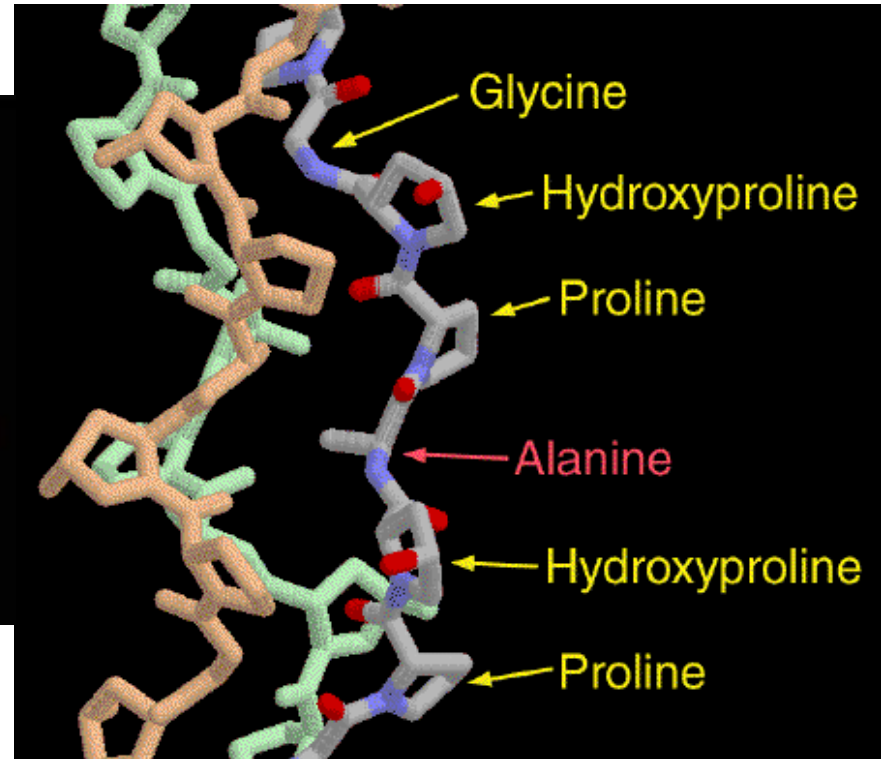


TENDONS

Du Concept
À
La Fonction

objectifs



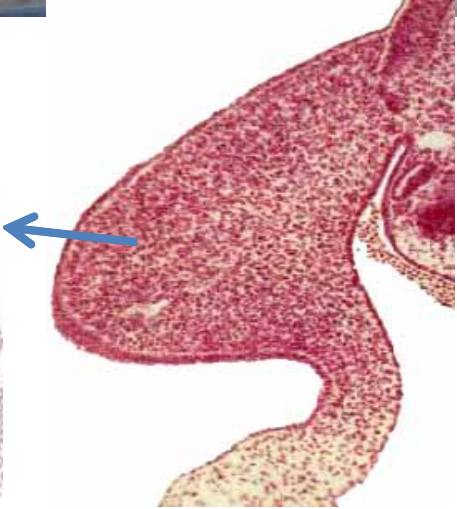
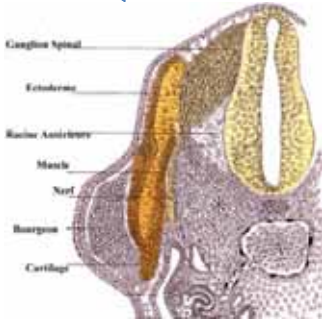
Transmission Harmonieuse

Tendons Croissance



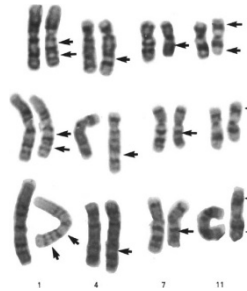
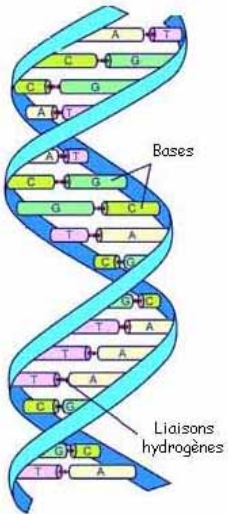
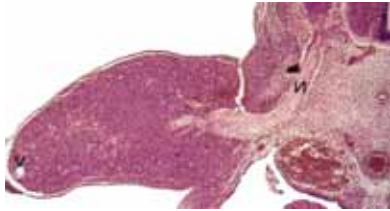
Quel Sculpteur ?

Code Génétique
Individuel



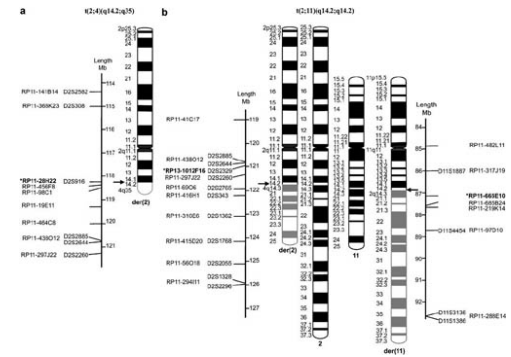
1^{er} Jour CODE GÉNÉTIQUE

25 000 gènes



Locomoteur

**Muscles,
Tendons**



**9^{ème} Semaine
63^{ème} Jour**

Normalité

**Mécanisme APOPTOSE
Sculpture Informatique 3D**

1^{er} Jour Cellules Mésenchymateuses



21^{ème} Jour

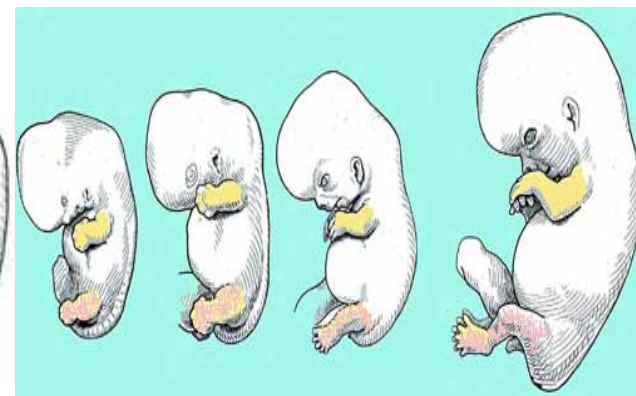
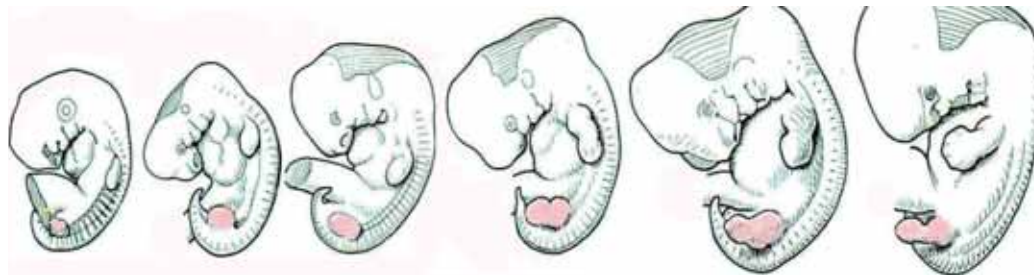
FACTEURS GÉNÉTIQUES

Transforming Grow Factor β

TGF β

ESSENTIELS

Déclenchement APOPTOSE



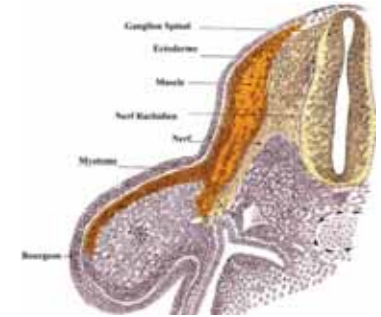
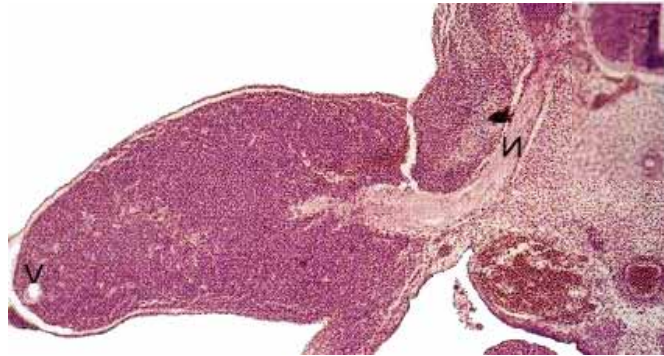
Normalité

Gènes Scleraxis Proteines

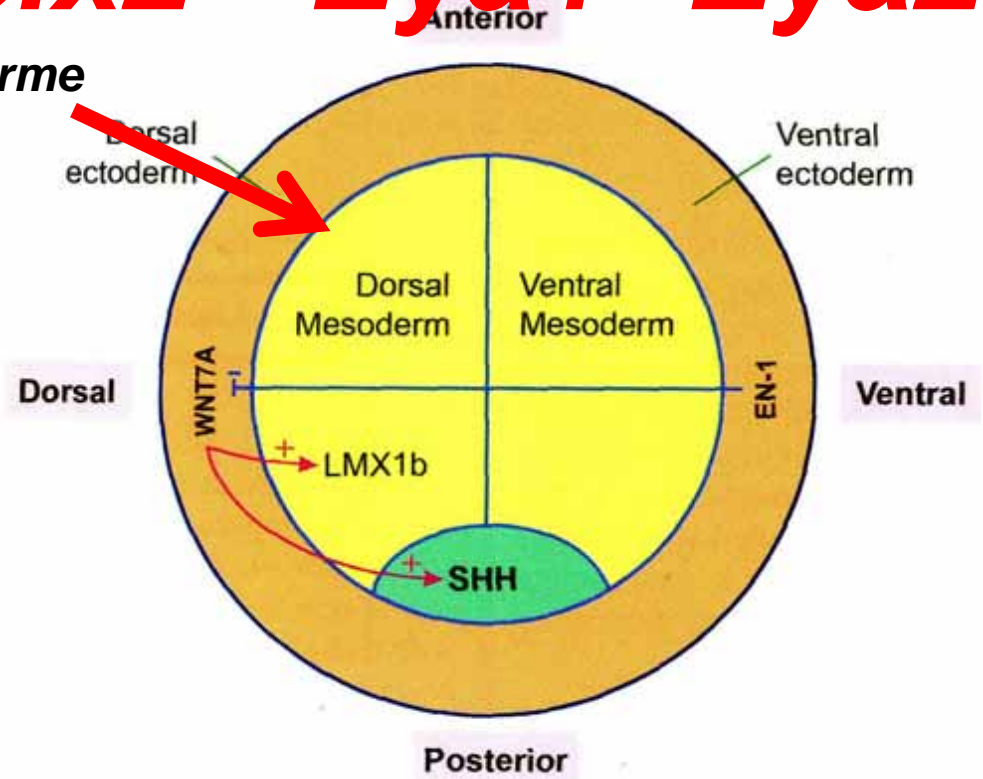
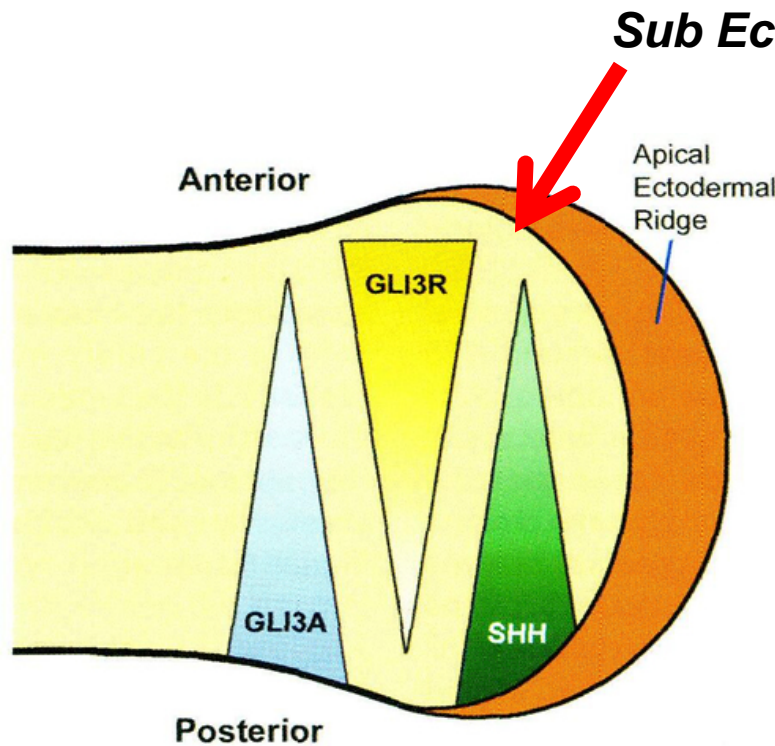
ScxGFP

