

TATTOO (2013)/TATTOO 400X (2013)/TATTOO RED PIGMENT(2014)

Short explanation:

Tattoo pigment is visible under the microscope in the dermis, or the deep layer of the skin, and retains its color at high magnification.

Expanded commentary:

An old saying states that “every generation thinks it invented sex”; apparently, every generation also thinks it invented tattoos. In point of fact, the act of tattooing – or intentionally depositing dye in the deeper layers of the skin to create a permanent design – has been part of worldwide artistic and cultural expression for more than 5000 years. Tattoos have been noted on Iron Age bodies pulled from the ice of the Alps, ancient Peruvian mummies, and (more recently) British royalty. The social acceptability of tattoos has varied widely throughout history; although outlawed in the Old Testament, tattoos indicating religious devotion were popular among early Christians. Tattoos now openly memorialize loved ones, indicate group membership, mark time behind bars, or serve as landmarks for radiation treatments.

Under the microscope, tattoo pigment is found in the dermis, the deeper layer of the skin. Macrophages and histiocytes (two types of cells found in the skin) are unable to completely process and dispose of pigment granules. At high magnification, individual fragments of tattoo dye are visible, as are their color. Though initially distinct, the body’s attempt to rid itself of the pigment is ongoing and progressive, and some tattoos fade and blur with time. In particular, repeated bouts of sun exposure will lessen the sharpness and contrast of a tattoo.

A small fraction of the public regrets their choice of tattoo and laser removal is sometimes a solution. Removal works by a process called selective thermolysis – that is, pigment particles are heated, causing them to break into smaller pieces, which allows cells to engulf and clear them. Dyes comprised of smaller particles at the time of application are more difficult to fragment with heat and remove.

Death investigators largely use tattoos to determine an unknown decedent’s identity through comparison with pre-mortem photographs or descriptions from loved ones. Counterintuitively, tattoos are often more visible in slightly putrefied bodies. One of the first changes of decomposition is the loss of the outer layer of the skin, making old tattoos appear bright and sharp once again.