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Platelet Disorder

Departemen Patologi Klinik dan Kedokteran
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Yogyakarta

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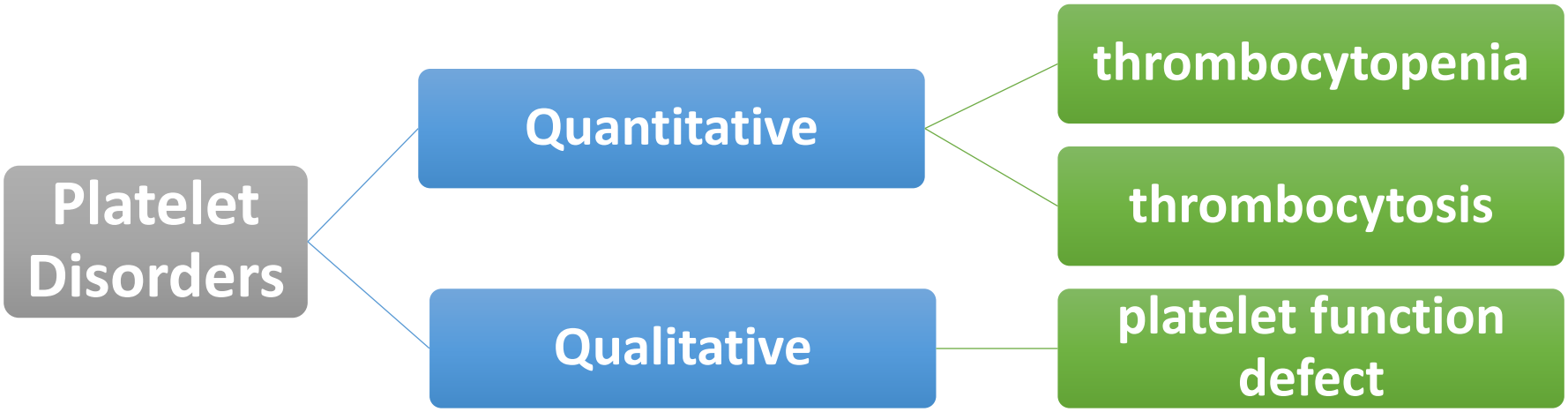
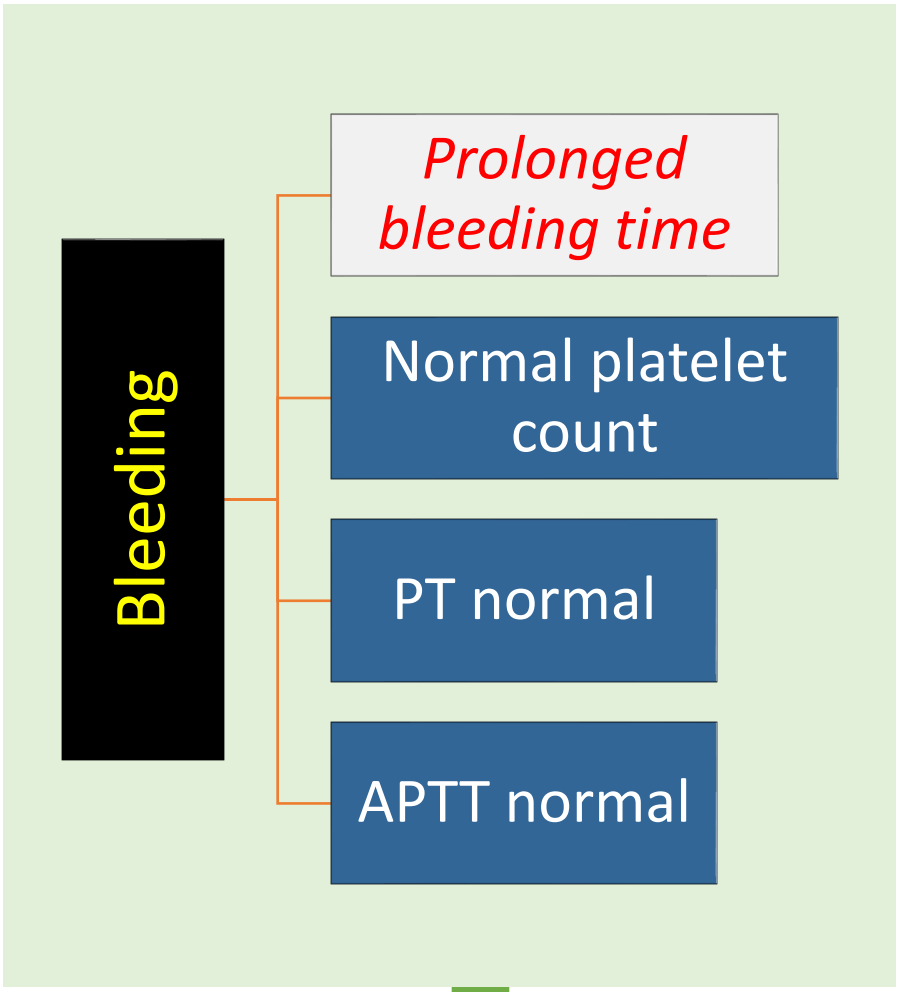
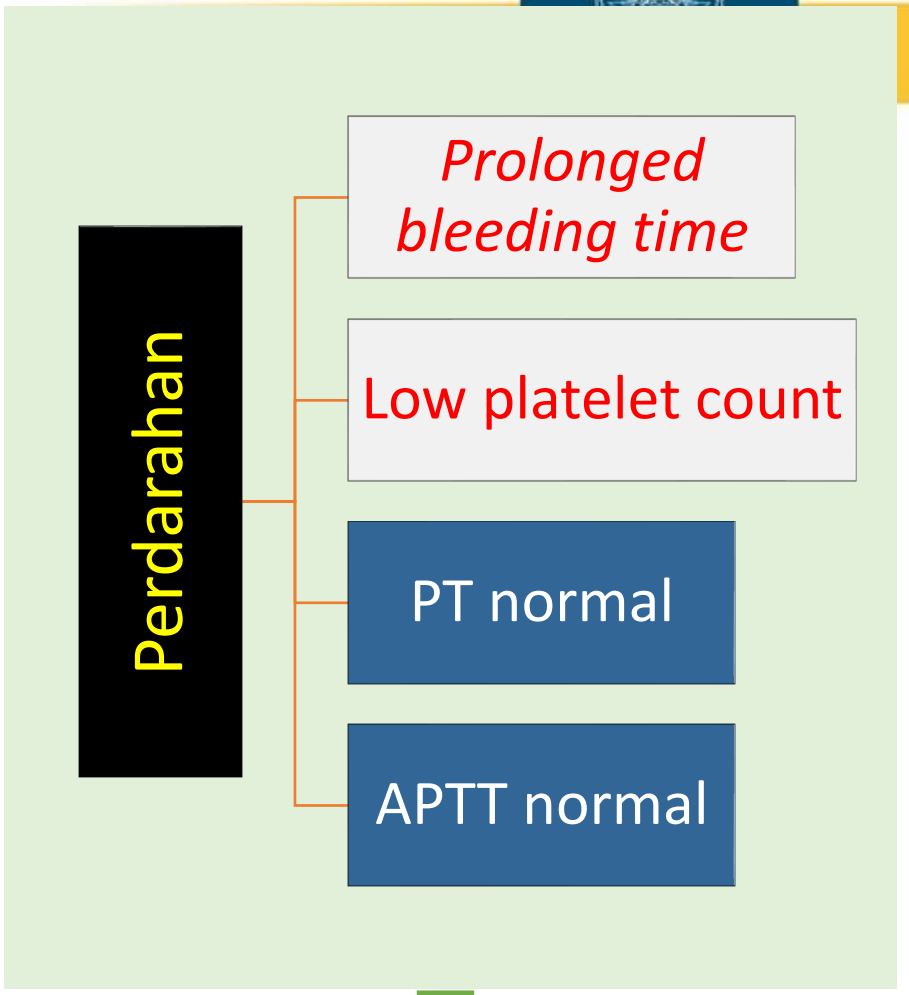
PLATELET DISORDERS







