



# THE SHROUD OF TURIN

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## INTRODUCTION

The Shroud of Turin (also known as the Holy Shroud) is one of the most mysterious and potentially significant items in human possession. It has been featured on the cover of *US News and World Report* (March 1, 2002) and *Time* magazine (April 20, 1998). The June 1980 edition of *National Geographic* included a 24-page article with a four-page foldout of the Shroud. In the 1980s, the Shroud was briefly head-line news around the world, but the Shroud has received little media attention for the last three decades. That is now starting to change due to five recent papers on statistical analysis published in peer-reviewed journals. *Note: The term Shroud will be used to denote Shroud of Turin.*

The Shroud is an alleged ancient burial cloth that bears a faint image of the front and back of a naked, scourged, crucified man whom many believe is Jesus Christ. It is the most-studied artifact in human history, and it would be hard to disagree with this often-quoted statement:

*"The Shroud of Turin is either the most awesome and instructive relic of Jesus Christ in existence or it is one of the most ingenious, most unbelievably clever products of the human mind and hand on record. It is one or the other; there is no middle ground"*<sup>1</sup>

Because the image details on the Shroud are consistent with biblical and traditional depictions of Jesus of Nazareth after his death by Roman Crucifixion, the Shroud has been asserted for centuries as the actual burial Shroud of Jesus upon which His image was somehow miraculously imprinted. Currently, the Shroud is on display at the Turin Cathedral in Italy. There are four biblical gospel references to the Shroud as follows:

- *“And Joseph took the body and wrapped it in a clean linen cloth, and laid it in his own new tomb” – Matthew 27:59*
- *“And when Joseph had bought a linen cloth and took Him down, he wrapped Him in the linen cloth and laid Him in a tomb which had been hewn out in the rock” – Mark 15:46*
- *“And he took it down and wrapped it in a linen cloth, and laid Him in a tomb cut into the rock, where no one had ever lain” – Luke 23:53*
- *“So, they took the body of Jesus and bound it in linen wrappings with the spices, as is the burial custom of the Jews” – John 19:40*

Let's continue by considering the following seven facets of the Shroud to determine if it is the ancient burial cloth of Jesus Christ, or a clever and/or false replica that has misled numerous people for centuries:

- Shroud History
- Shroud Fabric
- Shroud Images
- Shroud Research
- Shroud Queries
- Shroud Findings
- Final Shroud Deductions

## **SHROUD HISTORY**

Unfortunately, there is a lack of definitive historical records before the 14<sup>th</sup> century (1300 AD) that can be linked to the Shroud that is currently displayed in Turin, Italy. The documented history begins in 1354, when it began to be exhibited in the New Collegiate Church of Lirey, a village in north-central France. The Shroud was denounced as a forgery by the Bishop of Troyes in 1389. It was acquired by the House of Savoy in 1453 and later authorized for worship as a true relic of Jesus by Pope Julius II in 1506. Later, the Shroud was deposited in a chapel in Chambery, where it was damaged by fire in 1532 causing some burn holes and scorched areas down both sides of the Shroud. This damage was caused by contact with molten silver during the fire that burned through it in places while it was folded. As a result, fourteen large triangular patches and eight smaller ones were sewn onto the cloth by Chambery nuns to repair the damage.

In 1578, the Savoy's moved the Shroud to their new capital in Turin, Italy, where it has remained ever since. Since 1683, it has been kept in the Chapel of the Holy Shroud which was specifically designed for that purpose and which is also connected to both the Royal Palace and the Turin Cathedral. Ownership of the Shroud passed from the House of Savoy to the Catholic Church in 1983. Another fire, possibly caused by arson, threatened the Shroud during April 1997 resulting in the Holy See (the central governing body of the Catholic Church, headed by the Pope) having the Shroud restored. During this restoration, the cloth backing and thirty patches were removed, making it possible to

photograph and scan the reverse side of the cloth, which had previously been hidden from view. A faint part-image of a body was found on the back side of the Shroud in 2004. On Holy Saturday (March 30, 2013), images of the Shroud were streamed on various websites as well as television resulting in Pope Francis issuing a carefully worded statement urging the faithful “to contemplate the Shroud with awe,” but stopping firmly short of asserting its authenticity.

Although there have been several restorations of the Shroud, preservation efforts to avoid further damage and contamination have consisted of keeping it under a laminated bulletproof glass in an airtight case. The temperature and humidity-controlled case is

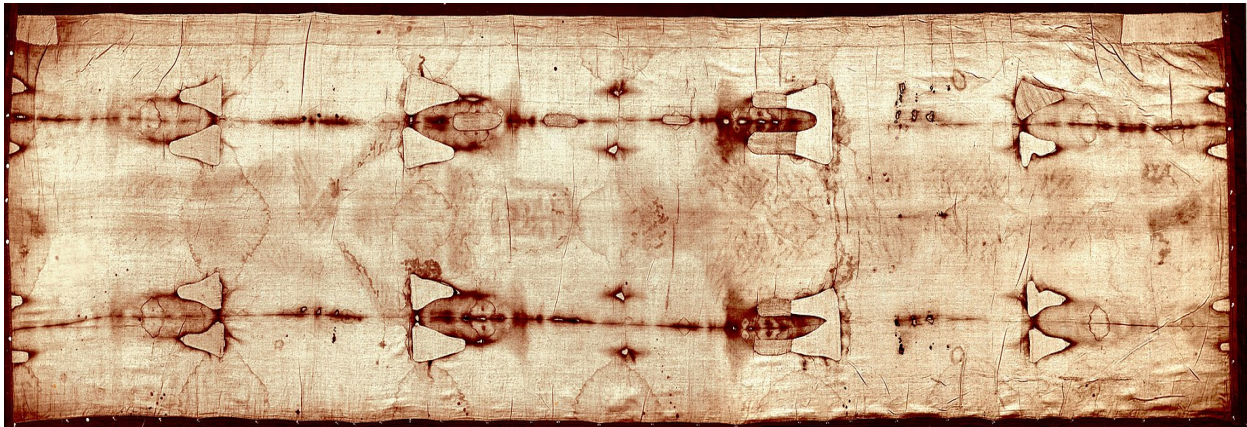


Figure 1. The Shroud of Turin

filled with argon at 99.5% and oxygen at 0.5% to prevent chemical changes. The Shroud itself is kept on an aluminum support sliding on runners and stored flat within the airtight case. The Shroud is currently housed at the Cathedral of St. John the Baptist in Turin, Italy, but is rarely available for the public to see due to its fragile condition. It has not been publicly displayed since 2015, and will not be publicly displayed in 2025.<sup>2</sup>

