



# **Rheumatoid Arthritis**

**Western Medicine Perspectives**

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# Outline of presentation

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- Clinical presentation of RA
  - Articular, extra-articular and radiological features
- The immunology of RA
- Diagnosis of RA
  - Classification criteria to aid diagnosis
  - The importance of early diagnosis
- Management of RA – an overview of drug treatment

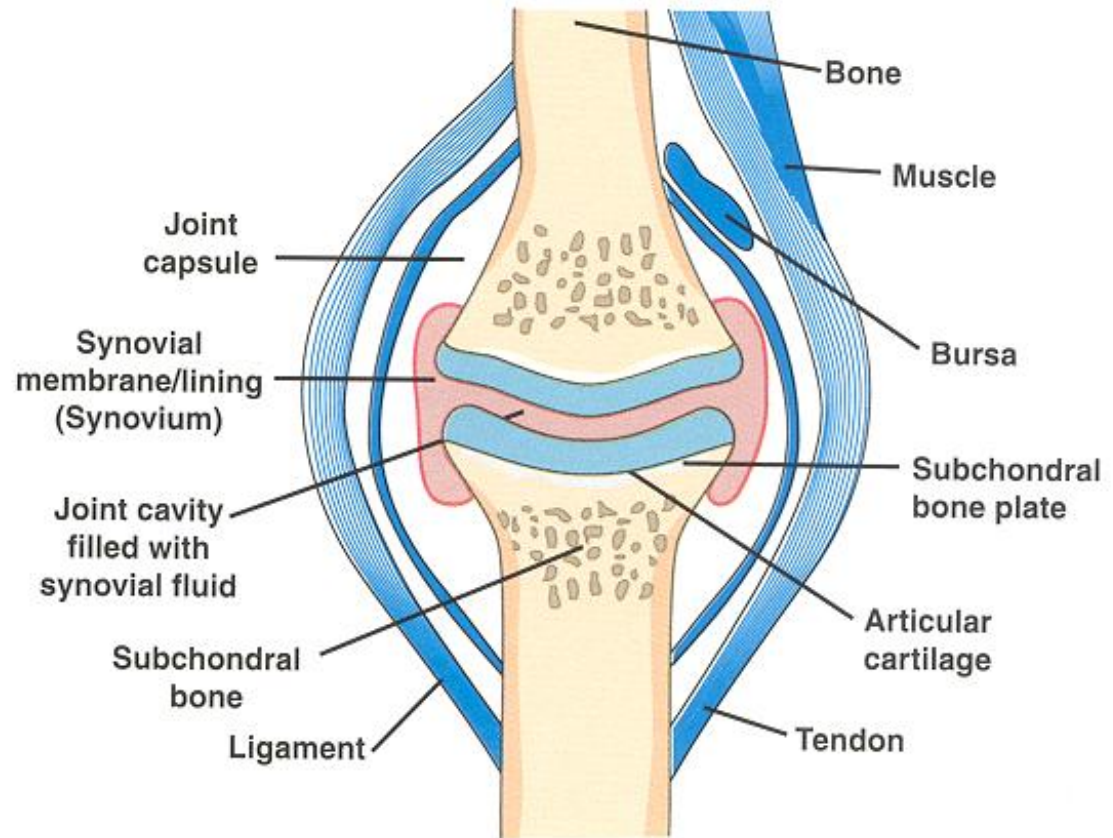
# RA - epidemiology



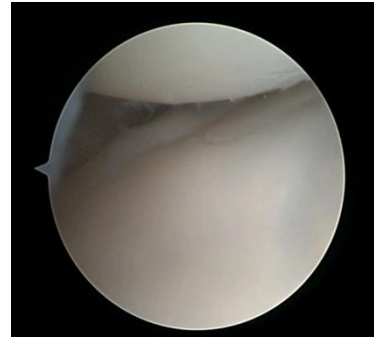
- Commonest cause of autoimmune inflammatory polyarthritis
- Found in all races with variable prevalence
  - 1 - 2% in Caucasians
  - 0.3 - 0.4% in Chinese
  - Rare in the blacks
- Peak age of onset: 35 - 55 years
- Female : Male = 3 : 1



# RA – a erosive synovial disease



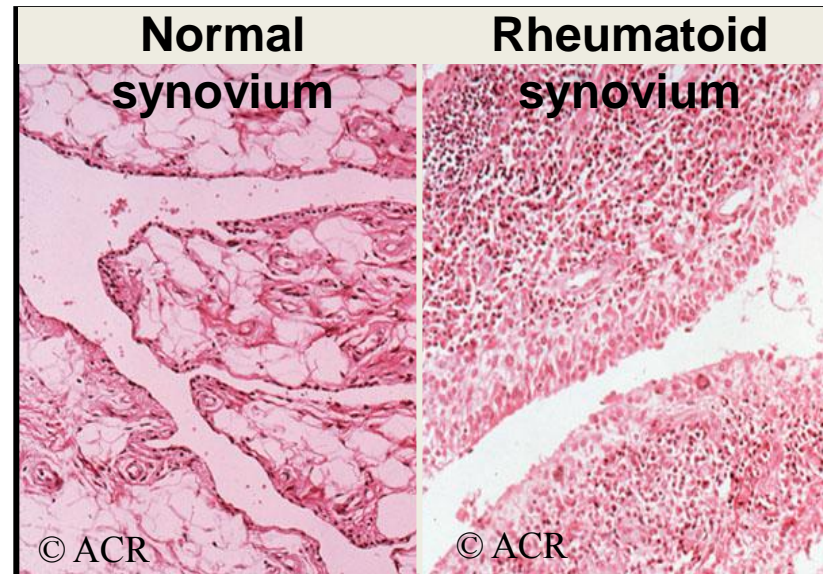
# RA – a erosive synovial disease



Arthroscopic appearance of a normal joint



Arthroscopic appearance of a rheumatoid joint



Histological appearances of normal and rheumatoid synovium

# The immunology of RA

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Proliferating synovial fibroblasts