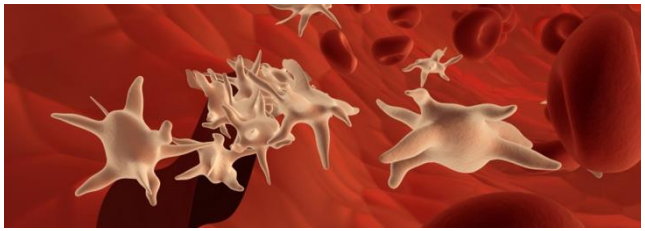
Platelet dysfunction

Thrombocytopenia

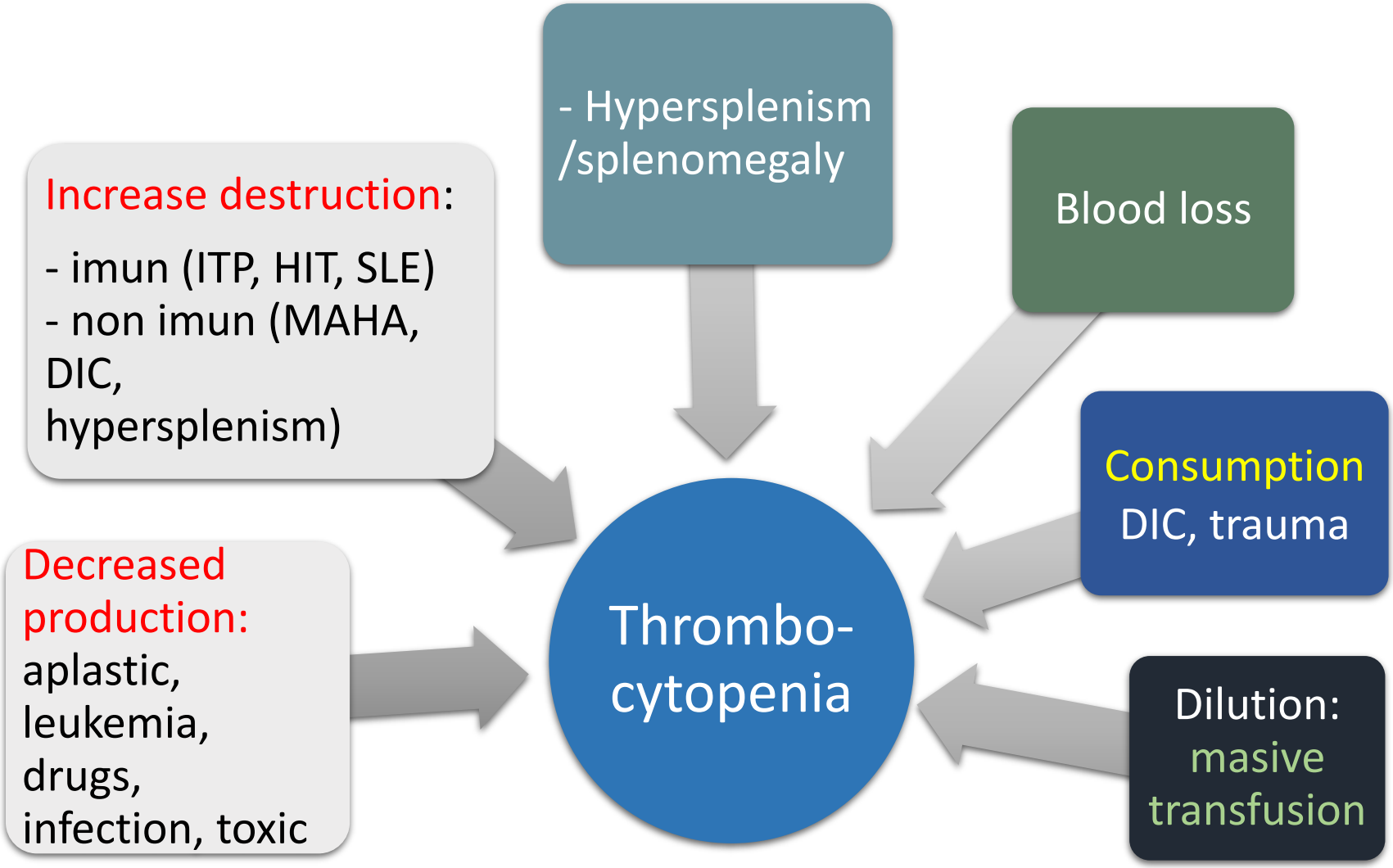
Thrombocytopenia

- Reduction in platelet number **< 100.000/uL**
- However, **spontaneous bleeding does not become evident until the count falls below 20.000/uL**

- Spontaneous bleeding associated with thrombocytopenia most often involves **small vessels**
- **The common sites**:
  - skin and the mucous membranes of the gastrointestinal and genitourinary tracts
  - Intracranial bleeding is a threat to any patient with a markedly depressed platelet count



THROMBOCYOPENIA & ETIOLOGY



THROMBOCYTOPENIA (Decreased production)

- **Decreased megakaryocytes**
  - Normal platelet life span
  - Good response to platelet transfusion
- **Neoplastic Causes**
  - Leukemias
  - Aplastic Anemia
  - Metastatic Carcinoma
  - Drugs
  - Radiotherapy
- **Primary Marrow Disorders**
  - Megaloblastic Anemias
  - Myelodysplastic syndromes
  - Myeloproliferative diseases
  - Some congenital syndromes