### SHROUD FABRIC

The Shroud is a rectangular linen cloth that is approximately 14-feet 5-inches x 3-feet 7-inches (Figure 1) and is woven from a herringbone twill composed of flax. Flax, is a flowering plant, scientifically named *Linum usitatissimum*, and is primarily cultivated for its seeds and fibers. The plant's fibers can be used to produce a linen that is a durable and breathable textile. The use of flax for linen dates back to ancient civilizations that extensively used flax to create linen cloth. As an example, flax linen was used as a durable and versatile clothing in the Neolithic period in Mesopotamia, was fundamental to the economy of ancient Egypt, and was particularly used for priestly and funerary garments as well as other uses for a strong textile. The durability of flax is well-known as its cellular structure inhibits moisture and microbes from penetrating the cellular fibers and a “herringbone weaving” method is found on the flax linen of the Shroud.<sup>3</sup> Intriguingly, Alexander the Great (356-323 BC) wore “*Linothorax Armour*” (a linen breastplate) which

is made from 15-20 layers of linen soaked in flaxseed oil and hardened through air oxidation.<sup>4</sup> This is recognized as the world's first composite.

As previously mentioned, the biblical account of a linen cloth being used to wrap the crucified dead body of Jesus is stated in the four Gospels of Matthew, Mark, Luke and John, but is repeated here in Mark as follows:

*“Joseph of Arimathea, a highly regarded member of the council, who was himself looking forward to the kingdom of God, went boldly to Pilate and asked for the body of Jesus. Pilate was surprised that he was already dead. He called the centurion and asked him if he had been dead for some time. When Pilate was informed by the centurion, he gave the body to Joseph. After Joseph bought a linen cloth and took down the body, he wrapped it in the linen and placed it in a tomb cut out of the rock” – Mark 15:43-46*

## SHROUD IMAGES

In 1898, an amateur Italian photographer, Secondo Pia, took the first photograph of the Shroud and discovered the image of the body was actually a negative on a clear positive (light and dark areas reversed). This conundrum made it possible to better see the image with the naked eye, and is still scientifically unexplained.

The images on the Shroud have been (and are) the subjects of extensive controversies in scientific investigations, scholarly and religious literature, and the media (both secular and religious). However, the most important image on the faint straw-colored flax cloth fibers of the Shroud can be assertively described as a man (alleged to be Jesus) with a beard, moustache, shoulder-length hair that is parted in the middle, muscular, and has been measured between 5-foot 7-inches to 6-feet in height. Moreover, of parallel importance is the fact that thirteen (13) characteristics related to Jesus's crucifixion are identified in the Gospel and Old Testament accounts and all thirteen characteristics are also depicted on the Shroud and accurately depicts the crucifixion of Jesus.

Let's compare the Shroud images with the Gospel accounts to determine if the Shroud accurately depicts Jesus's crucifixion. The following table enumerates the correspondence between the characteristics on the Shroud and the biblical accounts:<sup>5</sup>

<b><u>Reference</u></b>	<b><u>Description</u></b>	<b><u>Shroud Detail</u></b>
Matthew 27:30	Struck on Head with Reed	Swollen Cheek Head Abrasions
John 18:22	Struck on Head	Swollen Cheek Head Abrasions
Matthew 26:67-68 Luke 22:63, John 19:3	Struck in Face	Swollen Cheek

<b><u>Reference</u></b>	<b><u>Description</u></b>	<b><u>Shroud Detail</u></b>
Matthew 27:26 Mark 15:15 John 19:1 Psalm 22:17	Scourging with Metal-Tipped Whip (Roman Flagrum)	Body Lacerations Exposed Bones
Matthew 27:29 Mark 15:17 John 19:2	Crown of Thorns	Puncture Wounds Forehead & Scalp
John 19:16-17	Carrying Crossbeam on Shoulders	Abrasions & Blood on Back of Shoulders
Matthew 27:32 Luke 23:26, Mark 15:21	Likely Fell on Knees Unable to Carry Cross	Bloody Kneecaps
John 19:31-33	Leg Bones Not Broken	No Leg Fractures
Matthew 27:35 John 19:18 Mark 15:24 Luke 23:23	Crucifixion	Nail Piercings on Wrists and Ankles
Psalm 22:14	Dislocated Arms Due To Hanging	Abnormal Arm Length Extension
John 19:34	Side Pierced w/Sword	Blood/Water Near Pleura
Matthew 27:59 John 19:40	Enshrouded in Linen Cloth	Complete Front/Back Images
Luke 24:1	Body Not Embalmed	Image Not Obscured or Blurred

As a brief summary/review, all of the injuries that were incurred by Jesus and detailed in the biblical accounts – as outlined in the previous graph – are depicted on the Shroud and indicates that there is a complete consistency between the Gospel accounts and the images on the Shroud. The graphic on Figure 2 (page 6) graphically illustrates the characteristics on the Shroud and the biblical accounts.



