Immunity

Learning Objectives

- Introduction to Immunity
- Innate Immunity
- Lymphoid Tissue

Introduction to Immunity

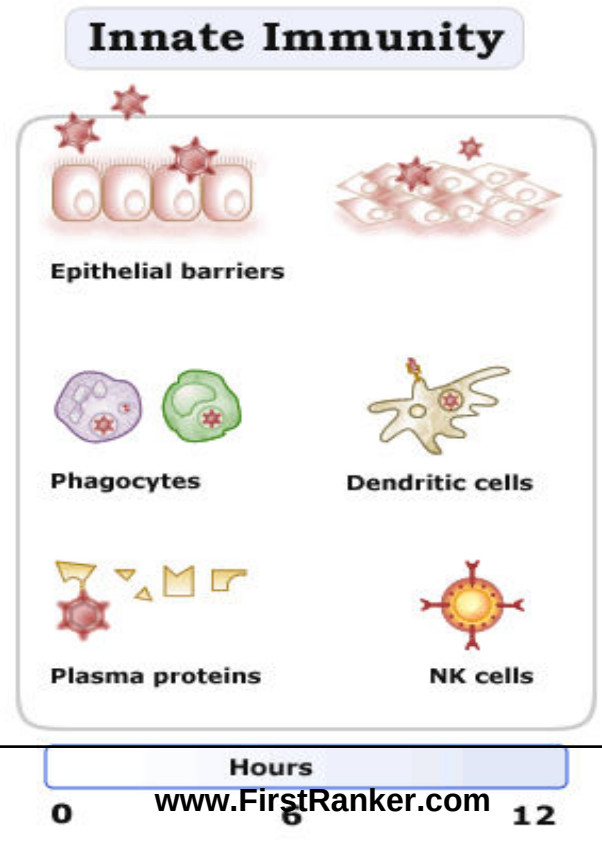
Immunitas : Freedom from

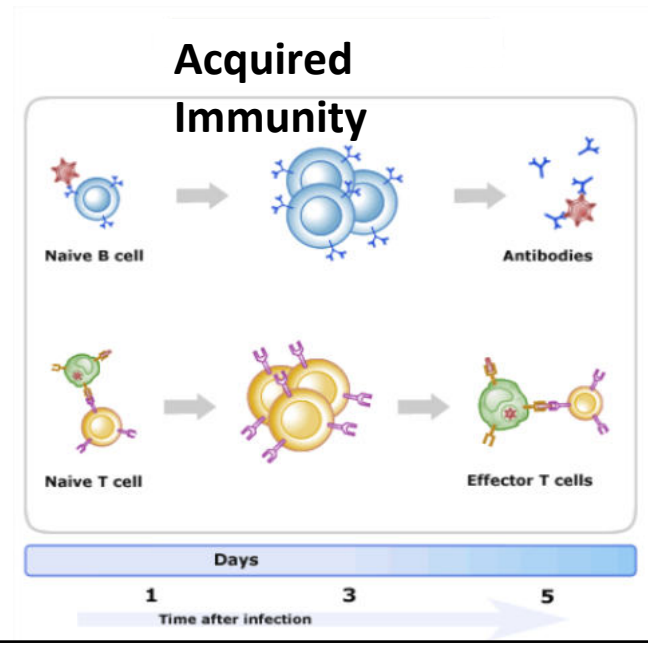
Immunity is the ability of body to destroy potentially hazardous/harmful foreign substances, if entered in body, that is it provides FREEDOM from any foreign invader.

Types of Immunity

Depending on presence-since birth or after birth

- Innate (Non specific immunity) - present since birth
- Acquired (Specific immunity) - develop afterwards
  - Humoral Immunity
  - Cellular Immunity



