



Fisiopatologia das Principais Doenças Crônicas relacionadas à idade

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Aterosclerose

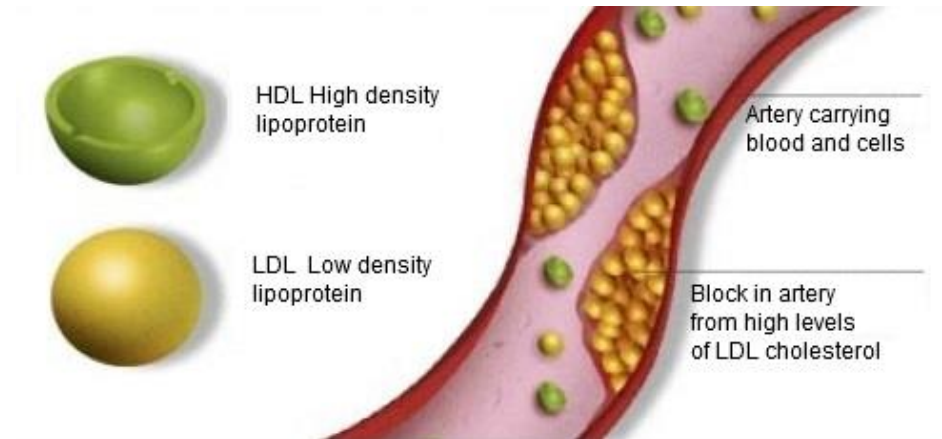
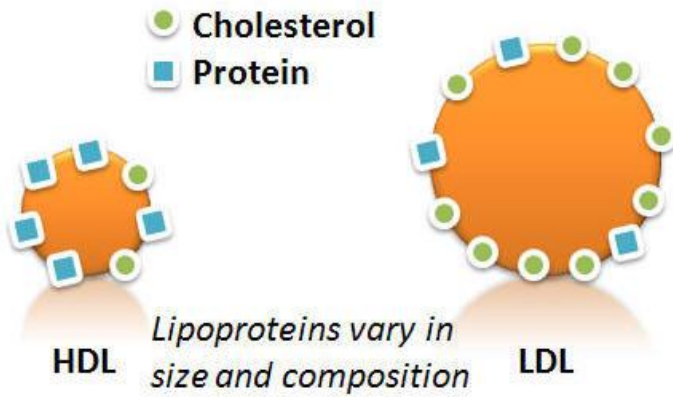
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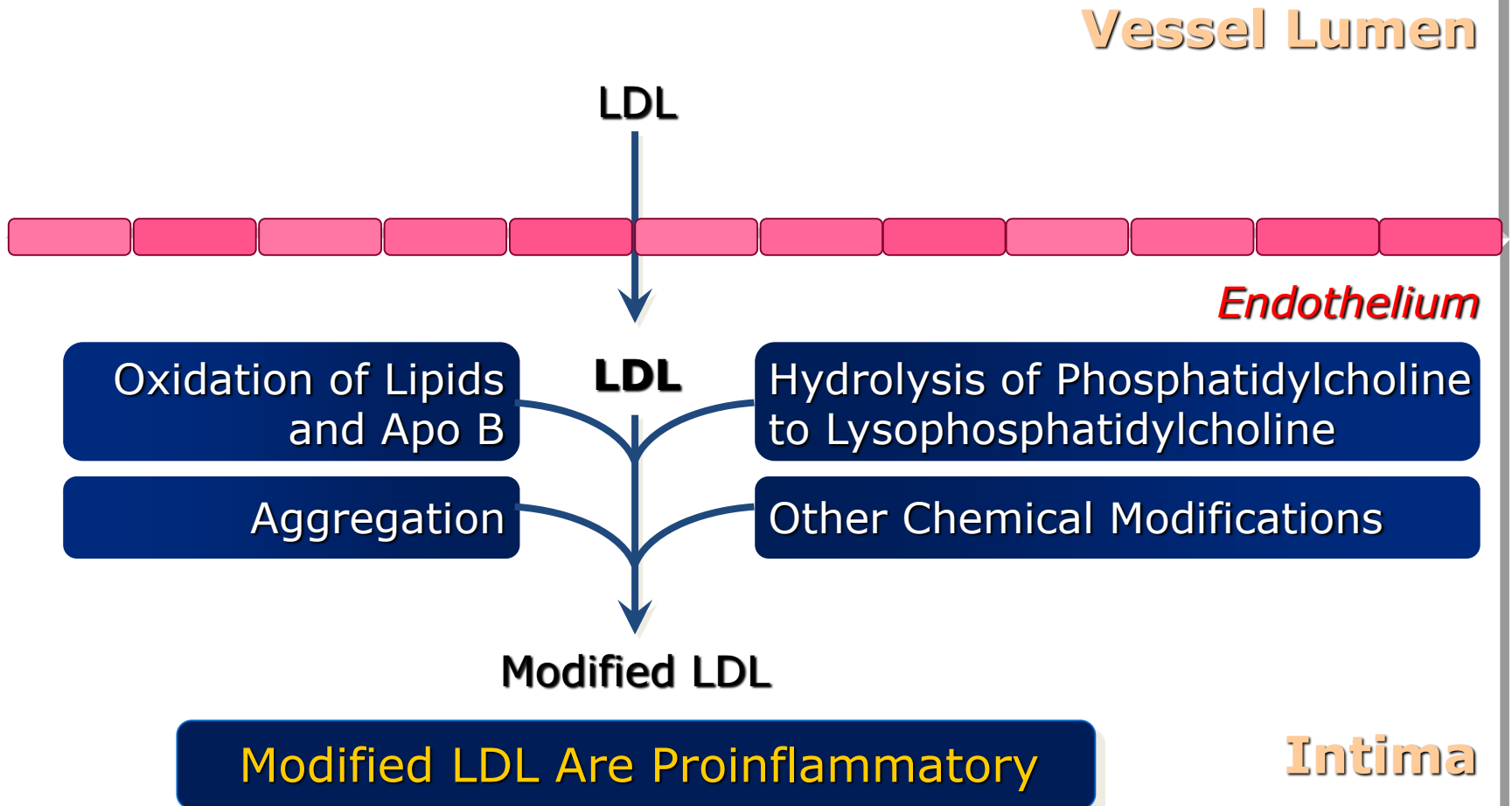
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Lipoproteins

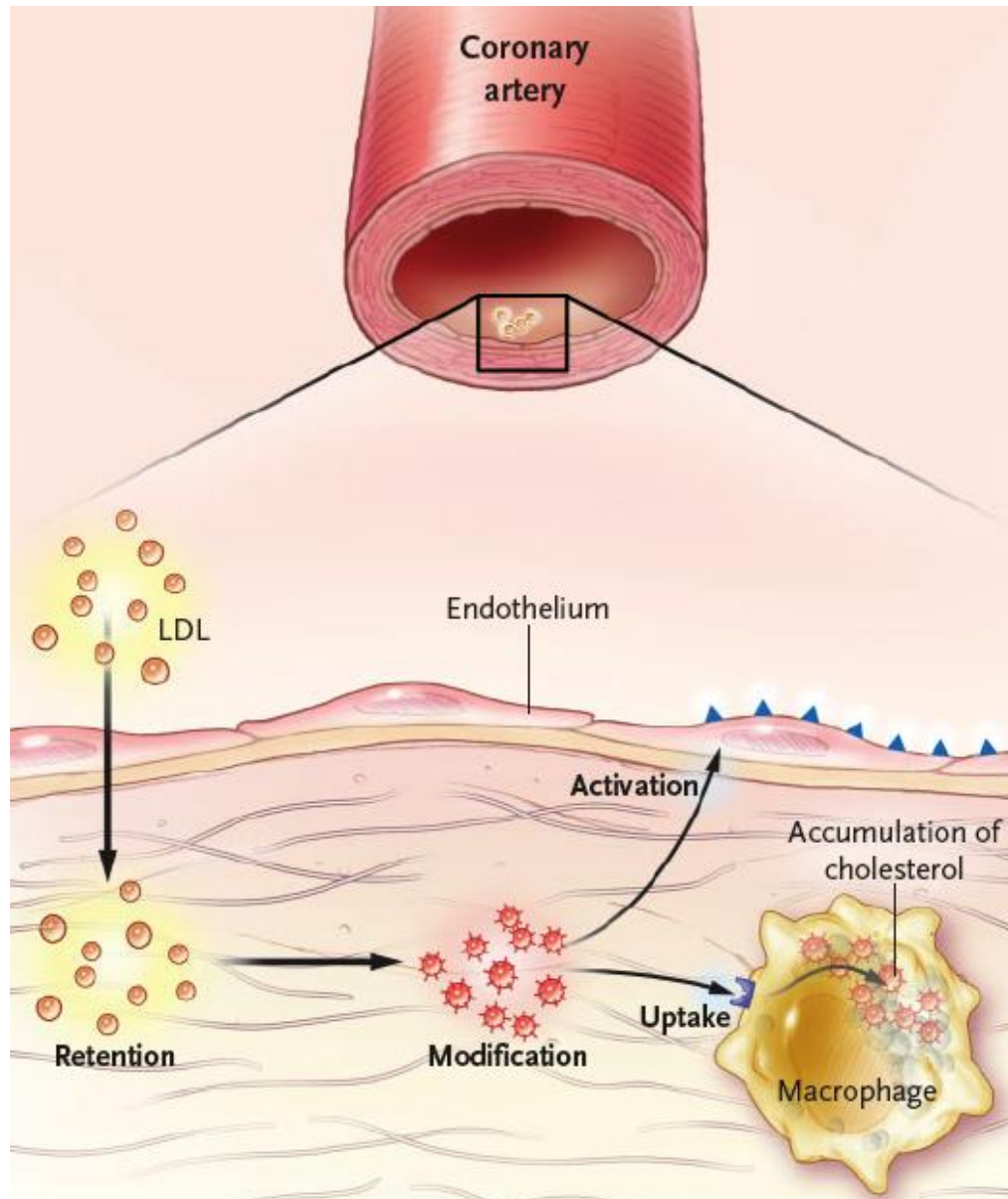


LDL na Inflamação

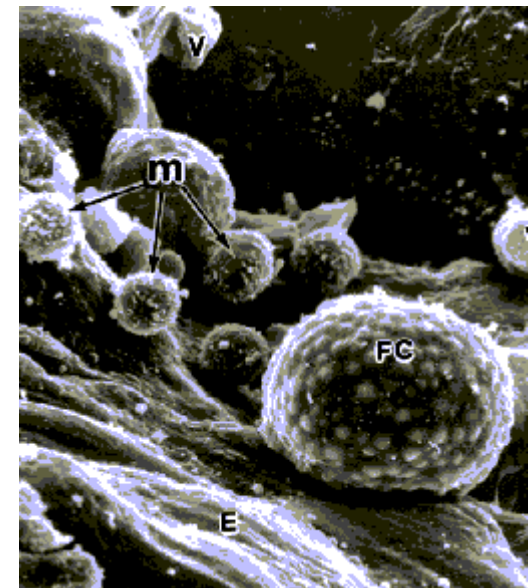
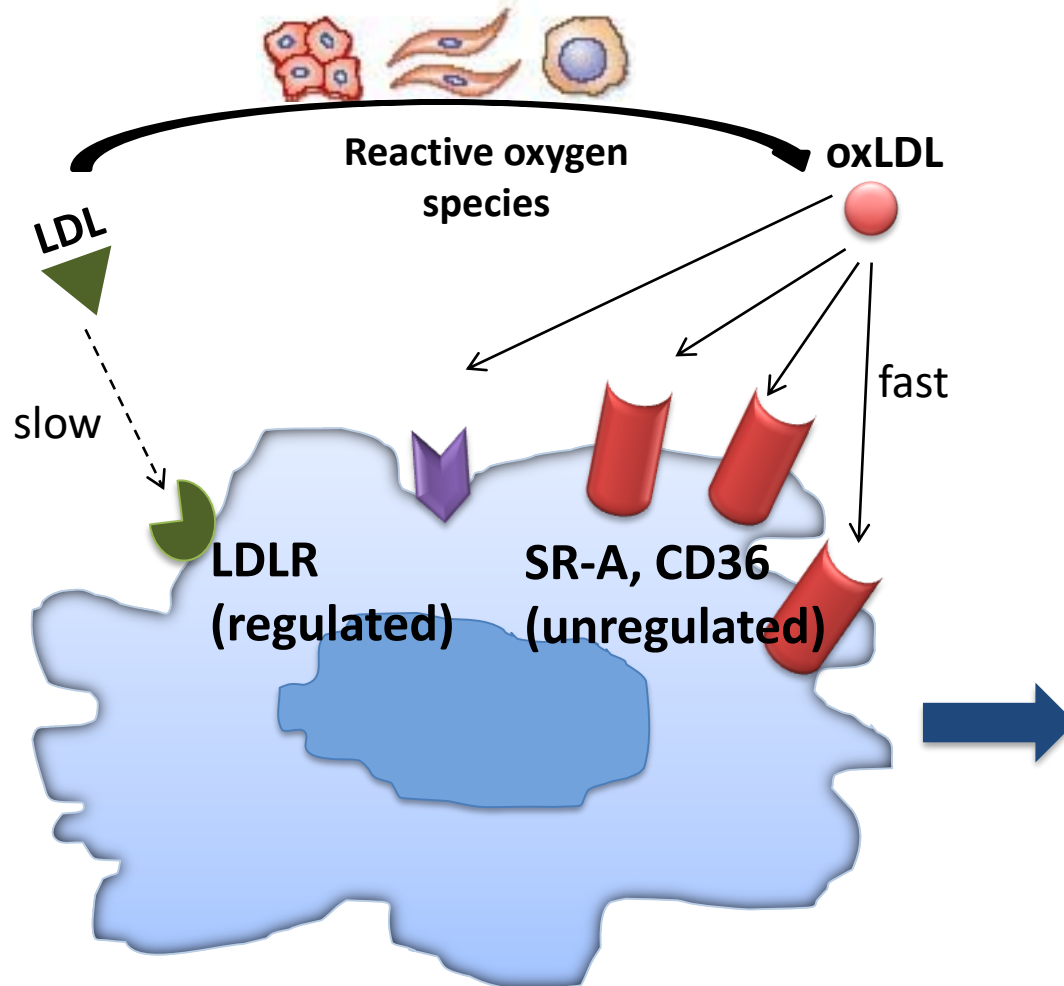
LDL Readily Enter the Artery Wall Where They May Be Modified