New blood vessels

Infiltrating lymphocytes

Normal synovium

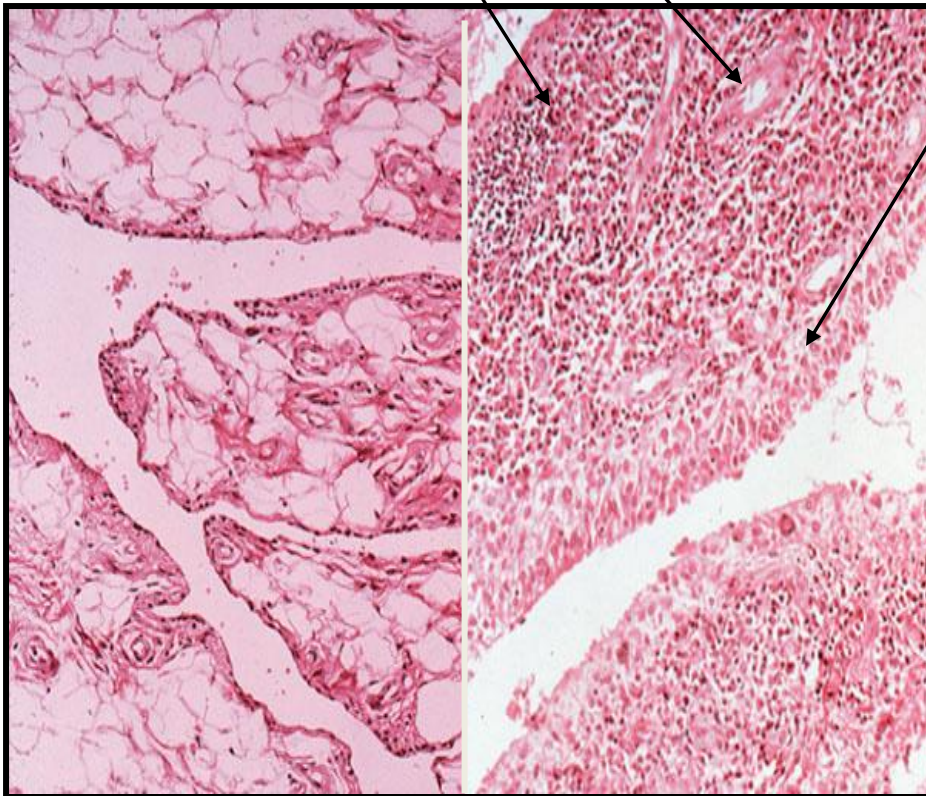
Rheumatoid synovium

**Other cell populations**

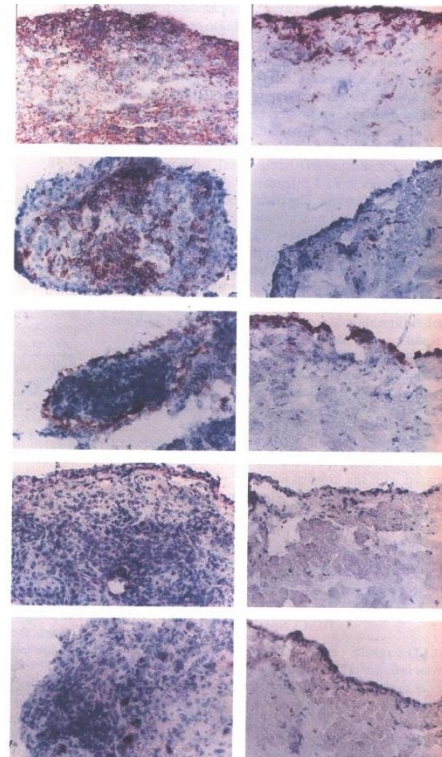
- Dendritic cells
- B lymphocytes
- Plasma cells
- Mast cells
- Osteoclasts

