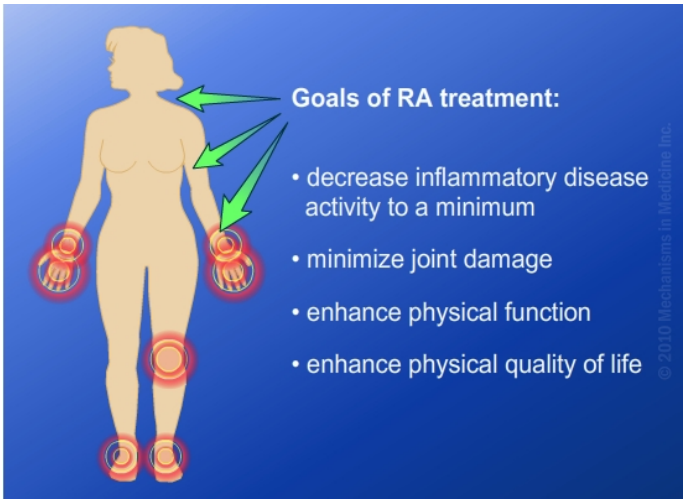
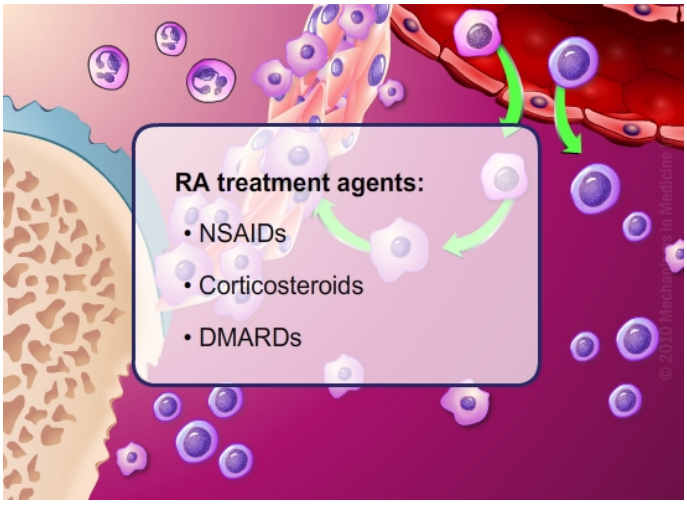
3e Recommendations in Rheumatology
Animation 3: Novel Treatments for Rheumatoid Arthritis



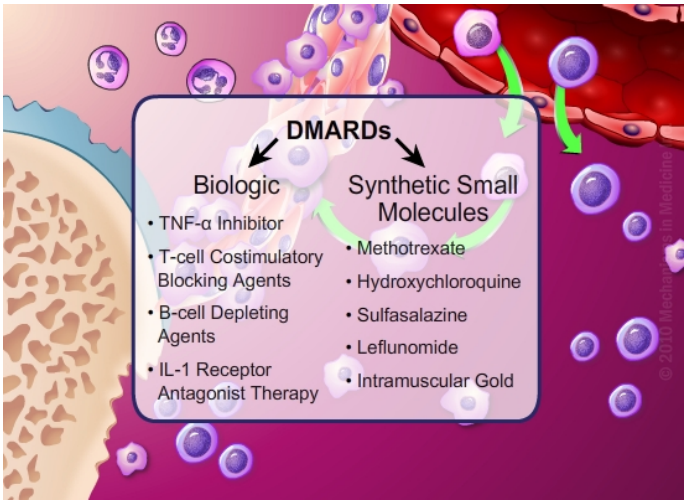
Scene 1 Notes:
The Goal of Treatment

Rheumatoid arthritis (RA) treatment aims to decrease inflammatory disease activity to a minimum.[2] The goal of treatment is to minimize joint damage, enhance physical function and improve patient quality of life.[2] Treatment is expected to improve the clinical outcomes of RA by reducing synovitis, therefore decreasing the likelihood of further joint damage.[1(p621)]