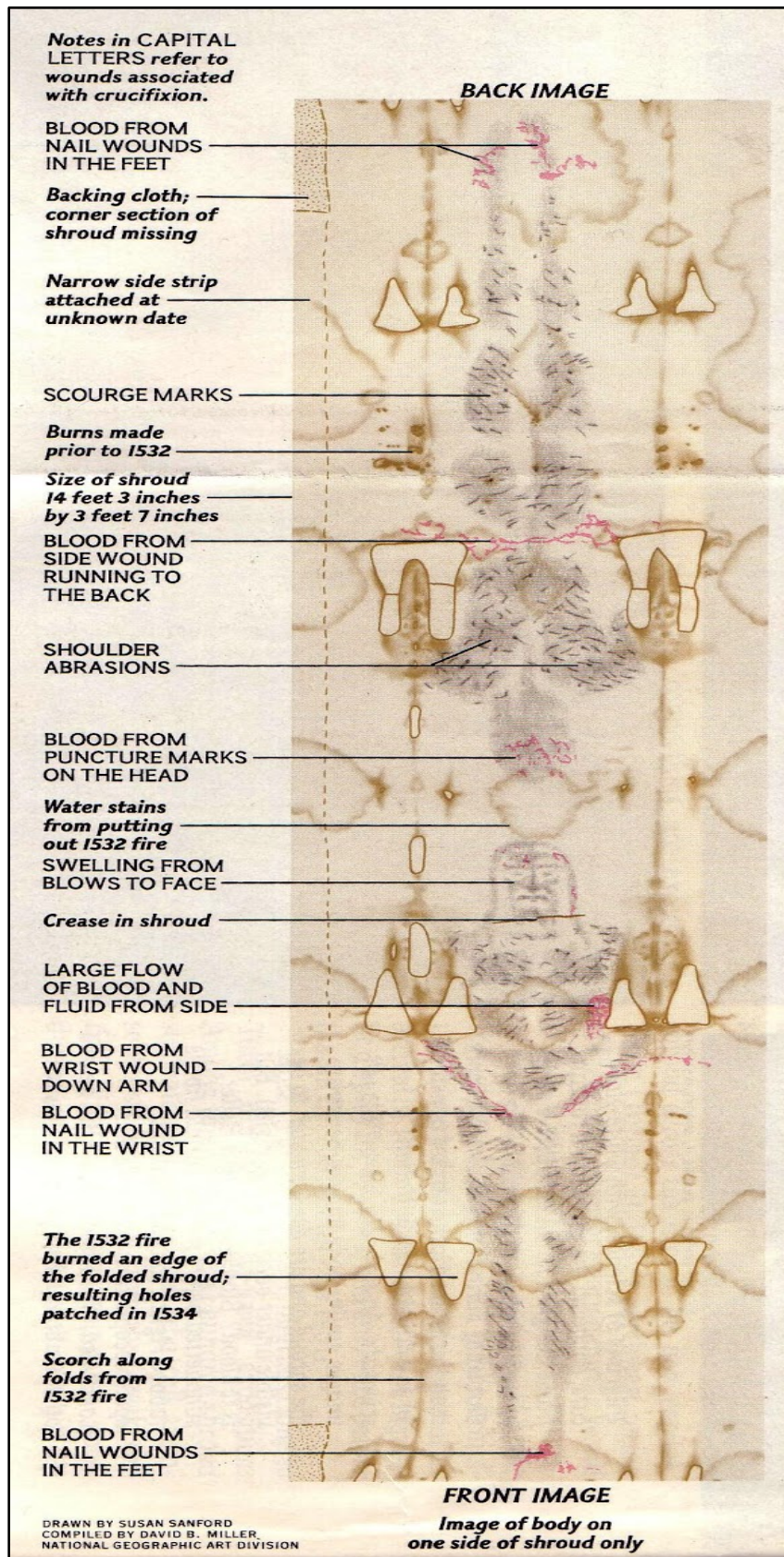


Figure 2. Shroud of Turin

## SHROUD RESEARCH

Before we consider the queries and supportive findings related to the Shroud, let's first overview the historic research and scientific testing and conclusions. Scientific testing of the Shroud began in 1898 when the first photograph of the Shroud was taken and revealed that the image on the Shroud was a good resolution negative image, with light and dark areas reversed. This discovery began the steps toward an opportunity for a comprehensive scientific examination of the Shroud in 1978 by the Vatican approved Shroud of Turin Research Project (STURP) that consisted of 26 American scientists. An overview of the testing history of the Shroud can be summarized in five time periods as follows:

- 1898 to 1977 – The images were deemed to be formed by a crucified man who was wrapped in the Shroud and primarily indicated by the nature of the blood on the Shroud
- 1978 to 1987 – Extensive experiments by the Shroud of Turin Research Project (STURP) team and was able to perform nondestructive experiments on the Shroud and indicated the image is not due to dyes, chemicals, paint, scorch, vapors, liquid, or photography. The methodology for image formation on the Shroud could not be determined. Testing included:<sup>6</sup>
  - Light and electron microscopy
  - Photography using various wavelengths
  - UV spectrophotometry of fluorescence
  - X-ray fluorescence and absorption radiography
  - Thermal photography
  - Mass spectrography
  - Laser-microprobe Raman spectroscopy
  - Attempts to alter color on fibers using acids, bases, oxidants, reductants, and organic chemicals
  - Testing for presence of protein in images
- 1988 to 2016 – The Shroud was carbon 14 (<sup>14</sup>C) dated in 1988 in laboratories in Oxford, Zurich and Arizona and dated to between 1260 AD and 1390 AD. These dates implied that it was a Medieval artifact, not the actual burial cloth of Christ
- 2017 to 2021 – 1988 measurement data released for review in 2017 indicated the 1988 <sup>14</sup>C alleged dates should be rejected because they may or may not be true
- 2024 – Due to alleged previous inaccurate <sup>14</sup>C dating, Italy's Institute of Crystallography used the new technology of Wide-Angle X-ray Scattering (WAXS), which showed that the fabric of the Shroud is a good match for a similar sample confirmed to have come from the Siege of Masada, Israel in 55-74 AD<sup>7</sup>

## SHROUD QUERIES

An important facet of the Shroud is whether it could be the authentic burial cloth of Jesus Christ and how the images have been encoded onto the cloth as there is no known example of a human body, dead or alive, producing an image of itself on a piece of cloth, except for the Shroud. In our current understanding of physics, chemistry, and photography, there is no mechanism or process that is capable of this scenario. Regardless of the continuing controversy of the authenticity of the Shroud, there is no shortage of hypotheses regarding its legitimacy. As an example, some suggest that the image on the linen cloth came about through natural processes; some claim the possibility of medieval forgers of ancient relics; and of course, others stand on the results of a past  $^{14}\text{C}$  test that alleged the Shroud was not approximately 2,000 years old. With these thoughts in mind, let's look at some of the Shroud suppositions (in no particular order) that rightfully challenge the authenticity of the Shroud:<sup>8, 9, 10</sup>