Rheumatoid synovium

Normal synovium



ACR



CD68+ macrophage

CD3+ T cells

Mab 67+ Type B synoviocytes

IL-1 $\beta$

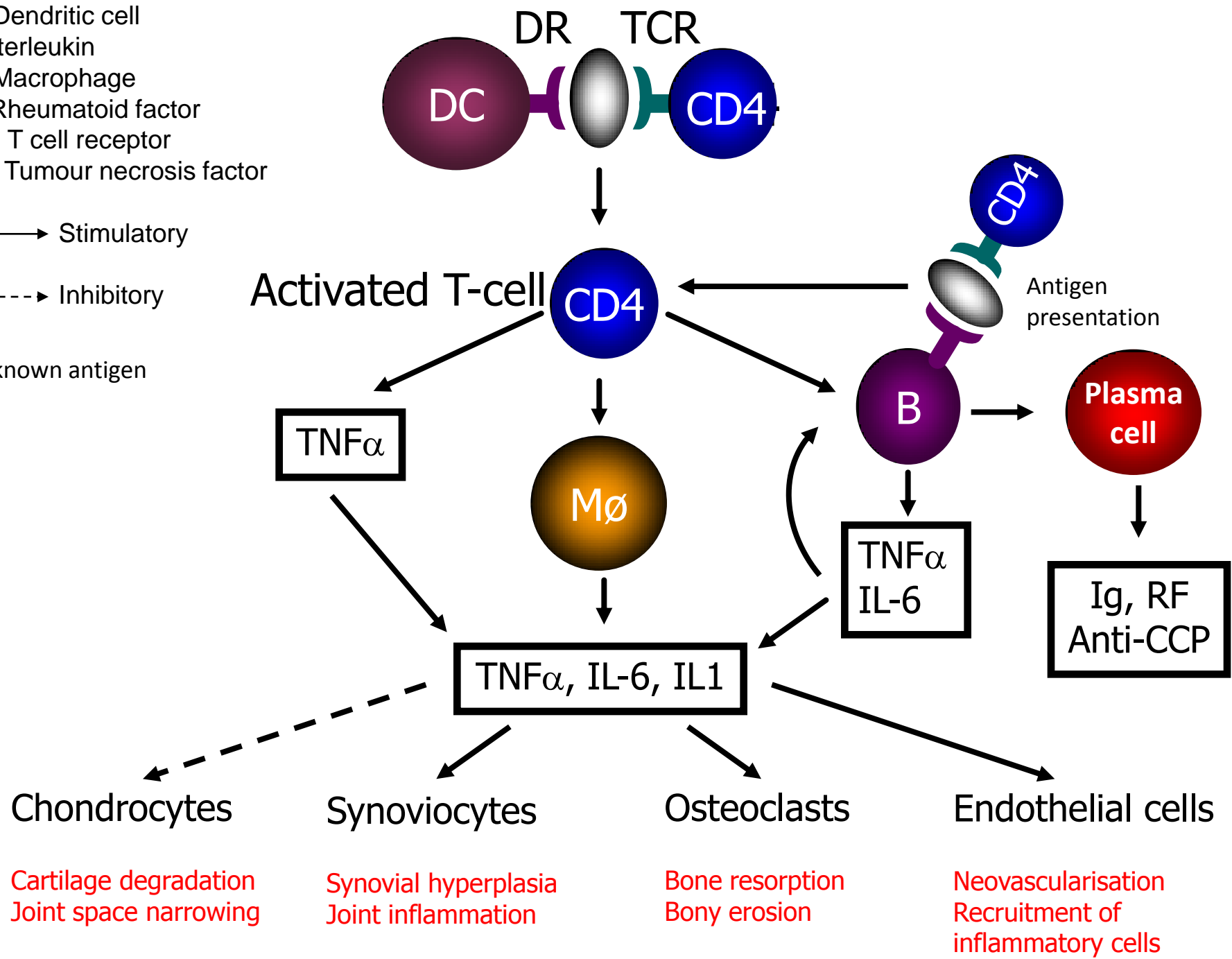
TNF $\alpha$

DC = Dendritic cell  
 IL = Interleukin  
 Mø = Macrophage  
 RF = Rheumatoid factor  
 TCR = T cell receptor  
 TNF = Tumour necrosis factor

