<table>
<thead>
<tr>
<th>Immunopathology</th>
<th>Mechanism</th>
<th>Effector cells</th>
<th>Typical example</th>
<th>Diagnosis</th>
<th>Treatment</th>
</tr>
</thead>
</table>
| **Type 1**      | IgE on mast cells  
► Early phase: histamine release (15 min)  
► Late phase: PG and LT production, cytokines (6-8 hr.)  
► Eosinophil chemotaxis | (B cells make IgE) (excessive Th2-like Tfh help)  
Mast cells  
Various, including M2 macrophages  
Eosinophils | ► Seasonal rhinitis (mostly early phase)  
► Asthma (eventually mostly late phase)  
► Eczema  
► Anaphylaxis (early phase) | Skin prick tests  
History  
CAP-FIA (lab test for specific IgE)  
Challenge tests | ► Antihistamines  
► Corticosteroids  
► Leukotriene antagonists  
► mAb to IgE (omalizumab, Xolair) for chronic asthma  
► Epinephrine for anaphylaxis |
| **Type 2**      | IgG autoAb (occasionally IgA, IgM)  
► Graves’ disease  
LATS’ Ab to TSH receptor *stimulates*  
► Goodpasture’s (Ab to collagen Ag in kidney and lung)  
► Rheumatic heart disease (cross-reaction with Strep) | (B cells make IgG) (excessive or illicit Tfh help; cross-reaction; exposure of sequestered Ag)  
Neutrophils | Fluorescent antibody techniques using patient’s or normal tissue (linear pattern)  
Some specific immunoassays | | ► Corticosteroids  
► NSAIDs (nonsteroidal anti-inflammatory drugs)  
► DMARDs (disease-modifying anti-rheumatic drugs)  
► mAbs to decrease T or B cells |
| **Type 3**      | IgG, IgA (IgM) immune complexes to intrinsic or extrinsic Ags  
► Serum sickness  
► Poststreptococcal glomerulonephritis  
► Hypersensitivity pneumonitis (Farmer’s Lung: develops into a Type 4 disease)  
► Arthus reaction  
“Mixed cryoglobulins” Biopsy shows lumpy-bumpy pattern | (B cells make Ab) (excessive or illicit Tfh help)  
Neutrophils | | Supportive care for self-limited conditions  
Corticosteroids |
| Type 4                      | Th1, Th2, Th17 (insufficient Treg) M1 macs (Th1) M2 macs (Th2) CTL | ► Multiple sclerosis
► Hashimoto’s thyroiditis
► Type 1 diabetes (T1D)
► Rheumatoid arthritis (like T1D, starts with autoAb then → T cell dominated) | Biopsy shows mononuclear cell infiltrate
Research tests show Ag-specific T cells | Immunosuppression
Anti-inflammatories mAbs to T cells |
|---------------------------|-----------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------|
| ‘Chronic Frustrated Immune Response’ | T cells against non-removable Ags → chronic inflammation Th1, Th2, Th17 (insufficient Treg) M1 macs (Th1) M2 macs (Th2) CTL | ► celiac disease: gluten
► inflammatory bowel disease (Crohn’s, ulcerative colitis): normal gut flora
► Chronic beryllium disease: Be
► psoriasis: normal skin flora | Biopsy shows characteristic pathology
Research tests show Ag-specific T cells, insufficient Treg | Immunosuppression
Anti-inflammatories mAbs to T cells |