Col1a1

Col1a2



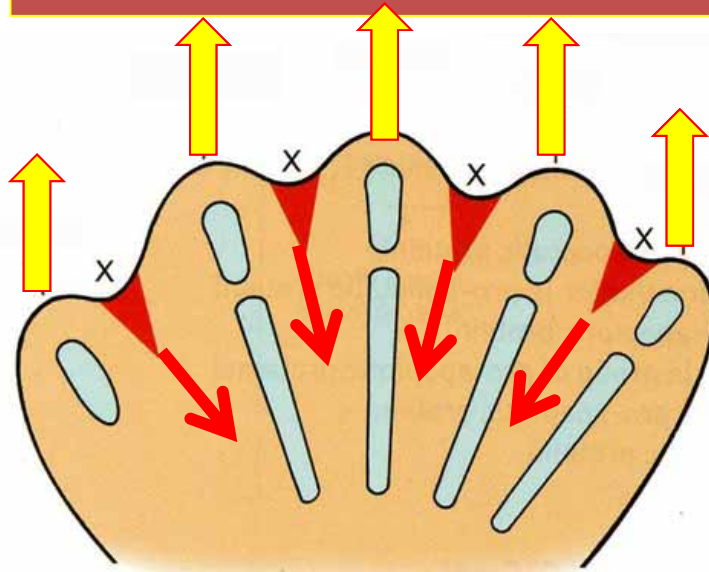
EphA4 - Six1- Six2 - Eya1- Eya2



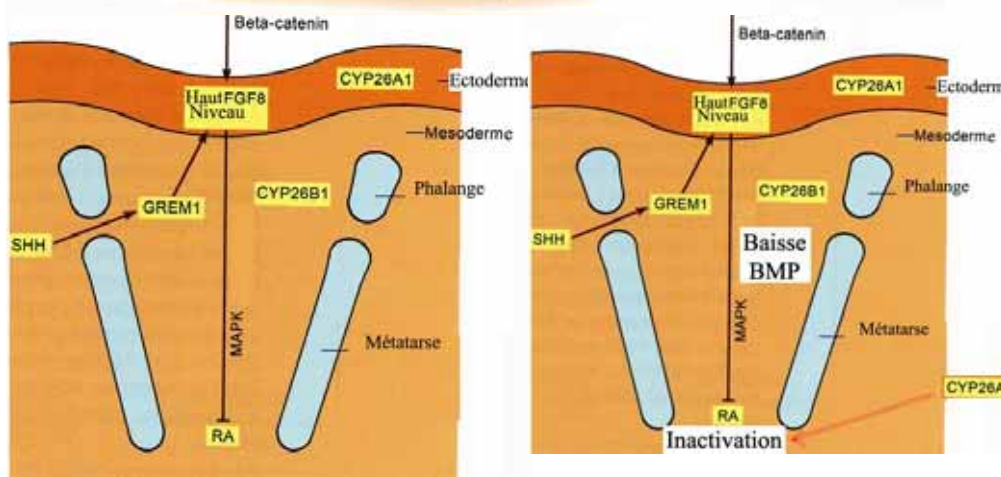
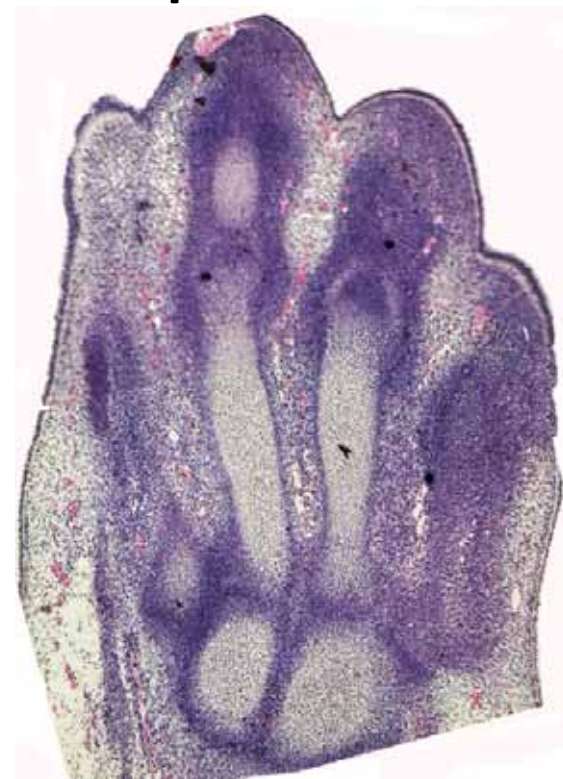
latic

Modelage Génétique

Croissance



4mm

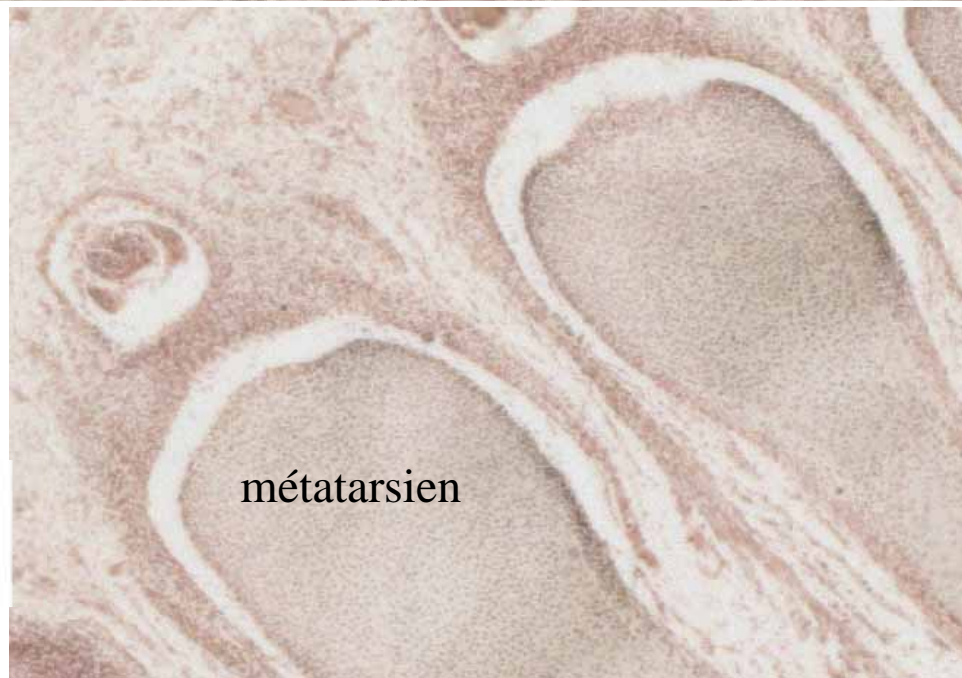




56 jours

CK MOX

fibrose



métatarsien

Normalité

PROTEINES TENDONS

Régulation APOPTOSE

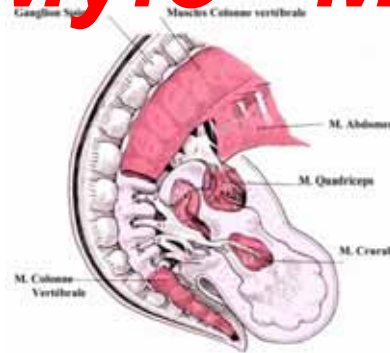
Col 1 a1

Myf5 - Myod1

Sox5

Coll a 2

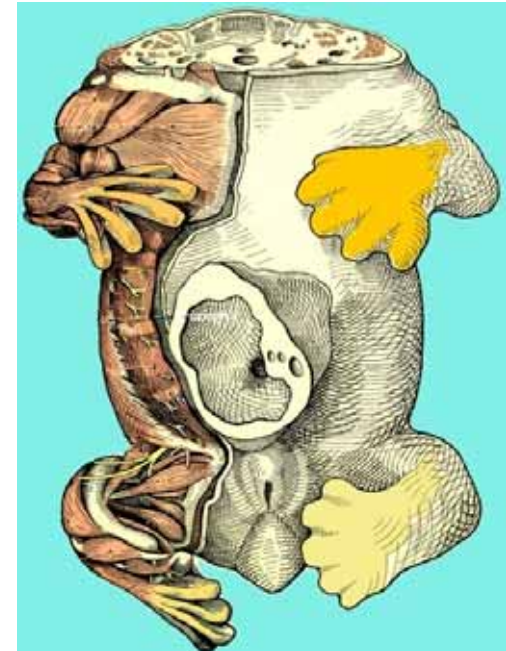
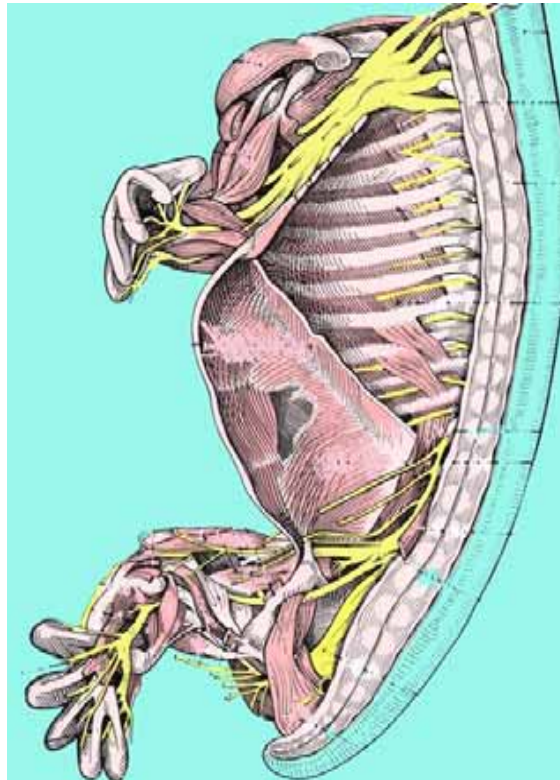
Sox6