—————> Stimulatory

- - - - -> Inhibitory

● Unknown antigen



Cartilage degradation  
 Joint space narrowing

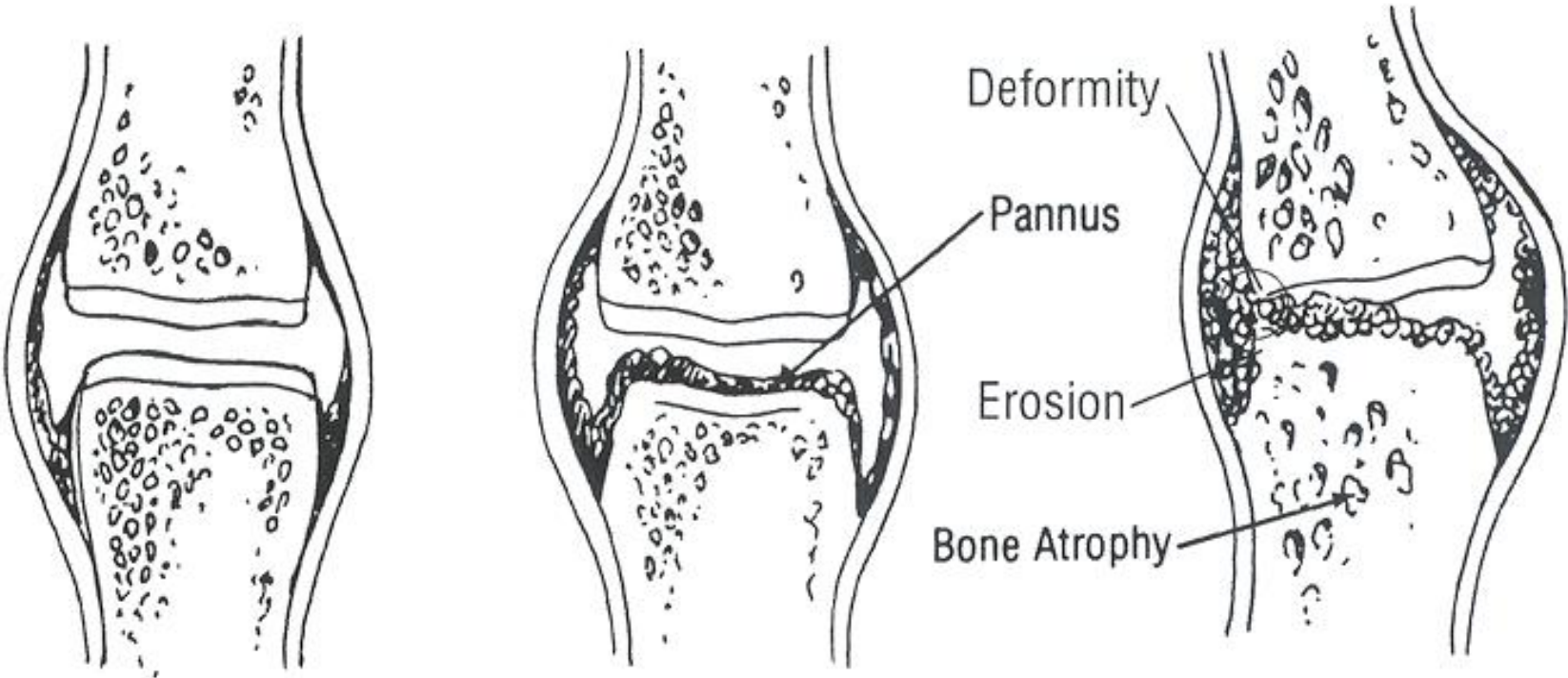
Synovial hyperplasia  
 Joint inflammation

Bone resorption  
 Bony erosion

Neovascularisation  
 Recruitment of inflammatory cells



# RA - Pathology



# RA – Early X-ray changes

## Soft tissue swelling



# RA – Early X-ray changes

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## Peri-articular osteopenia



# RA – Late X-ray changes

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## Peri-articular erosive lesions