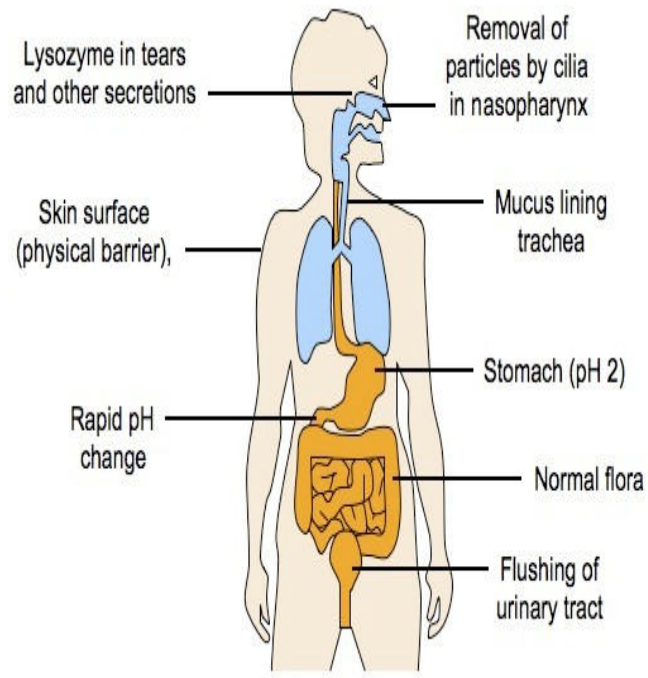


Innate Immunity

- Innate (Non specific immunity)-

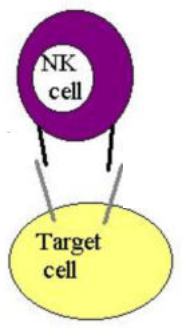
It denotes to **nonspecific protection** mechanisms that come into play **immediately** or within hours of an antigen's appearance in the body. These mechanisms include-

1) Physical barriers:
2) Chemical barriers:
3) Cellular Components:
4) Proteins:



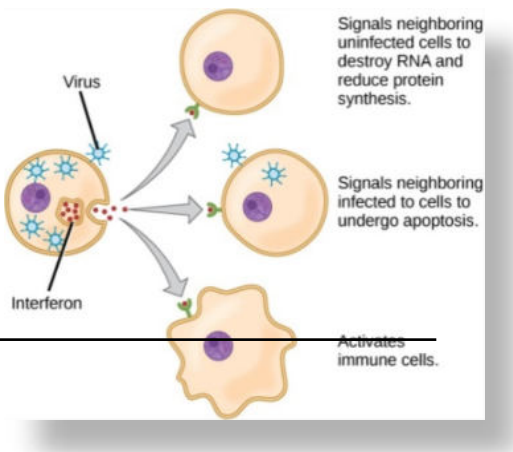
Natural killer cells

- Natural killer cells (also known as Nk cells, K cells, and killer cells) are a type of lymphocyte which does not undergo processing, show much faster immune reaction and thus a component of innate immune system.