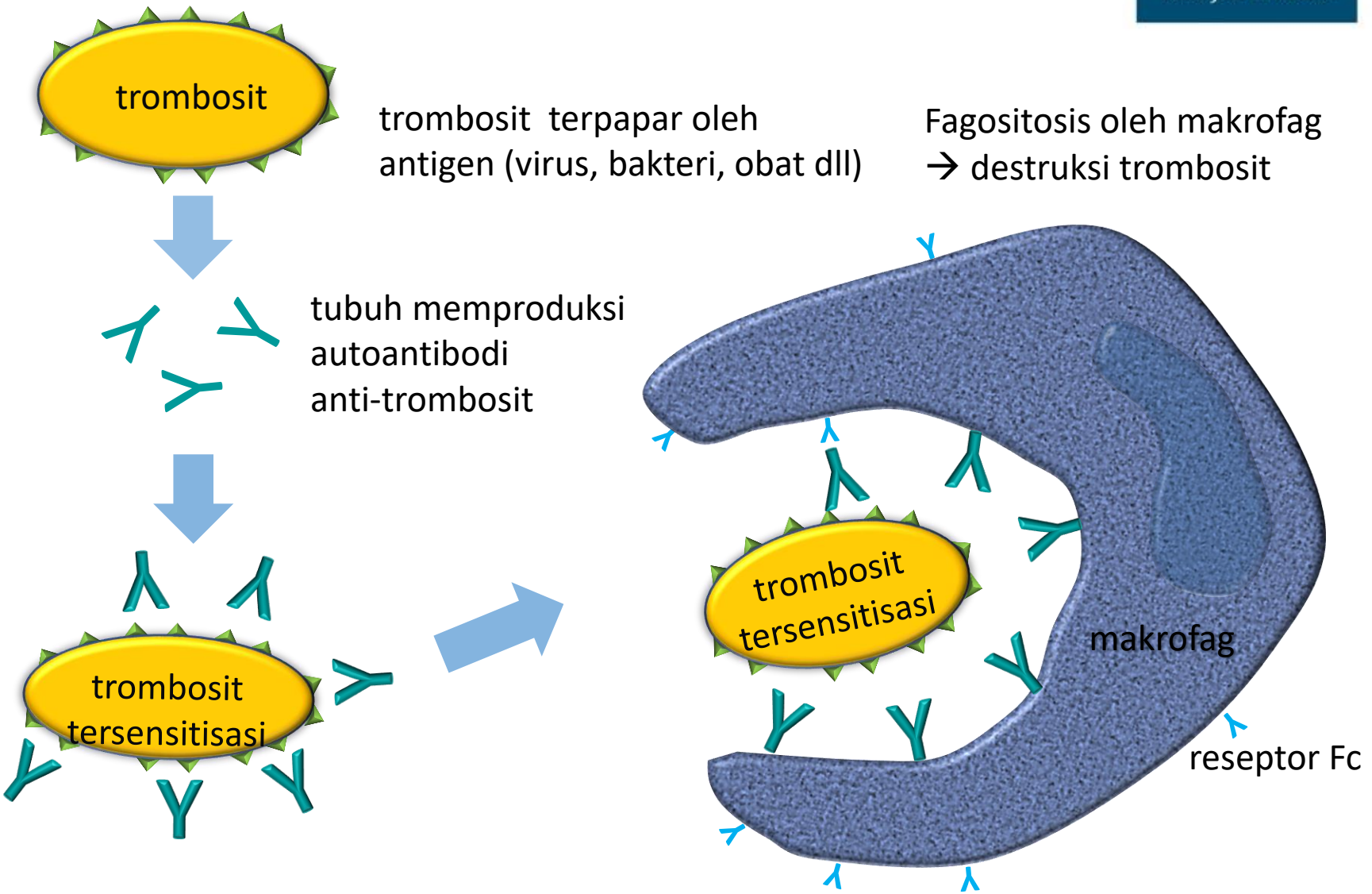
THROMBOCYTOPENIA (Increased Destruction)

- **Increased megakaryocytes**
  - Shortened platelet life span
  - Macroplatelets
  - Poor response to platelet transfusion
- **Causes**
  - Immune
    - ITP
    - Lymphoma
    - Lupus/rheumatic diseases
    - Drugs
  - Consumption
    - Disseminated intravascular coagulation
    - Thrombotic thrombocytopenic purpura
    - Hemolytic/uremic syndrome
  - Septicemia