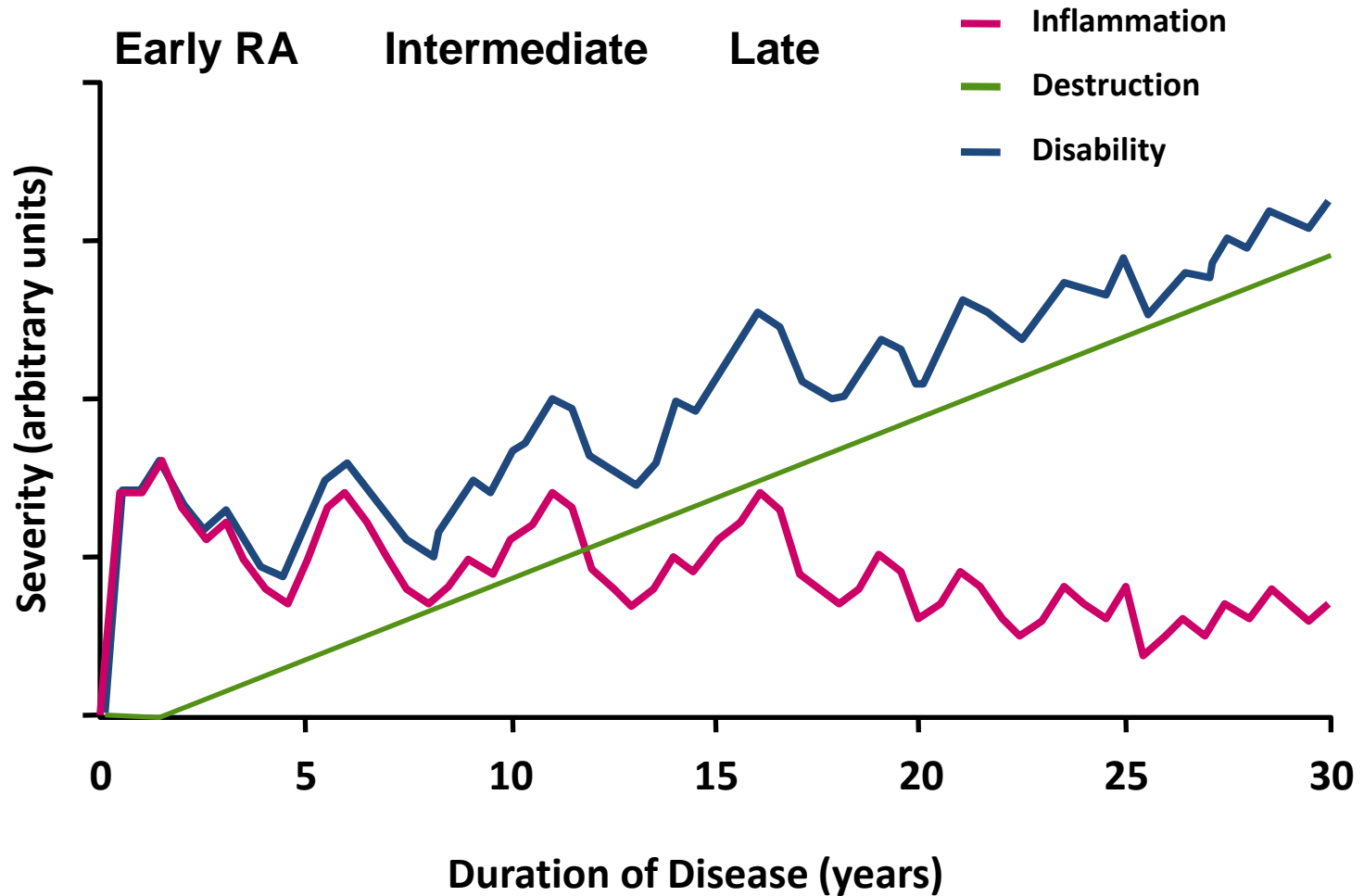
# RA – Advanced X-ray changes

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## Bony destruction with deformities

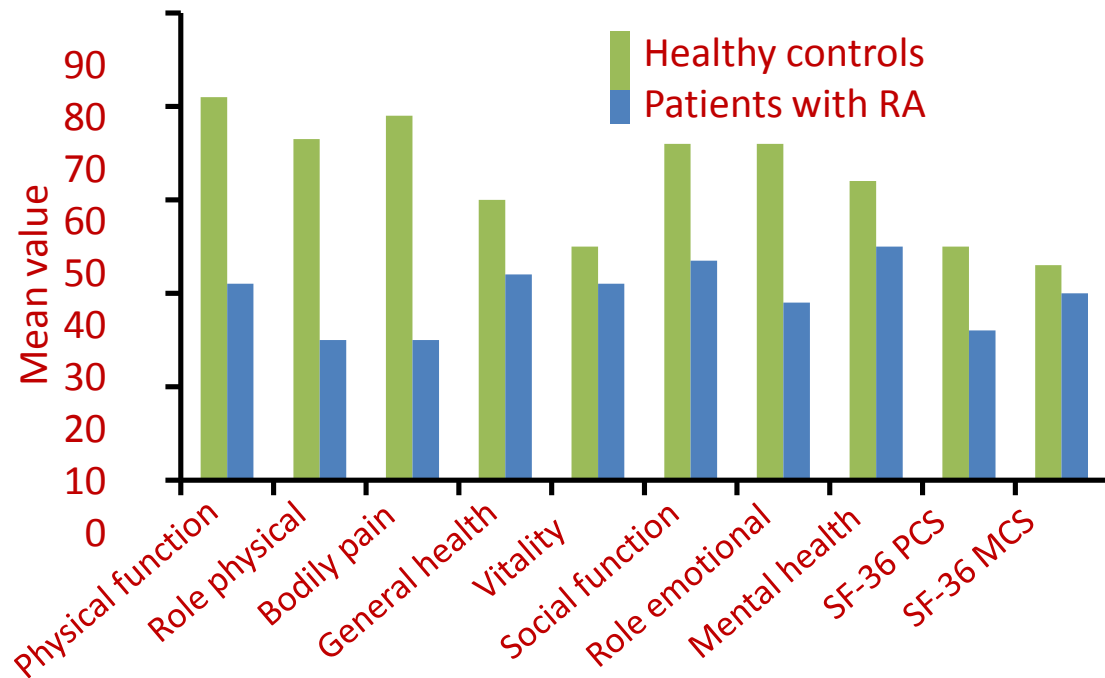


# The progressive course of RA



# RA – A chronic, serious, prevalent disease

- ▶ A global prevalence of around 24 million cases<sup>1</sup>
- ▶ RA is associated with
  - ▶ serious comorbidities such as heart disease, infection, and malignancies<sup>2</sup>
  - ▶ a 5–10 year reduction in life expectancy<sup>3</sup>
  - ▶ reduced quality of life compared with other serious conditions<sup>4</sup>
  - ▶ a considerable economic burden<sup>4</sup>



1. World Health Organization. The global burden of disease: 2004 update. ([www.who.int/healthinfo/global\\_burden\\_disease/2004\\_report\\_update](http://www.who.int/healthinfo/global_burden_disease/2004_report_update));

2. Boonen A, Severens JL. *Clin Rheumatol* 2011;30(Suppl 1):S3-S8; 3. Kvien TK. *Pharmacoeconomics* 2004;22(2 Suppl 1):1-12; 4. Lundkvist J, et al. *Eur J Health Econ* 2008;8(Suppl 2):S49-S60. Figure reproduced from Science Photo Library, London, UK.

