

## Excavated Jericho bones may help researchers combat tuberculosis

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Six-thousand year old bones excavated in Jericho may help a joint Israeli-Palestinian-German research group combat tuberculosis.

According to Prof. Mark Spigelman of the Kuvim Center for the Study of Infectious and Tropical Diseases at the Hebrew University of Jerusalem, who is leading the Israeli team, the bones, which were all excavated by Dr. Kathleen Kenyon between fifty and seventy years ago, will be tested for tuberculosis, leprosy, leishmania and malaria. However, the primary focus will be tuberculosis.

Spigelman is known for his pioneering studies of ancient diseases (palaeoepidemiology) found on mummified bodies and human remains from Hungary and Korea to Sudan, in his quest to provide answers to the development of diseases affecting us today, such as tuberculosis, hepatitis and malaria.

Tuberculosis - or TB - is a deadly infectious bacterial disease that usually attacks the lungs. Acknowledged as a disease of crowds, it is transmitted from human to human living in close contact.

Dating back thousands of years, tuberculosis was well known in antiquity. However, according to Spigelman, it is still the biggest killer even today. One-third of the world's current population has been infected by tuberculosis, resulting, in recent years, in approximately three million deaths per year.

While the origins of tuberculosis and its evolution remain unclear, it is thought it came from the first villages and small towns in the Fertile Crescent region about 9-10,000 years ago. Jericho is one of the earliest towns on earth, dating back to 9,000 B.C., and so a lot of communicable - or town - diseases would have had a good start in this community.

By examining human and animal bones from this site, the researchers will be able to see how the first people living in a crowded situation developed the diseases of crowds and how this affected the disease through changes in DNA – of both the microbes and the people.

The most significant results of this research will come from a comparison between those data for humans and corresponding animal remains which may allow the identification of animal-human vectors and their interaction.

Preliminary work suggests that there is sufficient DNA in the bone samples to make a contribution to our understanding of the origin and development of microbial disease which could provide crucial information in the evolution of tuberculosis.

Spigelman believes that knowing how a disease developed 6,000 years ago helps us understand what it will do as it continues to evolve, and will ultimately alter the practice of public health officials in combating it.

Spigelman came across the long-forgotten bones while examining mummies at Sydney University's Nicholson Museum.

"They told me they had lots of boxes of bones and didn't know what they were because they'd been deposited there fifty years earlier by an anthropologist who'd worked with Dr. Kathleen Kenyon who'd been excavating at Jericho. When I examined them, I recognized that these were the bones from Jericho, and I told them not throw them out!"

Some of the bones, which were then brought to Israel by Spigelman while on a Sir Zelman Cowan Fund fellowship, will be studied along with other bones from Jericho that have been contributed by the Duckworth Collection at Cambridge University who have agreed to participate in the project.

Source: The Hebrew University of Jerusalem

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