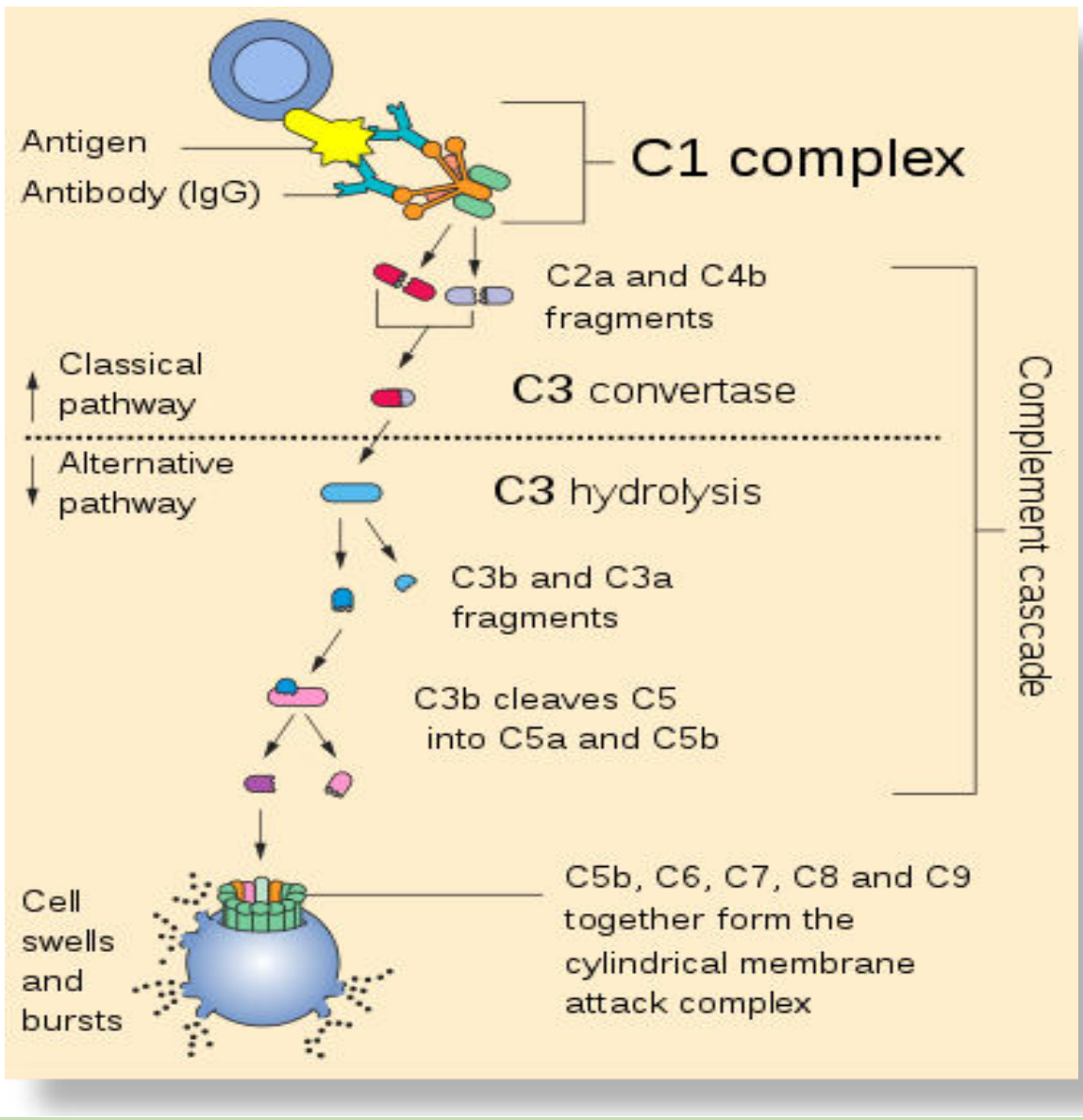


Interferon

- Interferons are named after their ability to "interfere" with viral replication within host cells.



Alternate pathway of complement system

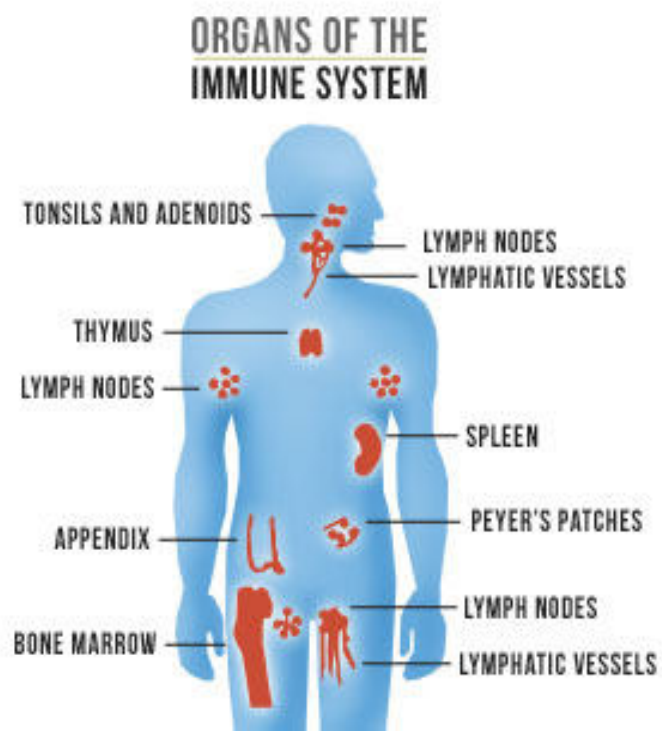


Lymphoid Tissue

Lymphoid tissue are the sites of processing to form **immunocompetent** lymphocytes and storage.

