

**I. Ag Binding and Presentation**

- A.Bind
- B.Internalize
- C.Process
- D.Present
- E.Wait

**II.B cell Interaction with Th cells**

- A.T cells
- B.Meeting
- C.Confirmation
  - 1.binding
  - 2.CD40-CD40L interaction
  - 3.cytokines
  - 4.Tfh
    - a. IL-21

**III.B cell Responses**

- A.Proliferation
- B.Affinity maturation
  - 1.somatic hypermutation
    - a. AID
  - 2.selection
  - 3.repeat
- C.Heavy chain isotype (class) switching
  - 1.overview
  - 2.examples
  - 3.Switch region (S)
  - 4.switch recombination
    - a. AID
    - b. UNG
    - c. APE1
  - 5.result

**IV.T-independent Ab Response**

- A.Ag
- B.Results

**V.Results of B cell Differentiation**

- 1.plasma cells
- A.Short lived plasma cells
- B.Long lived plasma cells
  - 1.plasmablasts
- C.Memory B cells