

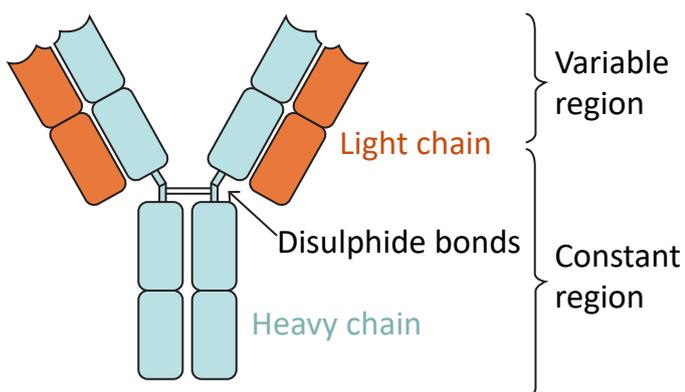
# Human Health and Diseases - Antigen, Antibody, Vaccines and Immunization

## Antigen

- \* Antigens are foreign substances that stimulate the immune system to produce antibodies
- \* Antigens could be anything like a pathogen or bacteria or fungi or even virus
- \* They cause diseases or allergic reactions
- \* Each antigen has a distinct surface feature or epitope
- \* Antigens are generally proteins
- \* They are of three types: Exogenous, endogenous and autoantigens

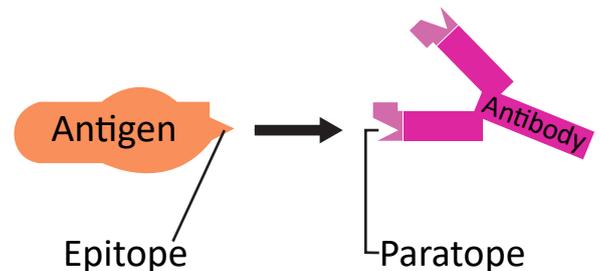
## Structure of Antibody

- \* Y-shaped protein molecule
- \* 4 polypeptide chains – 2 heavy (H) and 2 light (L)
- \* Chains have two regions called the constant region and the variable region
- \* Both the heavy chains and light chains are held together by disulphide bonds



## Antibody

- \* Antibodies are immunoglobulins (Ig) produced by the B cells of the immune system in response to antigen exposure
- \* Paratope of antibody binds with the epitope of antigen in a lock and key mechanism
- \* With the help of this binding, the antigens are eliminated from the body through direct neutralization or with the help of activating other arms of the immune system
- \* Types of antibodies: IgA, IgE, IgG, IgM, IgD



## Immunization

- \* Immunization is a term that refers to the process of getting vaccinated
- \* To eradicate a disease completely, the whole population of the place has to be immunized
- \* For example: Small pox has now been eradicated from the population through effective immunization plan

## Vaccines and Vaccination

- \* Antigens and antibodies have a significant role to play in vaccines
- \* Vaccines are substances that are antigenic, which are prepared from the agent causing the disease or any synthetic substitute
- \* In vaccination, weakened/inactivated virus or bacteria is deliberately administered to the person
- \* This stimulates the B lymphocytes present in the immune system
- \* Once these lymphocytes are stimulated, they respond and produce plasma cells which