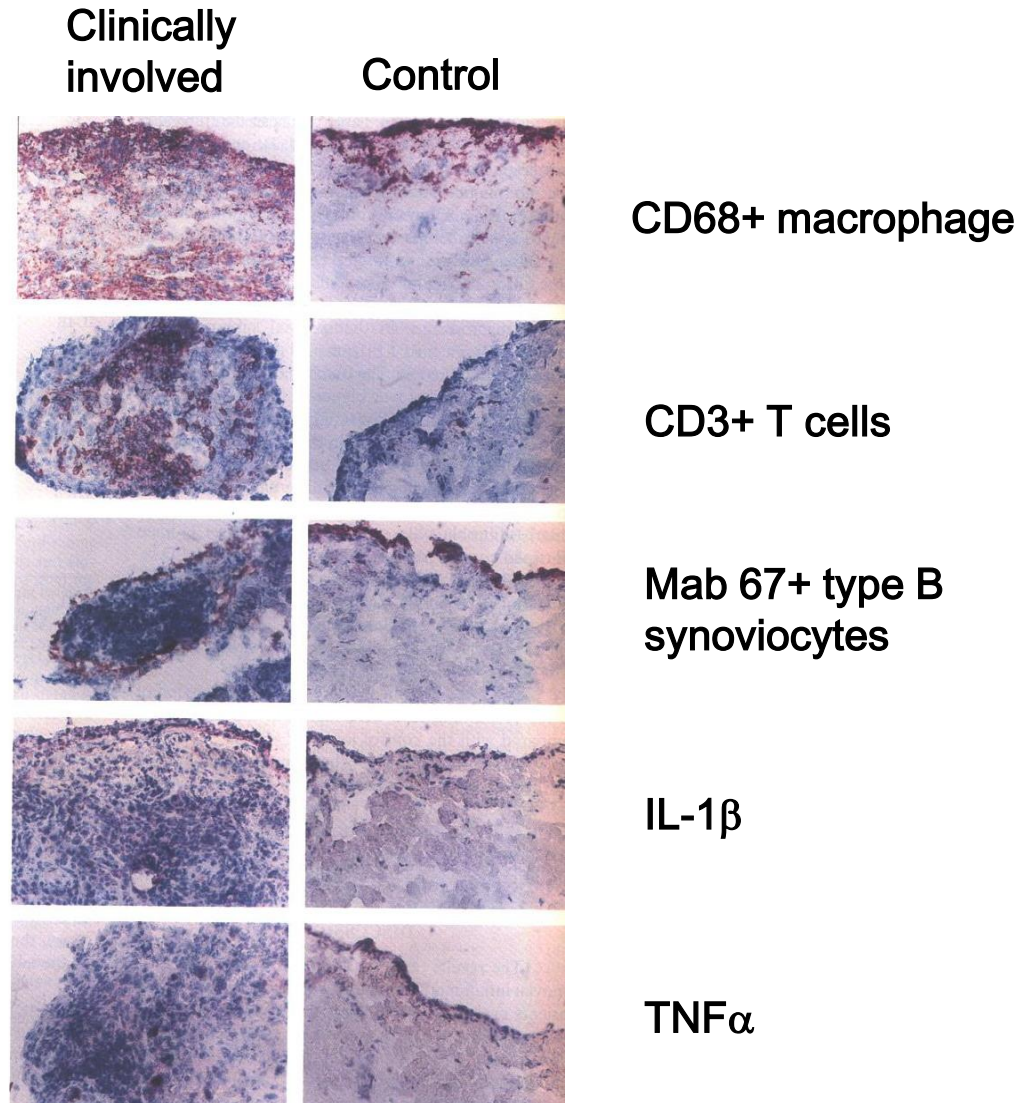
# Classification criteria for RA

		Score
Joint involvement	<ul style="list-style-type: none"><li>• 1 large joint</li><li>• 2-10 large joints</li><li>• 1-3 small joints (with/without large joint involvement)</li><li>• 4-10 small joints (with/without large joint involvement)</li><li>• &gt;10 joints (at least 1 small joint)</li></ul>	0 1 2 3 5
Serology	<ul style="list-style-type: none"><li>• RF and anti-CCP negative</li><li>• Low +ve RF or low +ve anti-CCP</li><li>• High +ve RF or high +ve anti-CCP</li></ul>	0 2 3
Acute phase reactants	<ul style="list-style-type: none"><li>• Normal CRP and normal ESR</li><li>• Abnormal CRP or abnormal ESR</li></ul>	0 1
Duration	<ul style="list-style-type: none"><li>• &lt;6 weeks</li><li>• ≥6 weeks</li></ul>	0 1