Lesão precoce: Lipoproteínas modificadas e as células espumosas

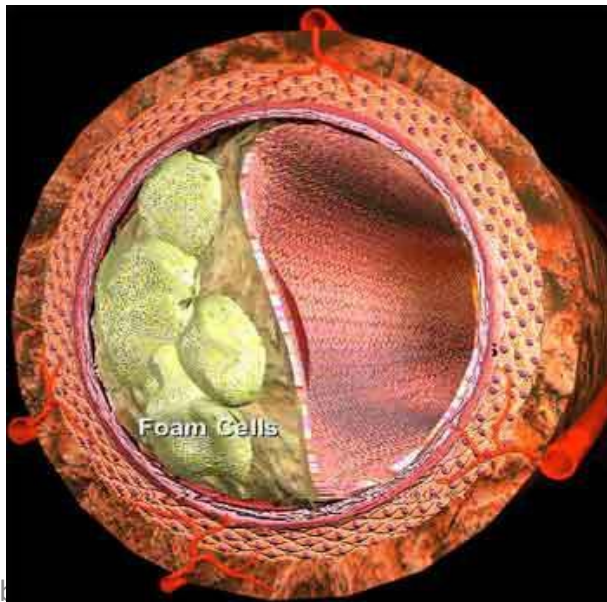
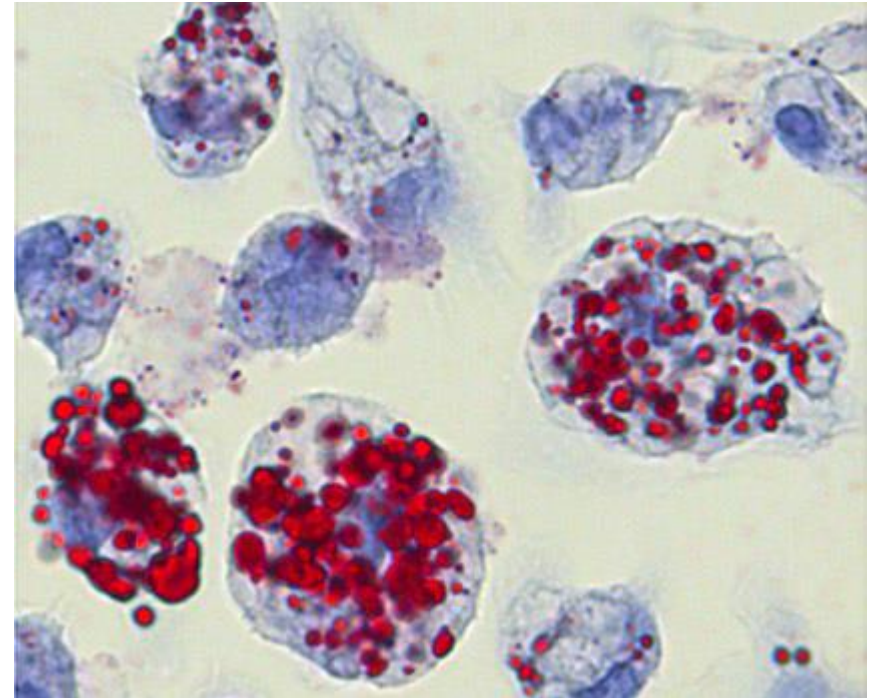
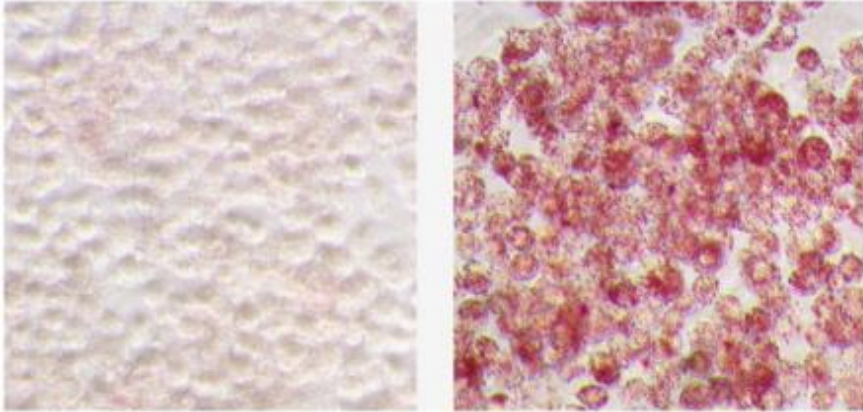


Captação de oxLDL pelos macrófagos



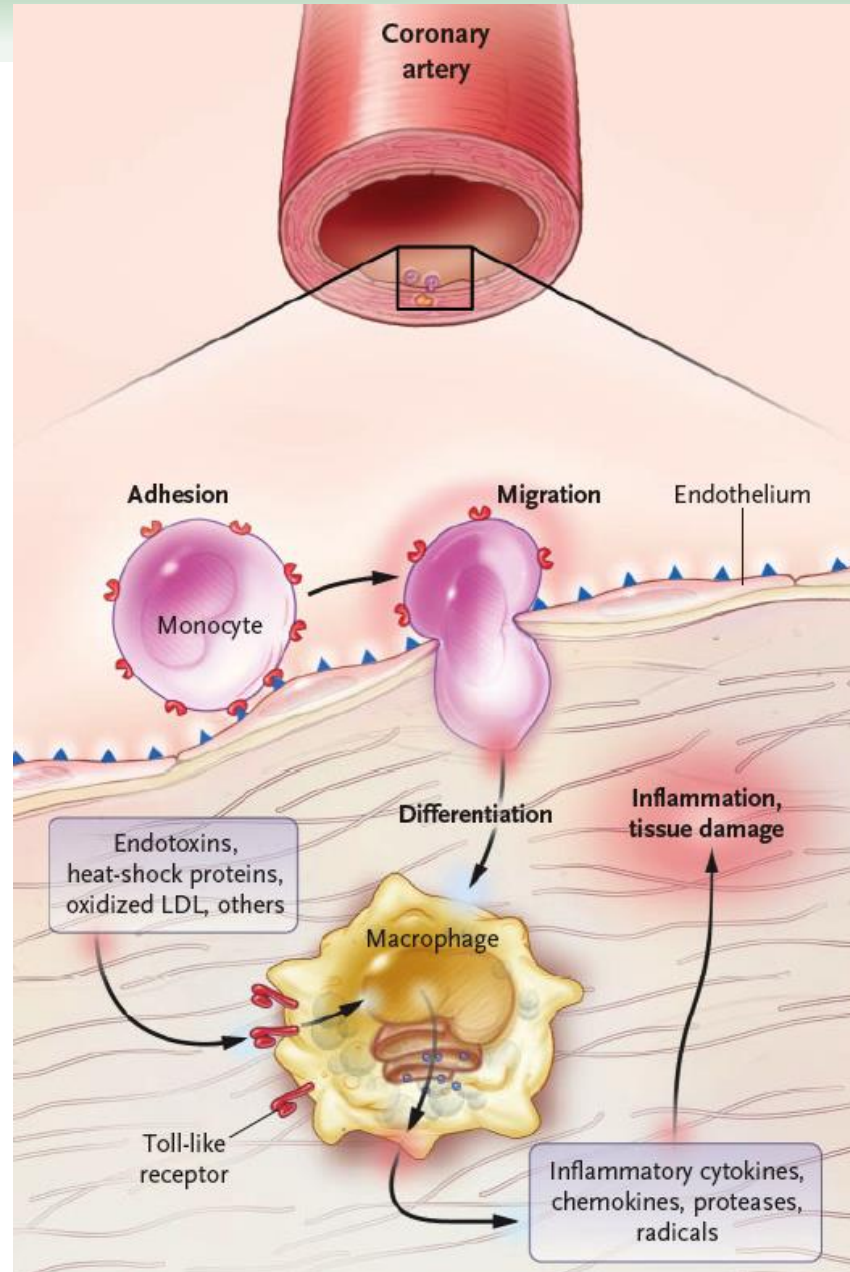
foam cells

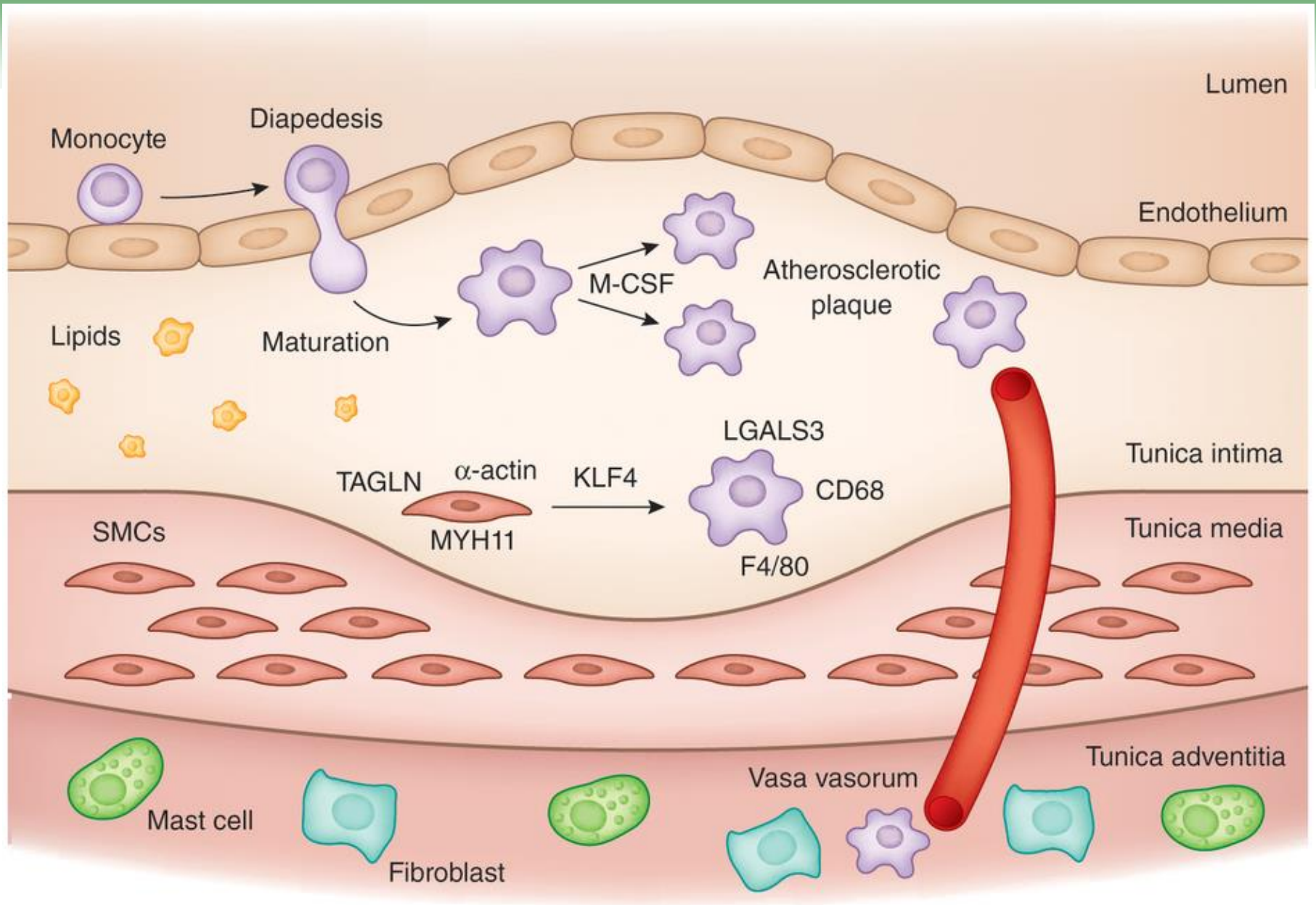
Foam Cells



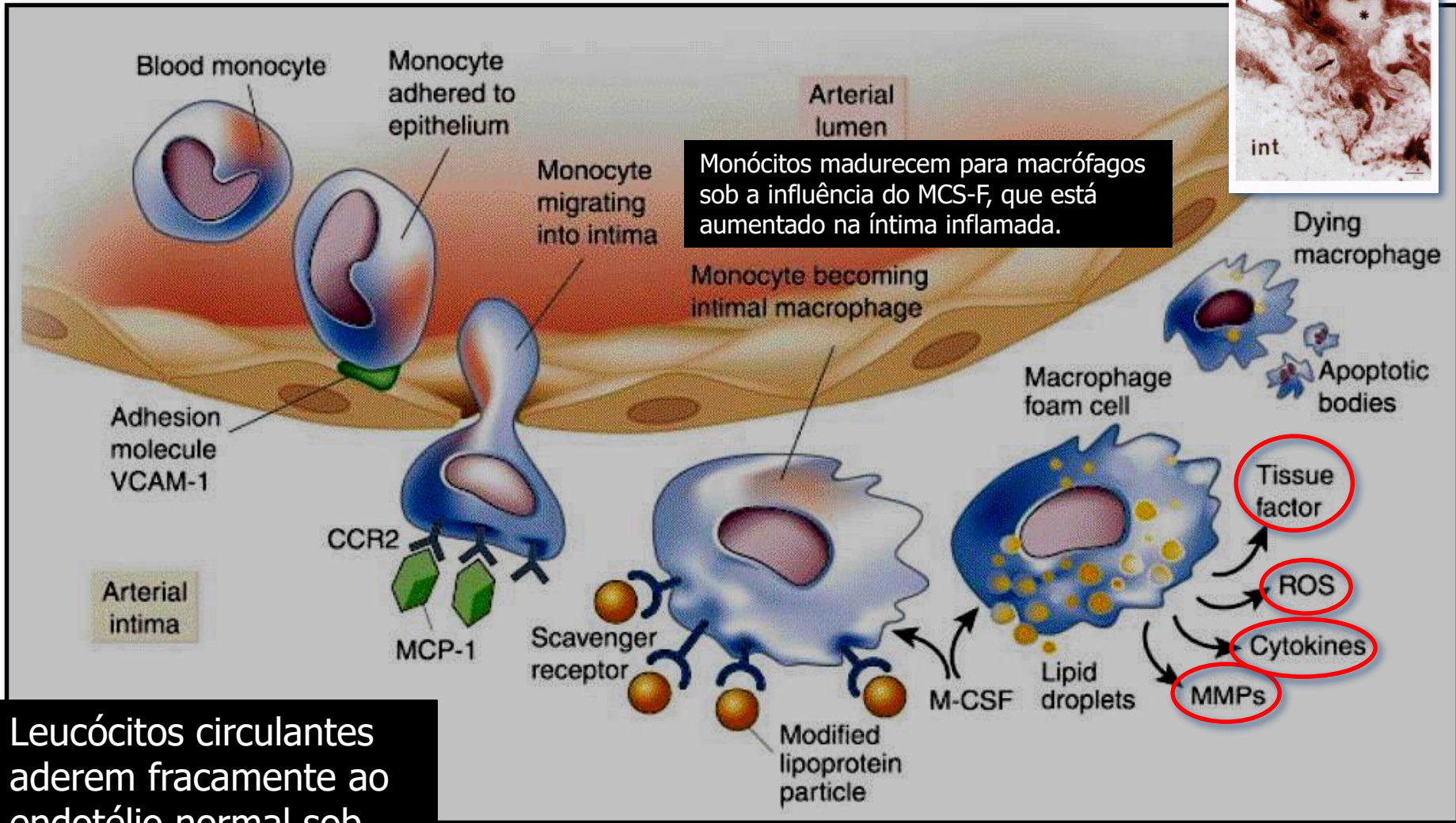
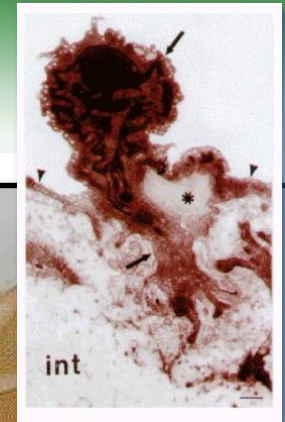
Foam cells are unable to metabolize and efflux the cholesterol that they have accumulated. As a result, they die which exacerbates the inflammatory conditions in and around the atherosclerotic lesion.