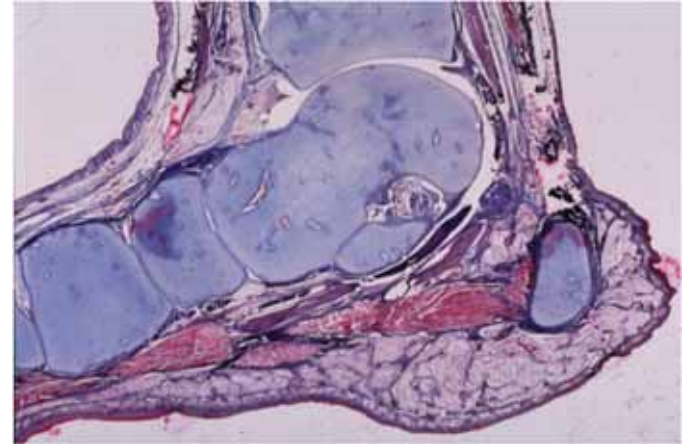


42^{ème} jour



63^{ème} Jour

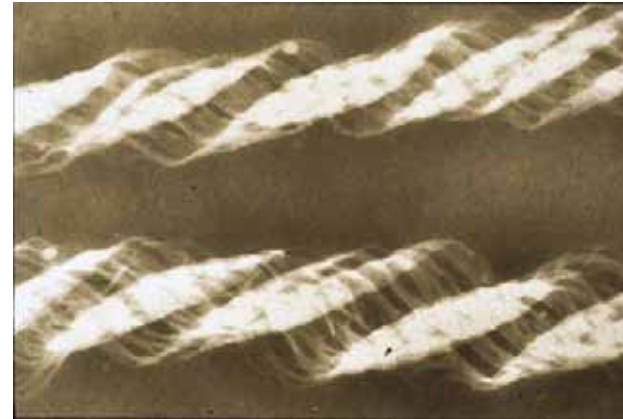
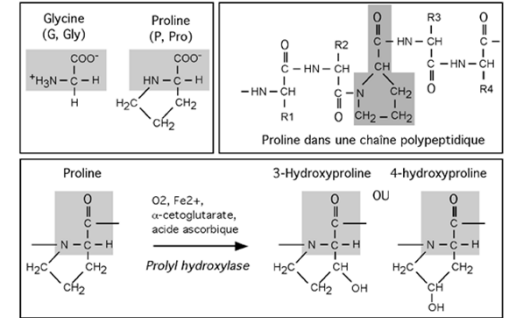
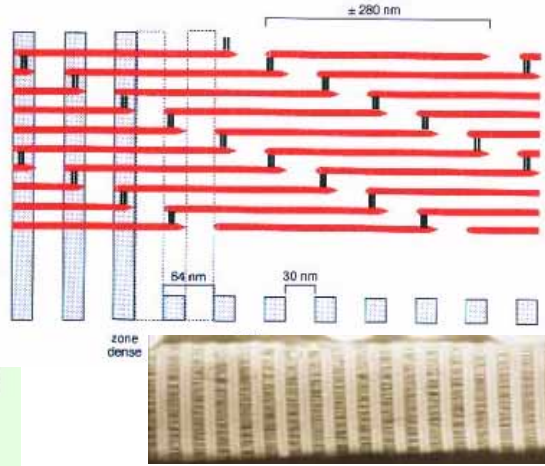
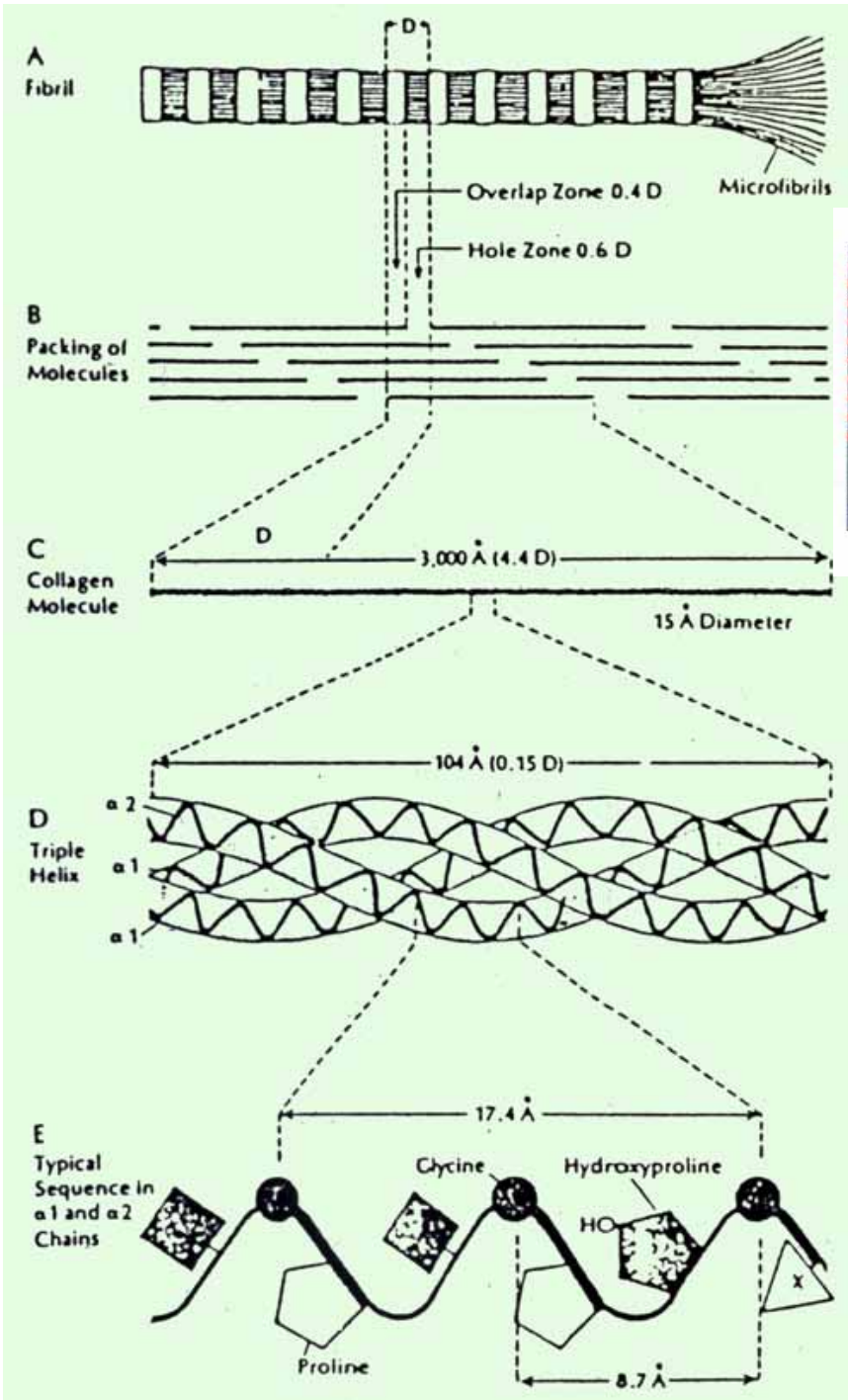




Structure Intrinsèque des Tendons

1 molécule de Tropocollagène

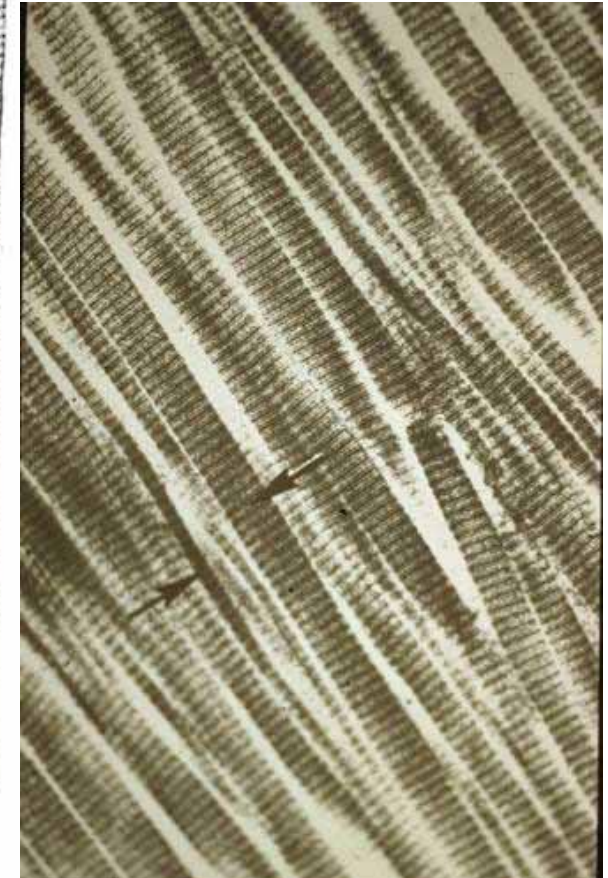
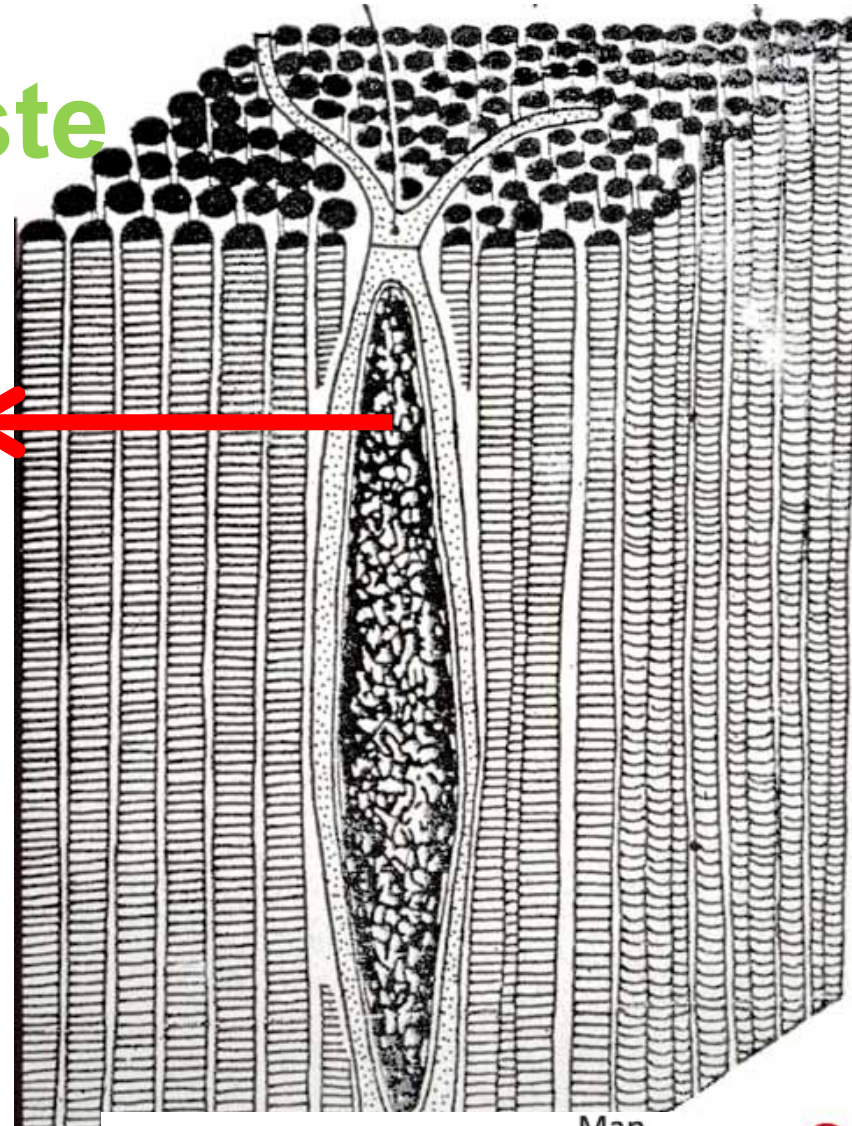
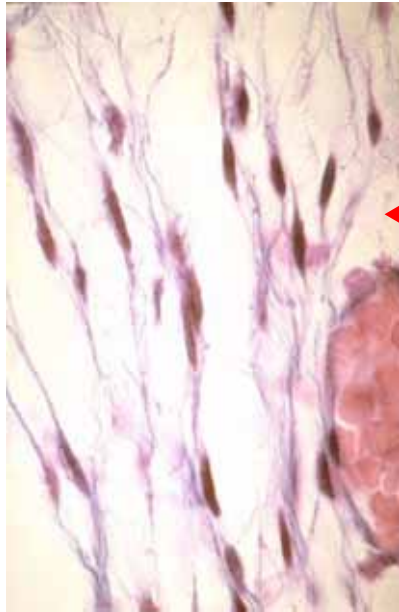
← 2800 Å →



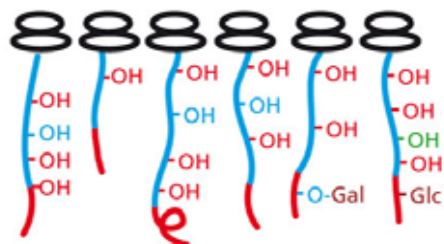
COLLAGÈNE TYPE I

Fibroblaste

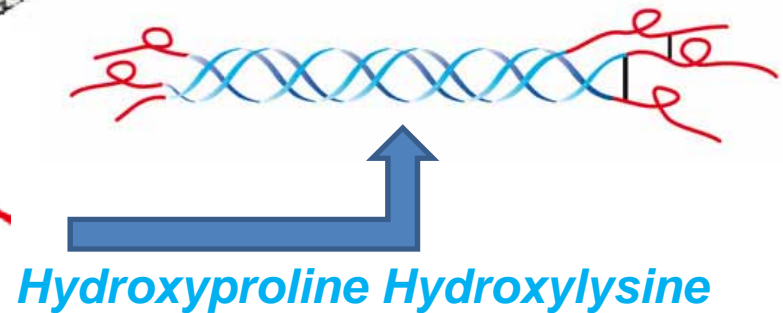
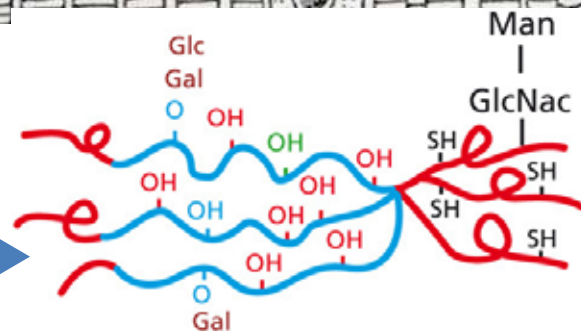
Fibres Collagènes



Fabrication



Prolyl 4-hydroxylase
Prolyl 3-hydroxylase
Lysyl 3-hydroxylase
Gal-transferase
Glc-transferase

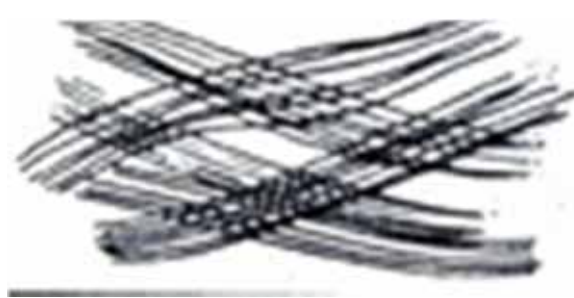
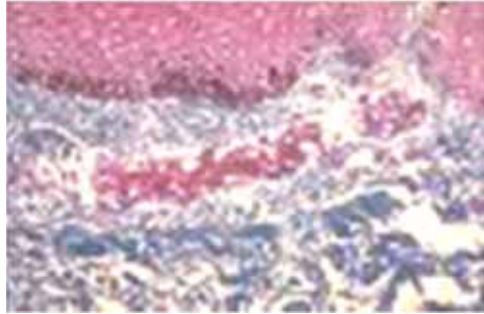