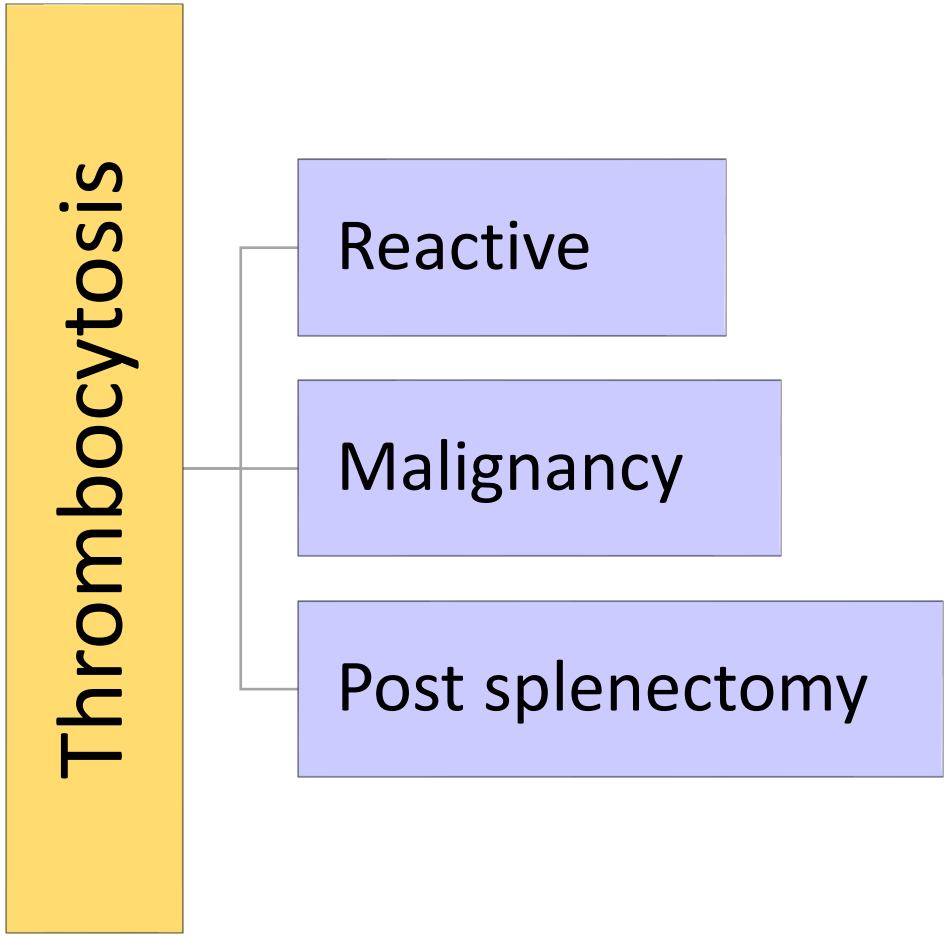
Immune Thrombocytopenia Purpura (ITP)

- The most common cause of thrombocytopenia due to increased **immune destruction of platelets**
- Acute and Chronic
- **Laboratory findings:**
  - **Platelet count: <<**
  - **Bleeding time: >>**
  - **PT and APTT: Normal**

Immune Thrombocytopenia Purpura (ITP)



THROMBOCYTOSIS & ETIOLOGY



Thrombocytosis

Table 1

Causes of Reactive Thrombocytosis

- Iron Deficiency
- Inflammatory Diseases
- Malignancy
- Chronic Infections
- Drugs (vinca alkaloids, epinephrine)
- Post-splenectomy (or functionally asplenic states)
- Rebound thrombocytosis (following acute blood loss, post-splenectomy)
- Myelodysplastic syndromes (5q- syndrome, Sideroblastic anemia)

Table 2

Myeloproliferative Disorders Associated with Thrombocytosis

Disorder	Distinguishing Feature
Chronic Myelogenous Leukemia	Bcr-abl gene rearrangement
Polycythemia Vera	Elevated red blood cell mass
Agnogenic Myeloid Metaplasia	Marrow fibrosis
Primary Thrombocythemia (Essential Thrombocytosis)	Elevated platelet count only

PLATELET FUNCTION DEFECTS

- Congenital
- Drugs
- Alcohol
- Uremia
- Hyperglobulinemias
- Fibrin/fibrinogen split products
- Thrombocythemia
- Cardiac Surgery

PLATELET FUNCTION DEFECTS (Congenital)

- Bernard-Soulier disease (Decreased platelet adhesion
- Glanzmann's thrombasthenia (Decreased platelet aggregation)
- γ or δ-storage pool disease (Defective platelet release)
- Gray platelet syndrome (Defective platelet release)
- Von Willebrand Disease