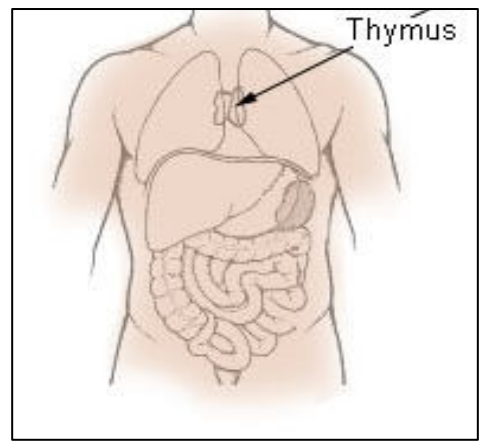
Primary lymphoid tissue (Central lymphoid tissue)

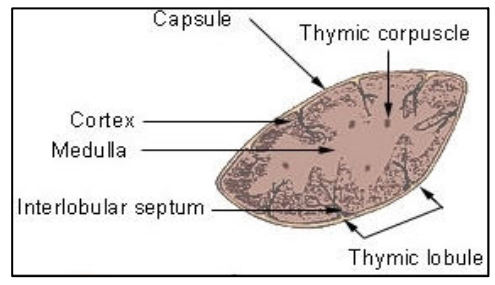
Secondary lymphoid tissue (Peripheral lymphoid tissue)

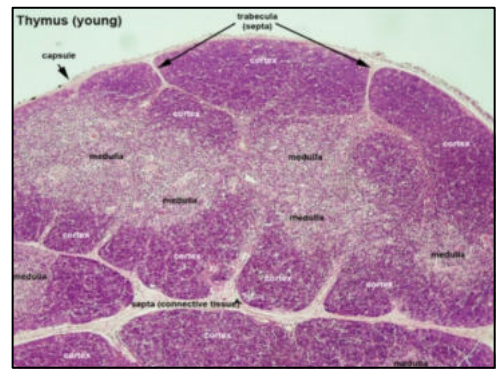


Primary Lymphoid Tissue-**Thymus**

Thymus increases in size from birth (10-15 gm to 40 gm at puberty) in response to postnatal antigen stimulation and regresses thereafter, still, minimal T lymphopoiesis continues throughout adult life.





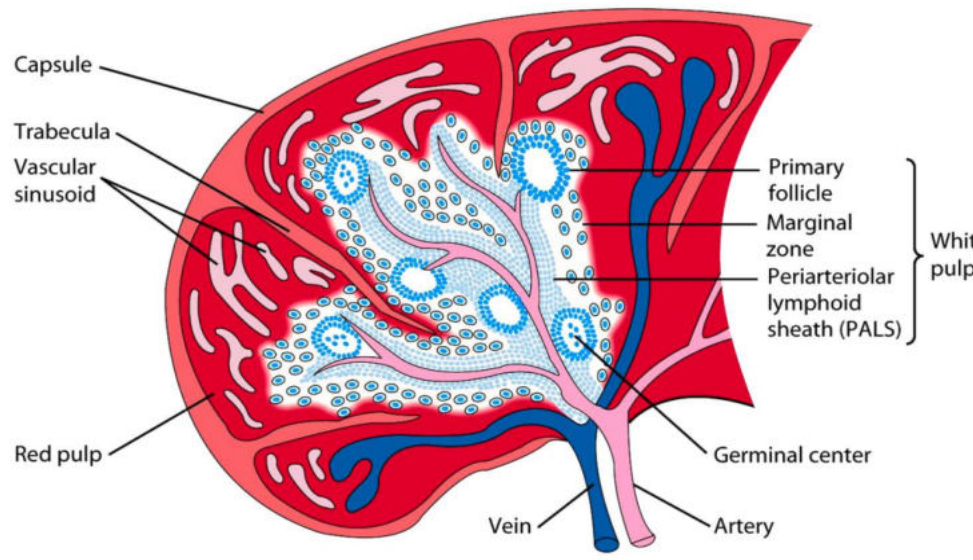


Primary Lymphoid Tissue-Thymus

1) Formation of specific surface receptors during Maturation:
2) Development of 'Tolerance to self antigen proteins':