### $^{14}\text{C}$ DATING

Although there are multiple doubt perspectives on the authenticity of the Shroud, the  $^{14}\text{C}$  dating is the most popular and relevant to its legitimacy. As previously mentioned, in 1988 the Shroud was allegedly  $^{14}\text{C}$  dated to between 1260 AD and 1390 AD which indicated that it was a Medieval artifact within a 95% probability, and not the actual burial cloth of Christ. However, conclusions from STURP and the Los Alamos National Laboratory concluded that there is overwhelming evidence that the sample used for the 1988  $^{14}\text{C}$  dating of the Shroud was anomalous and did not represent the main body of the Shroud cloth. The Shroud cloth was linen but the  $^{14}\text{C}$  dated area was cotton that had been colored to match the rest of the Shroud. The dated cloth sample was also a rewoven area of the Shroud that had been repaired using a medieval process known as "*French invisible reweaving*." These conclusions were published in the highly respected, peer-reviewed journals *Thermochimica Acta* and *Chemistry Today*. Interestingly, the Catholic Church still takes no official position on the authenticity of the Shroud, stating only that it is a matter for scientific investigation. This perspective was based on early  $^{14}\text{C}$  dating in 1988 that asserted the Shroud was approximately 700 years old, instead of 2,000 years old.

### IT'S A PAINTING

If the Shroud was some type of ancient painting, it should be possible to identify the pigments used by chemical analysis, just as is done for the paintings of Old Masters. The STURP team found no evidence of any pigments or dyes on the linen cloth in sufficient amounts to explain the image. Additionally, there is also a lack of any signs of the image being rendered in brush strokes. The faint coloration of the flax fibers is not caused by any darker substance being laid on top or infused into them as it's the very material of the fibers themselves that has darkened. In contrast to most dyeing or painting methods, the coloring of the fibers cannot be dissolved, bleached or altered by most standard chemical agents. There are also genuine human bloodstains on the cloth that has been



identified by spectrographic and chemical analysis. The results were published in the peer-reviewed scientific journal *Applied Optics*. Additionally, it has been determined that the blood group is AB along with traces of human DNA (although it is badly damaged). Interestingly, human blood typically turns brown or black over time, it does not remain red such as the red color on the Shroud.

### **IT'S A PHOTOGRAPH**

In 1975, John Jackson, professor of physics at the U.S. Air Force Academy discovered that the images on the Shroud contained 3D information (which led to the formation of the Shroud of Turin Research Project). However, this discovery eliminates the allegation that an ancient painting/artist is responsible for the Shroud images because it is known that the images are not the result of a photographic process as photographs (and paintings) do not contain 3D information.

### **MADE BY NATURAL CHEMICAL PROCESS**

Although there are various perspectives on this allegation, two possibilities are often suggested as a possible cause. First, Raymond Rogers of the Los Alamos National Laboratory in New Mexico, argued in 2002 that a simple chemical transformation incorporating a brief moderate heat of 104-F (from a dead body that died from hyperthermia or dehydration) could be responsible for the Shroud images. However, there is little evidence for this particular circumstance. Secondly, in the early 1900's it was proposed that the discoloration on the Shroud fibers was caused by a chemical reaction with some substance, such as ammonia, produced by the breakdown of urea in sweat. This is not a viable solution as the image would be too blurry.

### **IT'S A SCORCH**

A scorch is caused by a hot object emitting a fluoresce (emit light in the visible range) when exposed to ultraviolet light. When the Shroud was exposed to an ultraviolet light, the scorches caused by the fire in 1532 did fluoresce, but the images did not. This indicated that the images on the Shroud were not formed by contact of a hot object with the cloth.

## **SHROUD FINDINGS**

When considering the authenticity of the Shroud, it is important to remember that the Catholic Church takes no official position on the authenticity of the Shroud, even though they have been responsible for its custody and care since 1983, stating only that "*it is a matter for scientific investigation.*"<sup>11</sup> Additionally, since a radiocarbon (<sup>14</sup>C) dating test in 1988 that alleged that the Shroud was about 700 years old and well outside the anticipated age of about 33 AD, the Catholic church has avoided claiming that it is anything more than an "*icon*" of Christian devotion.<sup>12</sup>

However, regardless of the past alleged speculation, history, mysteries and purported scientific tests on the Shroud, there have been two scientific investigations that summarize relevant Shroud conclusions and are reprinted as follows:

**In 1978, the Shroud of Turin Research Project (STURP) performed the only in-depth scientific examination of the artifact in question. Scientists from twenty different prestigious organizations – including Lockheed Corporation, Los Alamos National Scientific Laboratories, IBM, and the U.S. Air Force Academy—studied the Shroud for five days, using the world’s most advanced scientific equipment and instruments. The members of the STURP were chosen solely for their scientific skills. Subsequently it was determined that the group consisted of atheists, agnostics, Jews, and Christians.**

**SHROUD CONCLUSIONS FROM THE STURP 1981 REPORT:** <sup>13</sup>

- No pigments, paints, dyes, or stains have been found on the fibrils of the Shroud linen. X-ray, fluorescence, and microchemistry on the fibrils preclude the possibility of paint being used for creating the image. Ultraviolet and infrared evaluation confirm these studies
- Computer image enhancement and analysis by a VP-8 image analyzer show that the image has unique, three-dimensional information encoded throughout both the front and back sides. It’s now known to be the only such object in existence
- Micro-chemical evaluation has indicated no evidence of any spices, oils, or any biochemicals known to be produced by the body in life or in death
- It is clear the Shroud had direct contact with a human body, which explains certain features such as scourge marks and bloodstains
- Experiments in physics and chemistry with old linen have failed to reproduce adequately the phenomenon presented by the Shroud
- No physical, chemical, medical, or biological methods can adequately explain the image
- How or what produced the image continues to be a mystery. We can conclude for now that the Shroud image is that of a real human form of a scourged, crucified man
- It is not the product of an artist. The blood stains are composed of hemoglobin and also give a positive test for serum albumin. The image is an ongoing mystery and until further chemical studies are made, perhaps by this group of scientists, or perhaps by some scientists in the future, the problem remains unsolved
- The three-dimensional information encoded throughout the front and back sides shows that the body was in a state of rigor mortis when the image was created. That establishes forensically that the image was created on the cloth within the first forty-eight hours after death, since the body is known to relax from rigor mortis by that time
- Of note, STURP’S data was published in twenty-four different papers, most of which appeared in highly respected peer-reviewed scientific journals