Hydroxyproline Hydroxylysine

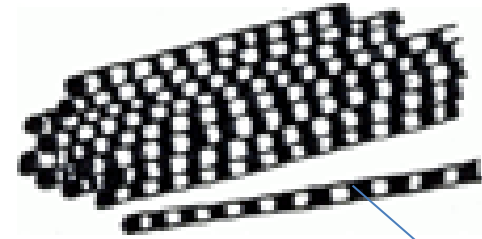
FIBRES

dans substance fondamentale (tenségrité)

Collagènes



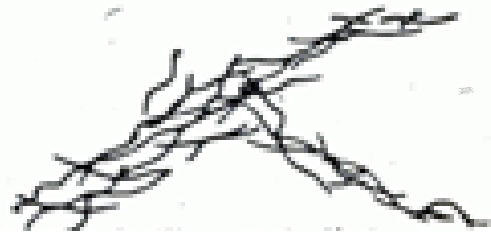
Safran



Striations Périodiques

Fibrilles Collagènes

Réticuline

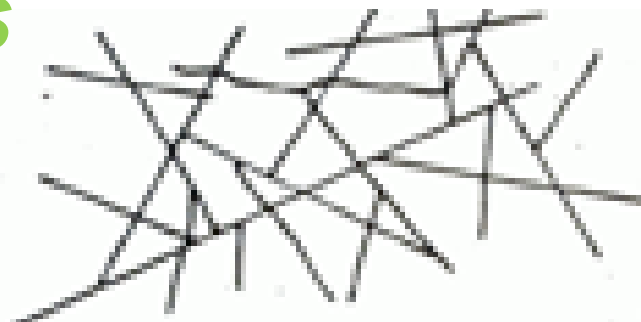
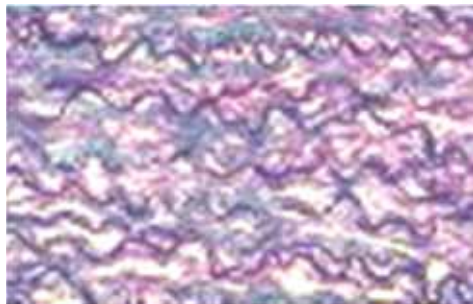


Argentique

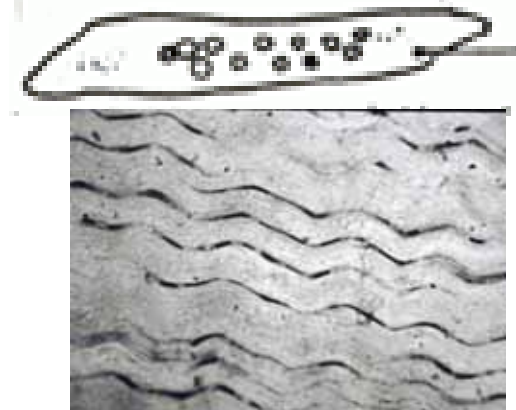


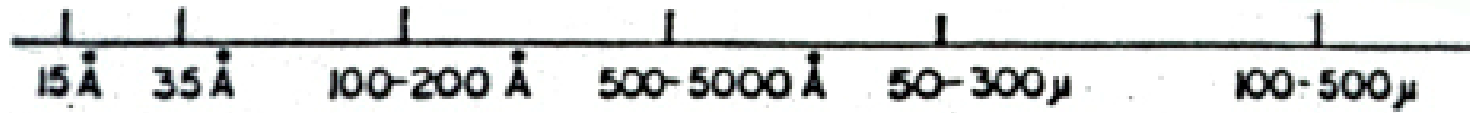
Microfibrilles

Elastiques

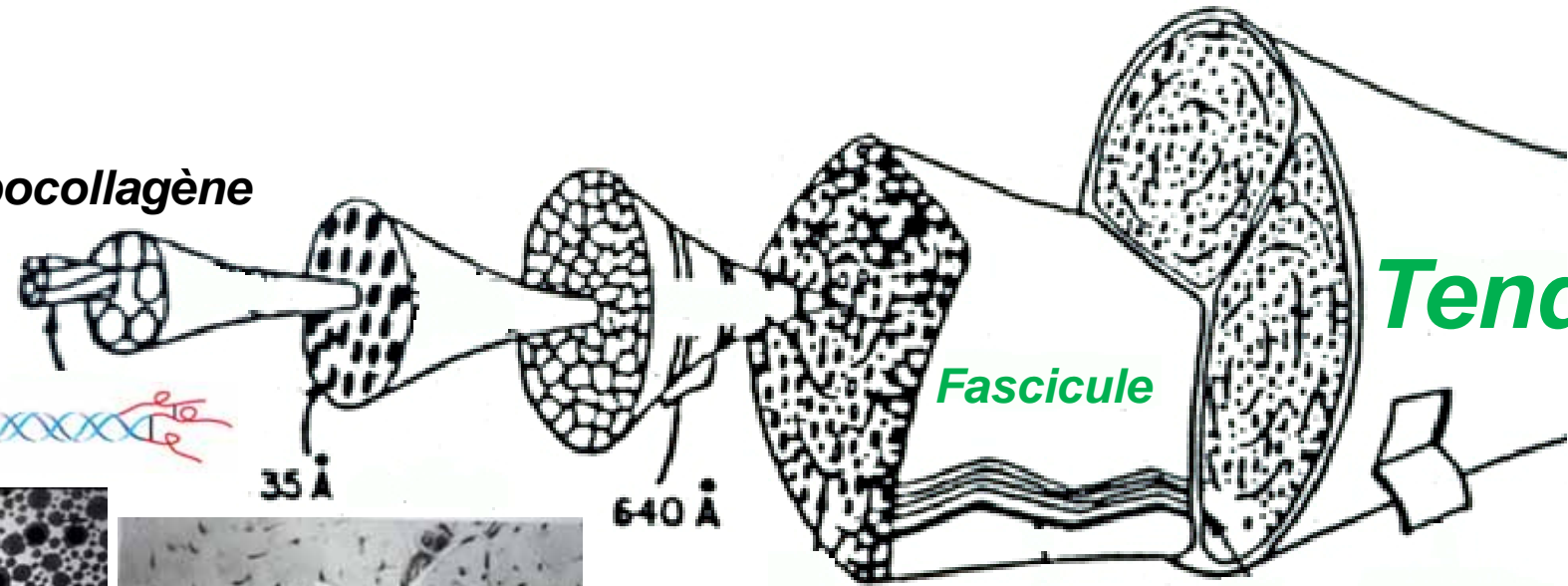


Orcéine





Tropocollagène



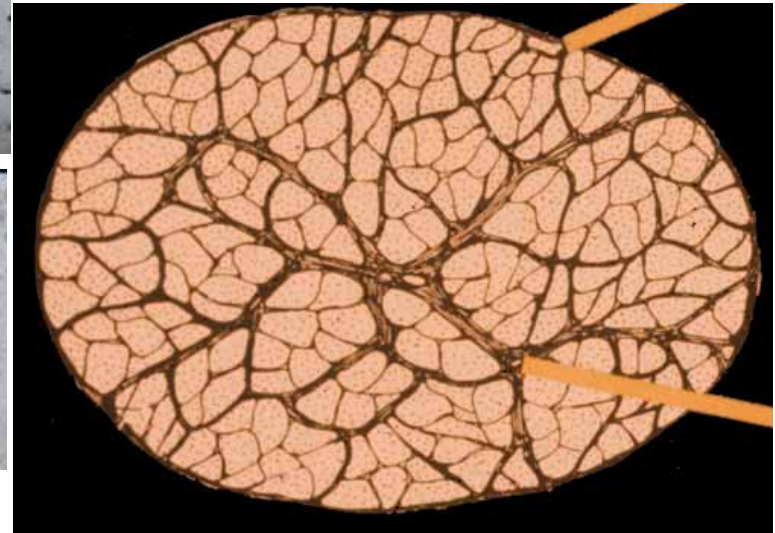
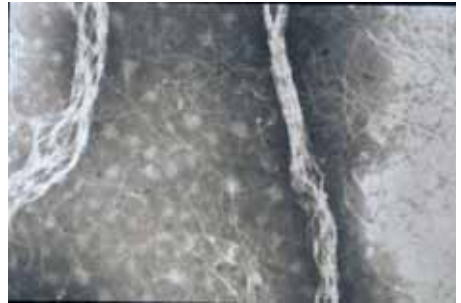
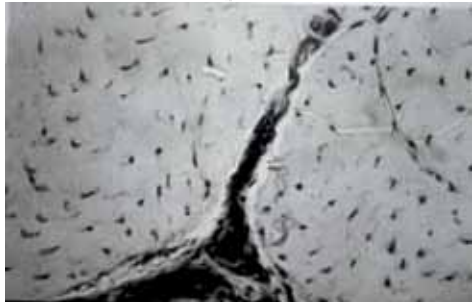
Tendon

