

COFFIN BONE (P-3): You can see the “holes” that are a normal part of bone (PURPLE). But some of the feet have more holes than others; this is where we are comparing density. We are finding quite a range both across different feet, and also between different areas measured within one foot. We have been comparing toe, medial quarter, and lateral quarter samples of P3.

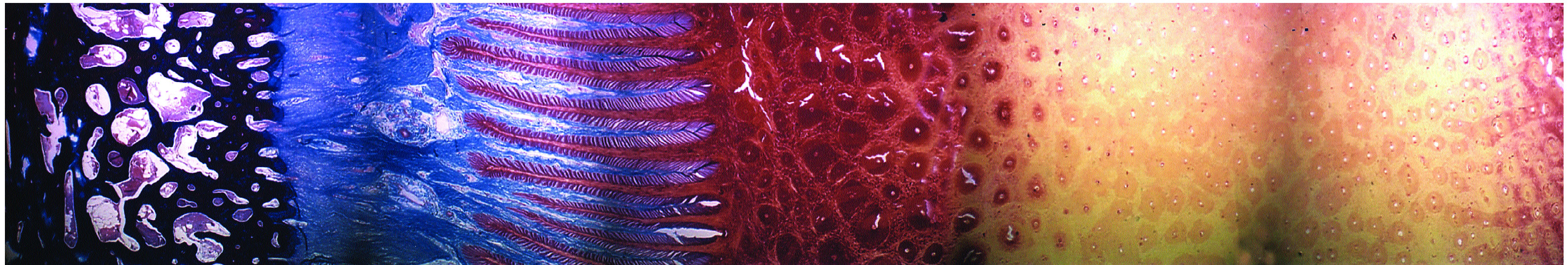
CORIUM OR DERMIS AND DERMAL LAMINAE: The outer layer of P3, covered with nerves and blood vessels, is full of collagen and stains BLUE. The finger-like outward projections are the dermal laminae. The reddish finger-like primary and secondary epidermal laminae are extending from the deeper hoof wall toward the bone from the stratum internum. In these intersecting laminar zones, the dermis (blue) (“sensitive”) and epidermal (red) (“insensitive”) laminae interdigitate.

STRATUM INTERNUM or EPIDERMAL LAMINAE: The deepest layer of epidermal hoof wall, which is unpigmented in the living foot, is stained here in RED. This is the epidermal (insensitive) layer of the laminar junction. Farriers see a continuation of this zone as the white line, where the stratum internum fills with horn. Notice the larger horn tubules migrating outward from the stratum internum. Look closely; you can see variations in pattern and density of the tubular architecture.

INNER STRATUM MEDIUM: The RED stain you see on the periople is also seen in the inner stratum medium. In the living foot this horn has no color. Farriers see this unpigmented zone on the solar surface just inside the pigmented hoof wall. Some of the cells of this region are fully cornified; others may only be partially cornified, i.e., they have yet to undergo the final (terminal) step in the cornification process. Evidence: Some of these cells appear to be metabolically active. Their material properties (elasticity) are distinct from that of fully cornified cells.

OUTER STRATUM MEDIUM: The YELLOW stain fills the part of the hoof wall that is pigmented (colored) in the living hoof. The stratum medium makes up most of the hoof wall and is divided into outer stratum medium and inner stratum medium. Most of these cells are cornified horn, but there are differences in the chemical makeup at different depths of hoof wall.

PERIOPLE (Stratum Externum): The RED stain shows up on the very outer layer. That is the periople, which lacks pigment in the live hoof. The different stains seen in lab specimen reflect biochemical differences and hydration gradient changes. The periople is soft horn and by the looks of this color, may be similar in softness to the inner hoof wall horn. +



THE EQUINE HOOOF WALL

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