**Frederick T. Zugibe, M.D., PhD.**

**Respected Worldwide Forensic Pathologist/Crucifixion Expert**

**SHROUD CONCLUSIONS:**<sup>14</sup>

- The features and bloodstains on the Shroud are natural, forensically accurate, and indicate direct contact with a human body
- The image was definitely not applied by an artist's hand
- Severe anxiety (such as Christ suffered in the Garden of Gethsemane) caused hematomas (sweat became blood)
- The scourging was particularly brutal
- The crown of thorns was in the shape of a cap, not a circlet. It caused trigeminal neuralgia, *"the worst pain that man is heir to."* It is devastating and unbearable
- The Shroud reflects blows to the man's forehead, brow, right upper lip, jaw, and nose
- Shoulder abrasions are consistent with injuries sustained while carrying the cross-piece of the cross. There is little doubt that Jesus stumbled to the ground numerous times before arriving at Calvary
- The nailing caused caustic pain, an agonizing pain like lightning bolts traversing the arms and legs
- Cause of death: Cardiac and respiratory arrest due to hypovolemic and traumatic shock due to crucifixion
- Travertine aragonite dust taken from the foot area of the Shroud was a strong match to samples taken from Jerusalem

**FINAL SHROUD DEDUCTIONS**

With all of the previous Shroud information, both positive and negative that we used to develop a basic foundation for this discussion, this leads to a basic question of *"Is the Shroud really the authentic burial cloth of Jesus Christ?"* Although we have discussed the popular Shroud queries, there is still an absence of irrefutable evidence – or even a strong hypothesis – of how the Shroud could have been some type of forgery, including the alleged 1988 <sup>14</sup>C dating results. Dr. Liberato de Caro from Italy's Institute of Crystallography has stated that prior to his study with the new Wide-Angle X-ray Scattering (WAXS), *"the only missing piece of the puzzle was dating"* since everything on the Shroud is *"highly correlated to what the Gospels tells us about Jesus Christ and His death: crown of thorn marks on the head, whip lacerations on the back and bruises on the shoulders from carrying a heavy cross."*<sup>15</sup>

From a practical perspective, it is a substantial challenge to accept the premise that a 2,000-year-old linen burial cloth that is purported to be associated with the crucifixion and death of Jesus Christ is *the* linen cloth that Joseph bought, wrapped Jesus in and laid Him in a tomb (Mark 15:46), is an immense challenge. However, the most substantial *scientific* answer to the validity of the Shroud is from the 1978 STURP project that

consisted of 33 scientists (26 were American) that analyzed the cloth for five continuous days, working in shifts around the clock, studying the results for three years, and then issuing the following quote that was agreed upon by all participating scientists:<sup>16</sup>

*"We can conclude for now that the Shroud image is that of a real human form of a scourged, crucified man. It is not the product of an artist. The blood stains are composed of hemoglobin and give a positive test for serum albumin."*  
1978 Shroud of Turin Research Project

Is the Shroud really authentic? A *practical* answer based on our previous discussion is **a qualified yes** that is based on the fact that there is enough scientific evidence that believing in its authenticity does not require the suspension of all critical thought to do so. Consider the following considerations:

- There is a reasonable case for its authenticity
- There is an accurate duplication between the Gospel accounts and what is seen on the Shroud
- There is an absence of irrefutable evidence (or even a strong hypothesis) of how the Shroud could have been some type of a forgery
- How this image came to be remains unknown and unexplained except that it is inconsistent with any form of clever painting or other credible inauthenticity

However, whether the Shroud is real or not, the real question is; *"What is the best explanation for your purpose in life"* as each person should be concerned with their future destiny and specifically, where you will spend eternity. The Bible clearly says; *"All have sinned and come short of the Glory of God, Romans 3:23,"* and those without a personal acceptance of God will spend eternity in a lake of fire (Revelation 20:15). Nevertheless, God has provided an alternate choice, and that choice is a free gift that only needs to be accepted by you; *"For God so loved the world, that He gave his only begotten Son, that whosoever believeth in Him should not perish, but have everlasting life," John 3:16,"* and; *"For whosoever shall call upon the name of the LORD shall be saved, Romans 10:13."* This is God's message to you, so have you accepted his free gift of eternal life? The Shroud is either a byproduct or a representation of that all important event of Jesus Christ giving His life to save all of mankind. Either way, the message of forgiveness of sins and resurrection unto eternal life remains unchanged.

## ADDENDUM

Although the previous discussion focused on the Shroud, the preparation for this discussion quickly indicated that there is much more history and accompanying facets that are directly linked to the Shroud and its past from the perspective of the cloth's in the tomb that covered His body and the actual crucifixion that was responsible for the death of Jesus. So, as an explanatory sidebar to the Shroud and its history, let's briefly consider two additional items of Shroud interest.

### SUDARIUM OVIEDO<sup>17</sup>

According to the Gospel of John, there were actually two separate cloth's that were used to cover the dead body of Jesus in the tomb, and is specifically mentioned as follows:

*“And so Simon Peter also came following him, and entered the tomb; and he saw the linen wrappings lying there, and the face-cloth which had been on His head, not lying with the linen wrappings, but folded up in a place by itself  
John 20:6-7*

The face-cloth that is mentioned in John 20:6-7 that is clearly associated with the Shroud and crucifixion of Jesus Christ, is known as the Sudarium Oviedo (or Shroud of Oviedo), and is the face-cloth that is believed to have been placed on Jesus's head after His crucifixion. It is a bloodstained piece of cloth measuring 33 x 21-inches (Figure 3) and kept in the Camara Santa of the Cathedral of San Salvador, Oviedo, Spain. It continues to be a subject of interest in the context of the Shroud of Turin as forensic and scientific evidence suggests the Sudarium and the Shroud may have covered the same face (Jesus). There is no image on this cloth. Only stains are visible to the naked eye, as illustrated in



Figure 3. Sudarium Oviedo

Figure 3, although more is visible under the microscope. The remarkable thing about this cloth is that both tradition and scientific studies claim that the cloth was used to cover and clean the face of Jesus after the crucifixion.