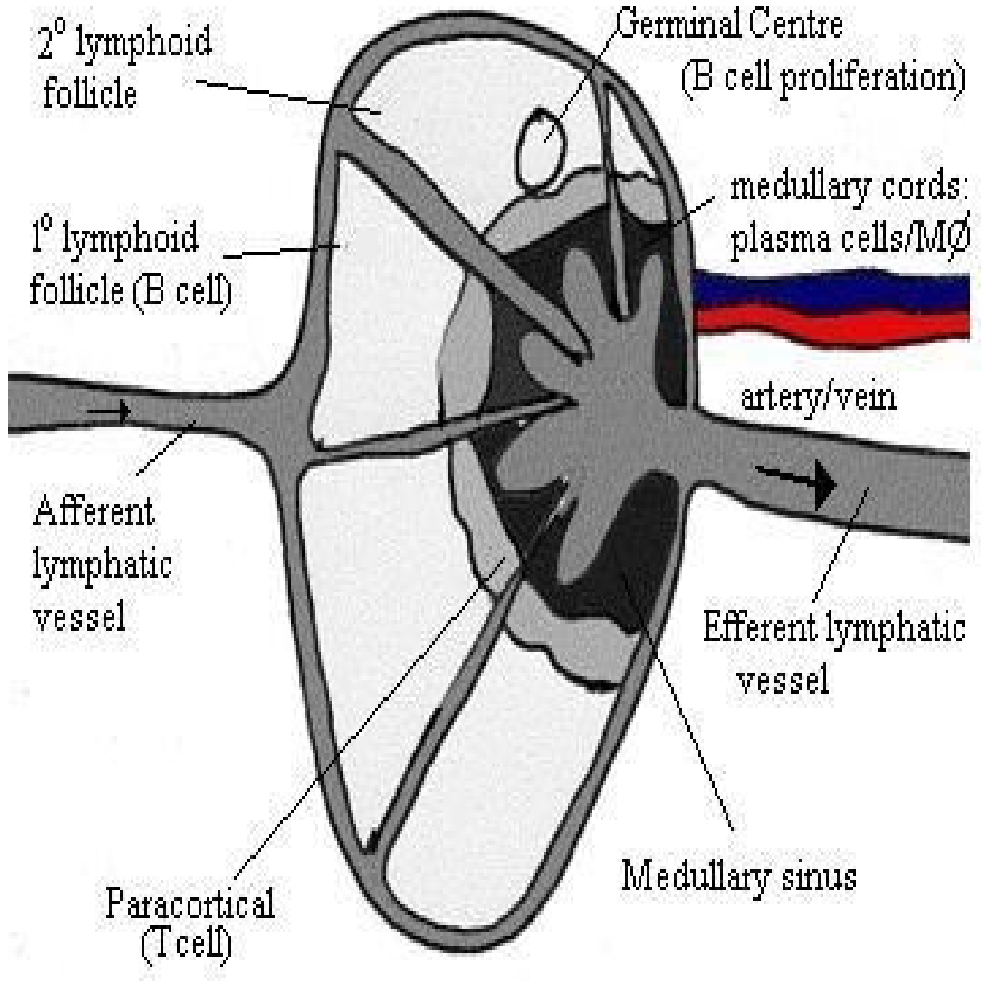
Secondary Lymphoid Tissue-Spleen

- This is the body's **largest lymphatic organ**.
- It is a large encapsulated organ in left upper part of abdomen, the outer capsule is fibro-elastic. Like the thymus, the spleen has only efferent lymphatic vessels. The germinal centers are supplied by arterioles.

