

Program: Monster Mash: The Science Behind Monster Legends

Speaker: William J Sullivan, PhD, Showalter Professor of Pharmacology & Toxicology and Microbiology & Immunology, IU School of Medicine

Introduced by: Alison Brown

Attendance: 88

Scribe: Dick Garrett

Editor: Bill Elliott

The Zoom recording of today's presentation can be found on the Sciencetech Club's website at:

<http://www.sciencetechclub.org/zoom/453.mp4>

Dr. Sullivan is the Showalter Professor of Pharmacology and Toxicology, Microbiology and Immunology at the Indiana University School of Medicine. He gave a very interesting presentation on, what I suspect, is a topic each of us was wondering what there was to say. It is only appropriate that we talk about monsters, vampires, zombies, witchcraft and such at this Halloween time of year. He claims that most of the legends dealing with human physiology or behavior have a scientific explanation, and he focused on some of these fables.

In order to understand the origins of some of our more ghoulish legends, we must all step back in time to the days when medical science was just beginning. In addition, we must imagine a population that was prone to blame unexplained phenomena on the devil, or some other imagined force. Once you visualize yourself in this past world, what Dr. Sullivan presented makes sense. All of us, including long ago citizens of the world, need explanations for things we see or experience. A philosophy professor from a class at DePauw said the brain must first rationalize our world before we can physically live in it.

Dr. Sullivan's first case is the madman. Here is a physician's note written in 1546: "The patient can neither stand nor lie down, like a mad man he flings himself hither and thither, tears his flesh with his hands and feels intolerable thirst. It is then that they bite other persons, foam at the mouth, their eyes so twisted..." Dr. Sullivan says that this case and similar cases were perhaps part of the origin of the zombie legend or other monsters. It was, in fact, a classic case of rabies, a disease that was many times more prevalent than in today's world. He spent time describing some of the conditions associated with rabies. One induced condition is foaming at the mouth. The rabies virus causes throat convulsions that make it impossible to swallow, thus the fear of water, and since saliva continues to be produced yet can't be swallowed, that victim foams at the mouth. It has been said that rabies erases one's humanity leaving only the beast.

The legend of zombies also originated in the Voodoo religion of Haiti and was associated with the slave trade. The religious priest administers a secret powder by blowing it into the face of the target victim. The victim becomes zombified and is easily mistaken for a dead person. When they awaken from their coma they rise as a mental slave following the instructions from the priest. The powder ingredient that induced this coma is derived from a toxin taken from a blow fish.

Vampires are named after a Slavic word for blood sucker and originated in the 1600's. Blood has long been viewed as a force of life while loss of blood equates to loss of life. Consumption of blood equates to preservation of life. There was a belief that people who come back from the dead needed to consume blood in order to preserve their lives. How do people return from the dead? Back in the days of no basic medical skills, occasionally a person would be buried alive and emerge from a shallow grave or be uncovered by grave robbers. In the New England Vampire Panic of 1892, Mercy Brown was thought to be a vampire. She was an unfortunate victim of tuberculosis or consumption. Here are some of the symptoms that her neighbors mistook as signs of a vampire:

Insomnia leading to nocturnal behavior
Coughing up blood
Blood in mouth or on her bed sheets
Skin very pale
Easily spreads to others.

Thus, her bizarre behavior and appearance was actually tuberculosis and since her relatives also caught the disease the assumption was that Mercy, as a vampire, had sucked the blood of her family members thereby turning them into vampires.

Dr. Sullivan's last example deals with demonic possession. Susannah Cahalan, a 24-year-old journalist, was suddenly stricken with strange behavior. She became paranoid, numb, erratic had seizures, hallucinations and walked like the bride of Frankenstein. She underwent one million dollars worth of tests and medical workups but to no avail. Finally, a neurologist named Dr. Souhel Najjar, discovered that she had a first time identified autoimmune disease where her own antibodies were attacking her brain. He was able to reverse all of the damage with immune suppression and she and was able to return to her normal life, and authored a book about her experience.

Dr. Sullivan did a great job with an effective collection of slides and we were very pleased with his talk. It was a pleasant surprise to see so much science applied to what most of us think is all fiction .



Dr. William Sullivan