The history of the Sudarium is well documented, and more straightforward than that of the Shroud. Most of the information comes from the twelfth century bishop of Oviedo, whose historical works are the Book of the Testaments of Oviedo, and the Chronicon Regum Legionensium. According to this history, the Sudarium was in Palestine until shortly before the year 614 when it was taken away to avoid destruction in the invasion, then across the north of Africa when Chosroes conquered Alexandria in 616. The Sudarium eventually entered Seville, Spain, where it spent some years. It then left Seville in a chest and stayed in Toledo, Spain until 718. Then, it was moved to a cave in Oviedo, northern Spain, until 718. It was then taken further north to avoid destruction from the Muslims and was kept in a cave near Oviedo where King Alfonso II had a special chapel built for the chest, called the "*Cámara Santa*", later incorporated into the cathedral. The key date in the history of the Sudarium is March 1075, when the chest was officially opened in the presence of King Alfonso VI. A list was made of the relics that were in the chest, and included the Sudarium. In the year 1113, the chest was covered with silver plating, on which there is an inscription inviting all Christians to venerate this relic which contains the holy blood. The Sudarium has been kept in the Cathedral at Oviedo ever since.

The Sudarium alone has revealed sufficient information to suggest that it was in contact with the face of Jesus after the crucifixion. However, the really fascinating evidence comes to light when this cloth is compared to the Shroud. Since the Shroud and the Sudarium share noteworthy historical and biblical similarities, let's overview their parallels in no particular order:<sup>18</sup>

- The first and most obvious coincidence is that the blood on both cloths belongs to the same group, namely AB
- The length of the nose through which the pleural oedema fluid came onto the Sudarium has been calculated at just over three inches. This is exactly the same length as the nose on the image of the Shroud
- If the face of the image on the Shroud is placed over the stains on the Sudarium, it is an exact fit over the stains with the beard on the face. As the Sudarium was used to clean the man's face, it appears that it was simply placed on the face to absorb all the blood, but not used in any kind of wiping movement
- A small stain is also visible proceeding from the right-hand side of the man's mouth. This stain is hardly visible on the Shroud, but using the VP-8 and photo enhancements has confirmed its presence
- The thorn wounds on the nape of the neck also coincide perfectly with the bloodstains on the Shroud
- When a Polarized Image Overlay Technique was used to compare the Sudarium to the image and bloodstains on the Shroud, the frontal stains on the Sudarium show seventy points of coincidence with the Shroud, and the rear side shows fifty

- The only possible conclusion from the Overlay Technique is that the Oviedo Sudarium covered the same face as the Turin Shroud
- The Sudarium has no image, and none of the facial stains of dried or drying blood that are visible on the Shroud, especially the stain on the forehead in the shape of an inverted three. The stains on the Sudarium were made by a less viscous mixture
- This, together with the fact that the fingers which held the Sudarium to Jesus nose have left their mark, point to a short temporal use of the cloth and eliminate the possibility of its contact with the body after burial
- Jewish tradition demands that if the face of a dead person was in any way disfigured, it should be covered with a cloth to avoid people seeing this unpleasant sight. This would certainly have been the case with Jesus, whose face was covered in blood from the injuries produced by the crown of thorns and swollen from falling and being struck
- It seems that the Sudarium was first used before the dead body was taken down from the cross and then discarded when it was buried
- This fits in with John's Gospel, which tells us that the Sudarium was rolled up in a place by itself
- Both cloths have blood and serum stains, with the Sudarium also bearing blood type AB
- Studies of pollen on the Sudarium revealed it originated from Jerusalem and other regions, aligning with the Shroud's pollen profile
- It's theorized the Sudarium held the hair in place on the Shroud, explaining the hair's position despite the body's position
- Scientists have concluded that the combined evidence makes it highly probable that both cloths covered the same face
- Scientific studies on the Sudarium and the comparison of this cloth with the Shroud are just one of the many branches of science which point to both having covered the dead body of Jesus

## CRUCIFIXION

Although the crucifixion of Jesus on a Roman cross is a well-known event, the events (and their impact on the human body) leading up to the actual crucifixion are not as well known. In fact, the typical portrayal is Jesus hanging on a cross, a lowered head with a small crown of thorns, and very little (if any) wounds/blood on His body as illustrated in Figure 4. Not surprisingly, this depiction tends to simplify one of – if not – the most brutal and agonizing deaths invented by mankind. Even the box-office hit movie, *The Passion of the Christ*, by producer Mel Gibson, suffered from many major inaccuracies and failed to accurately depict Jesus's crucifixion on a Roman cross.

To more accurately detail the medical aspects of the crucifixion of Jesus, a Forensic Inquiry will be summarized and is taken from the excellent book *The Crucifixion of Jesus*,



Figure 4. Depiction of Jesus on Cross

*a Forensic Inquiry*, by Frederick T. Zugibe, M.D., Ph.D.,<sup>19</sup> a renowned Chief Medical Examiner and Forensic Pathologist who has also studied and applied his medical skills to the crucifixion of Jesus for over 53 years. Let's consider the following five specific areas:

- Gethsemane
- Roman Flagellatio
- Crown of Thorns
- Road to Calvary
- Crucifixion

### **Gethsemane**

It is important to realize that the full impact of Jesus's agony in the Garden of Gethsemane is not generally recognized among Christians. Its significance centers on the realization that Jesus not only endured severe physical suffering during the Way of the Cross, but that He also suffered severe mental anguish that drained and reduced His physical strength to the point of total exhaustion in Gethsemane. As an example, Mark 14:34 states that Jesus declared; *"My soul is exceedingly sorrowful unto death."* This indicates that Jesus

was able to envision the entire scope of His suffering and death to come. As a result, Jesus suffered severe mental anxiety due to a profound fear of His prophetic sufferings. This lasted for hours, resulting in a state of total exhaustion, only to end abruptly with a severe counterreaction after the angel ministered to Him (Luke 22:43) as He accepted His fate, causing a severe dilation and rupture of the blood vessels into the sweat glands, hemorrhaging into the ducts of the sweat glands and the subsequent expulsion of blood onto the skin (Luke 22:44), which is called *hematidrosis*.