Macrófagos como mediadores iniciais





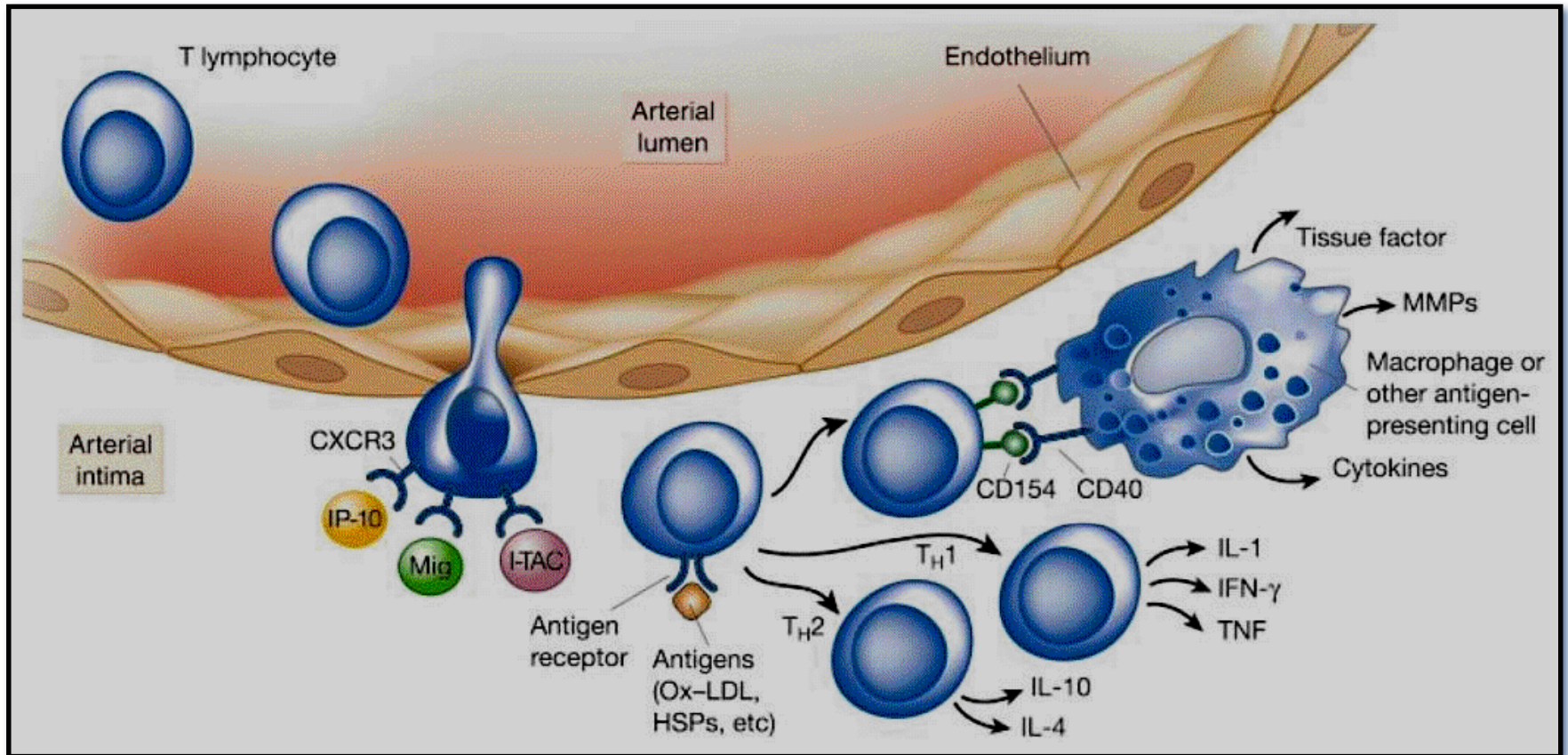
Aterogênese e inflamação: papel do monócito / macrófago



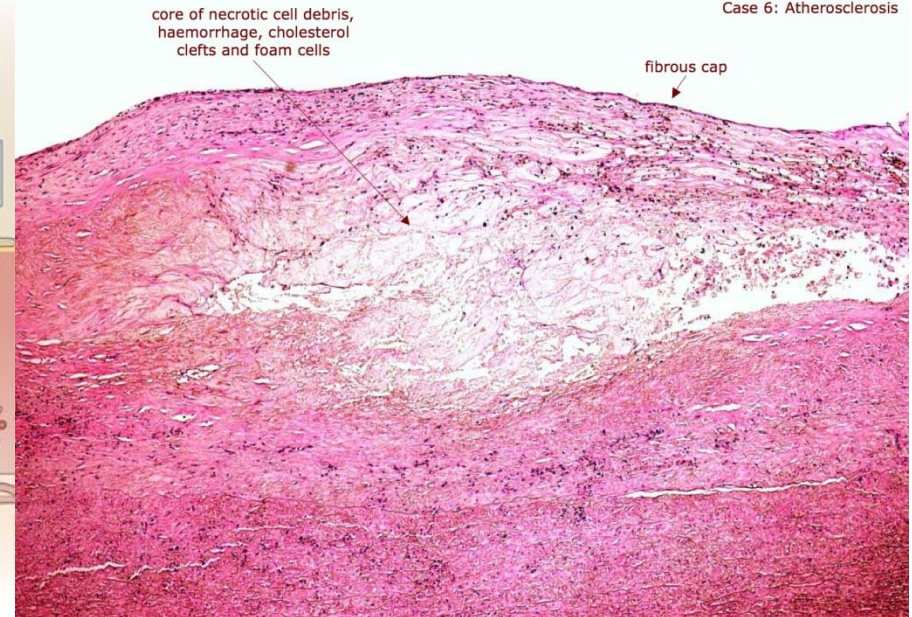
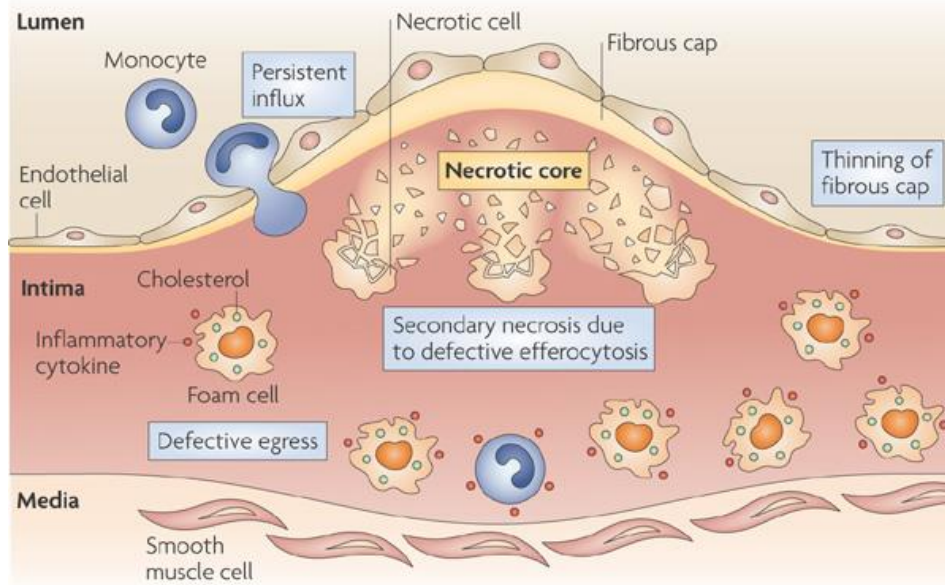
Monócitos madurecem para macrófagos sob a influência do MCS-F, que está aumentado na íntima inflamada.

Leucócitos circulantes aderem fracamente ao endotélio normal sob condições normais.