Scene 2 Notes:
The Goal of Treatment

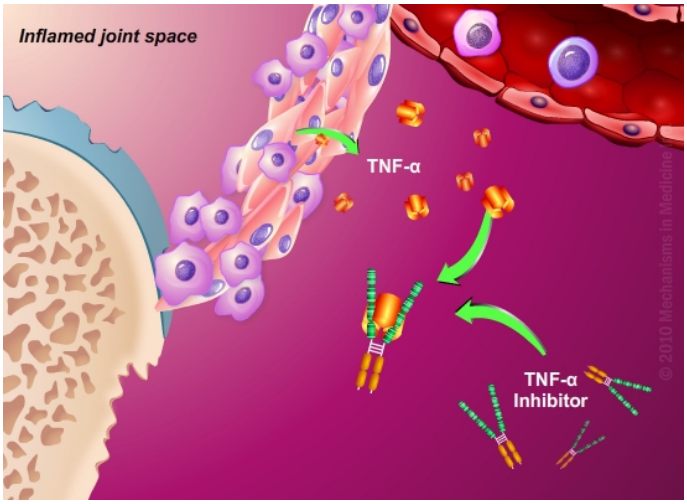
There are three general classes of drugs commonly used in RA therapy: non-steroidal anti-inflammatory drugs (NSAIDs), corticosteroids, and disease modifying antirheumatic drugs (DMARDs).[2]



Scene 3 Notes:
Disease-Modifying Antirheumatic Drugs (DMARDs)

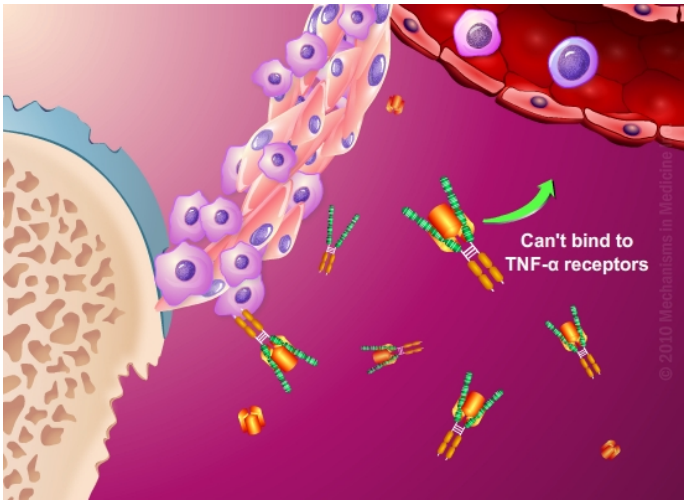
Although NSAIDs and corticosteroids are effective at providing symptom relief for patients with RA, only DMARDs have been demonstrated to modify the course of the disease and improve radiologic findings.[2] DMARDs are divided into 2 categories: biologic and synthetic small molecules.

The biologics represent a group of novel therapeutic strategies that are based on recent advances in the understanding of the immunoinflammatory events leading to RA.[3(p24)]



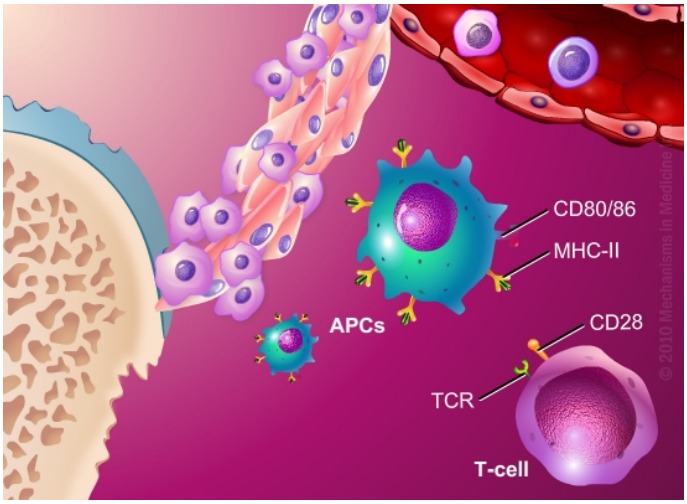
Scene 4 Notes:
TNF-α Inhibitors

Tumor necrosis factor alpha (TNF-α) inhibitors were the first of the biological DMARDs to be approved for arthritis treatment.[2]