Fascicule

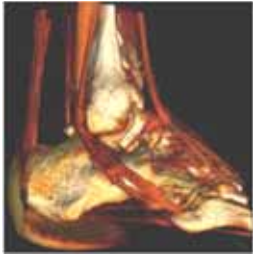
35 Å

640 Å

Peritenonium Externe



Peritenonium Interne



TENDONS

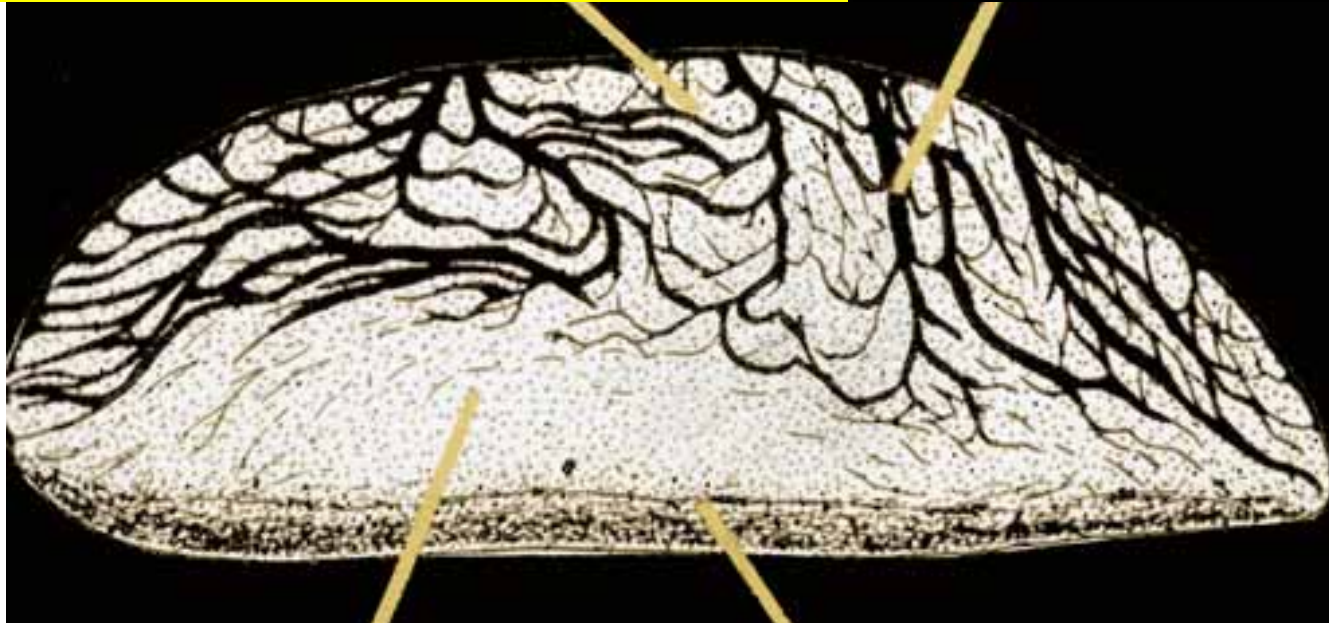


Traction



Couche Traction

Lame Fasciculation

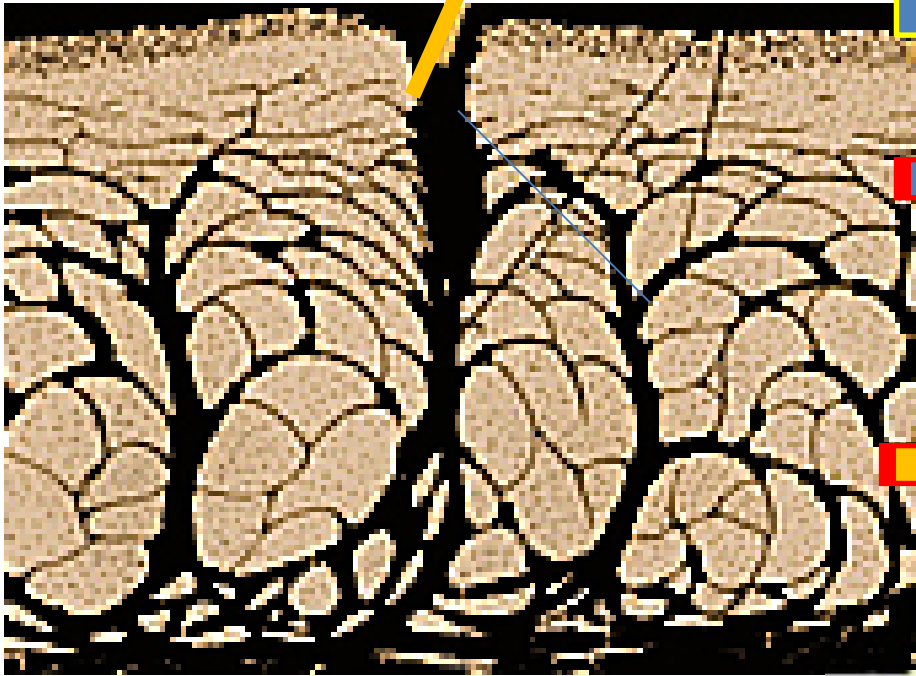


Couche Pression

Bourrelet Glissement

***Tendon
Traction***

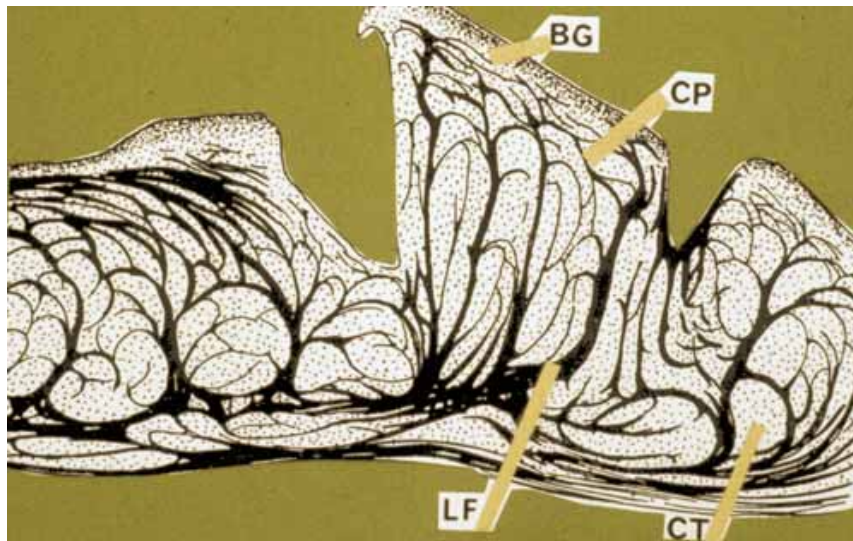
Fissure



Bourrelet
Glissement

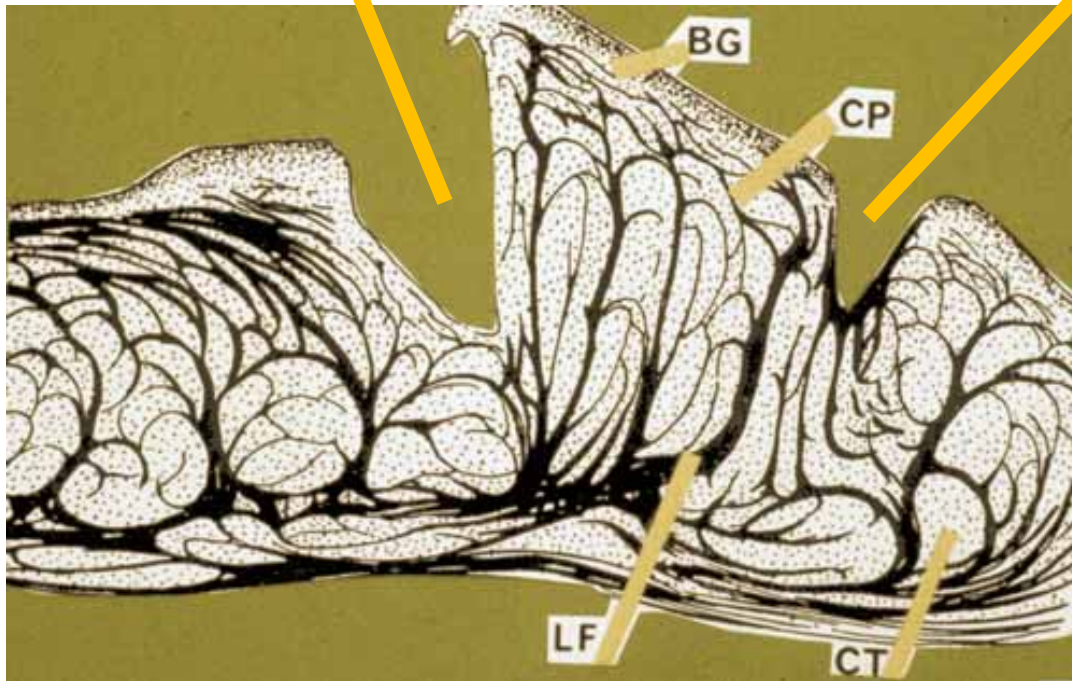
Couche
Pression

Couche
Traction



Tendon
Réflexion

Loi des Fissurations



Tendon
Réflexion

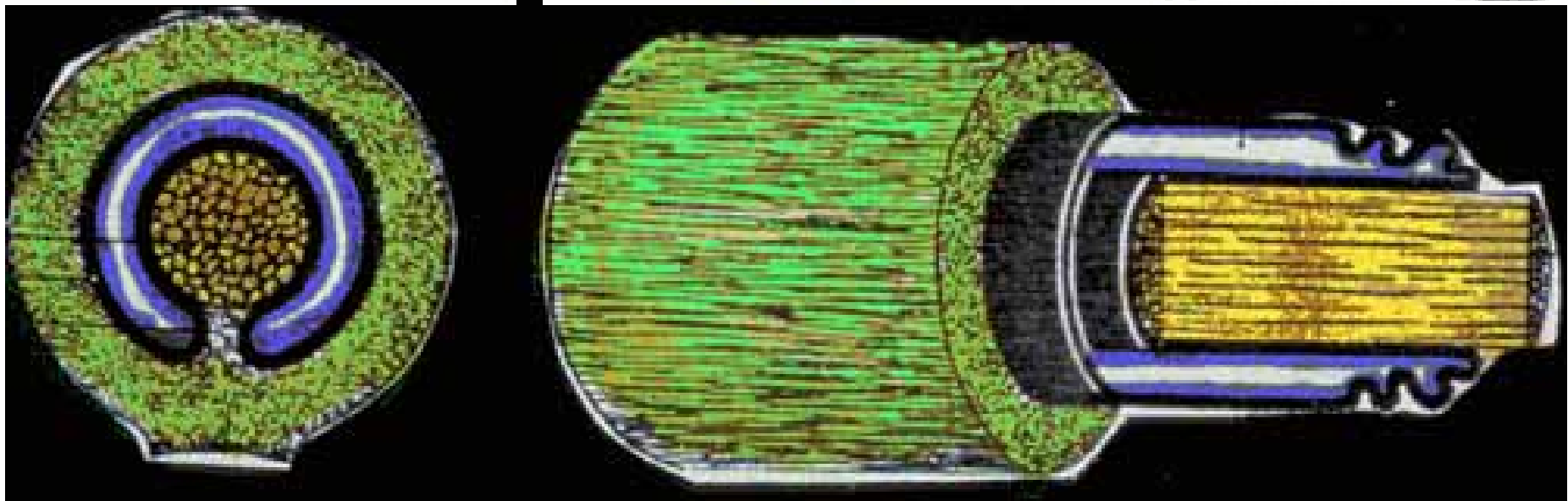
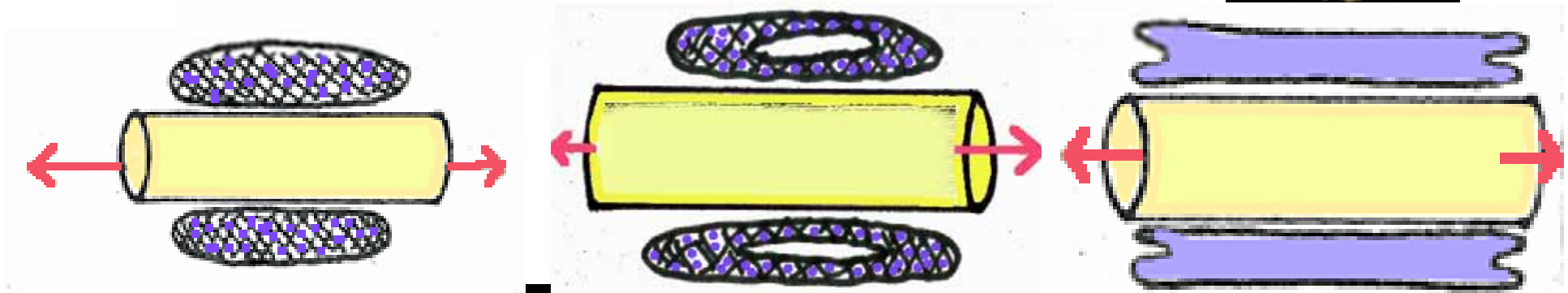
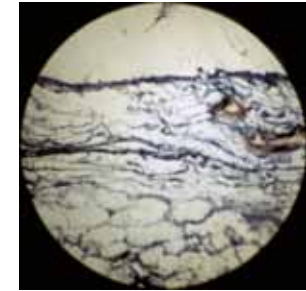
**Tendon
Calcaneéen**



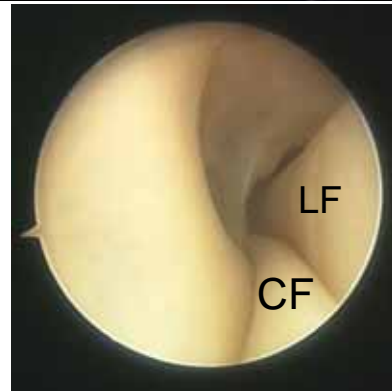
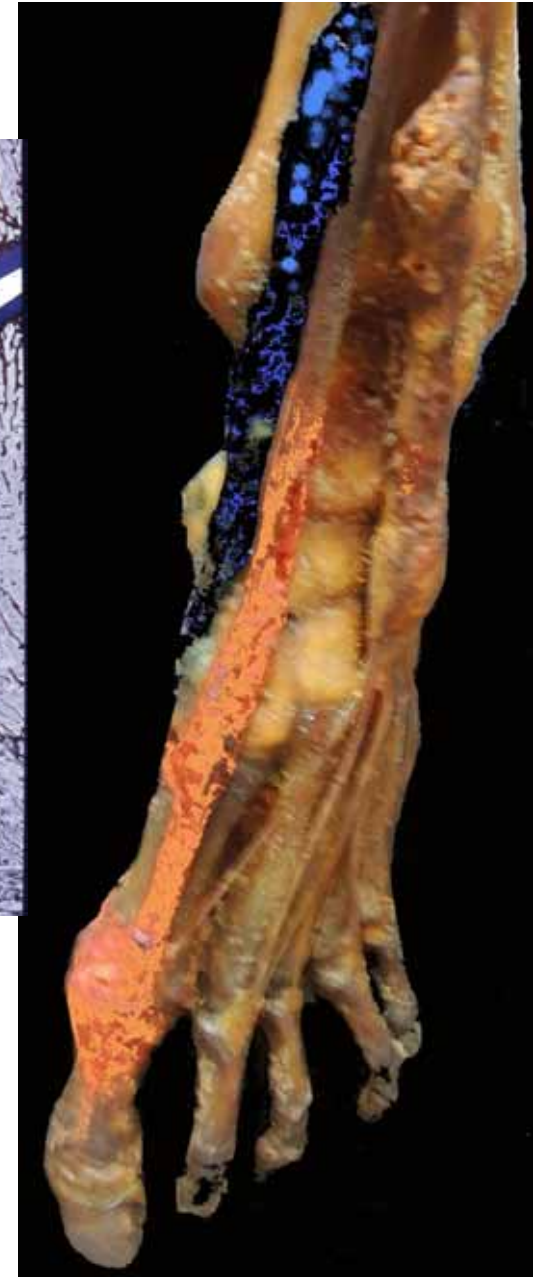
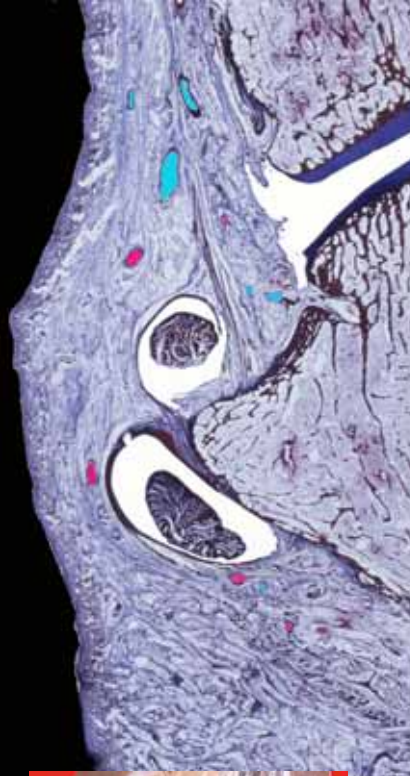
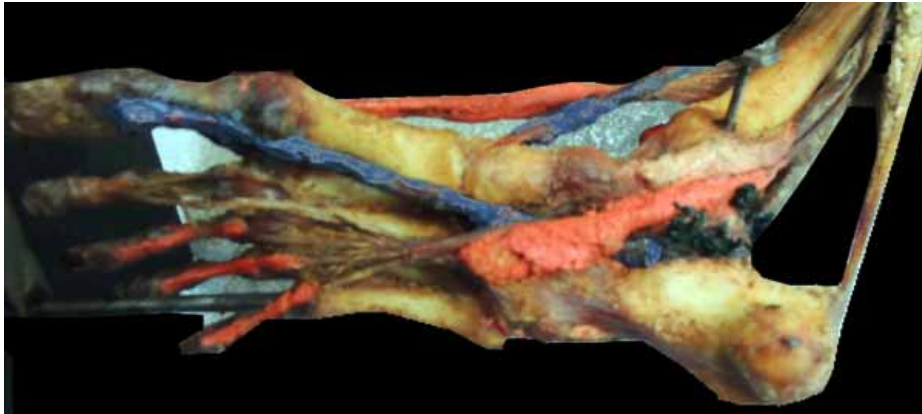
Amortisseur Dynamique Rotatoire