Aterogênese e inflamação: papel do linfócito T

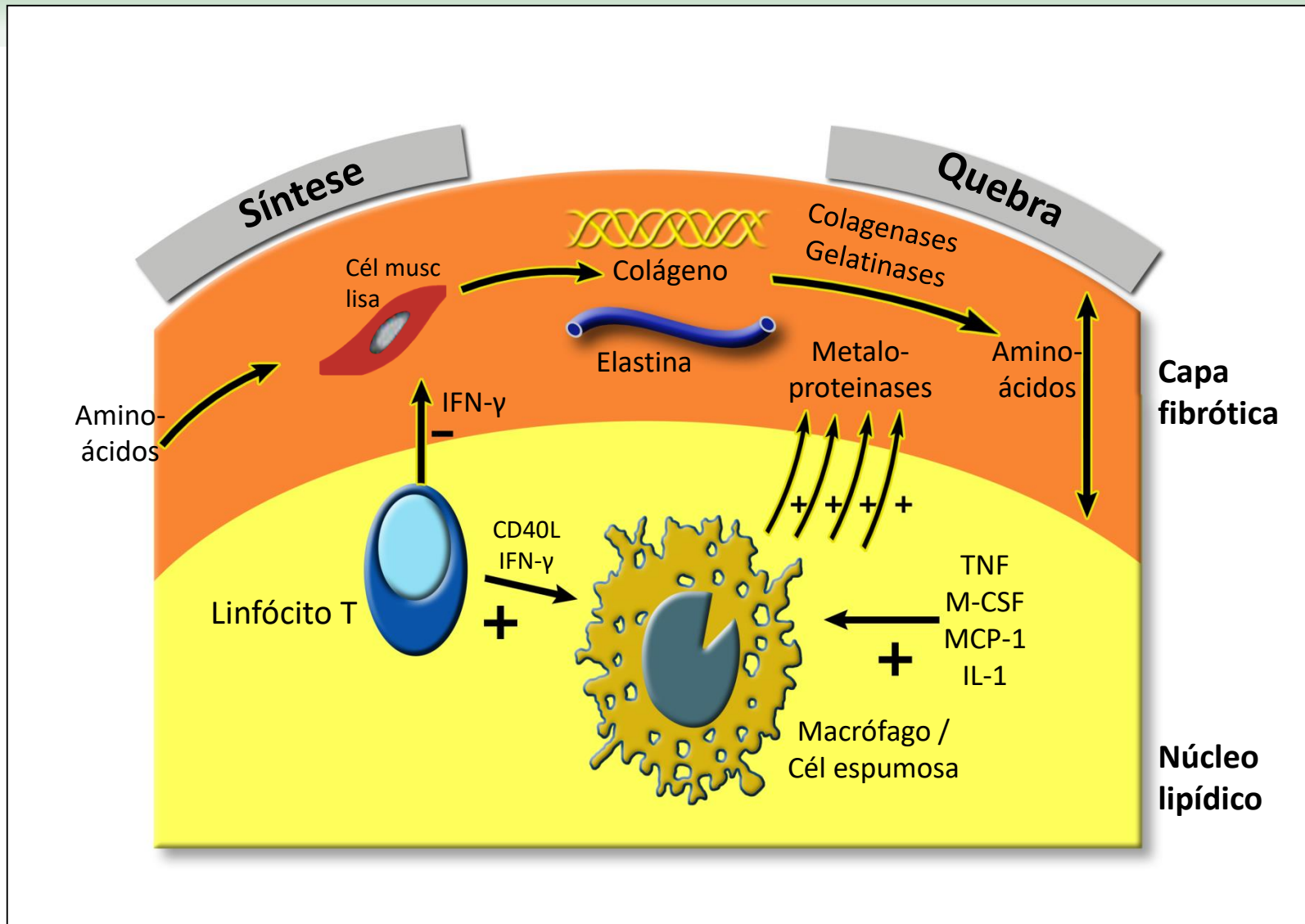


Placa aterosclerótica

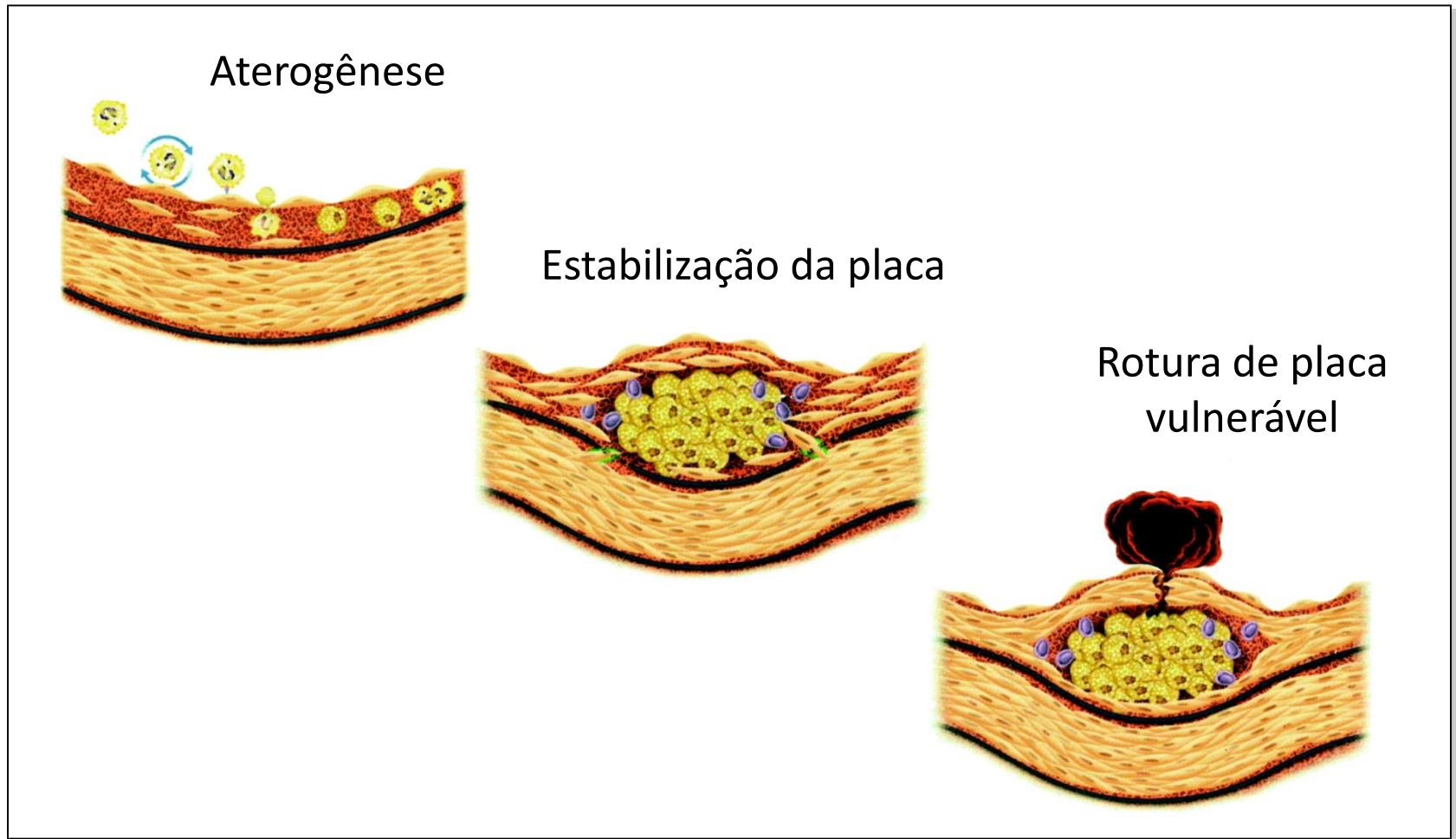


Nature Reviews | Immunology

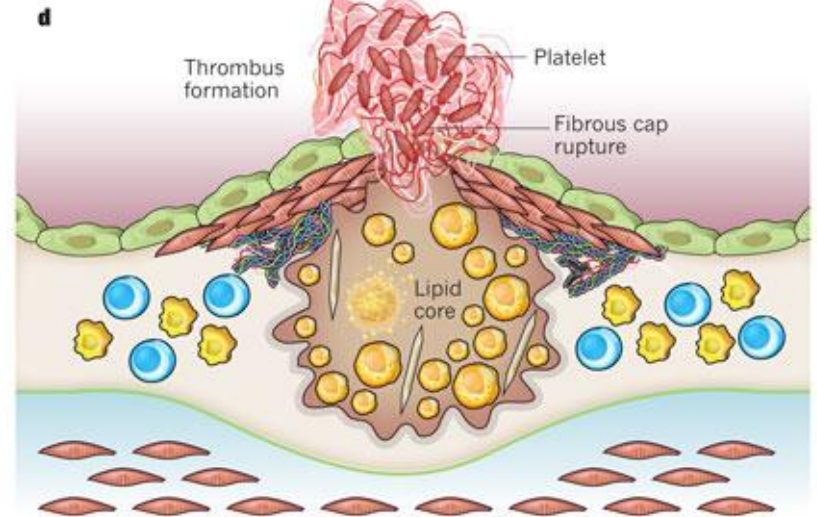
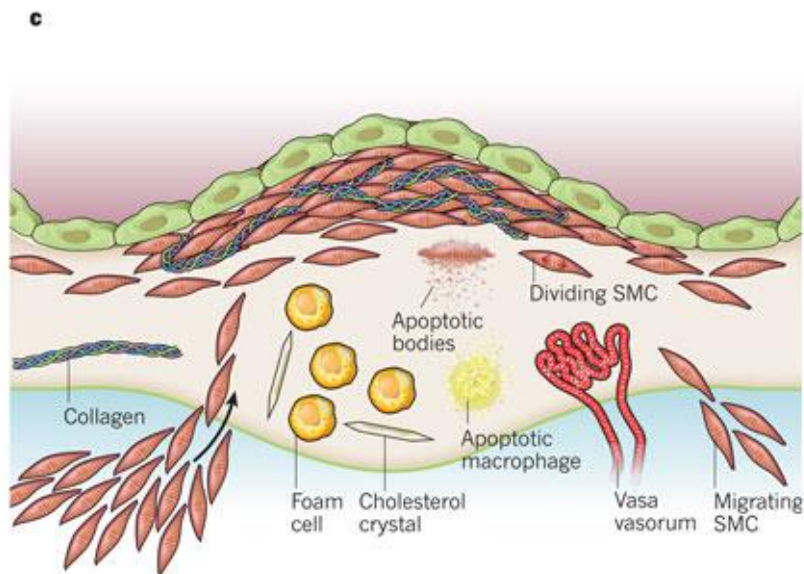
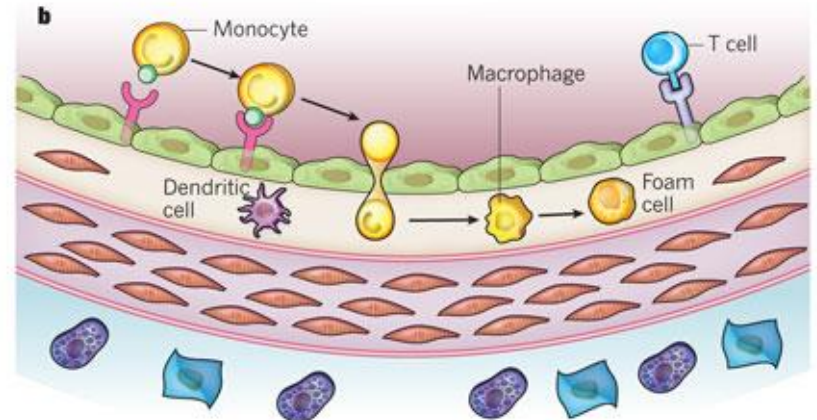
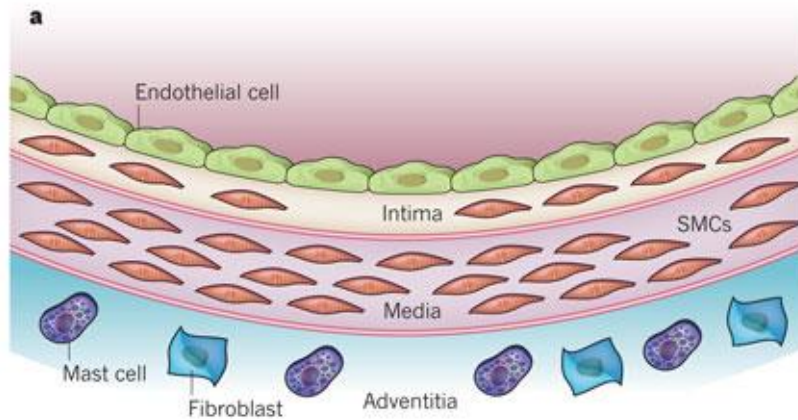
Instabilização da placa e inflamação

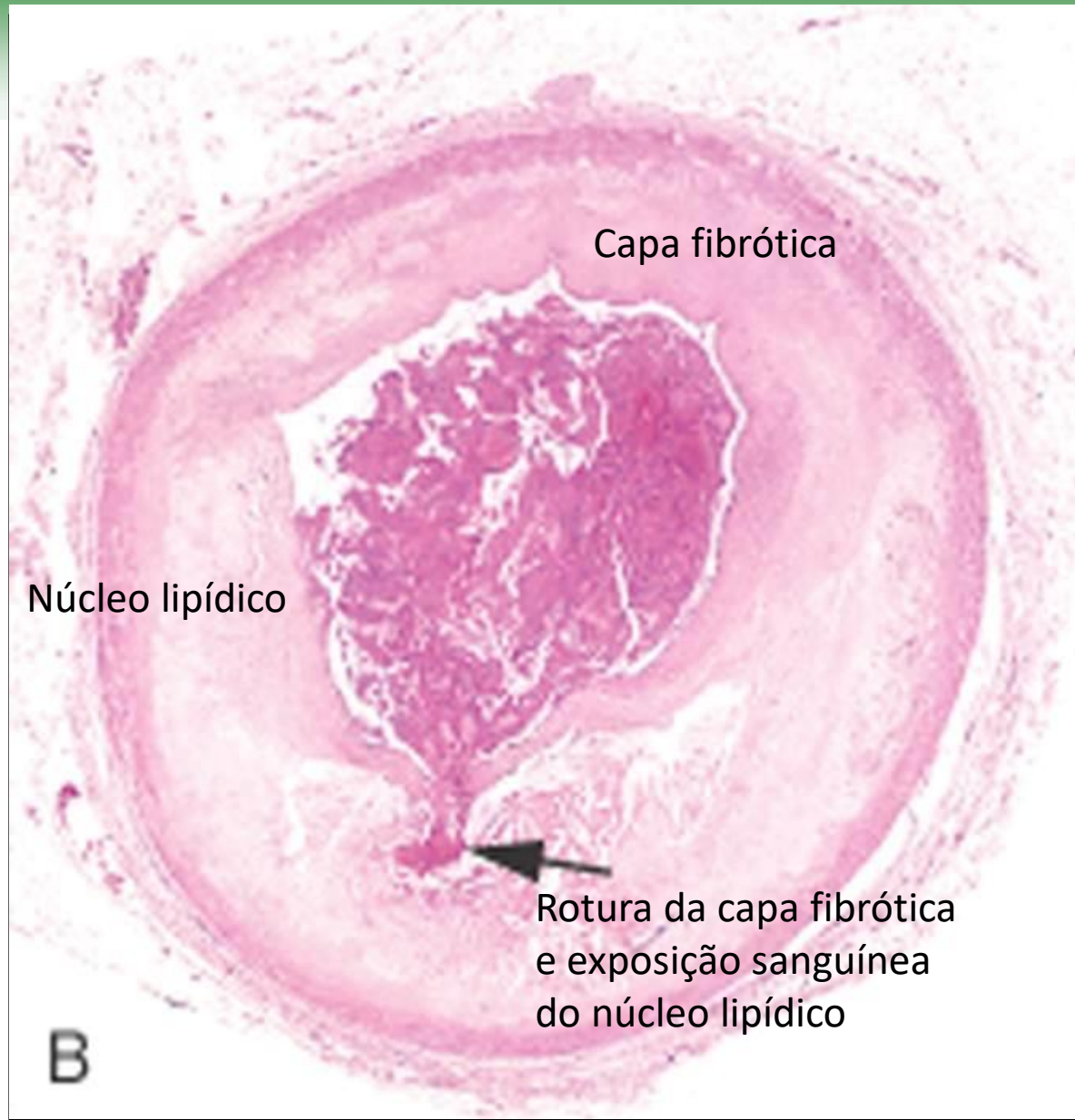


Inflamação: participa em todas as fases da aterosclerose

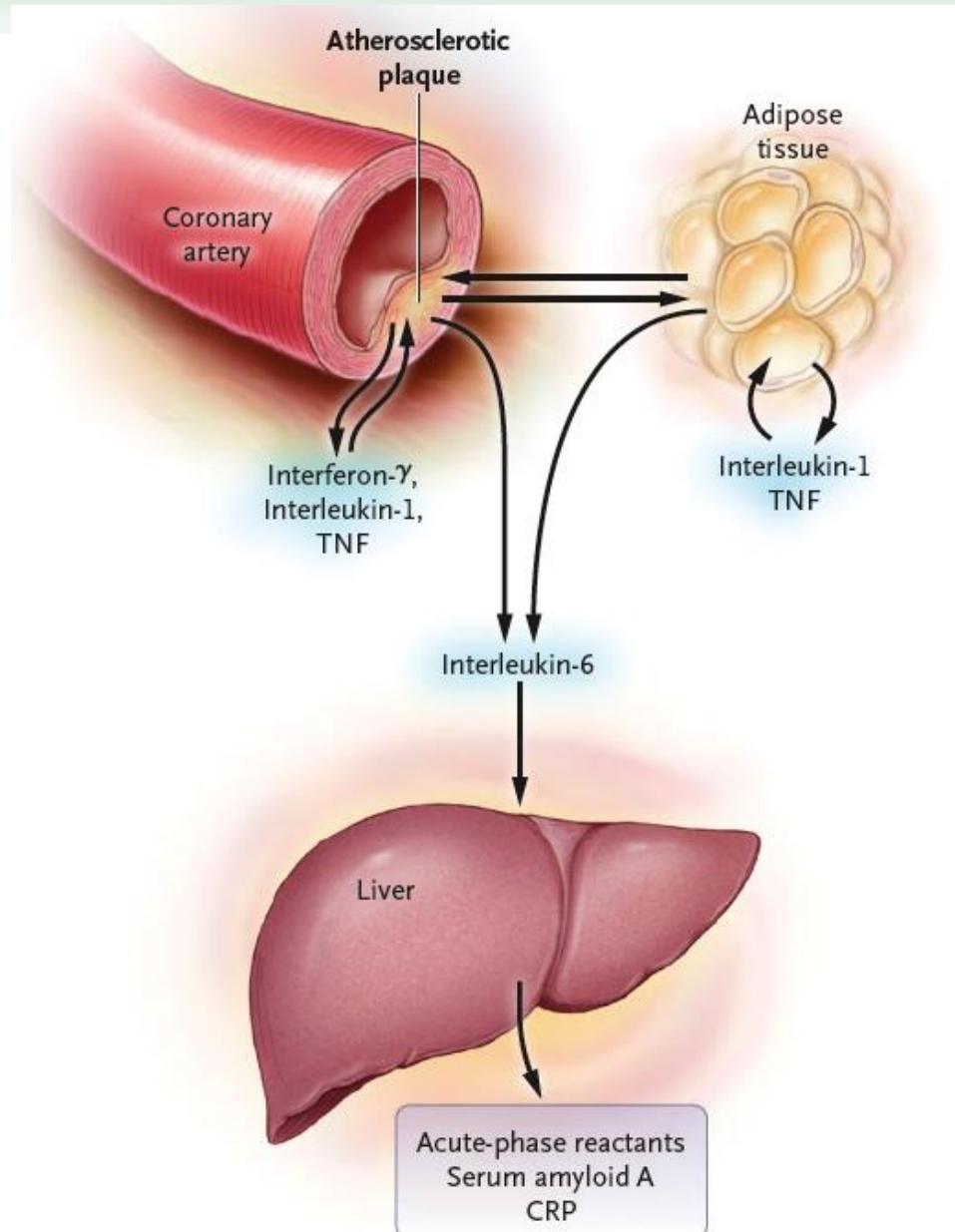


Trombose (Ruptura da Placa)