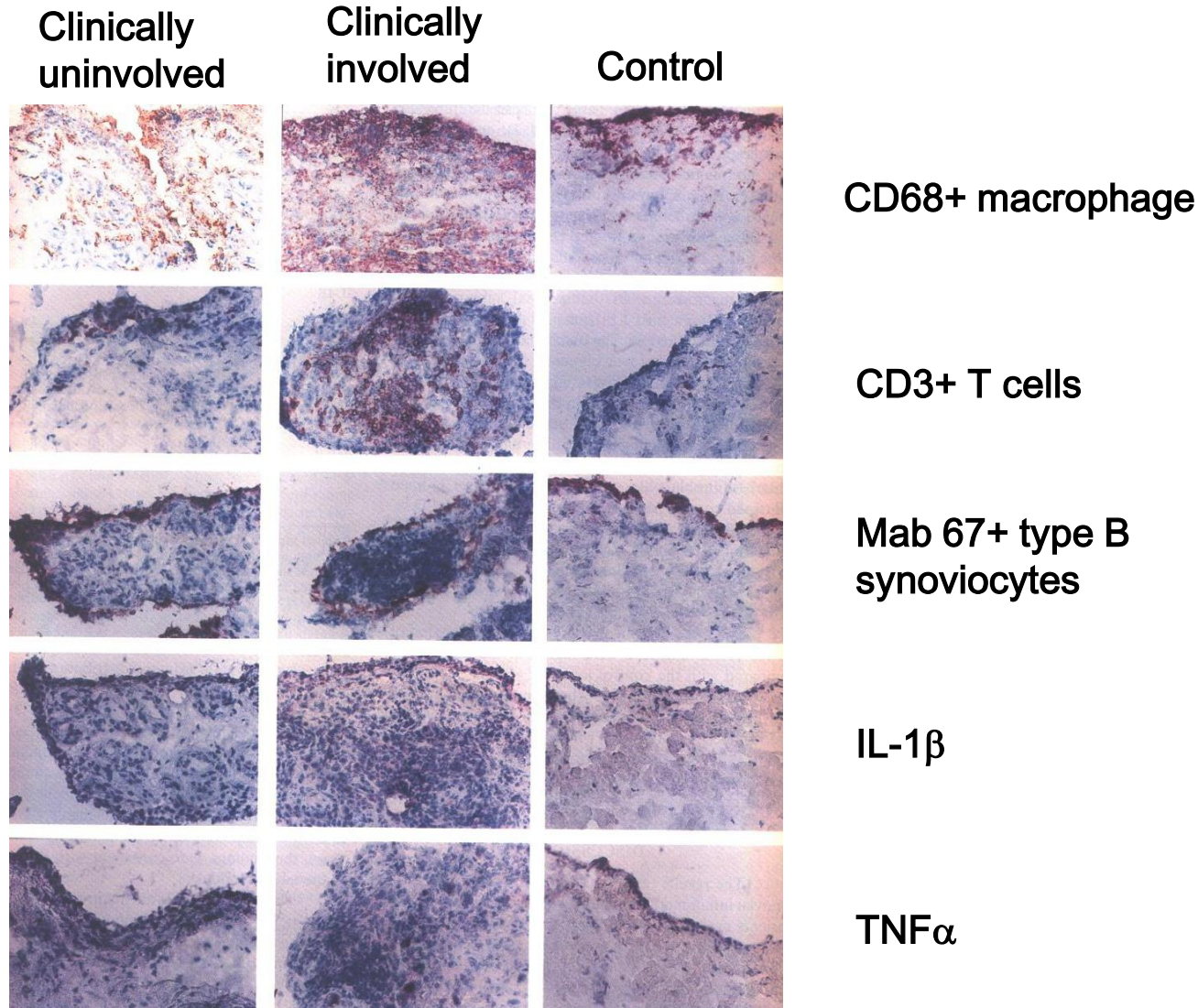
**≥6/10 = Rheumatoid arthritis**



# The need to diagnosis RA early



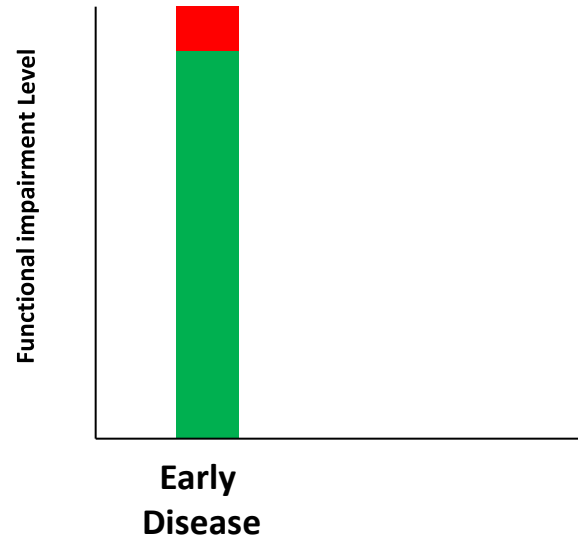
# The need to diagnosis RA early



# The need to treat RA early

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## Early Disease



 Reversible functional disability

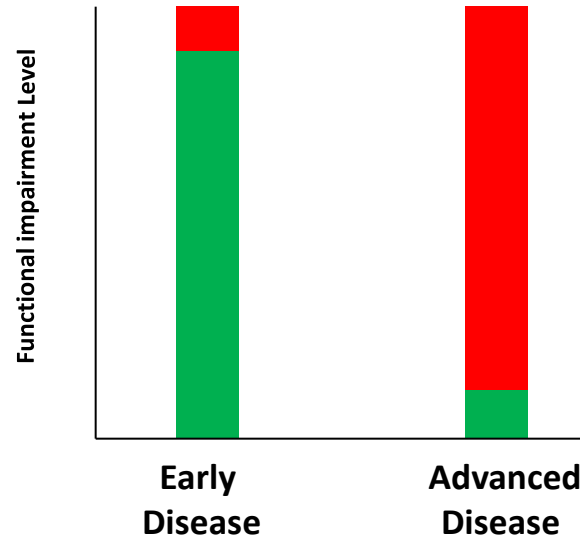
 Irreversible functional disability



# The need to treat RA early

## Early Disease



## Advanced Disease



-  Reversible functional disability
-  Irreversible functional disability

# Conventional drug treatment for RA

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- Symptomatic treatment
  - Non-steroidal anti-inflammatory drugs
  - Simple analgesics
- Local corticosteroids
- Disease modifying anti-rheumatic drugs
  - Azathioprine
  - Cyclosporine
  - Hydroxychloroquine
  - IM gold injection
  - Leflunomide
  - Methotrexate
  - Penicillamine
  - Sulphasalazine

