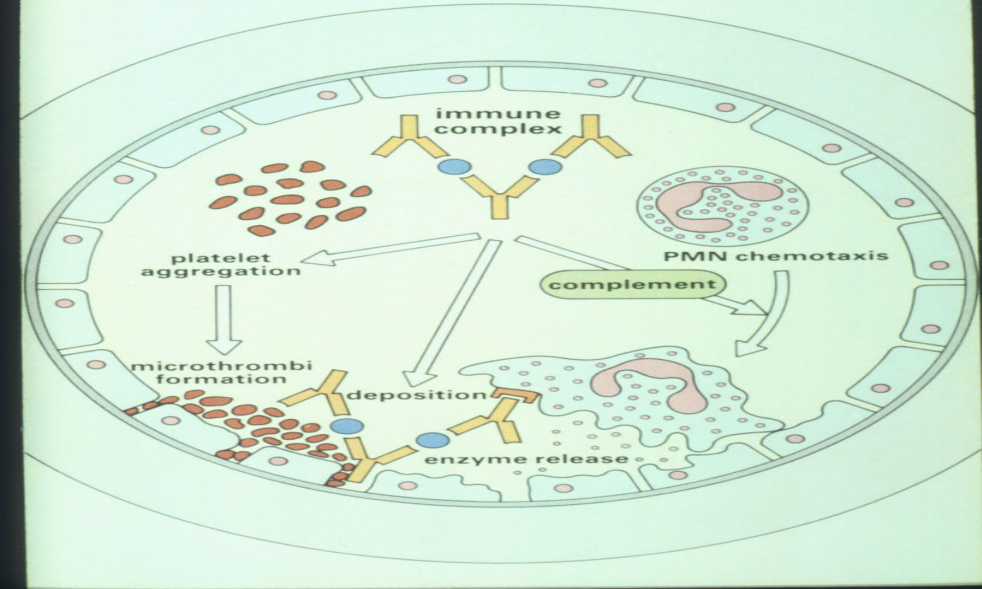


Myasthenia Gravis

- Fluctuating weakness
- Eyes: ptosis, diplopia (sparing pupils)
- Bulbar weakness: dysarthria, dysphagia
- Proximal muscle weakness
- Respiratory weakness
- Normal reflexes
- Normal sensation
- Assoc w/ thymoma
- Assoc w/ other autoimmune d/o



Deposition of immune complexes in blood vessel walls II



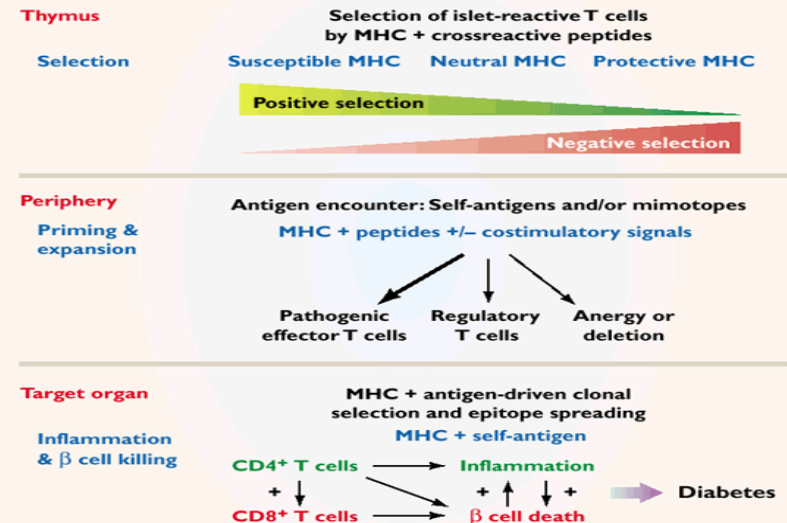
Autoimmunity

Table I. Relative risks in autoimmune disease

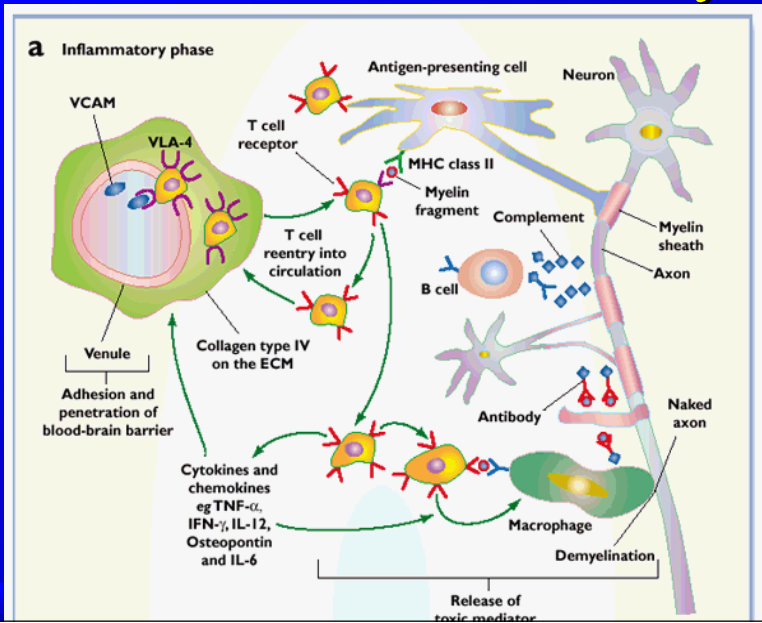
Disease	Concordance rate (%)			Population prevalence (%)	λ s
	Monozygotic twins	Dizygotic twins	Non-twin siblings		
IMD	30-50	0-13	6	0.4	15 ^a
MS	25	0-5	3-5	0.1	20 ^b
SLE	24-57	2-5	2-5	0.2	20-40 ^c
RA	12-15	3-4	2-4	0.24-1.0	5-10 ^d

^aRefs. 106 and 107. ^bRef. 49. ^cRef. 108. ^dRef. 3.

Hypothesis for the development of type I diabetes



MS and Autoimmunity



Mast Cell Receptors