During this first phase of the journey to the cross, the *hematidrosis* illustrates the severity of Jesus mental suffering when contemplating His future pain and suffering. The resulting effects are weakness, depression, mild to moderate dehydration, and mild hypovolemia (low blood and fluid volume) due to sweat and blood loss, all of which would have greatly weakened Jesus prior to His crucifixion.

### **Roman Flagellatio**

Following the agony in the Garden of Gethsemane, Jesus was led across the Kidron Valley to the home of Caiaphas, the High Priest where He was interrogated and then beaten by the men holding Him. The fatigued and humiliated Jesus was then brought before the Sanhedrin, the highest religious body of the land where they quickly condemned Jesus to death for blasphemy. Jesus was then taken to Pilate. Finding no fault in Jesus, Pilate sent Jesus to Herod who then returned Jesus back to Pilate. At this point, Pilate still found no fault in Jesus, but hoping to appease the Chief Priests and rulers of the Jewish people, had Jesus scourged.

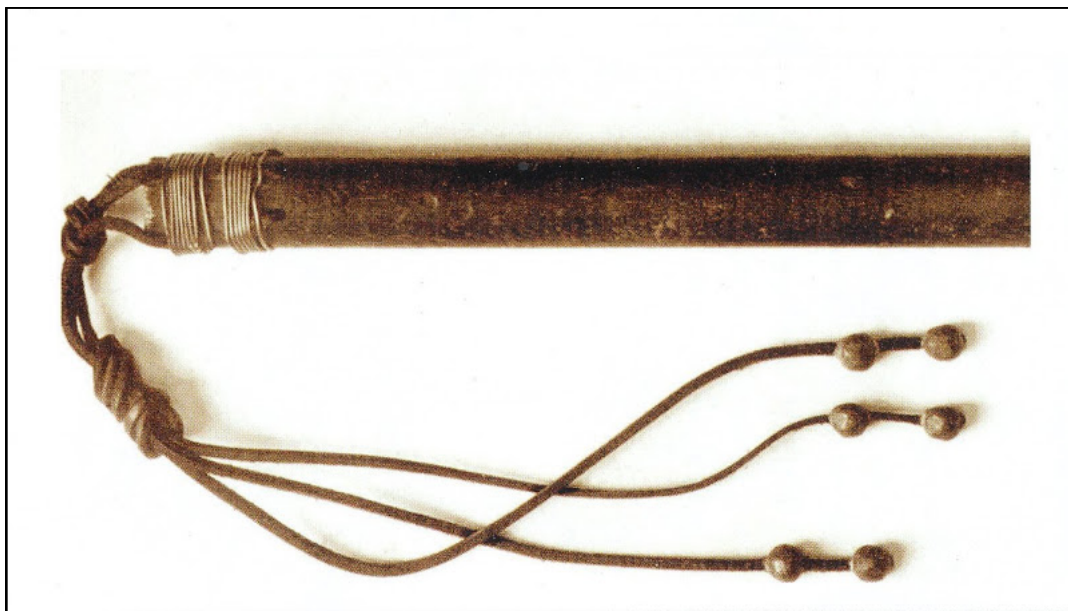


Figure 5. Roman Flagrum

The Roman flagellatio or “*scourging*” was one of the most feared of all punishments, and was a form of brutal, inhuman punishment typically executed by Roman soldiers

using the most dreaded instrument of the time, called a *flagrum*, and was the usual procedure among the Romans prior to crucifixion. The most common flagrum was made like a leather whip and contained three (or more) leather tails with small dumbbell-shaped weights (Figure 5), sheep bones, dice, etc., at the end of each tail. The type of flagrum with the dumbbell shaped metal weights was most consistent with the findings on the Shroud. The Romans had no laws governing the number of lashes to be administered, but Mosaic Law limited the number of lashes to not exceed 39. In many instances, the number of lashes was determined by the whims of the executioners for their personal enjoyment and/or who the individual was and the nature of the crime.

The victim was stripped naked and shackled to a fixed object causing a bent posture to make the scourging easier. When the flagrum was brought down on the victim, the weight of the metal objects would carry them to the front of the body as well as to the back, arms, shoulders, arms, legs, and down to and including the calves. The bits of metal would dig deep into the flesh, ripping small blood vessels, nerves, muscle, and skin. This procedure would be repeated over and over again, while changing position to the opposite side periodically until the allotted number of lashes were given. Ribs were frequently fractured and the victim's breathing would be severely affected by severe pain with every breath. The lungs would be lacerated, badly bruised, and frequently collapsed in addition to lacerations of the liver and spleen. Bouts of vomiting, tremors, seizures, and fainting fits would occur at varying intervals and there would be agonizing shrieks by the victim at the conclusion of each lash. The victim would be reduced to an exhausted, mangled mass of flesh with a craving for water.

After the scourging, Jesus's condition was relatively serious in addition to being in the early stages of traumatic or injury shock due to injuries caused by the brutal scourging, particularly to the chest wall and lungs – and to a lesser degree by the beating at the home of Caiaphas. Not surprisingly, a common illustration of Jesus on the cross is significantly different than the description of Jesus in Isaiah as follows:

*"As many were astonished at Him—His appearance was so marred, beyond human semblance and His form marred beyond that of the sons of man"*

*Isaiah 52:14*

### **Crown of Thorns**

After the Roman scourging and just before bringing Jesus back before Pilate, the Gospel of Mark gives a detailed account of the following actions by the soldiers:

*"And they clothed Him in a purple cloak and plaiting a crown of thorns, they put it on Him and they began to salute Him, 'Hail King of the Jews' and they struck His head with a reed and spat upon Him"*

*Mark 15:17-19*



Similar to the Christian perception of the Roman scourging, the traditional interpretation of the crowning of thorns tends to minimize the severe degree of physical pain caused by the thorns in the crown. The plants that were used in forming the crown of thorns has been the subject of much debate, but renowned botanical experts believe the prospects are either the Syrian Christ thorn or Christ's thorn as they are similar to each other, and are characterized by large closely spaced, sharp thorns. The nerve supply for pain perception to the head region is distributed by two major nerves (*trigeminal and greater occipital nerves*) that divide almost infinitesimally throughout the skin. Stimulation or irritation of either of these two major nerves causes noteworthy to unbearable pain. As an example, irritation of the *trigeminal nerve* is called *major trigeminal neuralgia* and can cause intense bouts of stabbing, knifelike, and explosive pain to the right or left half of the face that according to a 1986 *West Virginia University Newsletter*, "*trigeminal neuralgia is said to be the worst pain that man is heir to.*" It is important to note that the crown was



