

Active and passive immunization

Passive immunization

- Substitution of missing specific antibodies protecting against infectious disease or treating the infectious disease.
- Used mainly in infectious diseases or diseases caused by toxins.
- Prompt but short-term effect.
- No immunological memory is induced.

Active immunization

- Induction of immune memory by harmless antigen.
- In the case of infection by a pathogen prompt secondary immune response protects the immunized person from the disease.
- Has protective, but no therapeutic effect.

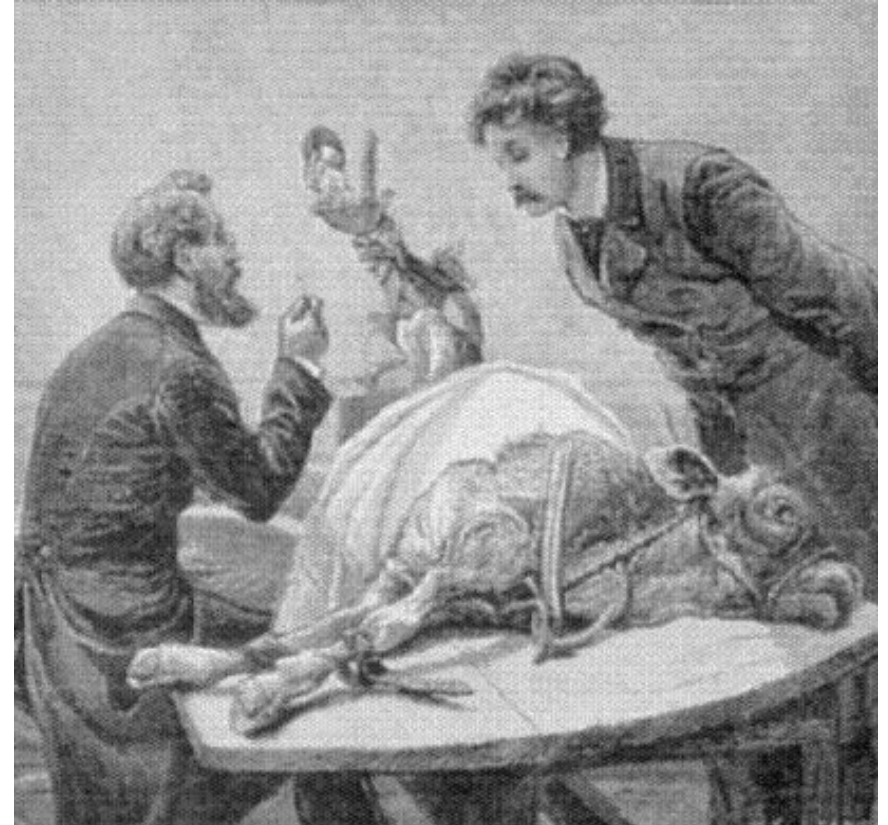
Active and passive immunisation

	<u>Active immunisation</u>	<u>Passive immunisation</u>
Speed of response	Delayed	Prompt
Length of response	Long-term	Short-term
Clinical use	Long-term prophylaxis	Treatment, short-term prophylaxis

Antisera used in human medicine

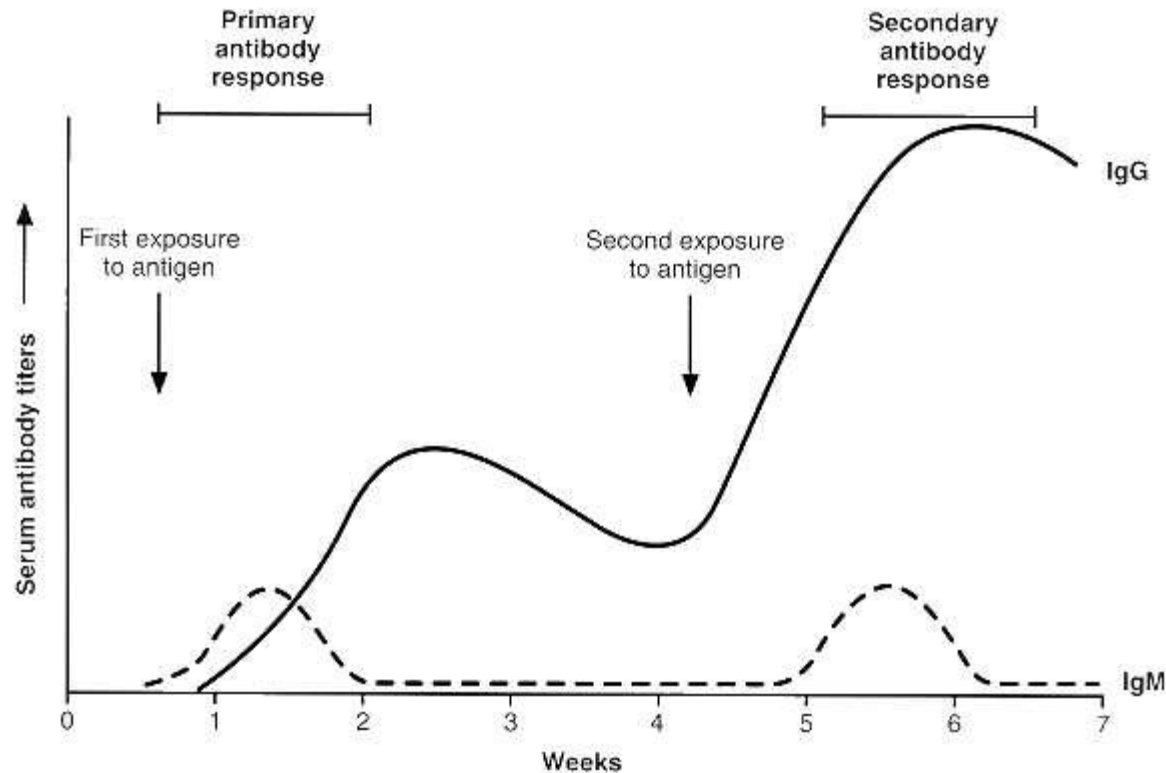
- Against bacterial infections: Tetanus (human), Diphtheria (equine), Botulism (equine)
- Against viral infections: Hepatitis B (human), Rabies (equine), Varicella-zoster (human), CMV (human), tick-born encephalitis (human), hepatitis A, measles and other viral infections (pooled human immunoglobulin)
- Against snake or black widow spider toxins
- Anti Rh

