

Genetic study proves Israel's wild boars originated in Europe

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Wild boars look more or less the same in Israel as they do anywhere else: stinky and hairy with big heads, long snouts, and beady eyes. So scientists had no reason to suspect Israeli wild boars were any different than their brothers and sisters roaming the Middle East, from Egypt to Iran.

Now, in a new study, Prof. Israel Finkelstein and Dr. Meirav Meiri of Tel Aviv University's Department of Archaeology and Ancient Near East Civilizations together with Dr. Lidar Sapir-Hen from the same department and Dr. Dorothee Huchon of TAU's Department of Zoology have found that, unlike the Near Eastern wild boars in surrounding

countries, Israel's wild boars originated in Europe. After a genetic and archaeological analysis, the researchers suggest the wild boars living in Israel are descendants of domesticated [pigs](#) brought to Israel starting almost 3,000 years ago by the Philistines and other seafaring raiders.

The findings were published this week in *Scientific Reports*. Prof. Steve Weiner and Dr. Eilsabetta Boaretto of the Weizmann Institute of Science, Prof. Guy Bar-Oz of Haifa University, Dr. Greger Larsen of Durham University, Prof. Aren Maeir of Bar-Ilan University and Dr. Liora Kolska Horwitz of the Hebrew University of Jerusalem contributed to the study.

Pillagers and pig lovers

"Our DNA analysis proves that the wild boars living in Israel today are the descendants of European pigs brought here starting in the Iron Age, around 900 BCE," says Prof. Finkelstein. "Given the concentration of pig bones found at Philistine [archaeological sites](#), the European pigs likely came over in the Philistines' boats."

Pig bones have been found in abundance at Philistine archaeological sites along Israel's southern coastal plain dating from the beginning of the Iron Age, around 1150 to 950 BCE. But pig bones are rare or absent at Iron Age sites in other parts of the country, including in the central hills, where Ancient Israel is thought to have emerged. The researchers set out to determine whether the Philistines and other Sea Peoples – groups of seafaring invaders from around the Aegean Sea – made use of local pig breeds or brought new ones with them from their native lands. Because there is not much difference in the size and the shape between European and Near Eastern pigs, the researchers had to use DNA testing to identify the origins of the animals.

Genetics researchers divide the pigs of the world into three main groups:

European, Far Eastern, and Near Eastern. To the researchers' surprise, each of the 25 modern-day wild boars they analyzed from Israel share a European [genetic signature](#), whereas modern-day boars from nearby countries, like Egypt, Syria, Turkey, Armenia, Iraq, and Iran, have a Near Eastern genetic signature. The researchers conclude that European pigs arrived in Israel at some point and overtook the local pig population.

To find out when, the researchers collected and analyzed pig bones from archaeological sites across Israel—ranging from the Neolithic period to medieval times, 9500 BCE to 1200 CE – the most comprehensive study of ancient DNA carried out in Israel in terms of both number of samples and time span. The results showed that pigs from the Bronze Age and the beginning of the Iron Age display the local Near Eastern genetic signature, while a European genetic signature appears early in the Iron Age, around 900 BCE, and has been dominant ever since. Domestic European pig breeds may have been introduced by groups of "Sea Peoples" – including the Philistines, mentioned in the Bible – who migrated to the coast of the Levant starting in the 12th century BCE and settled in places like Gaza, Ashkelon, and Ashdod.

Making themselves at home

Additional European pigs could have been brought to the Levant during the Roman-Byzantine period and during the Crusades. Over time, the European pigs overtook the local pigs, and their descendants are the only wild boars living in Israel today. The domestic European pigs could have driven the local pigs to extinction, or mated with them – which the researchers think is more likely. To find out for sure, they are further analyzing the DNA of modern wild boars.

"If the European pigs mated with the local pigs, as we suspect, today's modern wild boars should have some Near Eastern DNA," says Dr. Meiri, who conducted the laboratory work for the study in a special,

highly sterile lab in TAU's Sonia and Marco Nadler Institute of Archaeology. "If the European pigs just out-competed the locals, we'd expect the [wild boars](#) to have purely European DNA."

Provided by Tel Aviv University

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