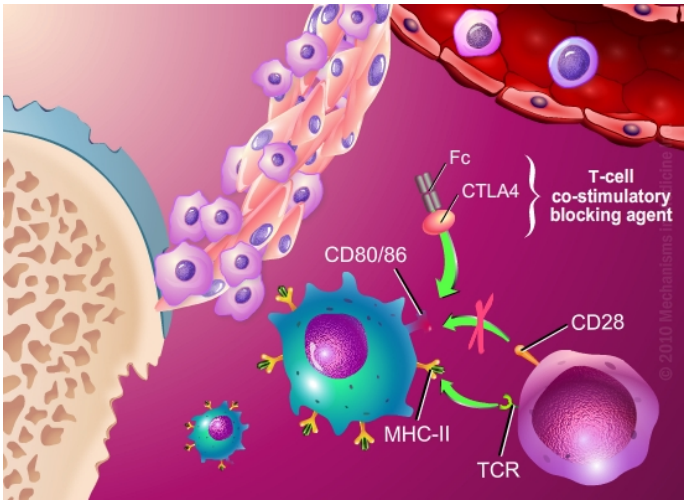
Scene 5 Notes:
TNF-α Inhibitors

The TNF-α inhibitors bind to TNF-α in the circulation and synovium, preventing its interaction with surface TNF-α receptors. Accordingly, there is a reduction in TNF-α activity, minimizing downstream proinflammatory effects.[2]



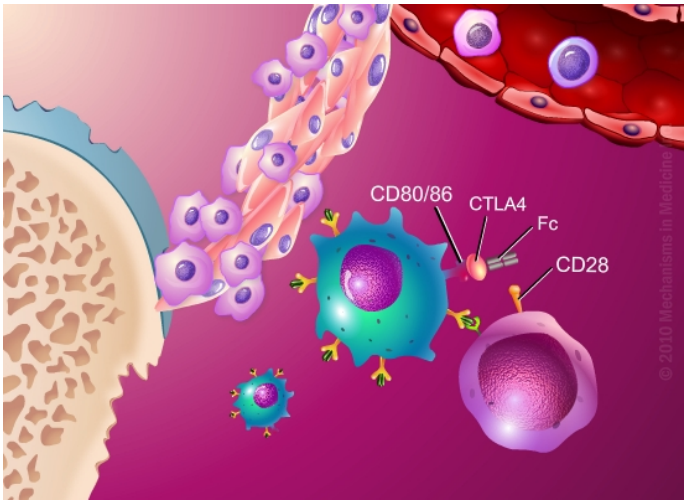
Scene 6 Notes:
T-cell Co-stimulatory Blocking Agents

T-cell co-stimulatory blocking agents are another type of biologic DMARD. These agents interfere with the interaction between antigen-presenting cells (APCs) and T-cells.



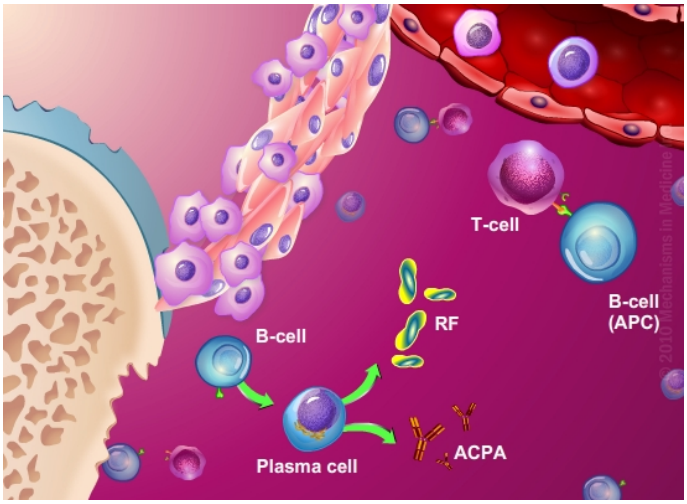
Scene 7 Notes:
T-cell Co-stimulatory Blocking Agents

For example, the fusion drug, abatacept, binds to the CD80/86 receptor on the APC surface and prevents delivery of T-cell secondary signals. Thus, T-cell activation is reduced.