Edward Jenner

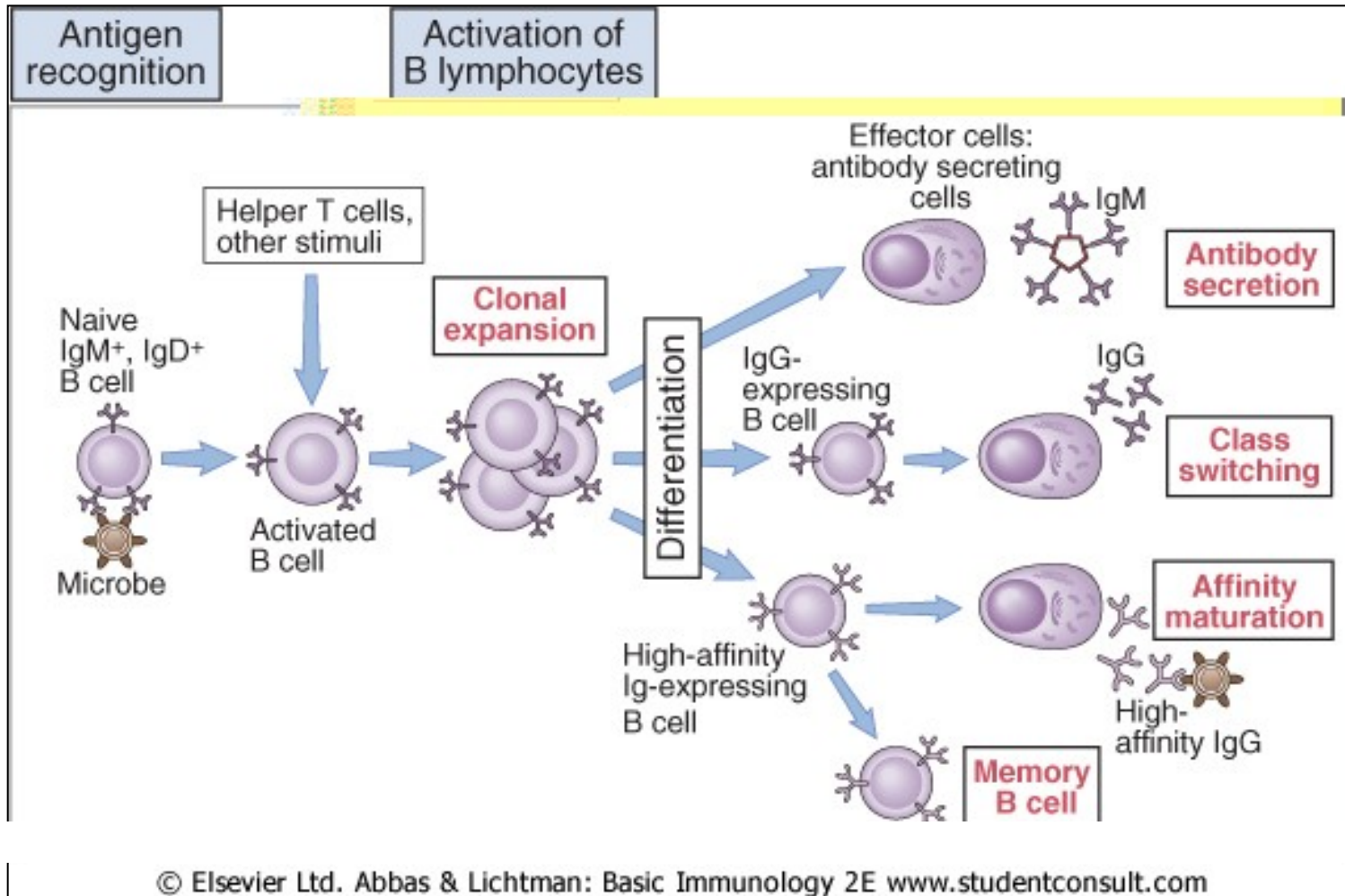


Discovery of small pox vaccine

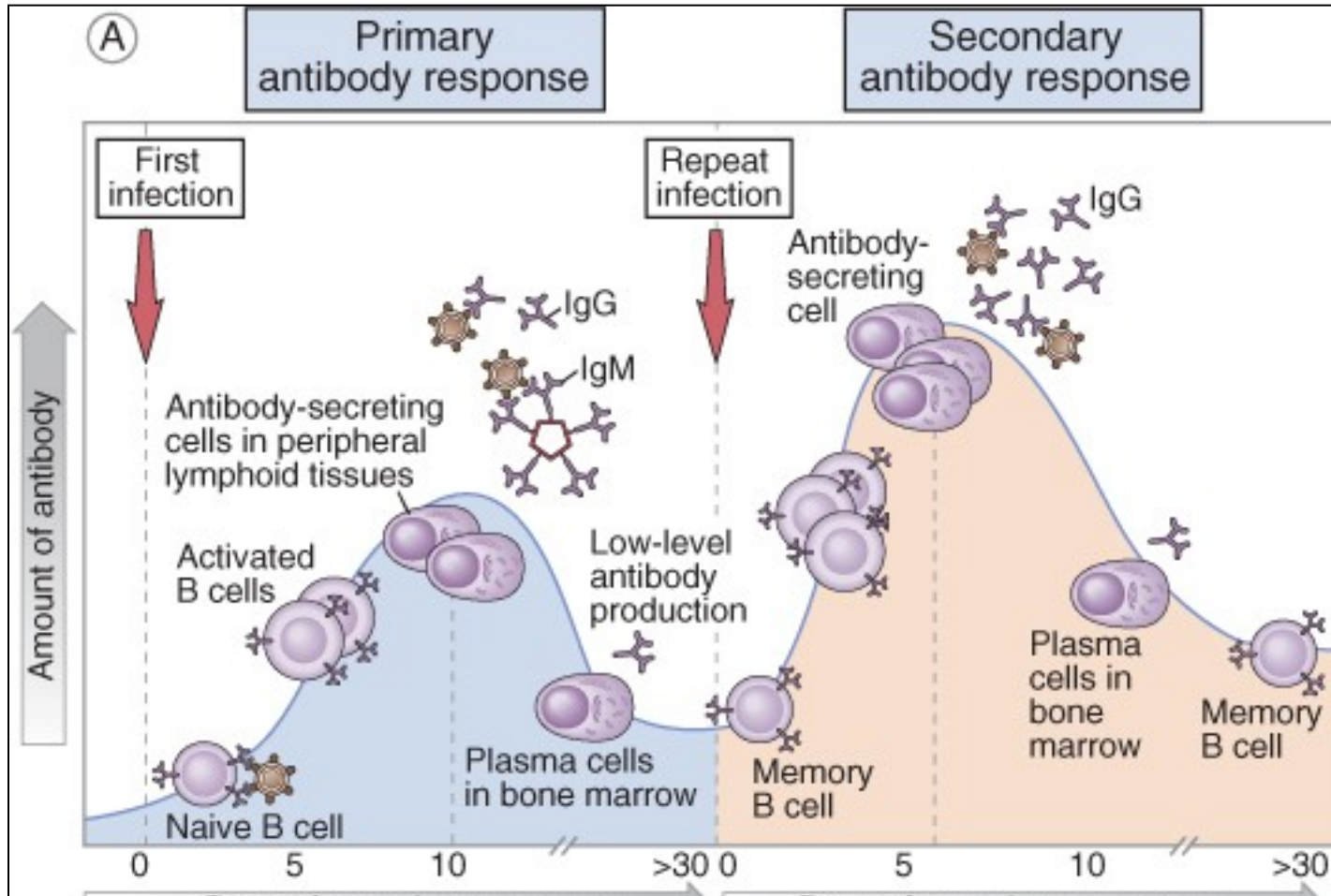
Primary and secondary immune response



Formation of memory cells after antigenic challenge



Primary and secondary immune response



„Classical“ vaccines

- **Attenuated microbes:** BCG (against TBC), mumps, measles rubella, varicella, cholera, yellow fever, poliomyelitis,
- **Inactivated microorganisms:** rabies, hepatitis A, tick-born encephalitis, poliomyelitis, cholera, plague. Formerly pertussis.
- **Toxoids:** tetanus, diphtheria

„Modern“ vaccines

- **Subunit:** influenza, pertussis
- **Polysaccharide:** Haemophilus influenzae B (conjugated), Meningococcus (group A a C, conjugated on non-conjugated), Pneumococcus (conjugate and non-conjugated)
- **Recombinant:** hepatitis B
- **Virus-like particles :** papillomavirus

„Future (?)“ vaccines

- Synthetic polypeptides
- Antiidiotype antibodies
- DNA vaccines
- Vector vaccines
- Antigens inserted into food
(bananas, potatoes)

Anti-idiotypic antibodies