Bourses Conjunctives

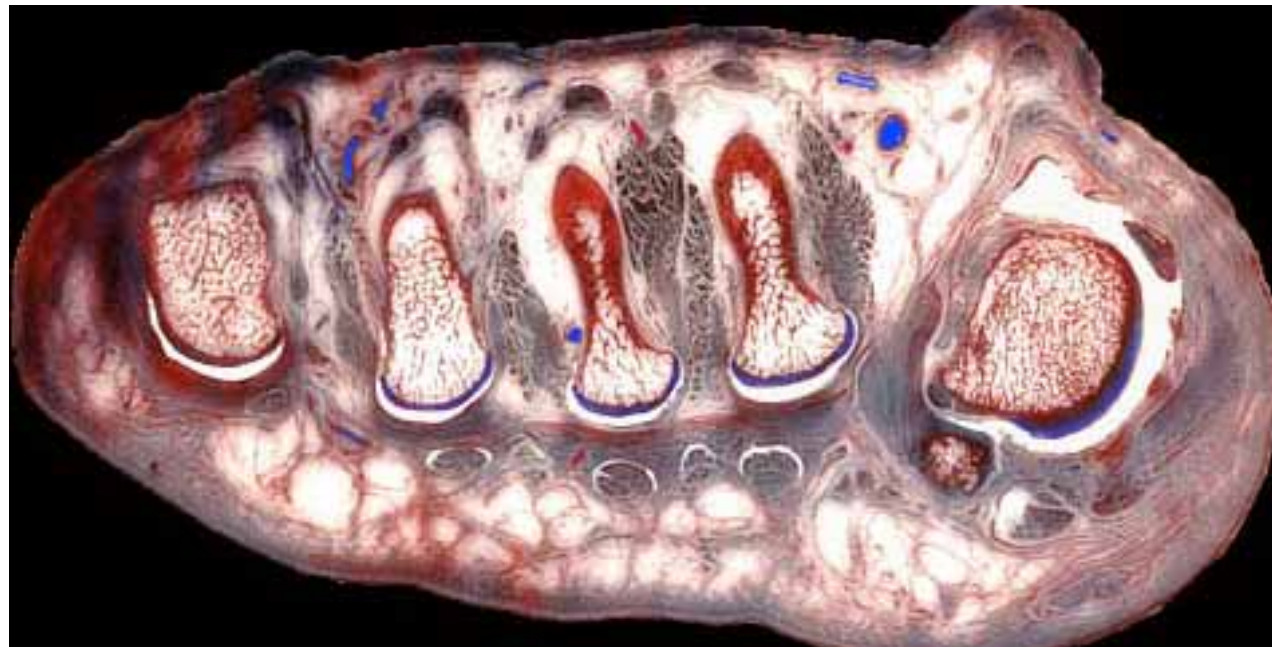
GLISSEMENT



Bourses Conjonctives



Orteil



Jonction Tendon Os



Transmission Progressive
Contraintes

Jonction Muscle Aponévrose Tendon

Tibial Postérieur

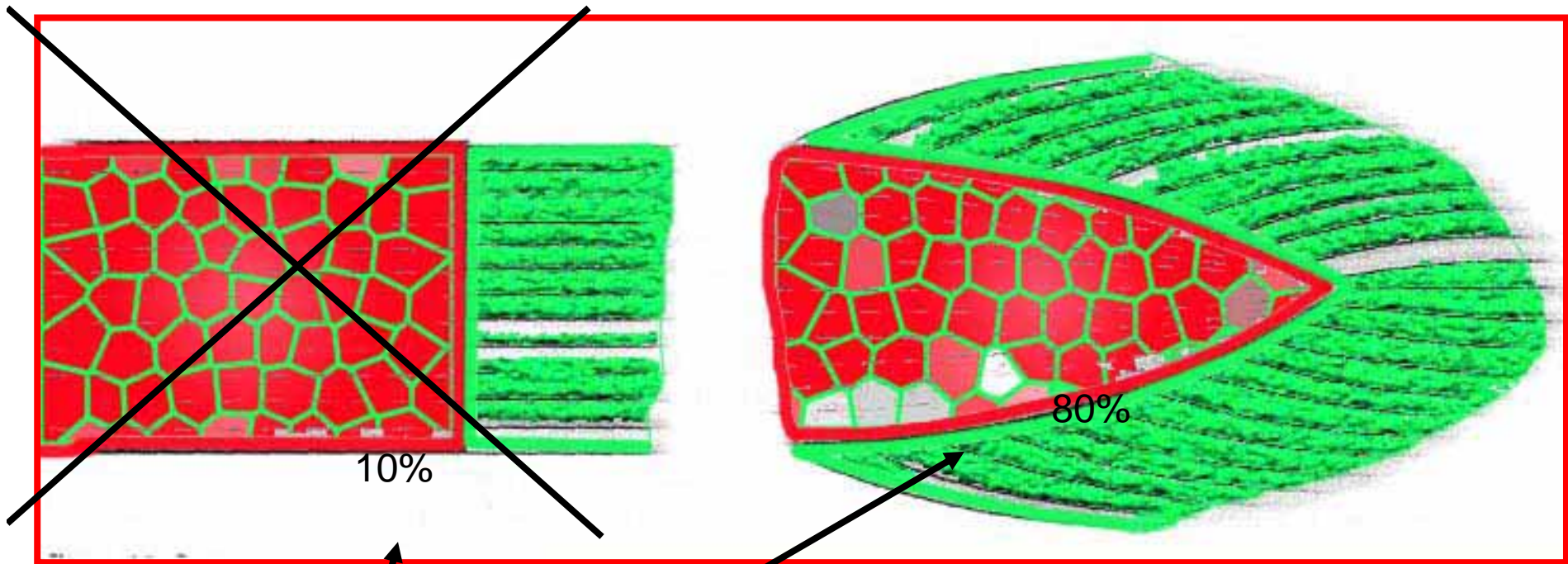
Long Fléchisseur des
Orteils

Long Fléchisseur
de l'Hallux



Jonction Muscle Aponévrose

TRANSMISSION



10%

80%

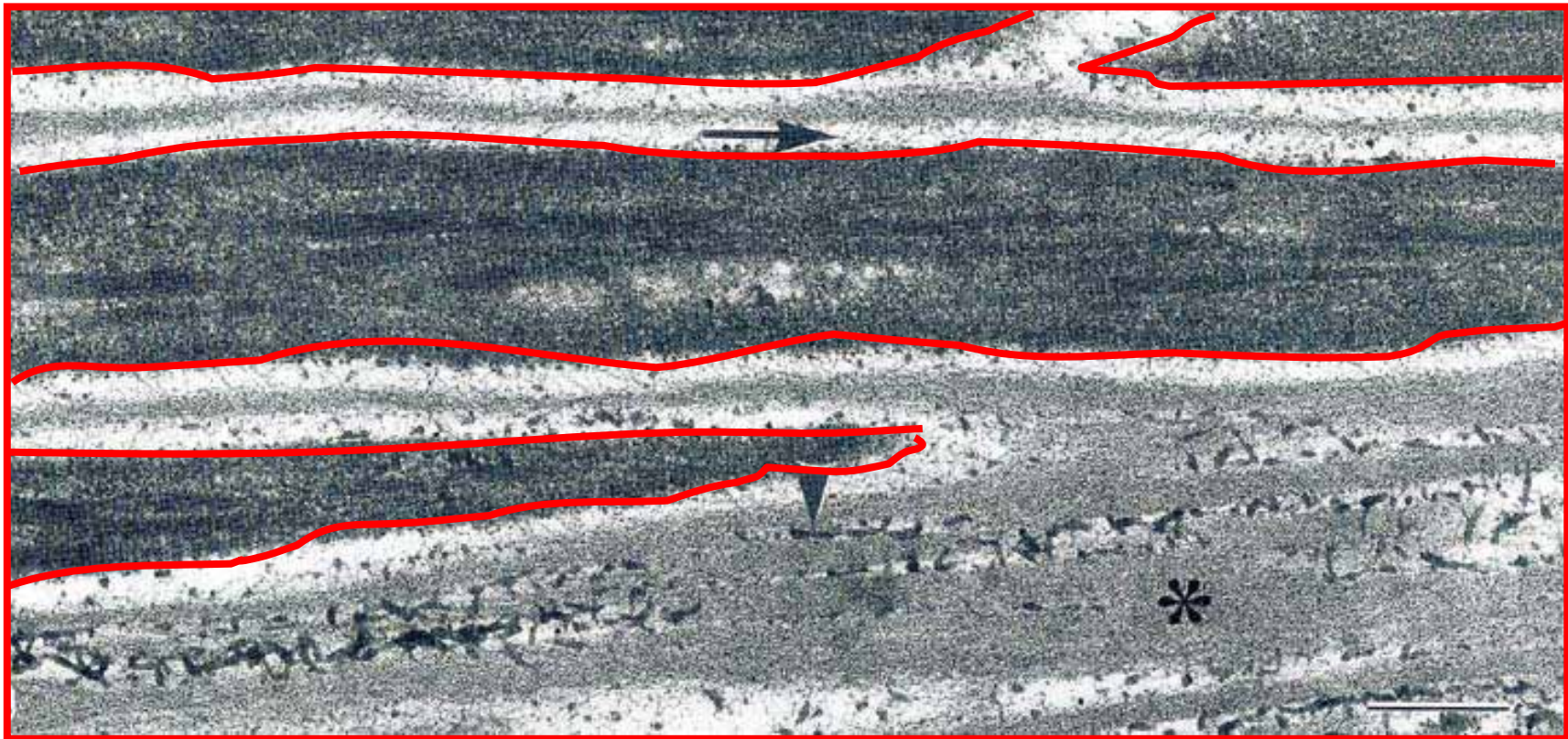
PROGRESSIVE
CONTRAINTES

Surface contact

Junction Muscle Aponévrose Tendon



FIBRE MUSCULAIRE

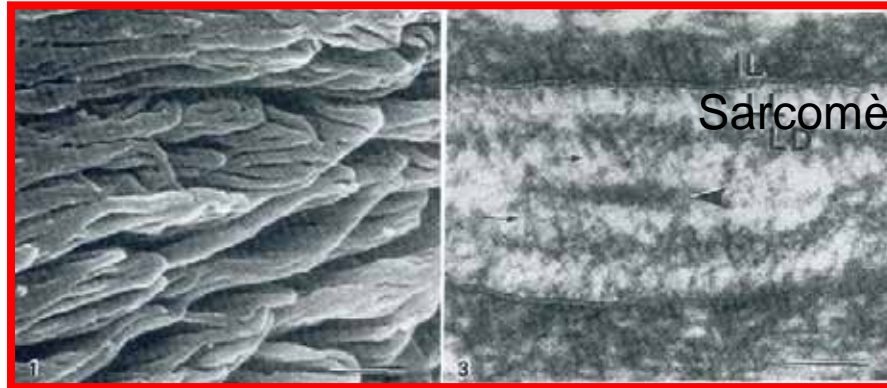


Répartition Contraintes Cisaillement