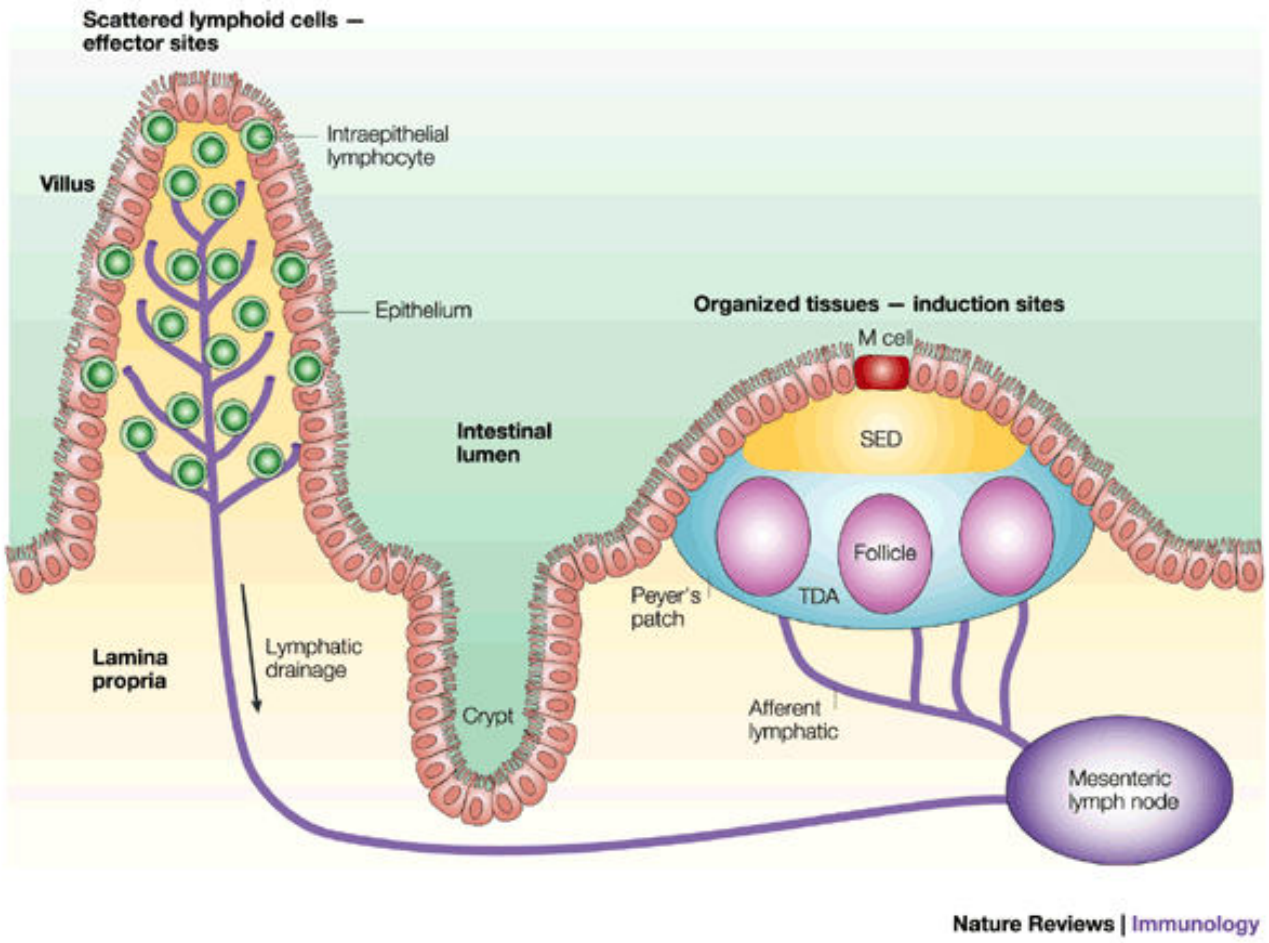


Secondary Lymphoid Tissue – Lymph Nodes

500-600 lymph nodes in the human body are grouped in clusters in different regions as at the base of limbs, abdominal and neck areas , where lymph is collected from regions of the body likely to sustain pathogen contamination from injuries.



Secondary Lymphoid Tissue – Lymphoid follicles



Lymph

Lymph, (lymph = clear fluid)

Fluid filters out of capillaries and drains into lymphatic vessels to become lymph and circulates throughout the **lymphatic** system.

Lymph is same as interstitial fluid, the fluid around tissue cells. Lymph eventually drains into venous blood.

Self Assessment

Immunity is the ability of body to …….potentially hazardous/harmful foreign substances.

Innate immunity denotes to **……** protection mechanisms that come into play ……..of an antigen's appearance in the body.

Natural killer cells are a type of lymphocyte which does not undergo ……

Interferons are named after their ability to "interfere" with ……..within host cells.

…… is the body's largest lymphatic organ.

Tolerance to self antigen proteins develop in ……..

Thank you