

Cytomegalovirus

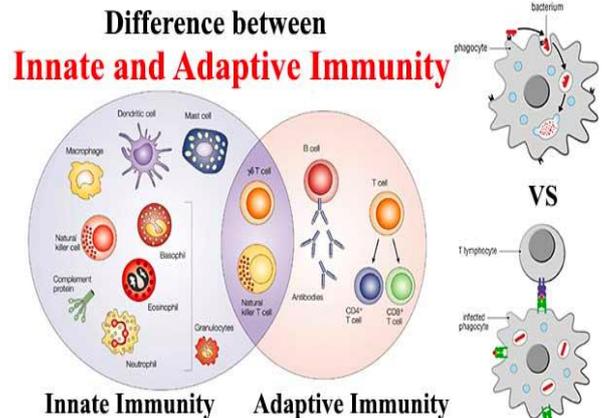
- Cytomegalovirus , or CMV, is a common virus that infects people of all ages.
- Over half of adults have been infected with CMV by age 40. Most people infected with CMV show no signs or symptoms.
- When a baby is born with cytomegalovirus (CMV) infection, it is called congenital CMV.
- About one out of every 200 babies is born with congenital CMV infection.
- About one in five babies with congenital CMV infection will have long-term health problems.
- Pregnant with immune system is weakened, CMV is cause for concern.
- Women who develop an active CMV infection during pregnancy can pass the virus to their babies, who might then experience symptoms.
- For people who have weakened immune systems, especially people who have had an organ, stem cell or bone marrow transplant, CMV infection can be fatal.

- CMV spreads from person to person through body fluids, such as blood, saliva, urine, semen and breast milk.
- There is no cure, but there are medications that can help treat the symptoms.

Innate and adaptive immunity

Differences b/w innate and adaptive immunity

Characteristics	Innate Immunity	Adaptive immunity
Presence	Innate immunity is something already present in the body.	Adaptive immunity is created in response to exposure to a foreign substance.
Specificity	Non-Specific	Specific
Response	Rapid	Slow (1-2 weeks)
Potency	Limited and Lower potency	High potency
Memory	No memory	Long term memory
Allergic Reaction	None	Immediate and Delay hypersensitivity



Innate & adaptive immunity

- Researchers have finally unravelled a longstanding question on why Serengeti zebra, wildebeest, and gazelle, which share limited food resources, follow the same migratory routes, in a body size dependent way.

- The researchers used novel data to show how a balance of species interactions and ecological factors regulate this process.
- They say competition pushes zebra ahead of wildebeest, and wildebeest then eats plants in a way that facilitates the development of newer growth for the trailing gazelle.



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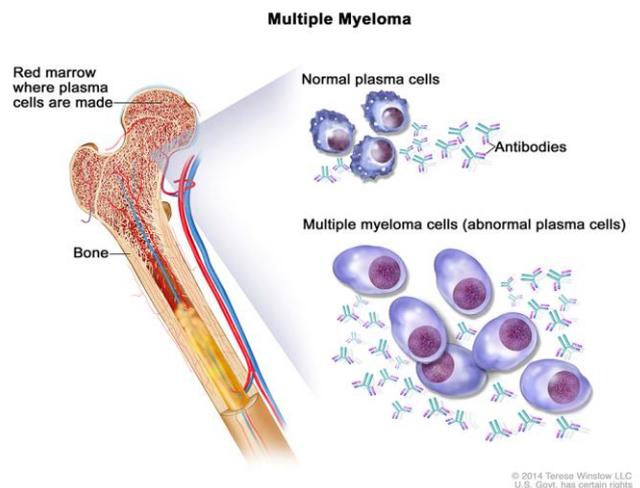
Myeloma cancer

- Scientists have engineered a new variant of cancer-fighting T cells that can suppress multiple myeloma tumours in mice while showing superior persistence and endurance compared with standard CAR T cell designs.
- The new cells' promising effects and durability suggest they could grant badly needed treatment options to patients with refractory or relapsed multiple myeloma.

Multiple myeloma is the second most common type of blood cancer in adults.

Myeloma cancer

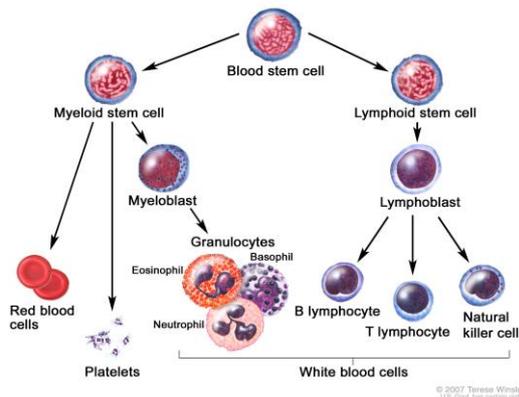
- Myeloma is a type of blood cancer that develops from plasma cells in the bone marrow.
- Myeloma is often called multiple myeloma because most people (90%) have multiple bone lesions at the time it is diagnosed. Plasma cells are a type of white blood cell found in the bone marrow.



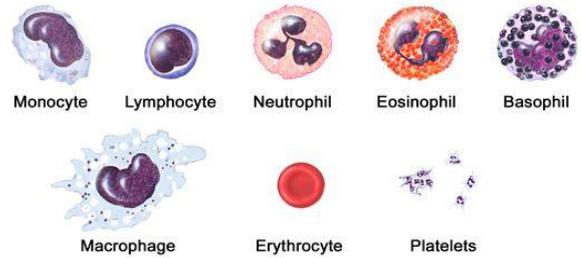
About T Cell

- A type of white blood cell.
- T cells are part of the immune system and develop from stem cells in the bone marrow.
- They help protect the body from infection and may help fight cancer.

