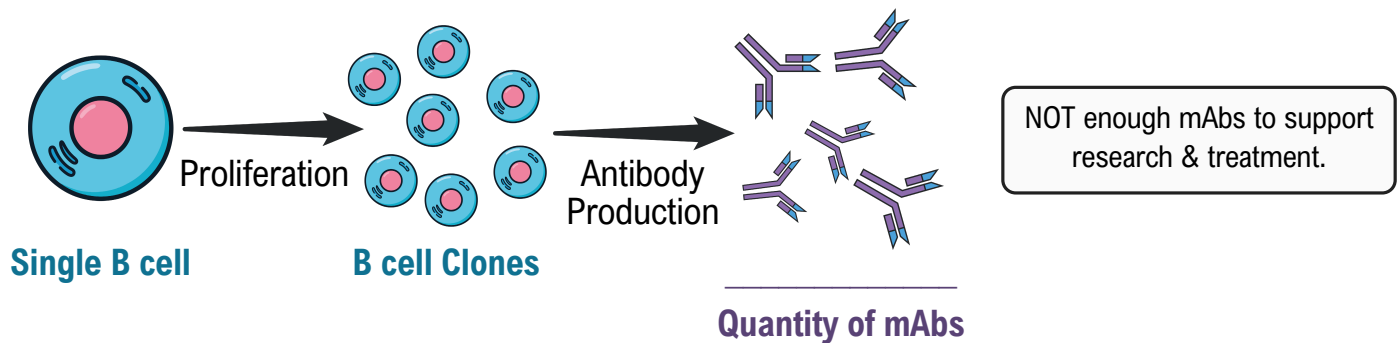


TOPIC: IMMUNOTHERAPY: MONOCLONAL ANTIBODIES

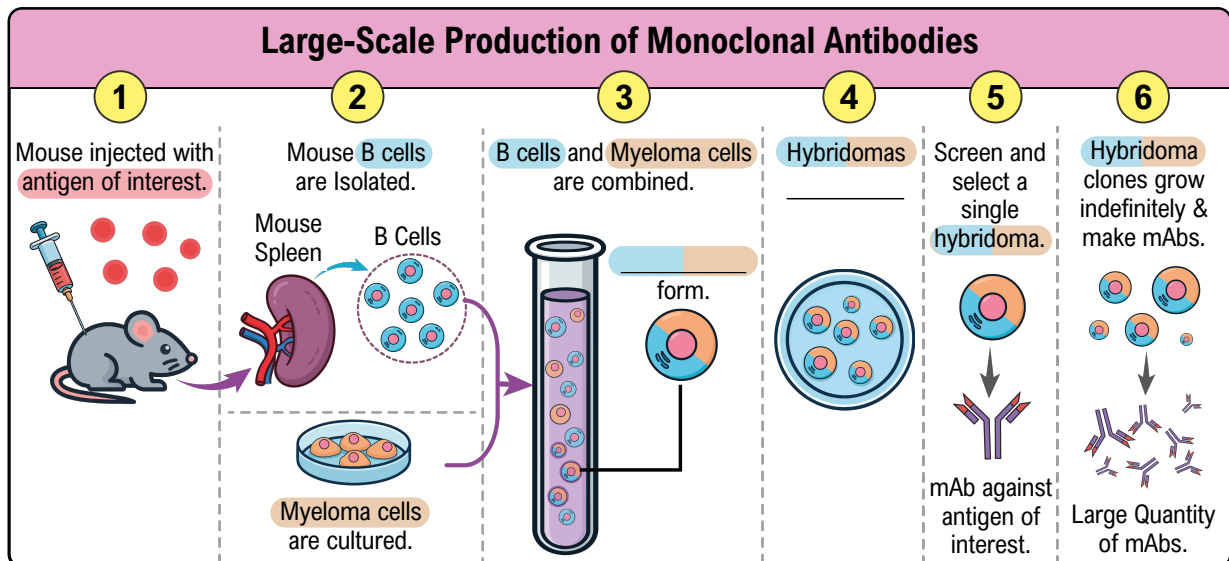
Immunotherapy: Monoclonal Antibodies

- ◆ **Monoclonal Antibodies (mAbs):** _____ antibodies produced by clones from a *single* B cell (mono = single).
 - mAbs have high specificity for recognizing the _____, single epitope of an antigen.
- ◆ Different sets of mAbs can be used to treat several diseases (e.g. cancer, autoimmune disorders, infections).
 - HOWEVER, B cells & plasma cells are _____-lived in vitro (*limits* how many mAbs can be harvested).



Large-Scale Production of Monoclonal Antibodies

- ◆ To produce _____ quantities of a mAbs, B cells are fused with “long-lived” *myelomas* to form *hybridoma cells*.
 - **Myelomas:** cancerous plasma cells that _____ proliferate in vitro, but do *NOT* produce antibodies.
 - **Hybridoma cells:** *continuously* proliferate in vitro while producing *mAbs* against antigen of interest.



TOPIC: IMMUNOTHERAPY: MONOCLONAL ANTIBODIES

EXAMPLE

For the monoclonal antibodies to be able to recognize the antigen of interest, what must occur?

- a) The B cells need to be exposed to the antigen during B cell maturation.
- b) The mouse needs to be injected with the antigen so it can encounter the developing B cells.
- c) The cancerous myeloma cells must be injected with the antigen before hybridizing with the B cells.
- d) The antibodies' shape must be carefully crafted in vitro.

PRACTICE

Why are the mouse B cells that are responsible for producing monoclonal antibodies hybridized with cancerous myeloma cells?

- a) B cells cannot replicate forever but cancerous myeloma cells can.
- b) B cells and myeloma cells create antibodies, hybridizing them increases the number of antibodies produced.
- c) Hybridization will ensure that the antibodies created by the B cells will recognize & bind to the myeloma cells.
- d) Hybridization will ensure that the antibodies have human qualities & will not be rejected by the patient's body.

PRACTICE

Which of the following is not a characteristic of monoclonal antibodies?

- a) Monoclonal antibodies are produced by hybridoma clones.
- b) Monoclonal antibodies are natural antibodies created by the immune system to fight disease.
- c) All monoclonal antibodies in a single batch are identical and therefore recognize the same epitope.
- d) Monoclonal antibodies can be used for various diagnostic and treatment therapies for disease.