PLATELET FUNCTION DEFECTS

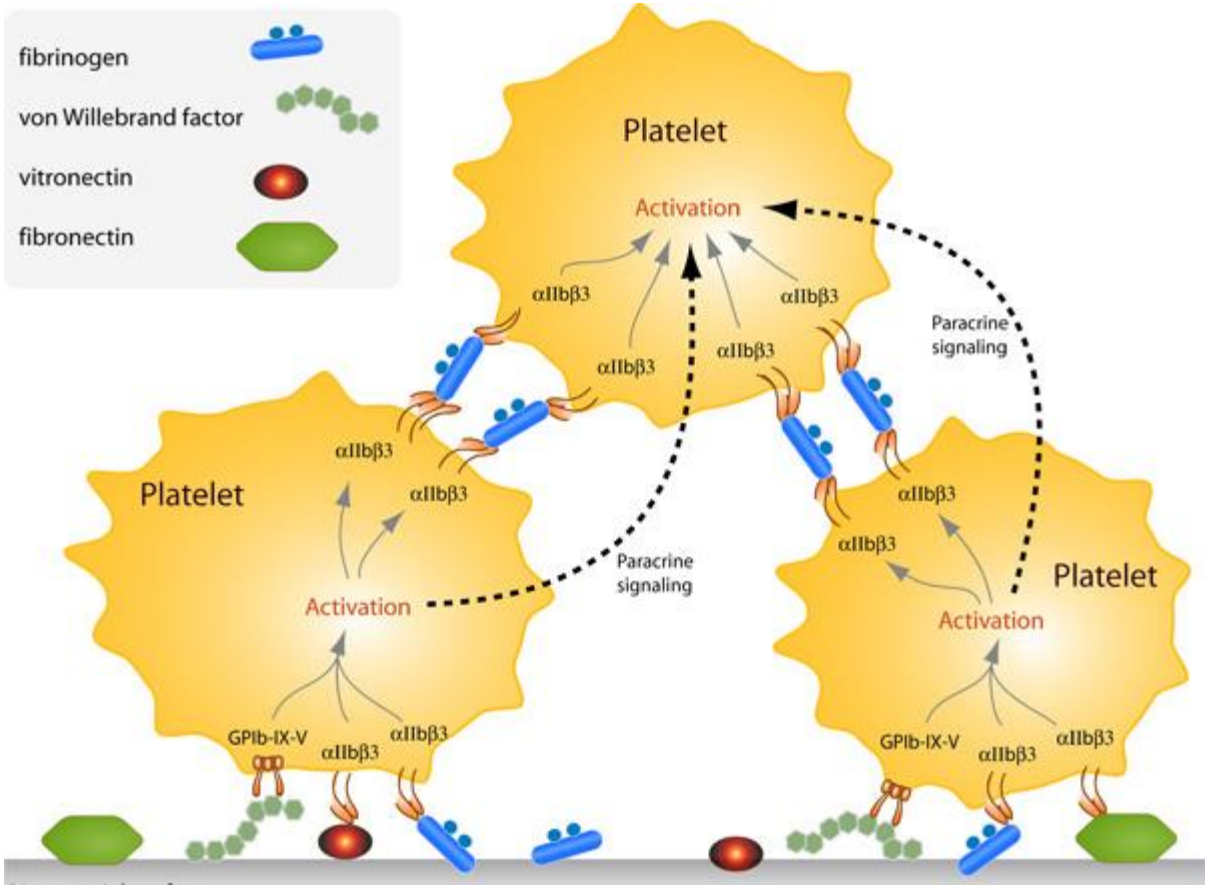
Inherited

- Defect in Platelet Adhesion:
  - von Willebrand disease and Bernard-Soulier syndrome
- Defect in Platelet Aggregation:
  - Glanzmann thrombasthenia

Acquired

- Drugs (aspirin and NSAIDs)
- Toxins (uremia)