JONCTION MUSCLE APONEVROSE

FIBRE MUSCULAIRE



Protection

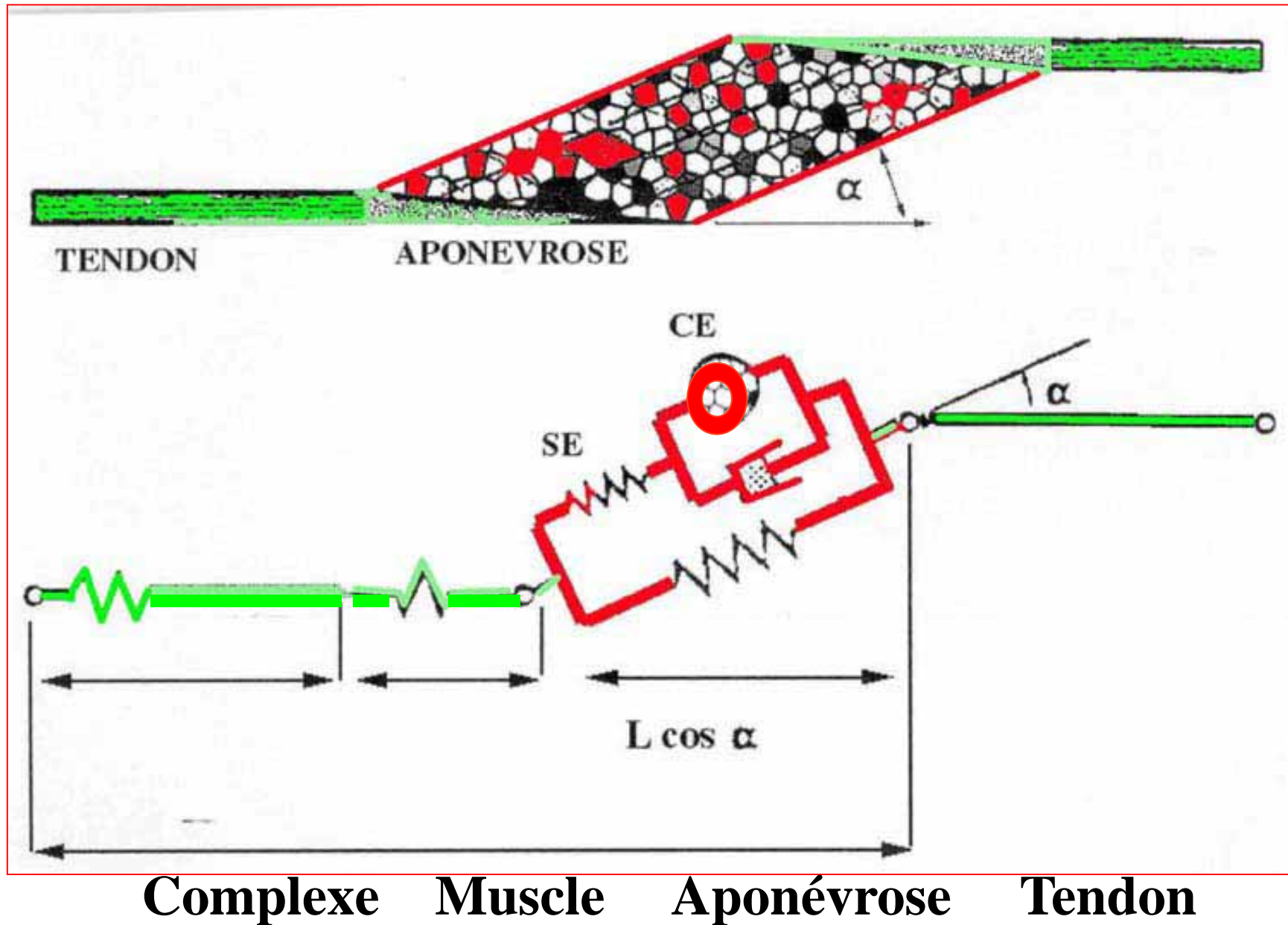


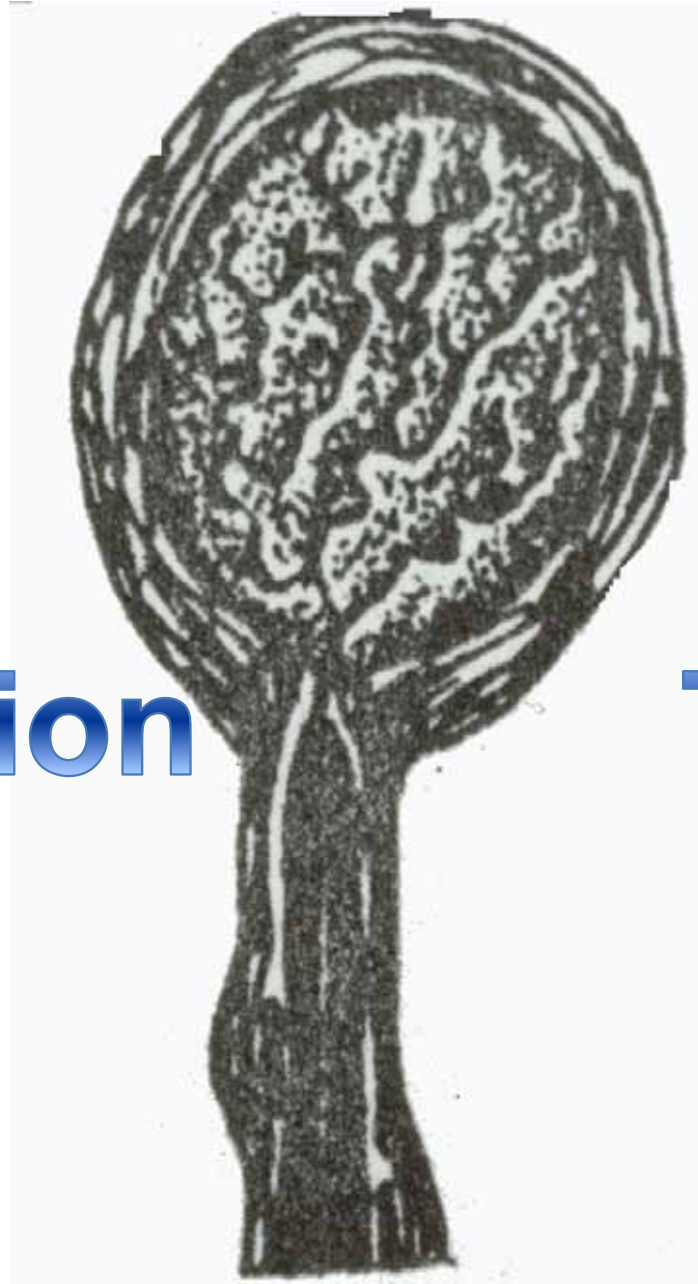
Complexe Muscle – Aponévrose - Tendon



Tendon

Modélisation : Zajac-Ettema - Huijing 1989

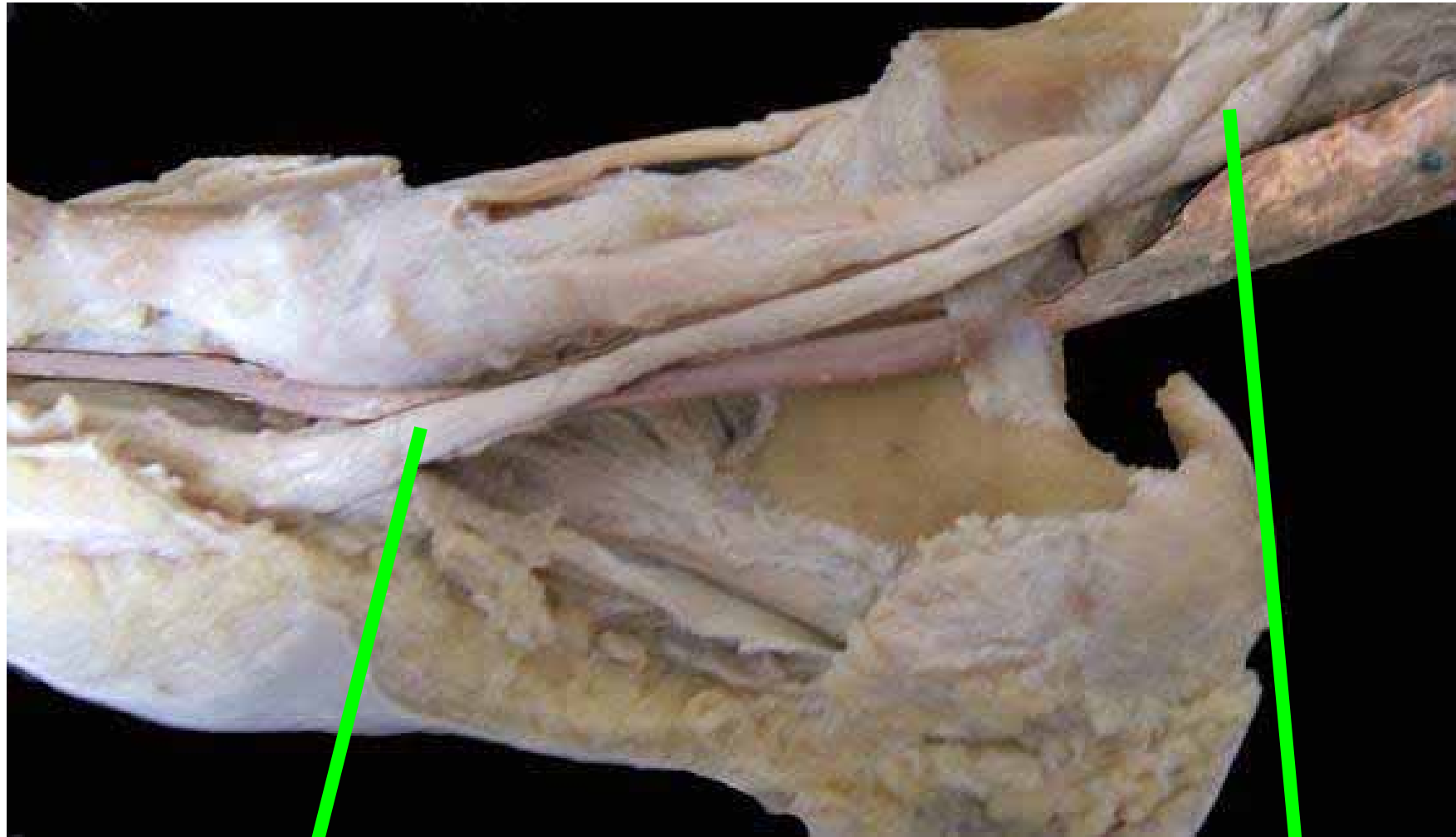




Régulation

TENSION

Corpuscule Neuro Tendineux de Golgi

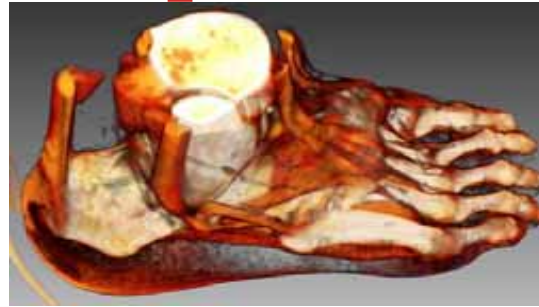


DOUBLE VERROUILLAGE DYNAMIQUE

Organisation Mécanique

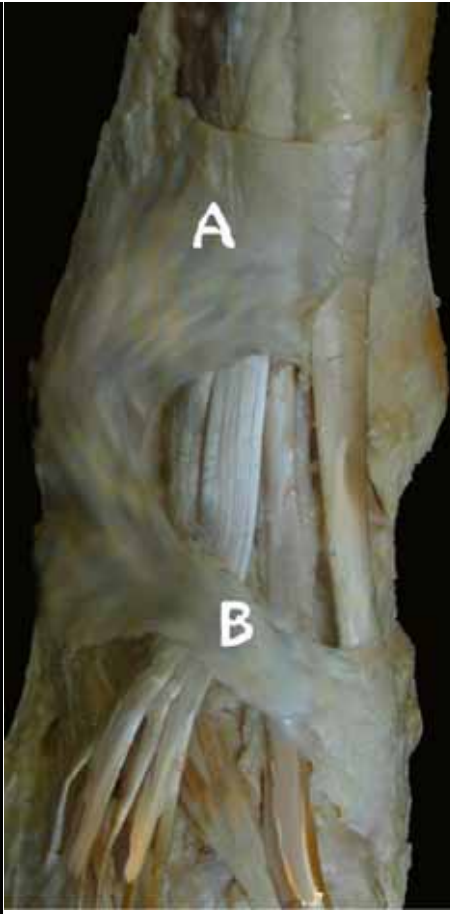
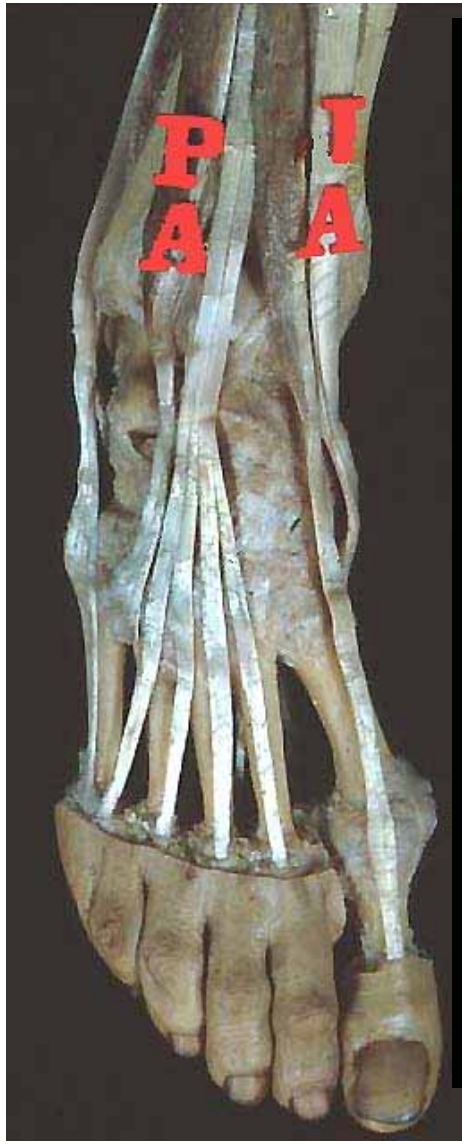
Fonctions du Complexe Muscle – Aponévrose - Tendon