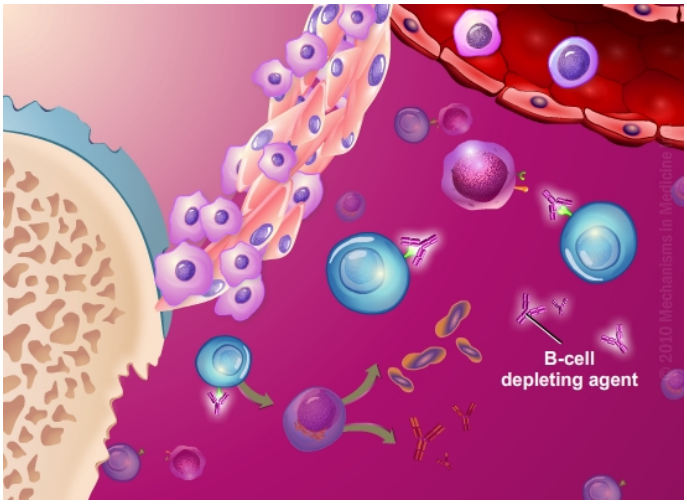
Scene 8 Notes:
T-cell Co-stimulatory Blocking Agents

This blockade interrupts the early stages of the pathogenic cascade of RA.[4]



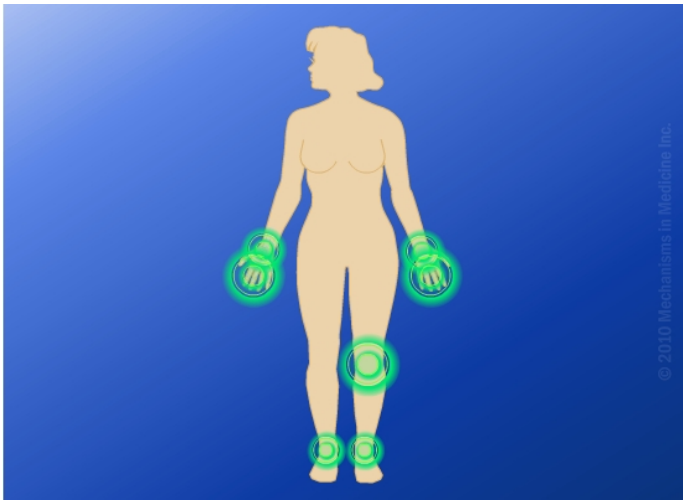
Scene 9 Notes:
B-cell Depleting Agents

Another form of biological DMARDs are the B-cell depleting agents. In the rheumatic joint, B-cells are the precursors to autoantibody-producing plasma cells and also act as APCs.



Scene 10 Notes:
B-cell Depleting Agents

By targeting B-cell CD20 surface molecules, B-cell depleting agents reduce the number of B-cells in the synovium. With fewer B-cells present, there is a reduction in both T-cell activation and plasma cell count.



Scene 11 Notes:
Conclusion

As novel therapies are developed for the treatment of RA, more options will become available to help minimize inflammatory disease activity. With early treatment, the characteristic autoimmune response of RA can be interrupted; paving the way for possible disease remission or resolution.

References:

1. Hitchon CA, Peschken CA, Shaikh S, El-Gabalawy HS. Early undifferentiated arthritis. *Rheum Dis Clin N Am*. 2005;31:605-626.

2. Matsumoto AK, Bathon J, Bingham III, CO. Rheumatoid Arthritis Treatment. http://www.hopkins-arthritis.org/arthritis-info/rheumatoid-arthritis/rheum_treat.html. Accessed November 24, 2009.

3. Scheinecker C, Smolen JS, Fleischmann R. *Essentials of Rheumatoid Arthritis: Challenges of Modifying Disease*. London, UK: Current Medicine Group Ltd; 2009.

4. Sidorov J. A summary of abatacept for rheumatoid arthritis refractory to tumor necrosis factor α inhibition. *Managed Care*. 2006, 15(3). Summary of: Genorese MC, Becker JC, Schiff MD, et al. Abatacept for rheumatoid arthritis refractory to tumor necrosis factor α inhibition. *N Eng J Med*. 2005; 353: 1114-1123.