Platelet receptors



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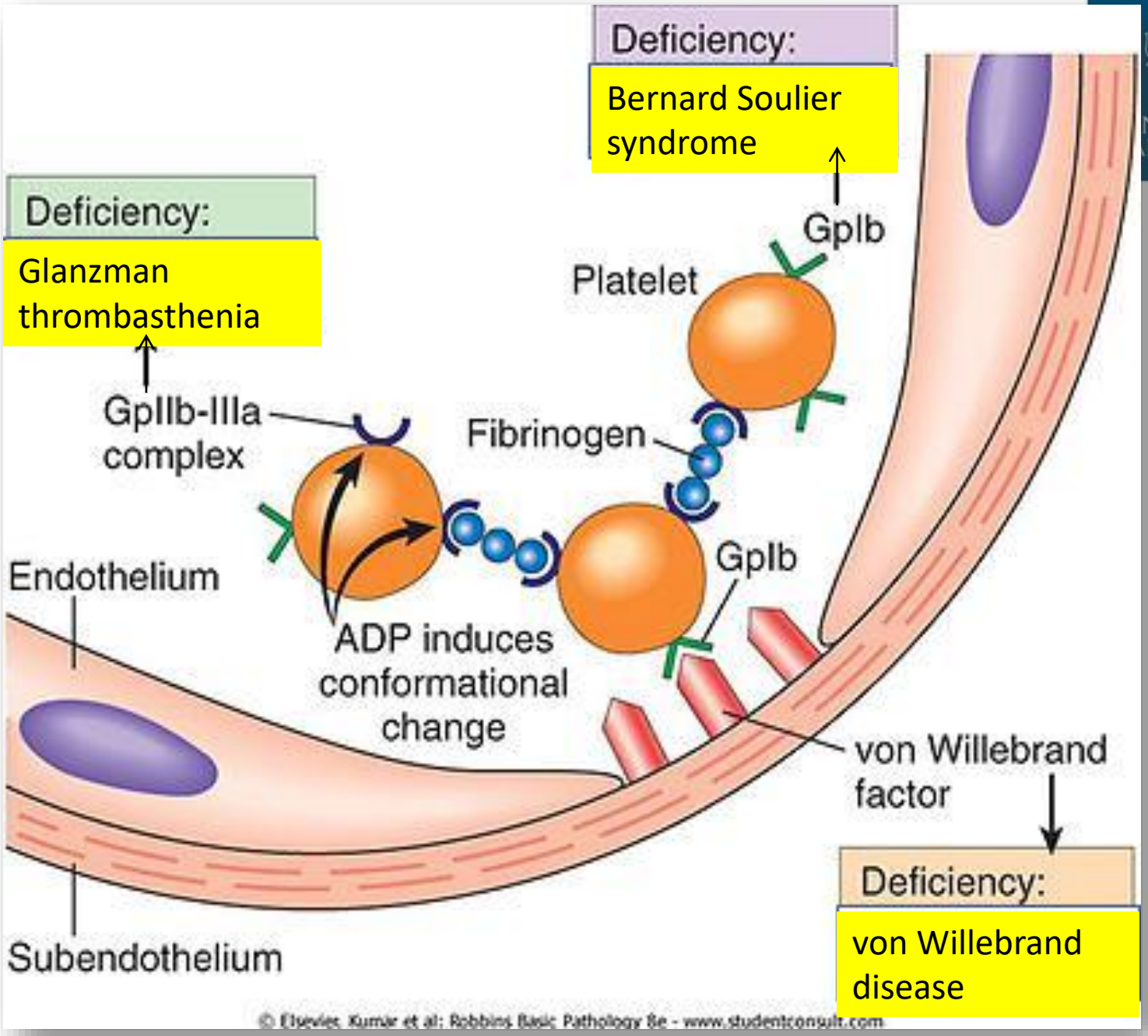
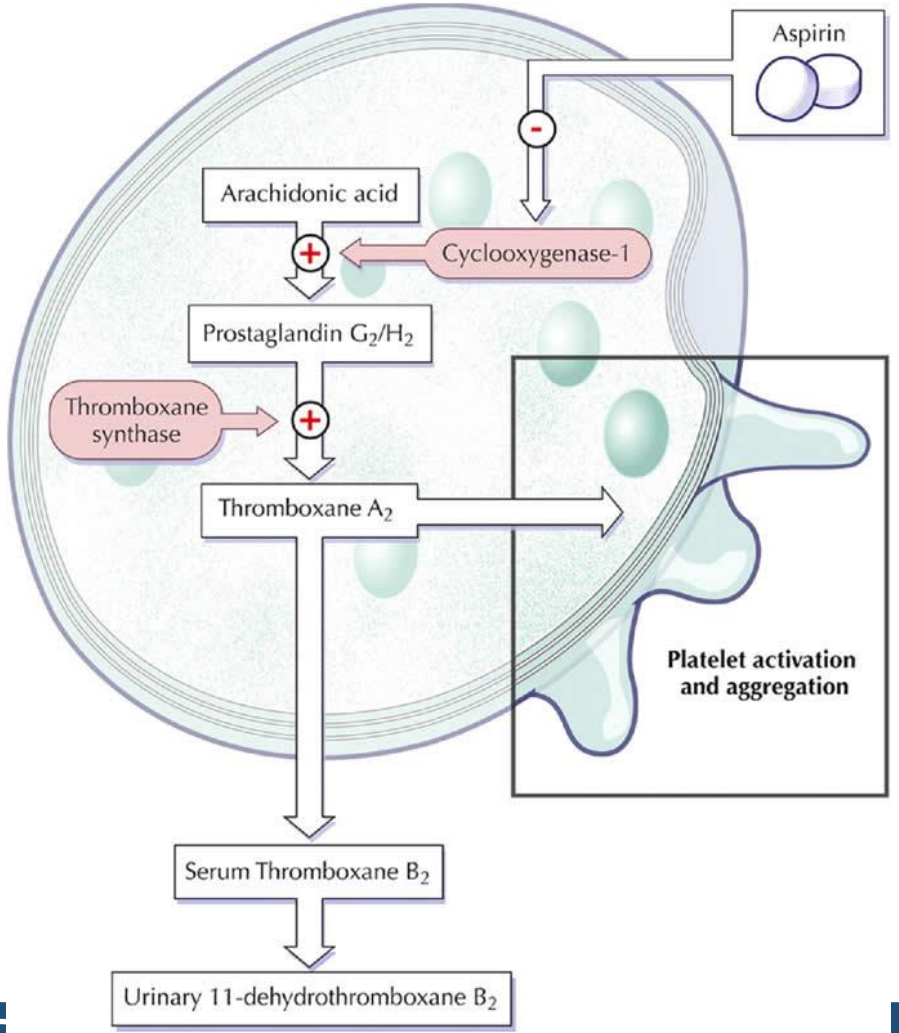
Inherited disorders of Platelet