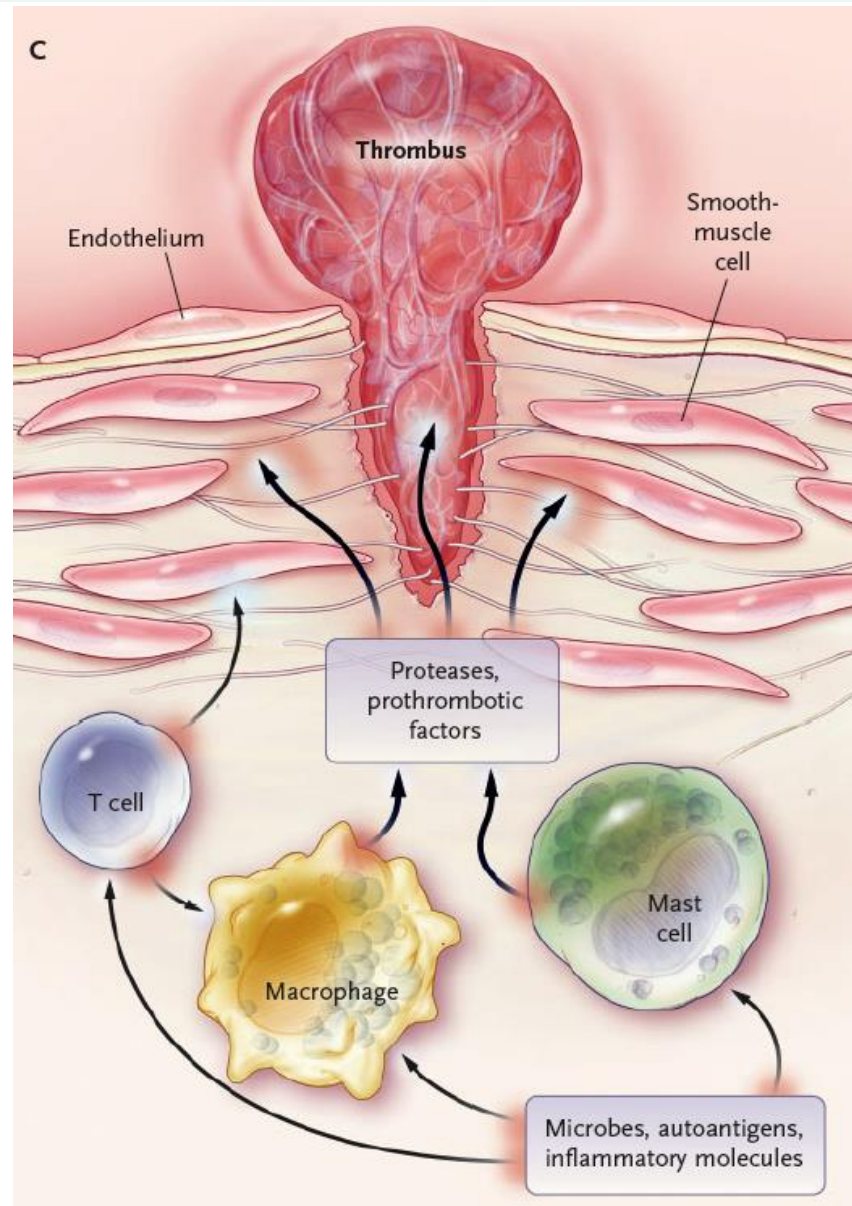




Inflamação sistêmica na aterosclerose



Células envolvidas na aterosclerose





Diabetes

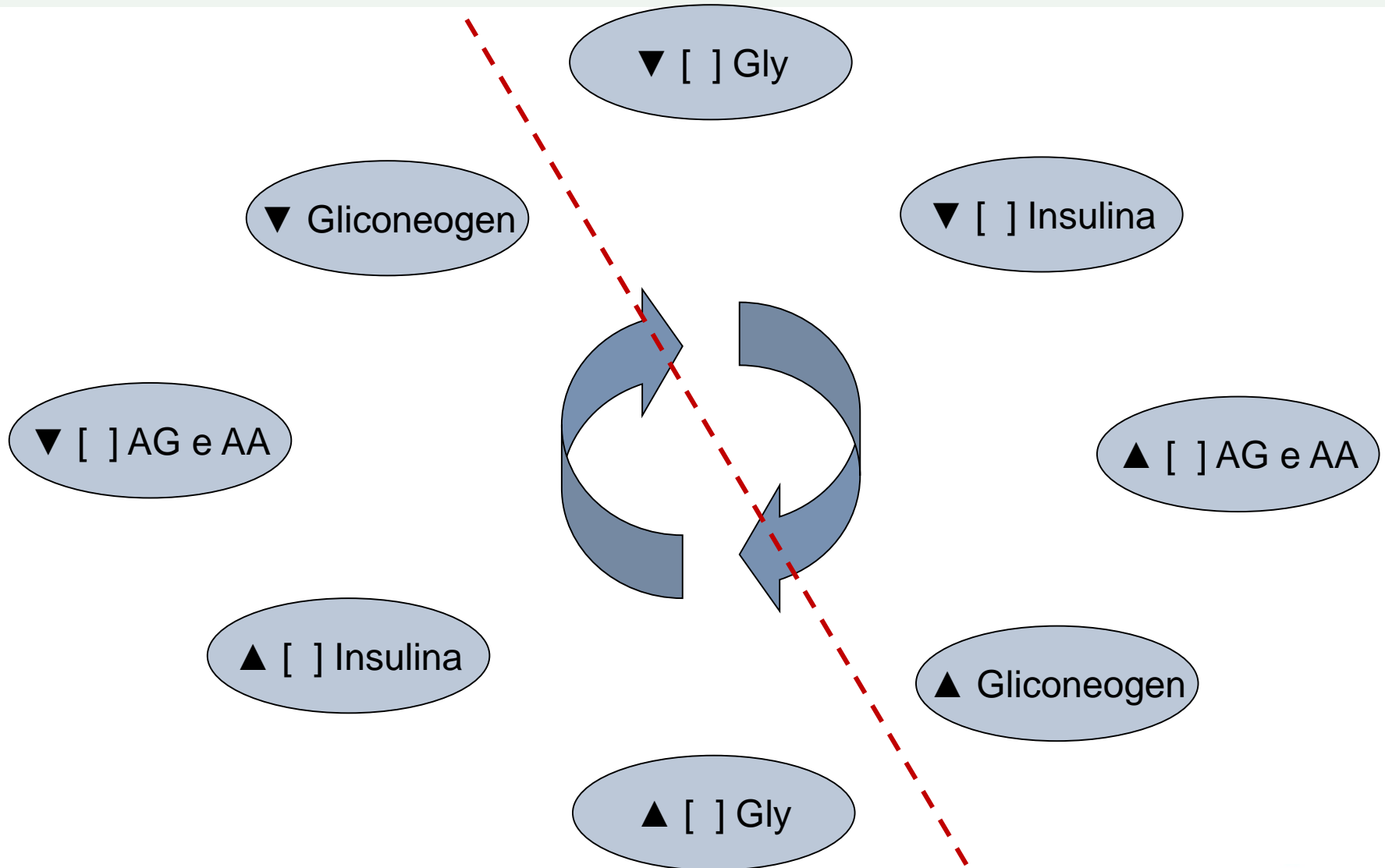
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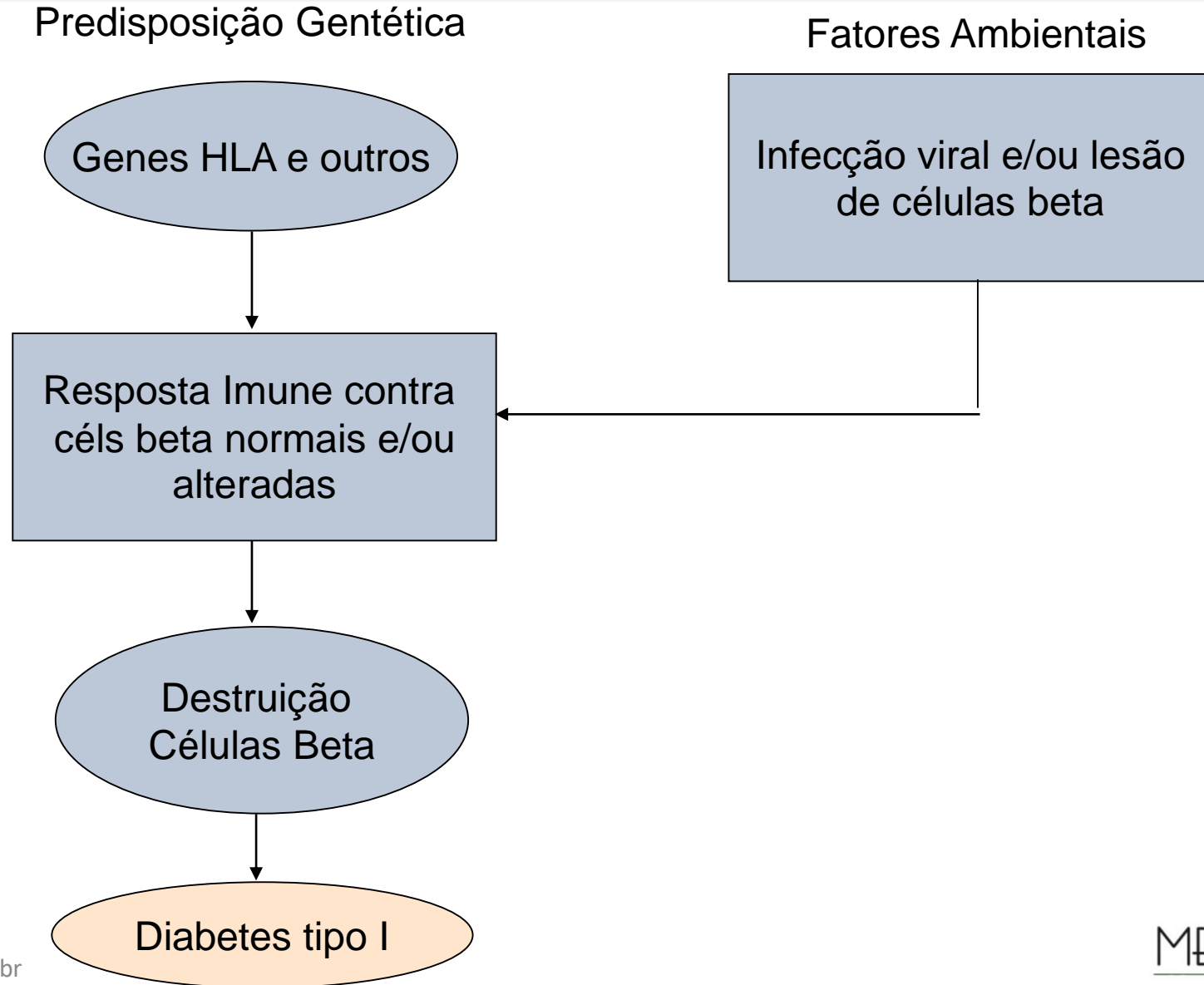


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Insulina



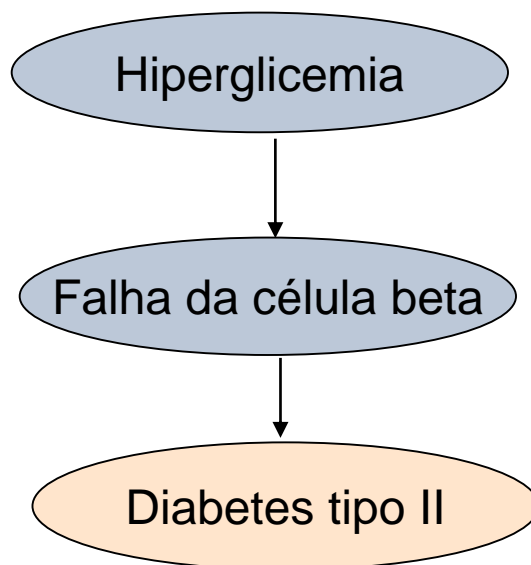
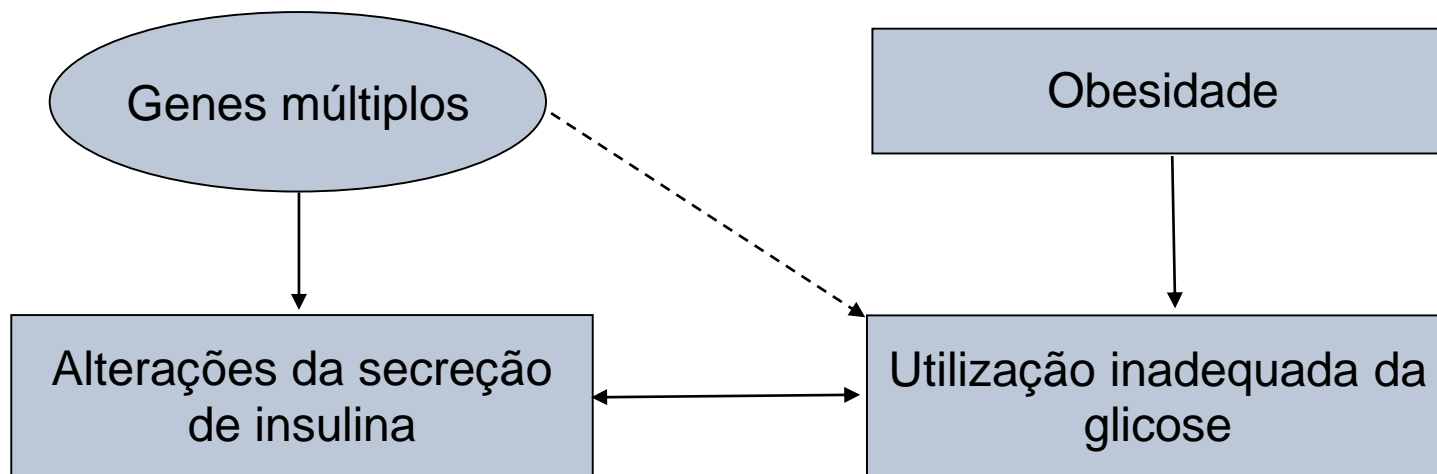
Fisiopatologia do DM Tipo I



Fisiopatologia do DM Tipo II

Predisposição Gentética

Fatores Ambientais



Fisiopatologia do DM Tipo II

↘ Alteração receptor

↘ Alteração sinalização

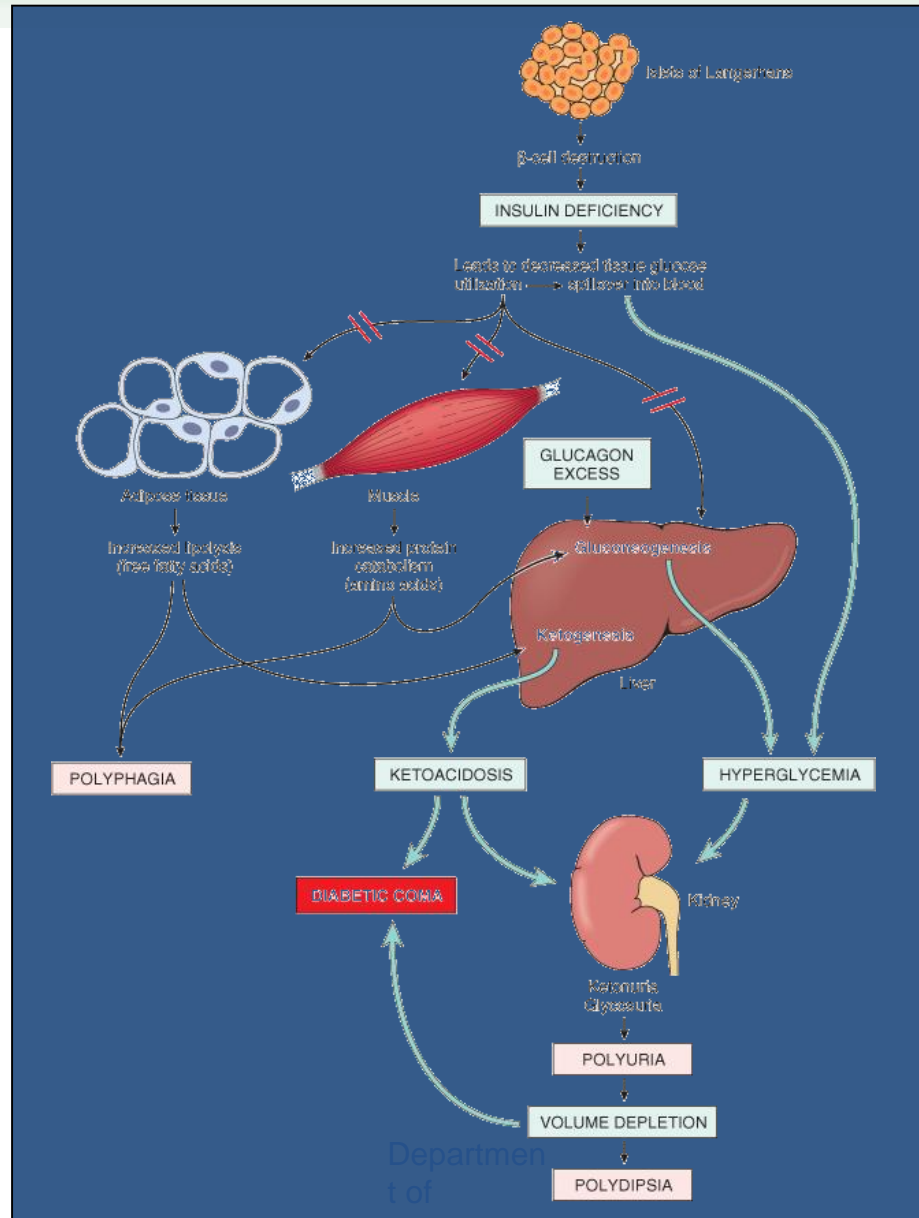
↘ Produtos do metabolismo lipídico

↘ Obesidade

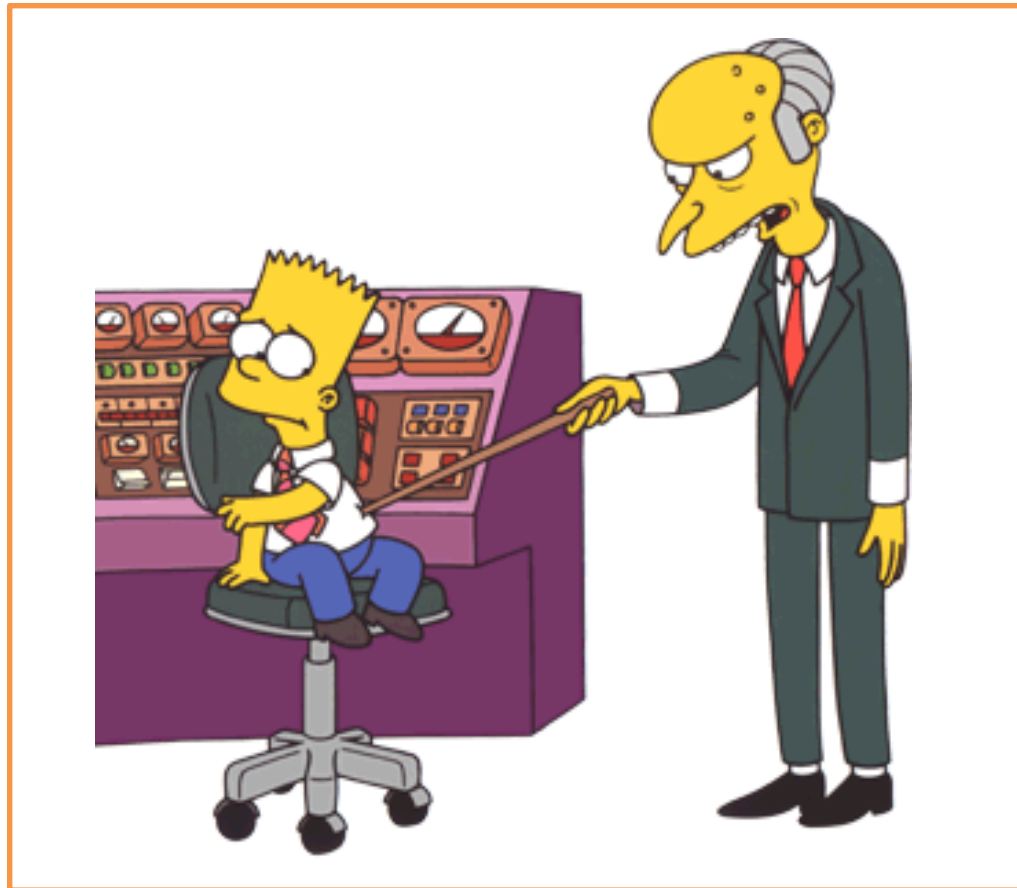
↘ Diminuição adiponectina (que diminui resistência periférica)

