

**Facebook posting by Otangelo Grasso – January 16, 2026 - The Blood on the Shroud of Turin: Biochemical, Forensic, and Anatomical Evidence of Authenticity**

Among the many features of the Shroud of Turin, the bloodstains constitute one of the most compelling lines of evidence supporting its authenticity as a burial cloth rather than an artistic fabrication. Unlike the body image, whose formation mechanism remains unresolved, the blood on the Shroud behaves exactly as real human blood would under conditions of extreme trauma, crucifixion, and death. Its chemistry, optical properties, anatomical placement, and interaction with the linen form a coherent forensic dataset that resists explanations based on medieval artistry or later forgery.

Chemical analyses conducted by the Shroud of Turin Research Project (STURP) and subsequent investigators demonstrated that the red stains contain hemoglobin derivatives, porphyrins, and serum proteins consistent with real blood. No pigments, binders, or paint media were detected. Microscopic examination revealed that the blood resides on the outermost fibers of the linen and does not penetrate deeply, a pattern consistent with contact transfer from a wounded body rather than application with a brush or tool.

A particularly significant feature of the Shroud's bloodstains is their persistent red coloration. Under normal conditions, dried blood darkens over time, becoming brown or black as hemoglobin degrades. The Shroud's blood, however, retains a reddish hue even after centuries. Early discussions sometimes attributed this phenomenon primarily to methemoglobin, an oxidized form of hemoglobin produced under hypoxic and oxidative stress. While methemoglobin has indeed been identified spectroscopically on the Shroud, it does not adequately explain the color preservation on its own.

The most compelling explanation, articulated especially by chemist Alan Adler, involves abnormally elevated levels of bilirubin. Bilirubin is produced during the breakdown of heme following massive hemolysis. In cases of extreme physical trauma, such as severe scourging, shock, and prolonged hypoxia, red blood cells are destroyed at unusually high rates, leading to markedly elevated bilirubin concentrations in the blood. Clinical and forensic literature confirms that traumatic shock can raise bilirubin levels several times above normal physiological values.

When blood containing excessive bilirubin dries on linen, the bilirubin binds strongly to hemoglobin and alters its optical behavior, inhibiting the typical darkening process. This biochemical interaction provides a robust explanation for the Shroud's red bloodstains without invoking any artificial treatment or pigment. Importantly, such pathological blood chemistry would have been entirely unknown to medieval artists and cannot be plausibly replicated through artistic means.

Ultraviolet fluorescence imaging further reveals the presence of serum halos surrounding many of the bloodstains. These halos result from serum separation during clotting and subsequent rehydration, a phenomenon that occurs only with real blood. Paint, dyes, or simulated blood do not produce this effect. The serum halos also demonstrate that the blood clotted on the body before coming into contact with the cloth and was later partially rehydrated, consistent with burial practices involving washing or wrapping.

The anatomical accuracy of the bloodstain distribution reinforces the case for authenticity. Blood flows on the forearms follow gravity-dependent trajectories consistent with crucifixion biomechanics and vary in angle, indicating changes in body position while the individual was alive. Wrist wounds are located in the intercarpal space, the only anatomically viable site for supporting body weight, contradicting traditional artistic depictions that place nails in the palms. Scourge marks across the back, shoulders, and legs correspond precisely to injuries inflicted by a Roman flagrum, displaying the characteristic dumbbell-shaped patterns of its weighted tips.

The wound in the chest exhibits features of a postmortem injury, including the separation of blood and clear serum, consistent with a mixture of blood and pleural fluid. The direction and morphology of this flow align with a spear thrust delivered after death, matching known Roman execution practices and historical descriptions.

Critically, the bloodstains are not affected by the body image. They sit atop the image and show no signs of image-related discoloration, indicating that blood was deposited first and that the image-forming process occurred later. This strict sequence is difficult to reconcile with any artistic hypothesis, as it would require a forger to apply chemically and anatomically perfect bloodstains, allow them to clot and partially rehydrate, and only then produce an image without disturbing them.

From a forensic standpoint, the blood on the Shroud behaves as blood should behave. Its chemistry reflects extreme trauma and shock; its optical properties are consistent with pathological bilirubin enrichment; its anatomy and flow patterns conform to crucifixion physiology; and its interaction with the cloth matches contact transfer from a real human body. Any hypothesis of fabrication must account simultaneously for all these features, a challenge that no proposed forgery model has met.

In conclusion, while debates regarding the image formation continue, the blood on the Shroud of Turin stands as one of the strongest arguments for its authenticity. It records, with biochemical and anatomical precision, the suffering and death of a severely traumatized crucified individual, leaving a forensic signature that is consistent, coherent, and extraordinarily difficult to dismiss as artifice.