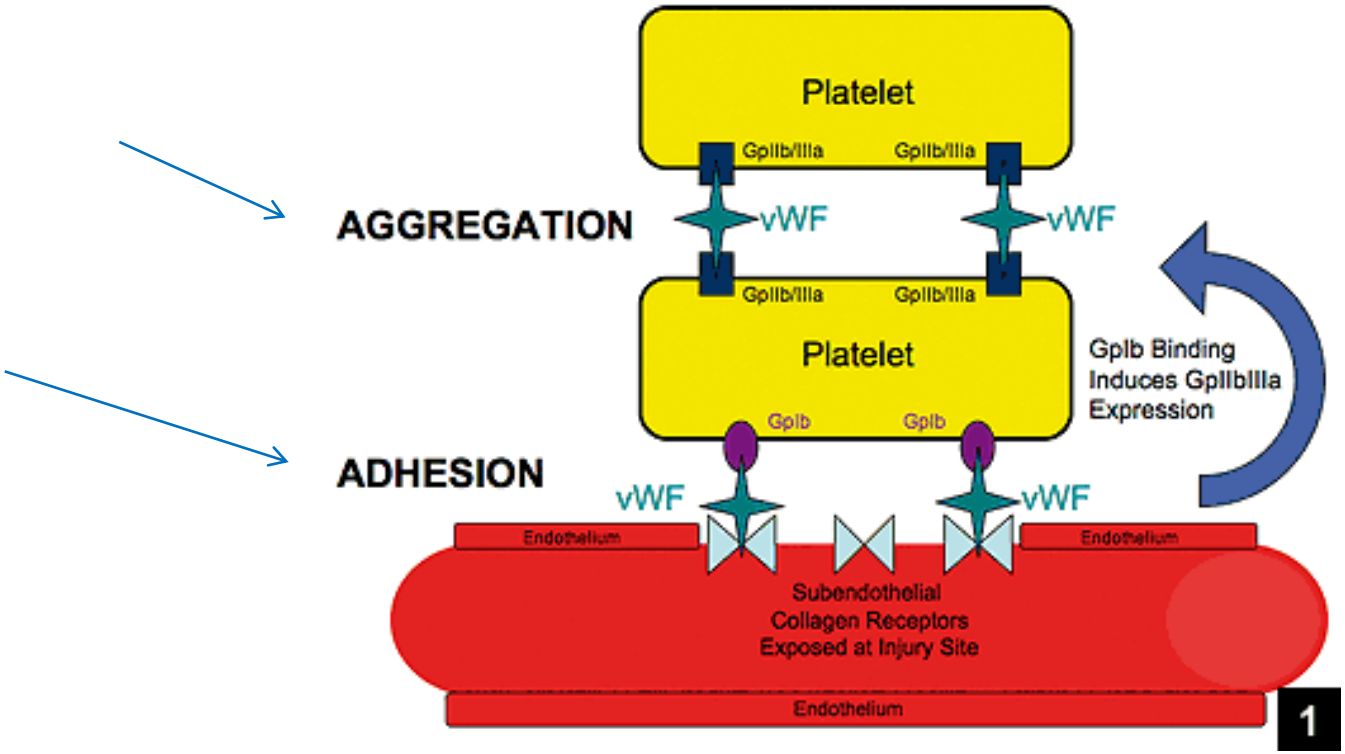
Aqcuired defect of platelet function

- **Aspirin** = irreversible inhibition of COX-1 → risk of hemorrhages that continue 3-7 days after stopping the administration
- **NSAID** = reversible inhibition of COX-1 (during the treatment period)



Von Willebrand disease

- Defiency of von Willebrand factor



Lab. Findings in Von Willebrand disease

- Platelet count: normal
- Bleeding time: >>
- APTT: Normal, (type 3b → APTT >>)
- Normal PT
- Platelet aggregation: <<
- VWF Ag: <<

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Thank You ☺