↘ Citocinas inflamatórias

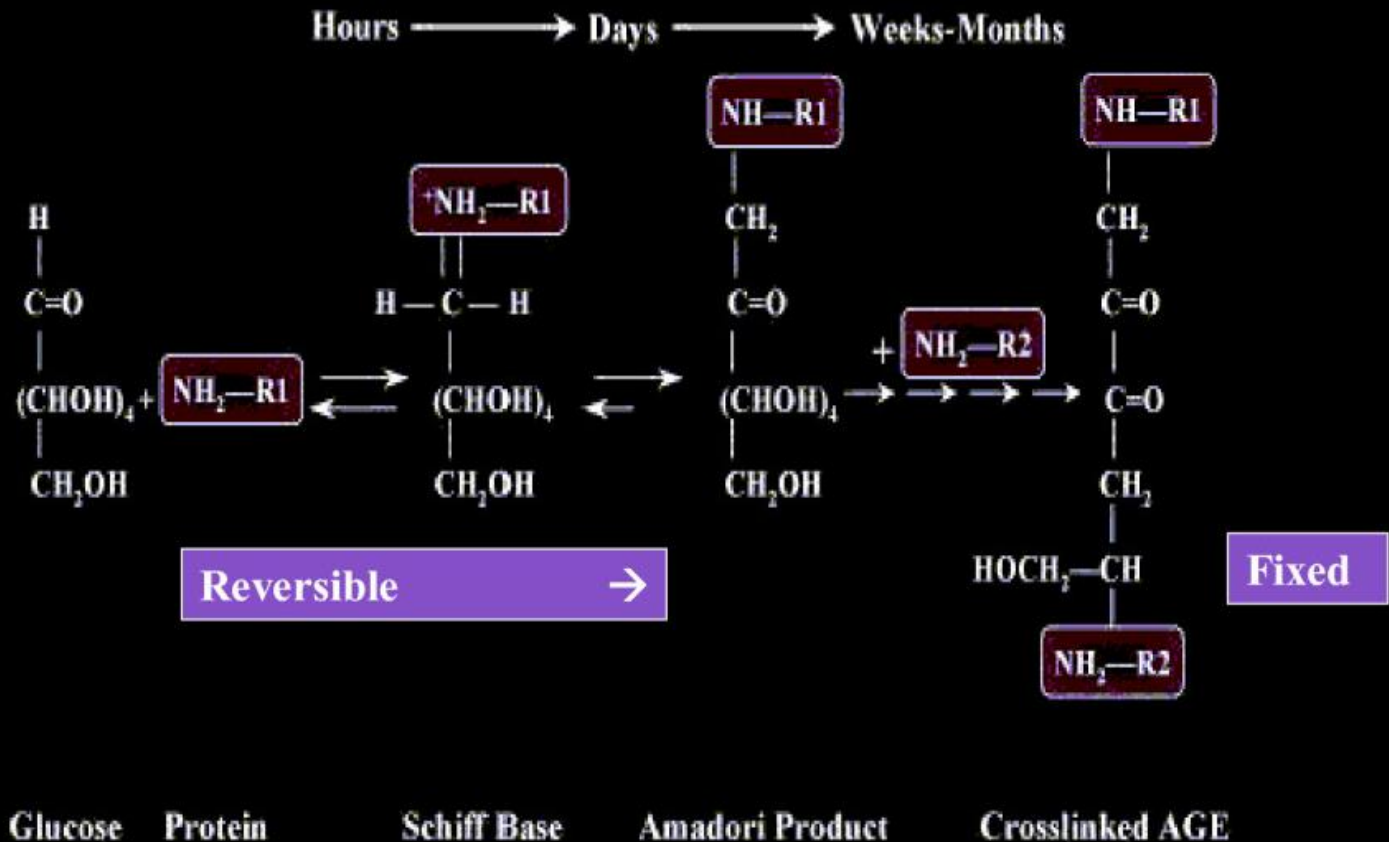
Insulina



Patogênese das Complicações Crônicas



Advanced Glycated End Products

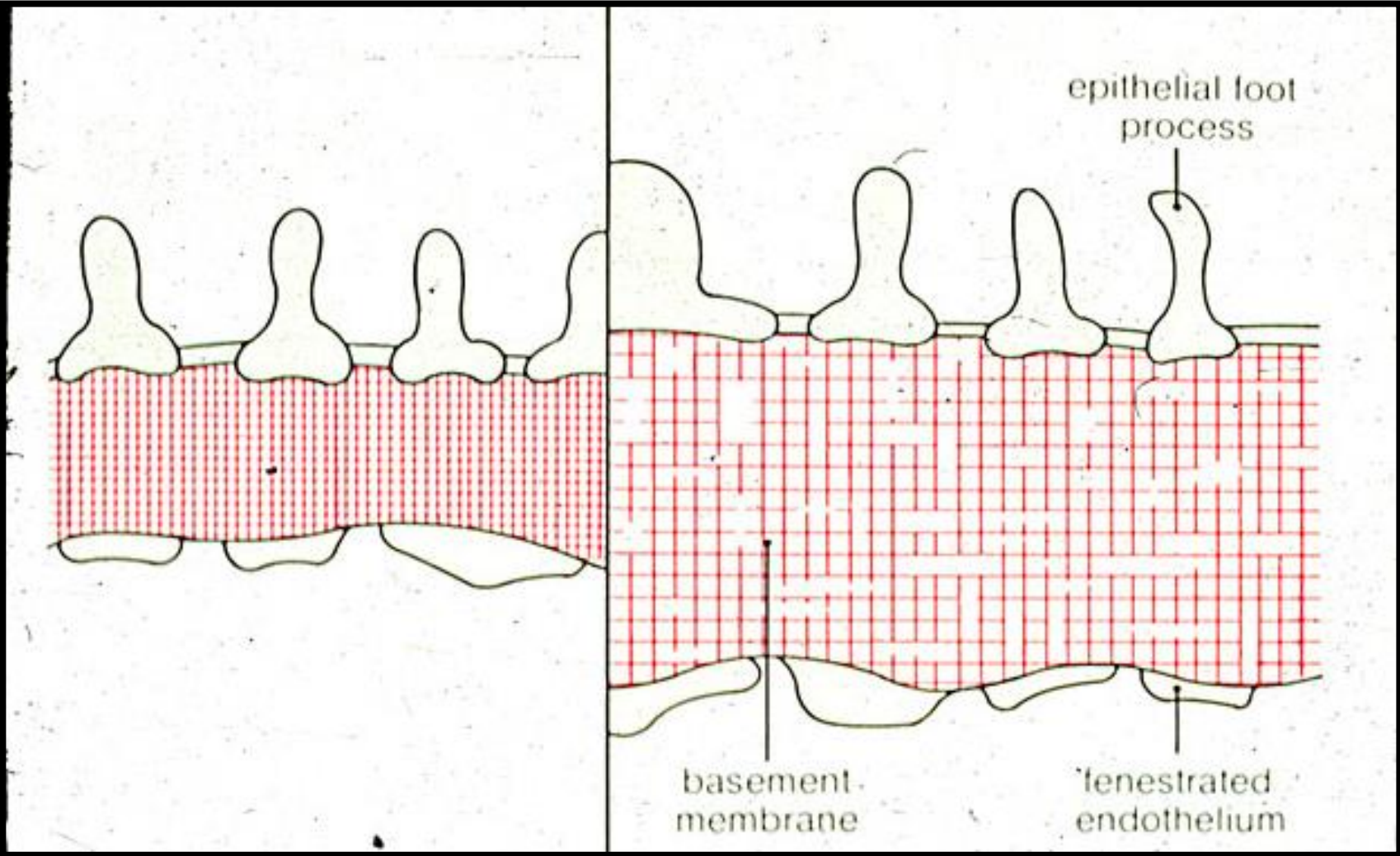


Copyright 2002, Aronson and Rayfield; licensee BioMed Central Ltd.
 Cardiovasc Diabet. 2002; 1(1):1 Formation of Advanced Glycation Products [82].

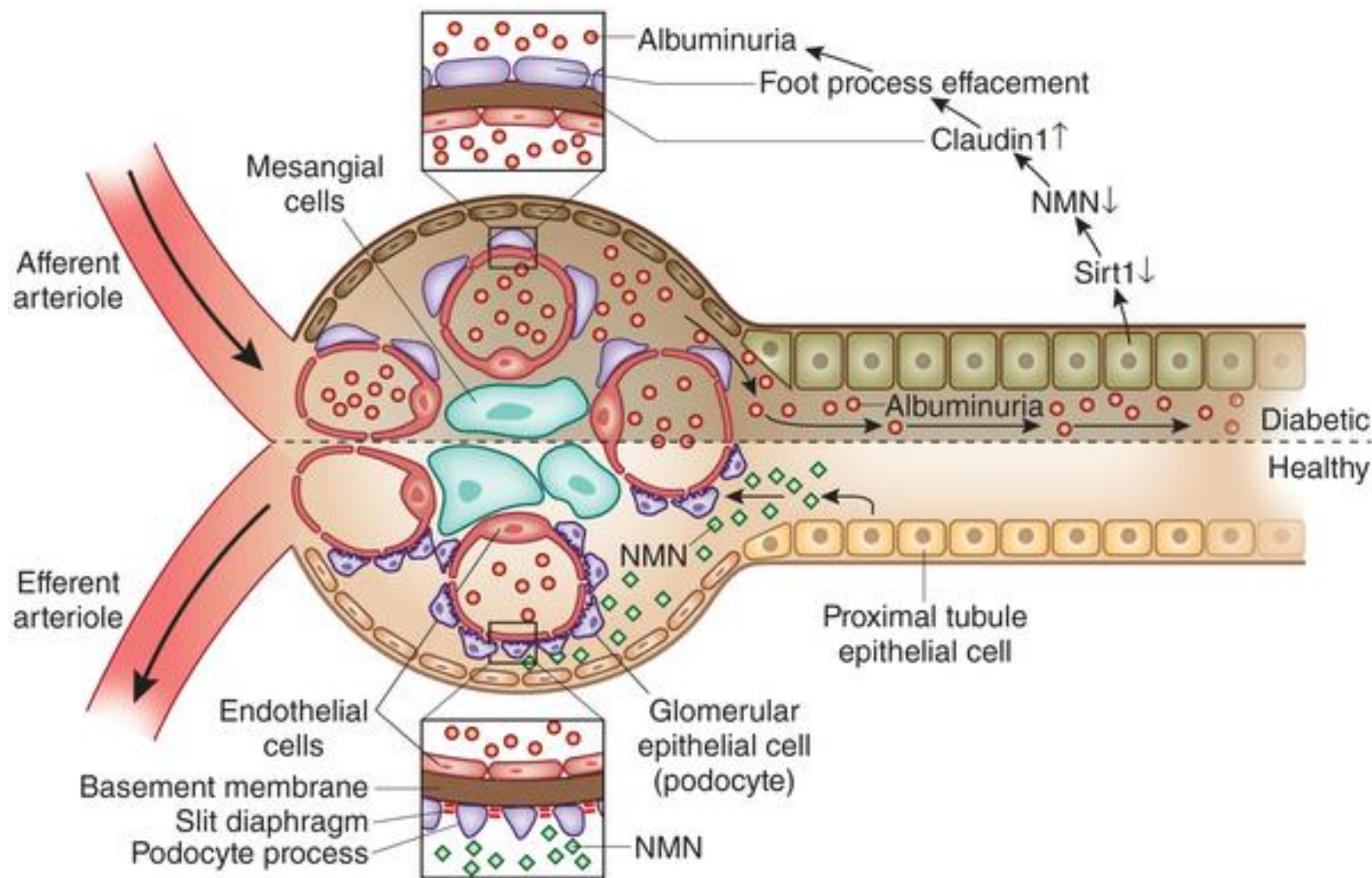
Advanced Glycated End Products

- **Ligação a polipeptídios – colágeno**
- **Ligação a proteínas não glicosiladas (LDL, Ig, Complemento)**
- **Resistência à digestão protéica**
- **Induz à oxidação lipídica**
- **Inativação do Óxido Nítrico**
- **Ligação aos ácidos nucleicos**

Advanced Glycated End Products



Advanced Glycated End Products

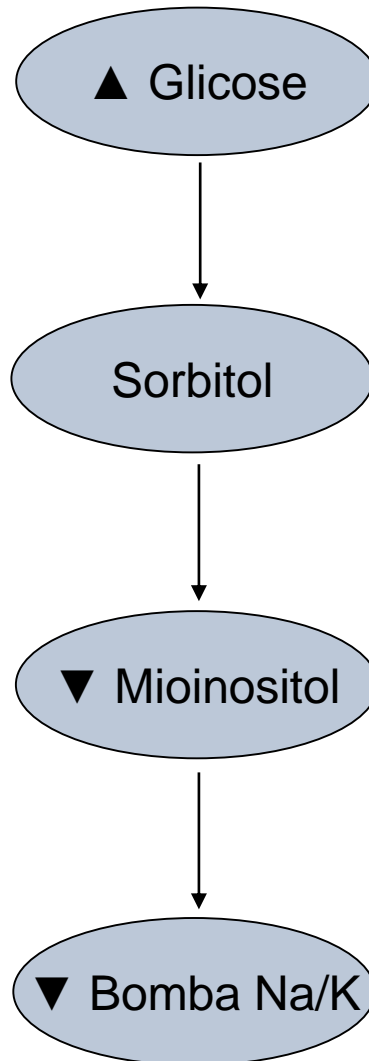


Nihalani D, Susztak N, Sirt1–Claudin-1 crosstalk regulates renal function, Nature Medicine 2013

Advanced Glycated End Products

- **Ligação dos AGEs aos receptores de monócitos e células mesenquimais:**
 - * **Migração dos monócitos**
 - * **Secreção de citocinas e fatores de crescimento**
 - * **Aumento da permeabilidade vascular**
 - * **Aumento da atividade pró-coagulante**
 - * **Aumento da proliferação celular**
 - * **Aumento da produção de matriz extracelular**

Glicose e Na/K ATPase



Alterações Morfológicas

- **Pâncreas**
- **Artérias (aterosclerose)**
- **Membrana Basal dos pequenos vasos (microangiopatia)**
- **Rins (Nefropatia)**
- **Retina (Retinopatia)**
- **Nervos (Neuropatia)**