Figure 6. Crown of Thorns

made by interweaving the thorn twigs into the shape of a cap (Figure 6) and not the often illustrated “*wreath*” design. The shape of a cap placed a large number of thorns in contact with the entire top of the head, including the front, back, and sides. The blows from the soldiers using reeds across the face of Jesus or against the thorns (Matthew 27:30) would have directly irritated the nerves or activated trigger zones along the face, bringing on severe pains resembling a hot poker or electric shock. Aggravations and remissions of throbbing bolts of pain would have occurred all the way to Calvary and during the crucifixion, activated by the movements of walking, falling, and twisting from the pressure of the thorns against the cross, and from the many shoves and blows by the Roman soldiers. At this stage, Jesus would be progressively weaker, light-headed, ashen in color, somewhat short of breath, unsteady on His feet, and He would experience intermittent episodes of sweating and vomiting caused by the flogging – all adding to the degree of hypovolemic shock.

### **Road To Calvary**

The pitiable-looking, beaten Jesus, whose body was severely distorted and racked with pain from the terrifying scourging, His vision blurred, barely able to stand, was led into the praetorium by the soldiers. He was covered with blood from the fiery-red lacerations, abrasions, and avulsions that were all over His body. He could hardly stand, and secretions and vomitus were smeared across His face and garments. After talking to the frenzied crowd, Pilate relented and “*handed Him over to them to be crucified*” as stated in John 19:16. In John 19:16-17, John relates “*they took Jesus, and He went out, bearing His own cross to the place called the Place of the Skull, which is called in Hebrew, “Golgotha.”*”

Before we continue and consider the biblical statement in John 19:16-17 of Jesus bearing His own cross to Golgotha, let’s briefly consider the various types of Roman crosses that were used for crucifixion. Typically, there were four types as follows:

- The *crux simplex* (simple stake)
- The *crux immissa* or *crux capitata* (the conventional cross as displayed in most churches and artist illustrations)
- The *crux commissa* (shaped like the letter T)
- The *crux decussata* (known as St. Andrews cross, shaped like an X)

Most scholars support the theory that usually only the crosspiece (*patibulum*), weighing about 50 to 60 pounds, was carried by a crucifixion victim to the place of crucifixion. The fact that the entire cross has been estimated to weigh well over 175 to 200 pounds and that scourging as a prelude to crucifixion causes extreme weakness further support the theory of Jesus carrying only the crosspiece. While Mel Gibson’s movie *The Passion of the Christ* depicts Jesus carrying the entire cross, it is unlikely that this would have been physically able to do. From a medical and historical perspective, it is most likely that the cross was balanced on one shoulder of Jesus to the crucifixion site.

When Jesus arrived at the crucifixion site, He was likely numb with severe exhaustion resulting from the severe mental and physical sufferings endured at Gethsemane, the brutal flogging at the praetorium, and the nerve-racking, lancinating pains from the crown of thorns. These conditions were accompanied by a marked shortness of breath, pleural fluid that was slowly accumulating around and within His lungs, and the strong possibility that at least one of His lungs was collapsed and hemorrhagic due to the brutal scourging and excessive sweating. Additionally, hypovolemic shock was becoming progressively worse from dehydration due to the slow, continual accumulation of fluid around His lungs. Forensic pathologist Dr. Zugibe finds it extraordinary that Jesus was able to make the trek to Calvary at all in the condition that He was in. However, Jesus was still to face the most ignominious of suffering, the terrifying crucifixion.

### **Crucifixion**

Jesus was brought to the place of crucifixion and stripped of both His outer garment and His tunic beneath the cloak. He would have been gasping for air as He clutched His chest with every breath – the results of the brutal scourging. Every sudden movement of His chest and every time the soldiers grabbed Him brought on unbearable pain. He was then thrown to the ground, and made to lie on His back with His shoulders and outstretched arms on the crosspiece and the rest of His body on bare ground. One of the executioners would have then laid across His chest and another across His legs to hold Him down so that a third executioners could nail His hands to the crosspiece, causing excruciating pain in His chest and severe difficulty in breathing, causing him to scream out in agony and push against the soldiers with all of His remaining strength.



Figure 7. Common Roman Crucifixion Nail



While being held down, each arm was grasped separately and forcibly stretched out parallel to the crosspiece. A large, square spikelike, rusty nail made of iron and about 4-3/4-inches long (Figure 7) was nailed through the palm of the hand just below the bulge at the base of the thumb and into the crosspiece. The pains would have been brutal, like hot pokers traversing His arms like lightning bolts, causing Jesus to arch His torso and let out piercing screams. This process was then repeated for the other hand, offering no relief from the agonizing pain. Then two members of the execution squad likely manned the ends of the crosspiece while a third member grasped Jesus around the waist, getting Him to His feet. They would then back Him up to the upright onto a platform device, and then two soldiers lifted the crosspiece while two others lifted Jesus by the legs and inserted the crosspiece into a mortise on the top of the upright. The soldiers then bent His knees until His feet were flush to the cross and nailed His feet to the upright.

Again, Jesus would likely have screamed out in agony after each foot was nailed – *“They have pierced my hands and my feet, I can number all my bones, Psalms 22:16-17.”* The medical effects of the nailing of the hands would damage the median nerve, causing a painful disabling affliction of the median nerve called *causalgia*. The pain can be so unrelenting and intense that victims of causalgia frequently go into shock if the pain is not controlled. The pain of causalgia in Jesus’s feet would also have been severe, with the iron nail pressing against the plantar nerves, similar to that suffered with the median nerve injuries during nailing of the hands.

Finally, from a medical viewpoint from Dr. Zugibe acting as a Medical Examiner, death would be from cardiac and respiratory arrest, due to hypovolemic and traumatic shock, due to crucifixion.

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