- Also called T lymphocyte and thymocyte.



Blood Cells



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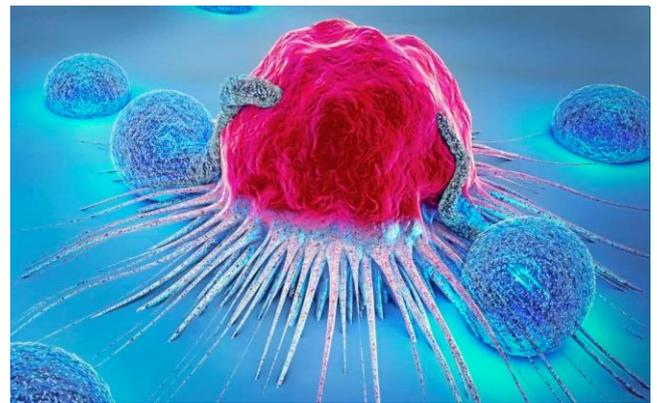
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Macrophage

- It was long thought that the fluid-filled sac around our lungs functions merely as a cushion from external damage.
- Turns out, it also houses potent virus-eating cells that rush into the lungs during flu infections.
- These cells are macrophages, which are immune cells produced in the body, and go into the lungs when there's an infection.

About Macrophage

- A type of white blood cell that surrounds and kills microorganisms, removes dead cells, and stimulates the action of other immune system cells.



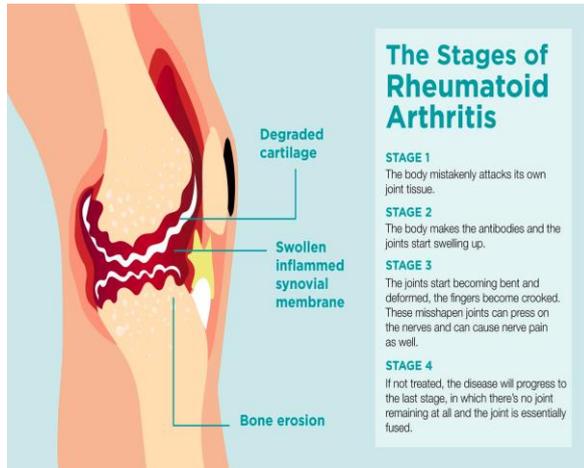
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Rheumatoid arthritis

- The Lancet published the results of a study that proposed to repurpose an existing drug to treat rheumatoid arthritis as prophylaxis, to prevent disease.
- Prophylaxis requires daily administration of anti-migraine compounds, whether or not a migraine attack is occurring.
- All the drugs used for migraine prevention have potential and often relevant adverse events or contraindications, and may also interfere with other concurrent

conditions and treatments.

- The results of the study showed that “rheumatoid arthritis prevention trials are feasible and targeting the adaptive immunity of such individuals at an early stage, can prevent the onset of rheumatoid arthritis.”



What is rheumatoid arthritis?

- It is a chronic, autoimmune condition that mostly affects the joints.
- Scientists have not yet understood why an autoimmune condition occurs, allowing the immune system that protects the body, to attack itself.
- A patient experiences pain, swelling of joints, and loss of function and mobility as a result of stiffness.
- As can be expected, this is likely to significantly lower a patient's quality of life.

As per the National Institute of Arthritis and Musculoskeletal and Skin Diseases, of the National Institutes of Health, U.S., rheumatoid arthritis affects the lining of the joints, and damages the tissue that covers the ends of the bones in a joint.

It often occurs in a symmetrical pattern, meaning that if one knee or hand has the condition, the other hand or knee is also often affected.

Fatigue, occasional fevers, and a loss of appetite are to be expected, and there is a possibility that it may cause medical problems outside of the joints including in the heart, lungs, blood nerves, eyes and skin.

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ASAT

What are anti-satellite weapons?

- Anti-satellite (ASAT) weapons are designed to debilitate and/or destroy satellites that are already in orbit and operational.
- ASAT weapons violate the OST through the latter's Article VII, which holds parties to the treaty liable for damaging satellites

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belonging to other parties, and Article IX, which asks parties to refrain from the “harmful contamination” of space.

- Russia, in the form of the erstwhile Soviet Union, has had ASAT capabilities since at least 1968.
- While the Cold War motivated ASAT weapon tests on either side of the Atlantic, the respective programmes refused to dwindle once relations thawed.
- Most of these weapons are kinetic, meaning they destroy satellites in orbit by rocketing into them or detonating an explosive near them, and blowing them to pieces.
- Because of the low gravity and lack of an atmosphere, the resulting debris can stay in orbit for a long time depending on their size. This result violates Article IX of the OST...

Detailed course on 2yrs current affairs for prelims 2024

sample class notes

- Attappady Thuvara has seeds with white coat.
- These are bigger and have higher seed weight than the regular variety.
- Compared to the garlic produced in other areas, the garlic from the Kanthalloor Vattavada area of Devikulam block panchayat in Idukki contains higher amount of sulphides, flavonoids, and proteins.
- Onattukara Eilu and its oil are famous for its unique health benefits.
- Relatively higher antioxidant content in Onattukara Eilu helps in fighting the free radicals which destroy the body cells.
- Kodungalloor Pottuvettari cultivated in Kodungalloor and parts of Ernakulam is consumed as juice and in other forms.
- This snap melon, which is harvested in summer, is excellent for quenching thirst.

The Tamakoshi River

- The Tamakoshi River is part of the Koshi or Sapta Koshi river system in Nepalese Himalayas.
- It originates from the Rongshar Chu and Lapshi Gang rivers close to the Nepal-Tibet border.
- It flows in a southern direction through Bagmati Province in Nepal, namely through Dolakha District and Ramechhap District.

By saurabh pandey sir