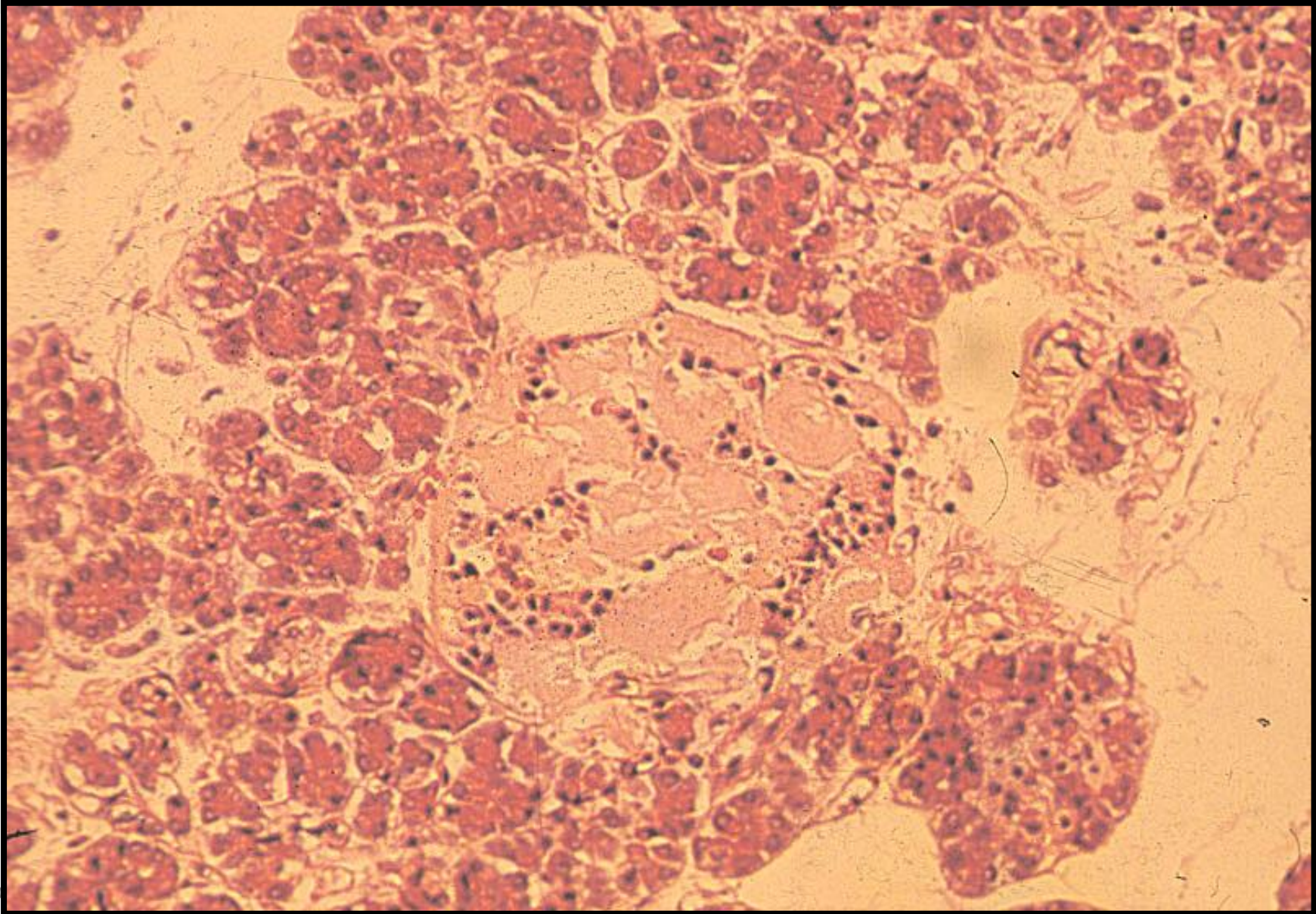
Pâncreas

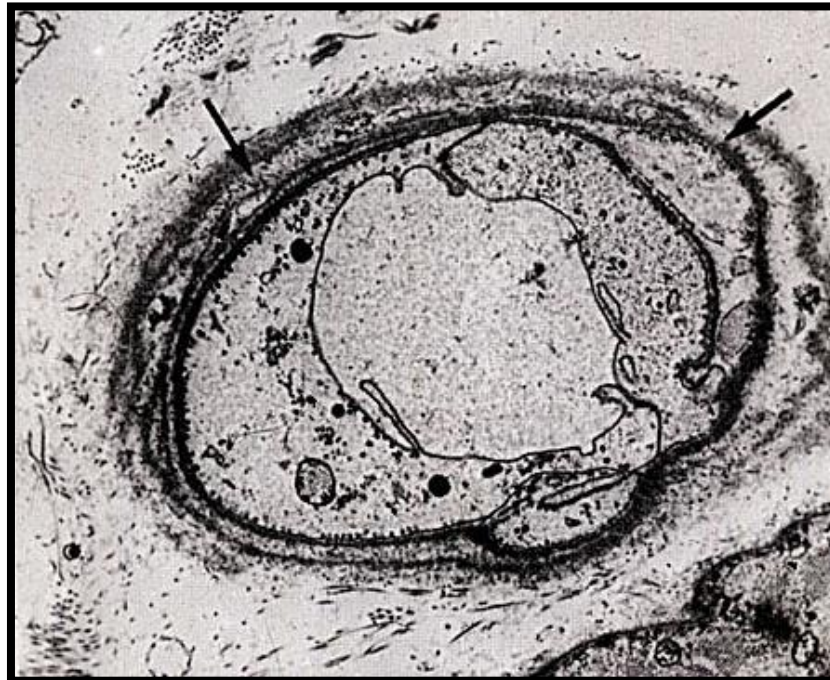
- **Lesão células B – Insulinite (Tipo I)**
- **Alterações de MB – Deposição de amilina (Tipo II)**

Pâncreas



Pâncreas





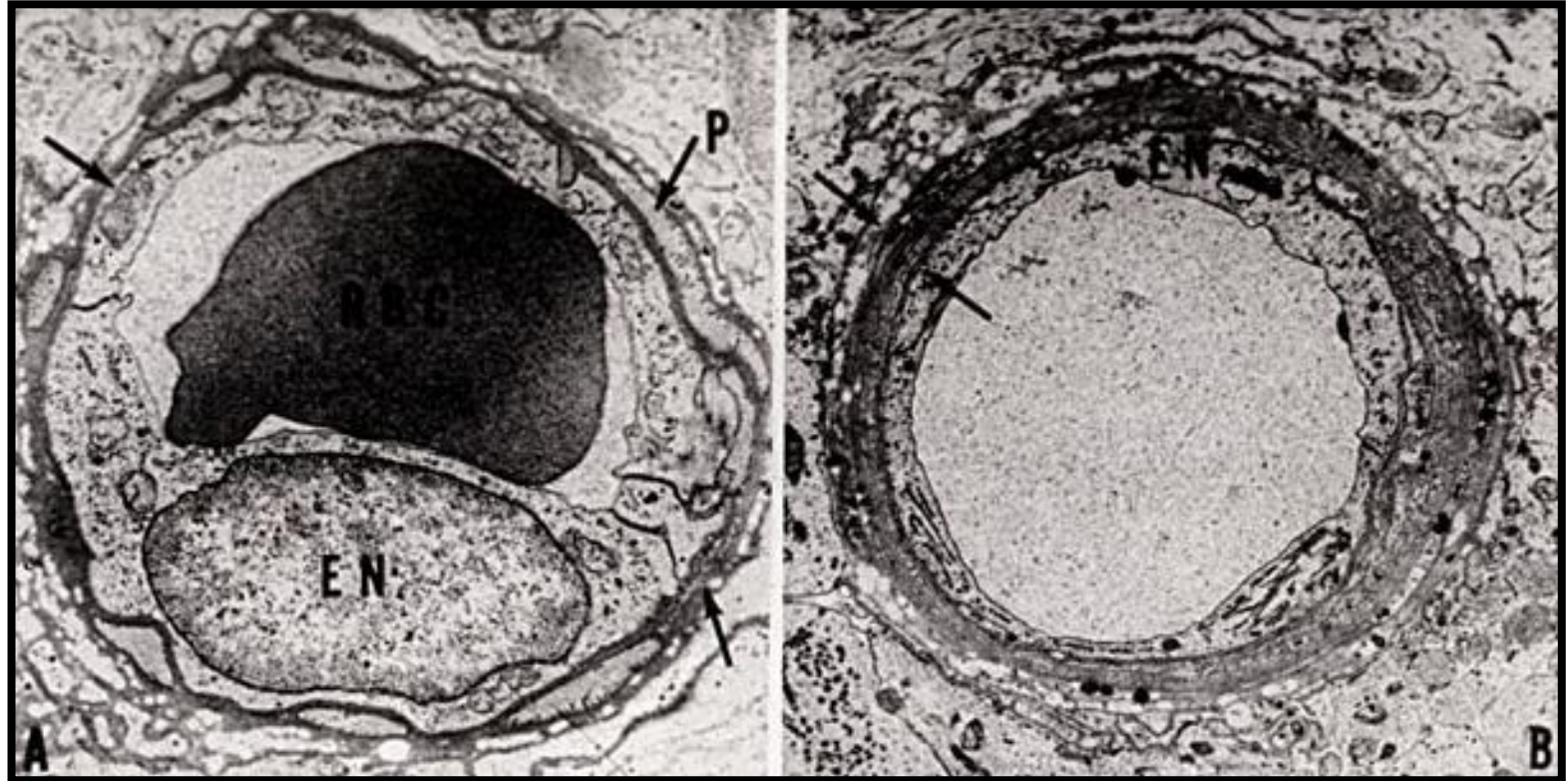
Alterações Oculares

- **Aumento Permeabilidade de vasos retinianos – hemorragia – descolamento de retina / glaucoma**
- **Fragilidade de vasos - microaneurismas**

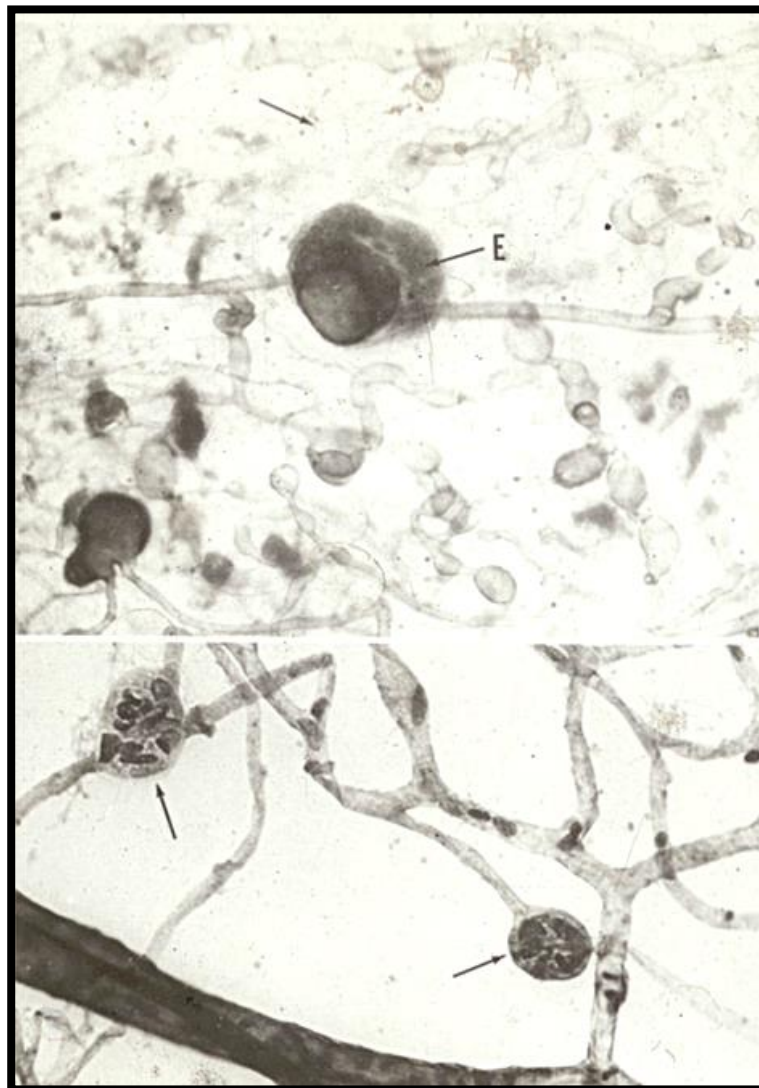
Alterações Oculares

- **1º - Retinopatia**
 - **microaneurismas**
 - **exsudatos e hemorragias**
 - **retinite proliferante**
- **2º - Cataratas**
- **3º - Alterações da íris**
- **4º - Alterações da refração e acomodação**
- **5º - Neurite óptica com atrofia de papila**

Alterações Oculares



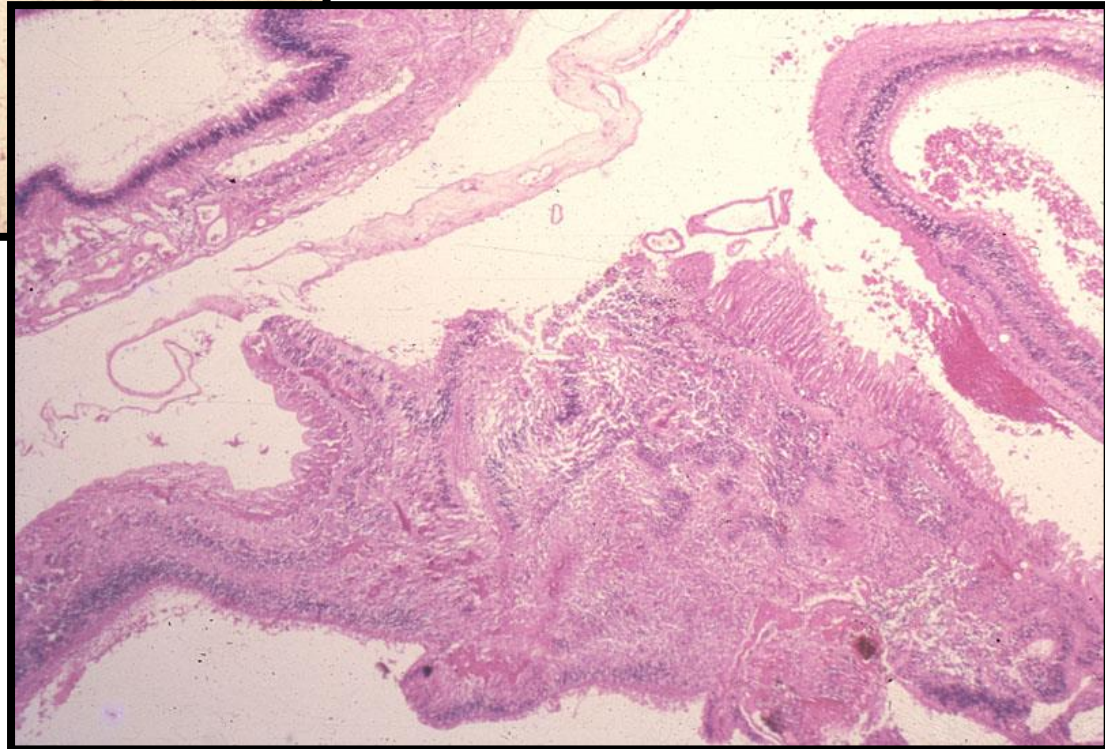
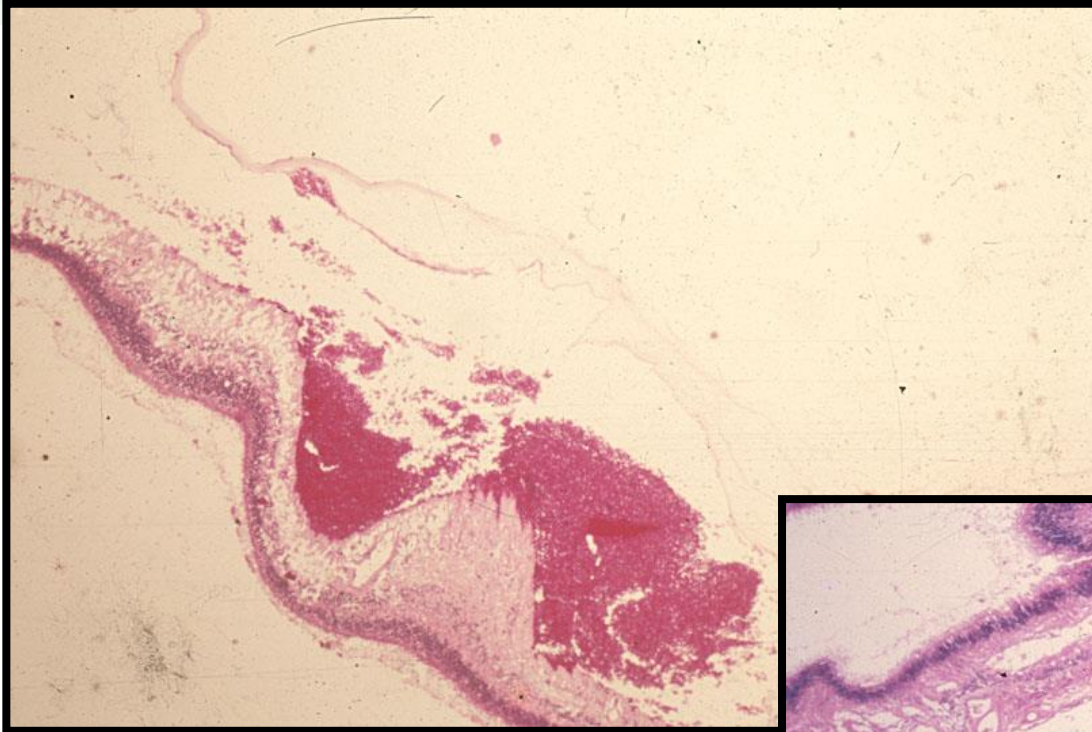
Alterações Oculares



