

## Video Transcript: Meet the Smithsonian's Bone Detectives

Narrator:	00:01	Meet the Smithsonian's Bone Detectives.
Doug Owsley:	00:04	It's phenomenal what can be learned from the human skeleton.
Narrator:	00:08	Solving mysteries from human bones.
KariBruwelheide:	00:11	We can really put together who they were and how they lived and how they died.
Narrator:	00:17	From historic excavations, to current criminal investigations.
KariBruwelheide:	00:20	Law enforcement comes to us to assist in body location and recovery, and then to establish identification and cause of death.
Doug Owsley:	00:30	It's not a field for just anyone. It has a lot of harshness to it.
KariBruwelheide:	00:36	This is a human story that we're trying to unravel. These are real people who lived and died, and we feel an obligation to tell their story.
Narrator:	00:46	How do the forensic anthropologists unlock the clues hidden in bone?
Doug Owsley:	00:51	Can you come in and look at this one right here?
Narrator:	00:53	They combine extensive training in skeletal anatomy and keen powers of observation with the high-tech tools of modern science.
KariBruwelheide:	01:01	The technology today affords us incredible opportunities to analyze bone in different ways.
Narrator:	01:07	For the Written in Bone exhibit, they're applying this cutting edge technology to the Smithsonian's collection of some 30,000 human skeletons and yielding amazing new insights.
Doug Owsley:	01:18	Our ability to read the skeleton gets better and better.
Narrator:	01:23	The CT scan's x-raying power allows the anthropologists to visualize internal bone structure. They can detect changes that result from disease or trauma.

Doug Owsley:	01:33	We're looking it over for any types of infections, any types of injuries, fractures that occurred in life.
Narrator:	01:39	X-ray and CT imaging are crucial first steps in the analysis of the bones.
Bruno Frohlich:	01:44	The bone is basically very, very weak.
Narrator:	01:48	The Mass Spectrometer helps the anthropologists test for chemicals such as heavy metals in bones.
Doug Owsley:	01:55	If they were being treated with certain types of medicines, like mercury for instance, or arsenic, we can pick that up in terms of their bone chemistry.
Nicole Little:	02:02	This is the mass spectrometer, and what this machine can do is tell us what trace elements make up the bones.
Narrator:	02:09	Detection of trace elements can provide key insight into a person's living environment, health, diet, even cause of death.
Nicole Little:	02:17	This one sample has over 700,000 counts of lead. This individual has ingested a lot more lead over their lifetime than the rest of the population.
Narrator:	02:28	The scanning electron microscope magnifies up to 200,000 times, making a tiny specimen like this mosquito look like a giant T-Rex. Anthropologists can use the microscope to explore the minute details on bone.
KariBruwelheide:	02:44	What you're seeing here in this image is actually a very small surface of this central incisor. The scanning electron microscope is allowing us so much more visualization of teeth and bone than ever before possible.
Narrator:	03:02	Advances in DNA technology have had a tremendous impact on forensic anthropology.
KariBruwelheide:	03:07	It allows us to take samples of bone and establish positive identification of some of these old remains.
Narrator:	03:15	Working with skeletal DNA, anthropologists can help identify individuals previously lost to history.
KariBruwelheide:	03:22	When you're talking about bones that are 400 years old, it's totally amazing.

Narrator:

03:28

Armed with these high-tech tools, the Smithsonian's bone detectives read the remains and decode the stories locked in human bone.