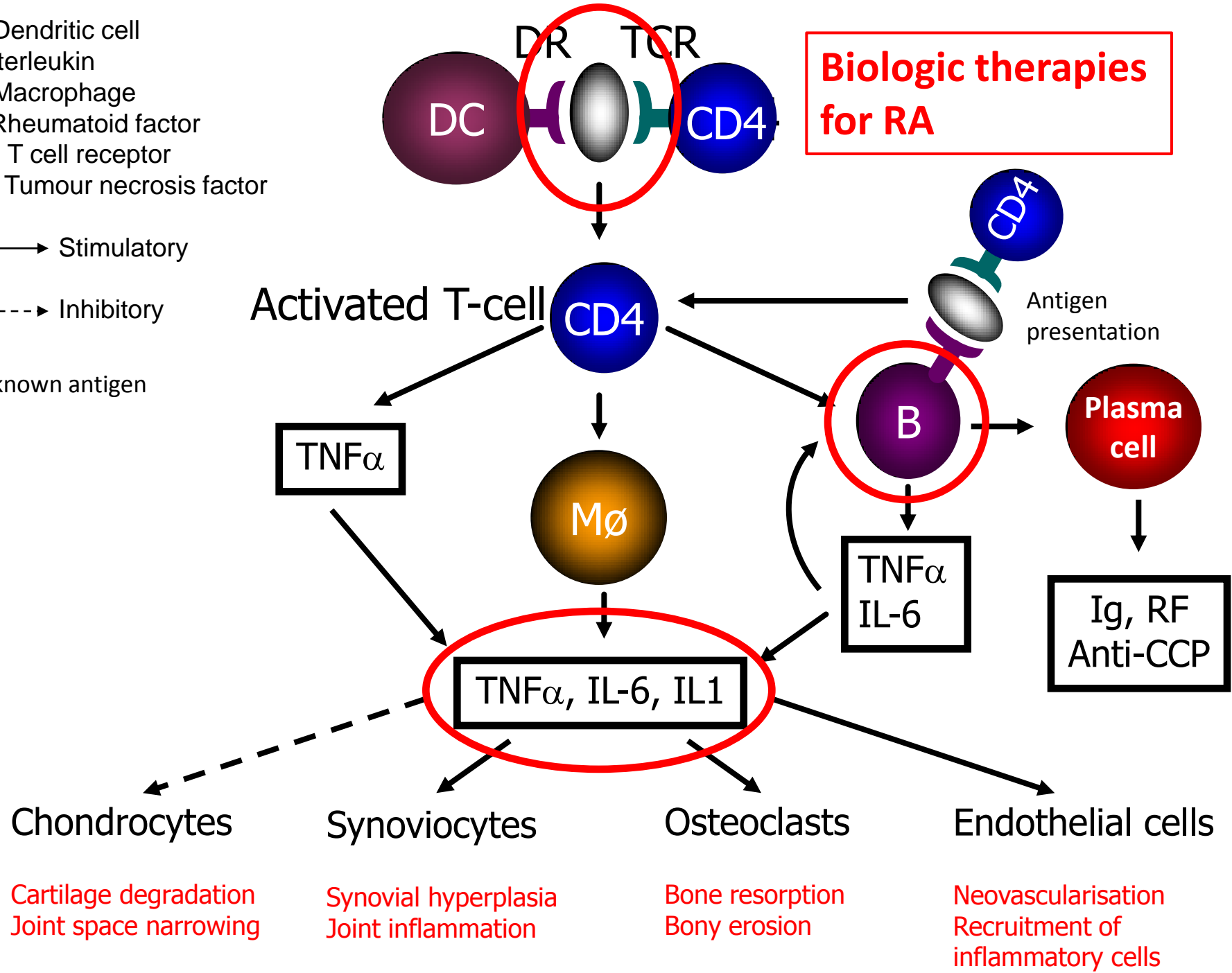
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**Biologic therapies for RA**



Chondrocytes  
 Cartilage degradation  
 Joint space narrowing

Synoviocytes  
 Synovial hyperplasia  
 Joint inflammation

Osteoclasts  
 Bone resorption  
 Bony erosion

Endothelial cells  
 Neovascularisation  
 Recruitment of inflammatory cells

# Alternative therapies for RA

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- Patients want to try alternative therapies
  - 335/402 patients – alt therapies in the past 1 year
  - 243/335 are current users
  - Mean cost per year = HK\$10447 (~US\$1400)
- Dietary supplements
  - Vitamins
  - Fish oil
  - Evening primrose oil
  - Green lipped mussels
  - Minerals
- Copper bracelet
- Magnet necklace
- Bee sting
- Scorpions
- Bone setting
- Traditional Chinese Medicine
- Lingzhi / yunzhi
- Tu-na
- Qi gong
- Taichi
- Spa / balneotherapy

# Summary

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- RA is a common chronic autoimmune disease of the joint
- Poorly treated, there is significant morbidity and mortality
- The goal of treatment is to achieve remission
- Early patient identification and treatment is essential
- Multiple treatment regimens are available
- Clinicians should work together to control the disease