Alterações Oculares



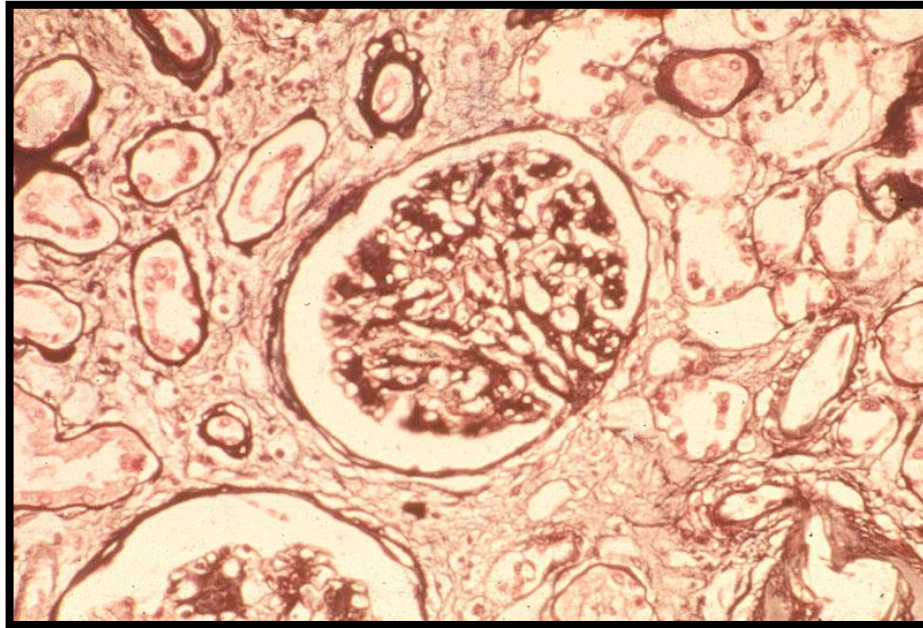
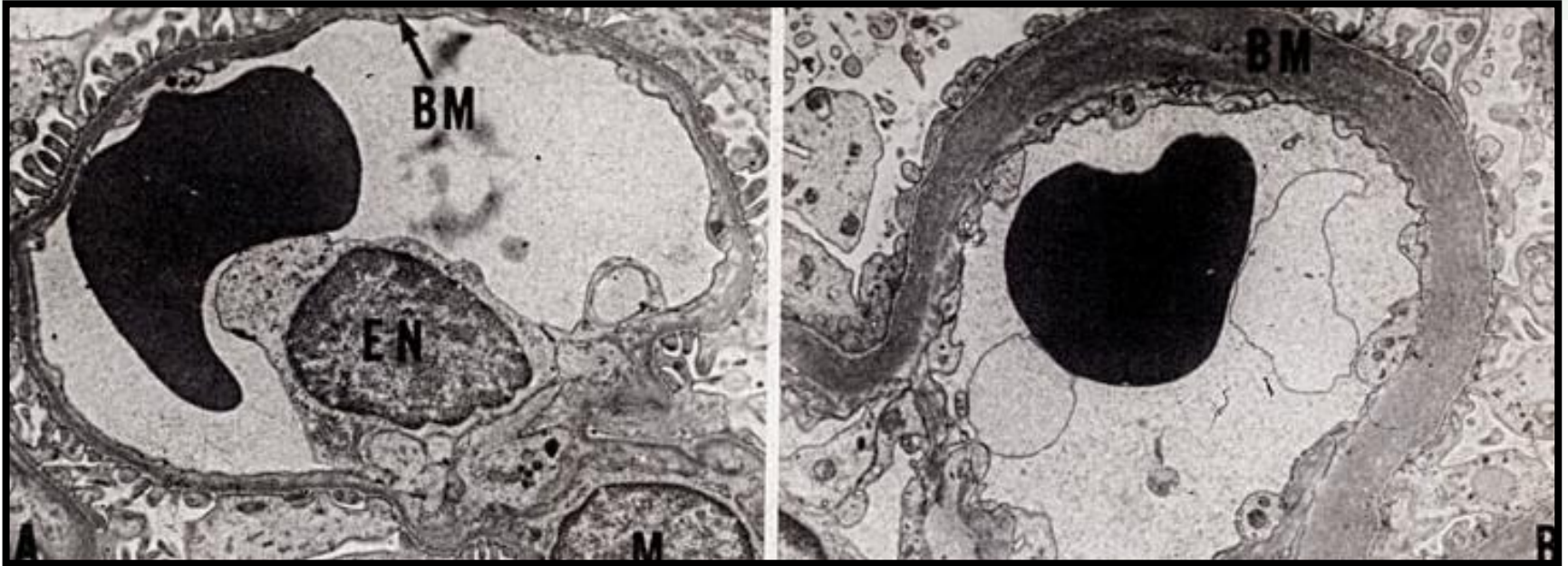
Alterações Oculares



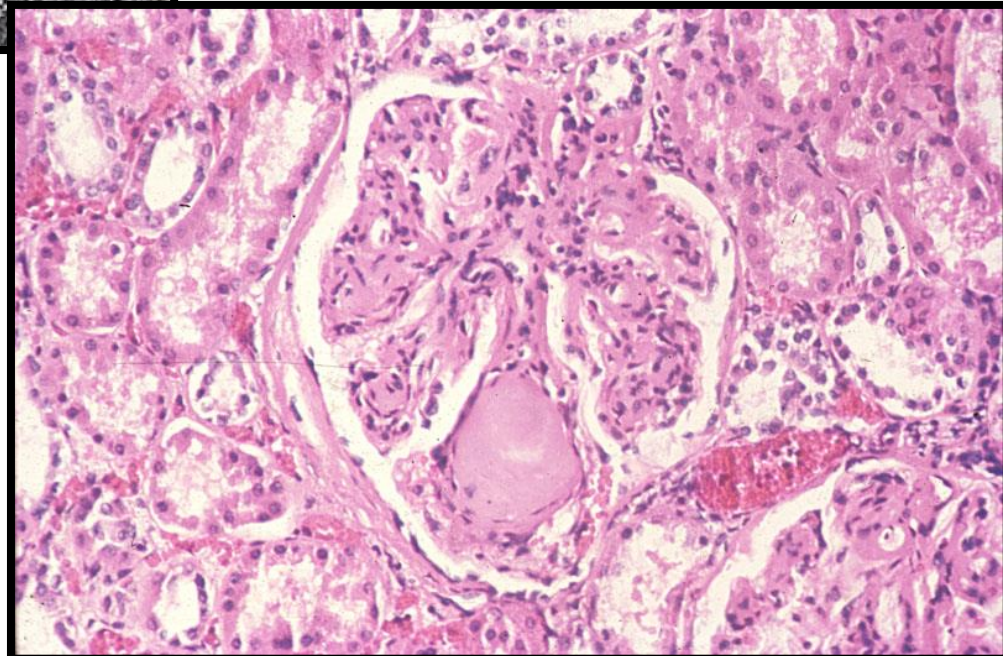
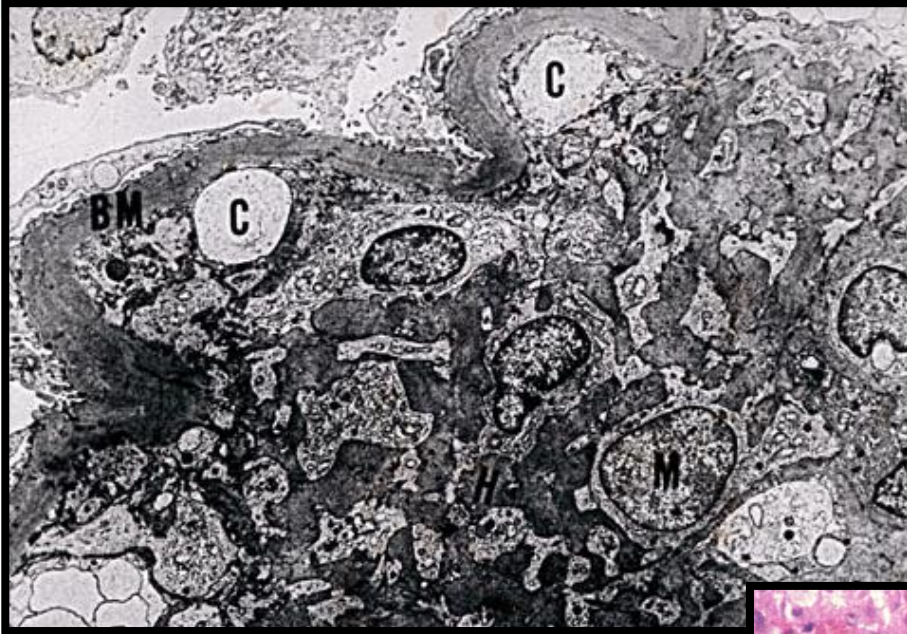
Nefropatia Diabética

- **Aumento permeabilidade da MB – microalbuminúria / esclerose glomerular**
- **Hialinização arteriolar – hipertensão arterial**
- **Predisposição a infecções - pielonefrite**

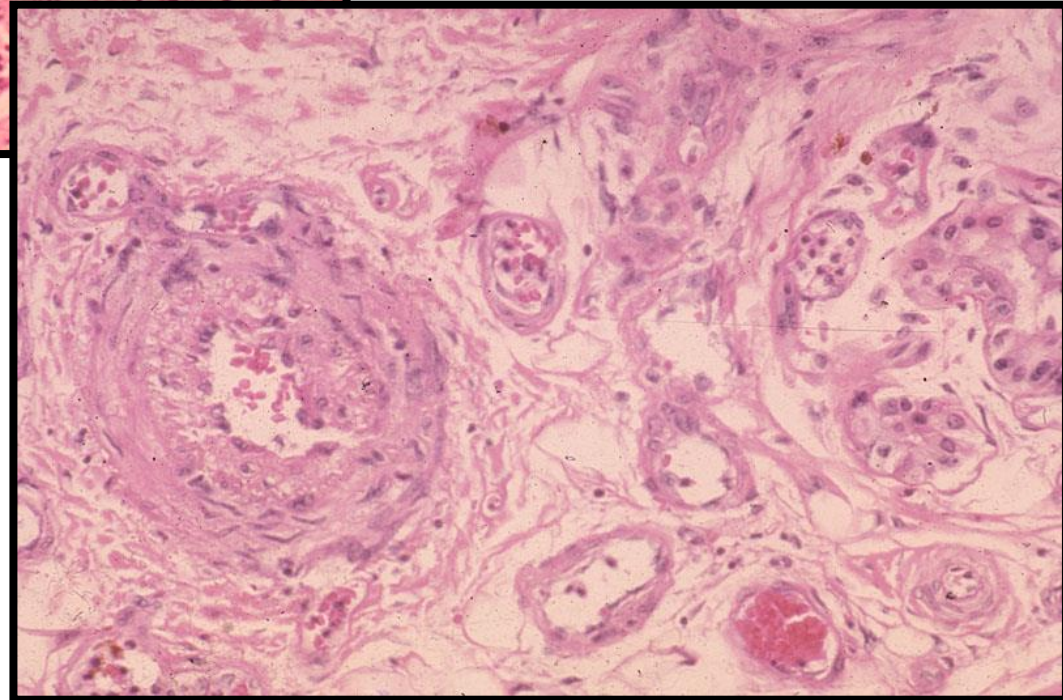
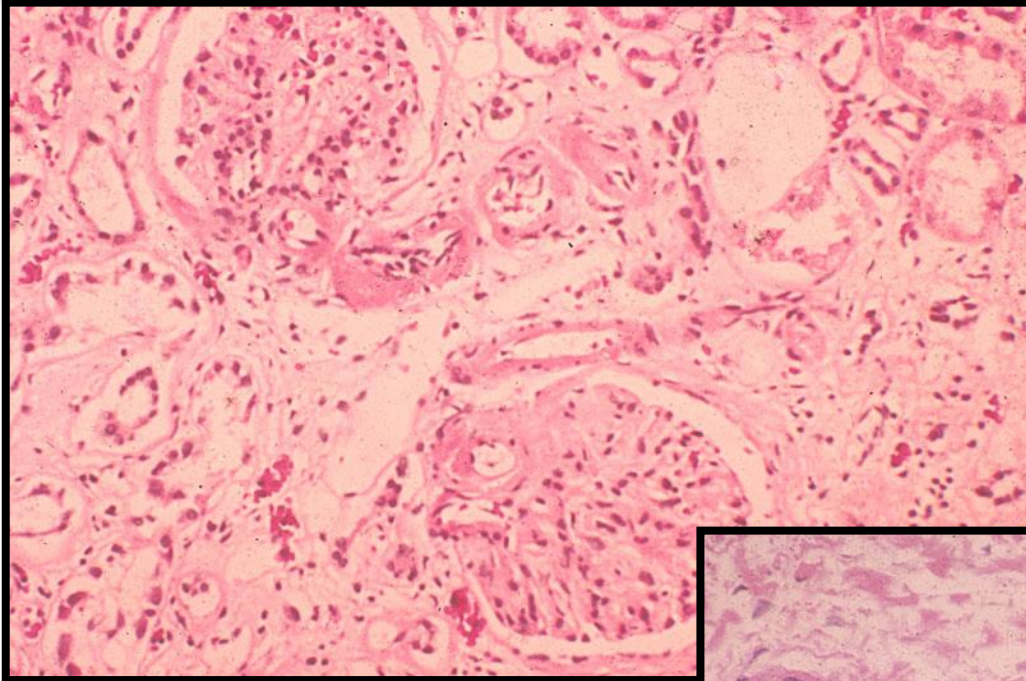
Nefropatia Diabética



Nefropatia Diabética



Nefropatia Diabética



Pé Diabético

- **Aterosclerose periférica – isquemia**
- **Alteração vascular dos nervos periféricos + alterações de bomba - neuropatia**
- **Alterações do sistema de coagulação e recorrência das lesões**

Pé Diabético



Pé Diabético