Suspension



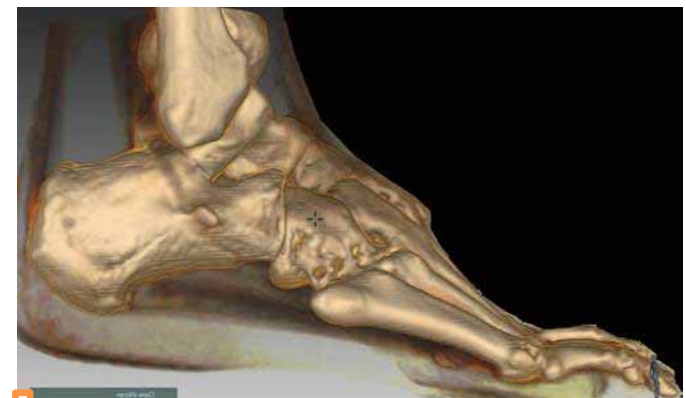
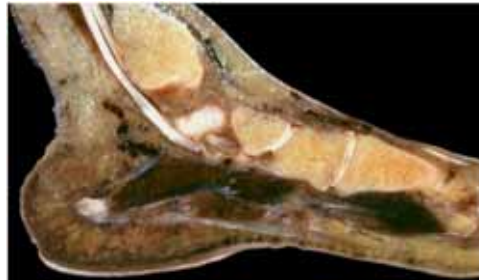
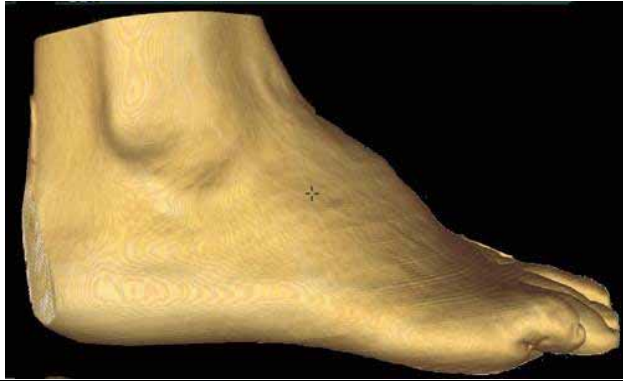
Soutènement

Rapports Topographiques



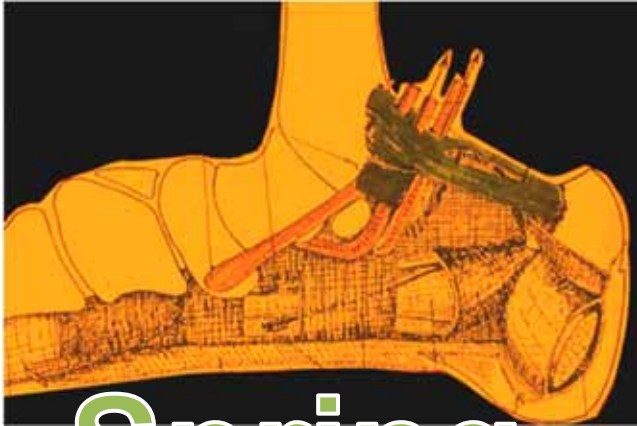
Face Dorsale

Rapports Topographiques

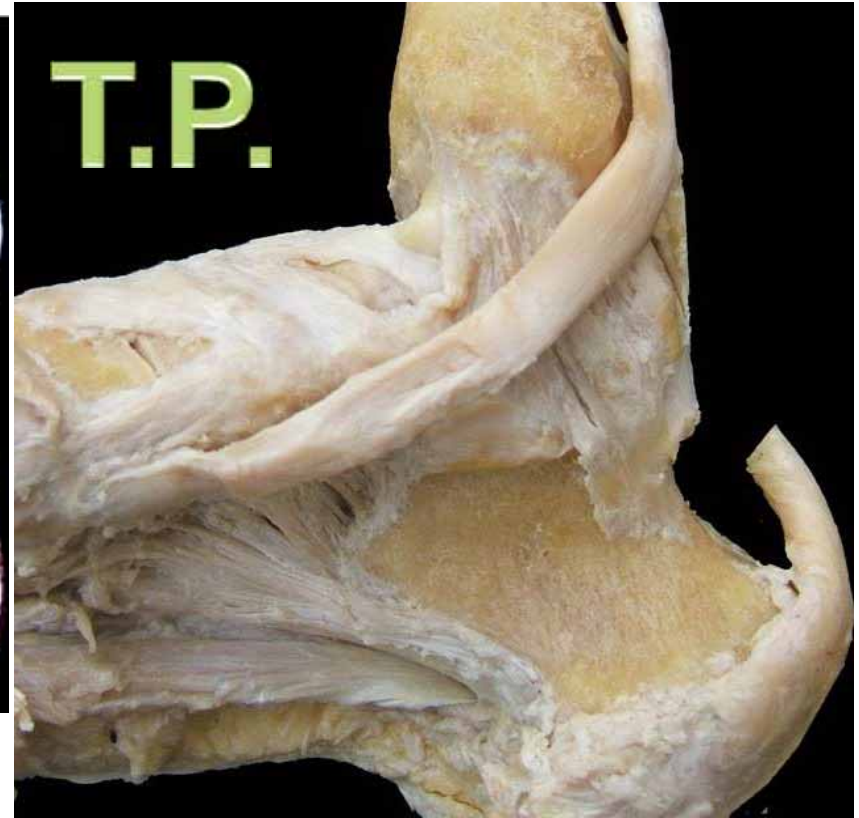
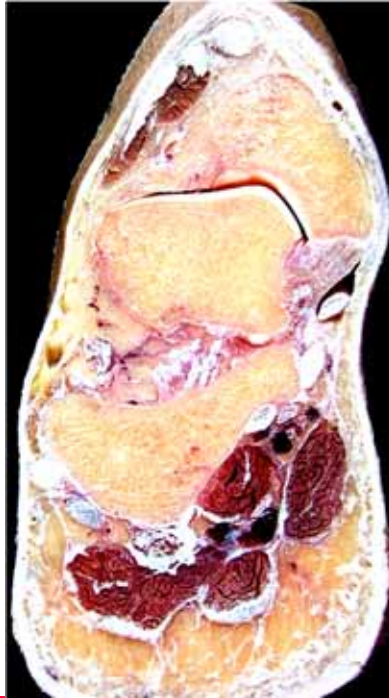


Face Latérale

Rapports Topographiques



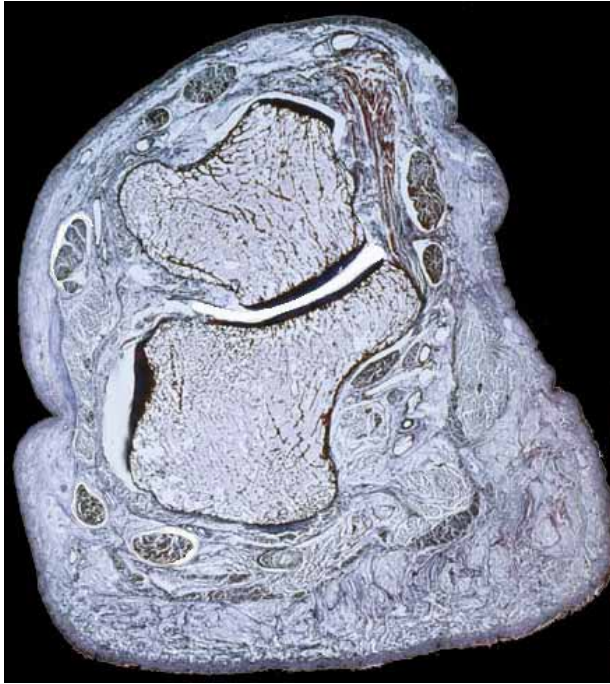
Spring
Ligament



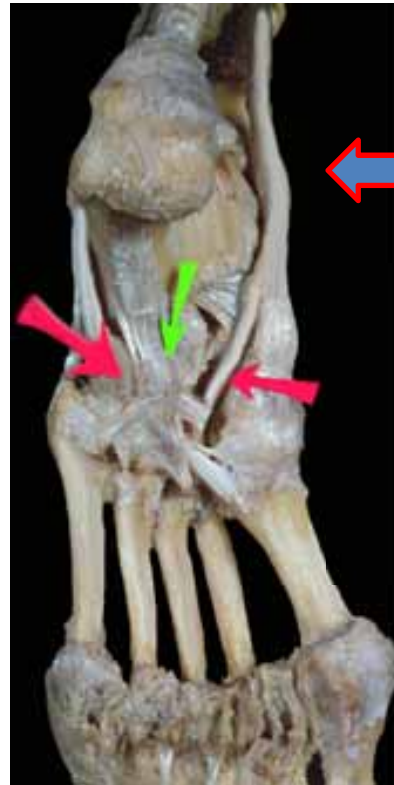
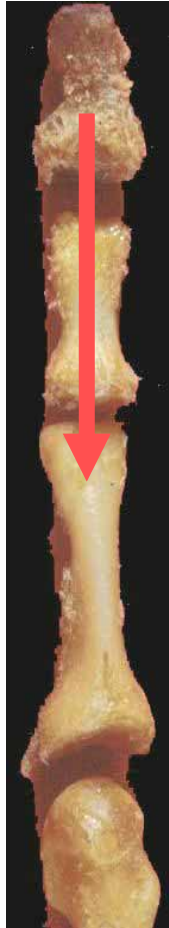
Articulation
Talo Naviculaire

Face Médiale

Rapports Topographiques

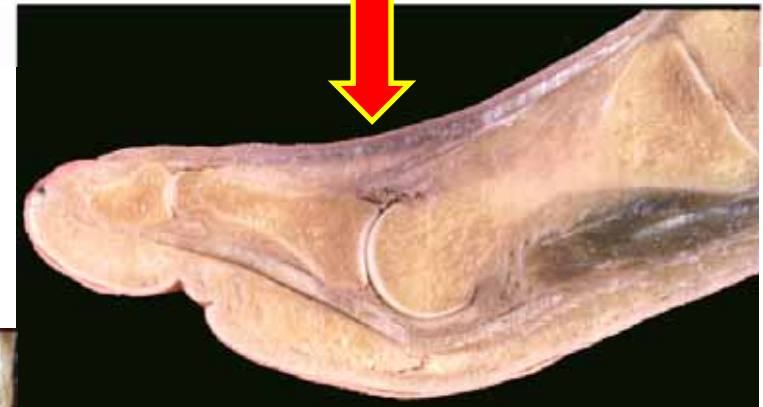


Rapports Topographiques



← **Médio-Pied**

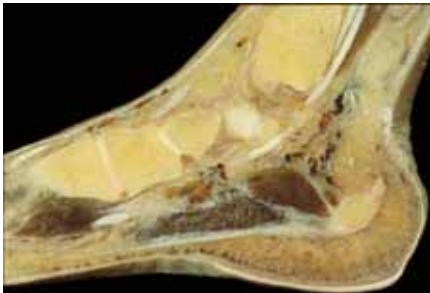
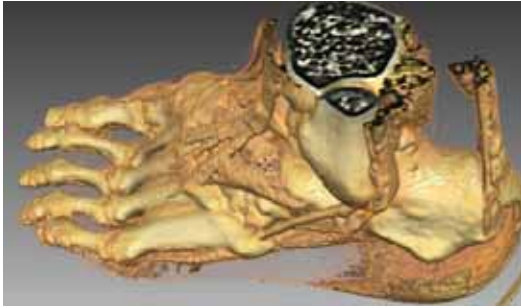
Avant-Pied



Face Plantaire



Rapports Topographiques



Face Postérieure



Triceps Sural

Tendon Calcanéen

Conclusions



Réflexion

Traction

**Tendinopathie Surcharge
MECANIQUE**

