Human link in spread of infectious cancer in mussels

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Mussels hitching a ride on ships are the likely source of an infectious cancer now found on both sides of the Atlantic, scientists say.

Mussels hitching a ride on ocean-going ships are likely responsible for the spread of an infectious cancer found in different species on either

side of the Atlantic, scientists say.

A recent study in the journal *eLife* suggests that human activity may "unwittingly be contributing to the worldwide spread of infectious cancers" affecting mussels, clams and cockles.

Most often, cancer arises from DNA mutations in an organism's cells which lead to uncontrolled cell growth—it does not normally spread from one organism to another, although it can.

"Tasmanian devils, dogs and bivalves have all developed cancers that can spread to others, acting more like a pathogen or parasite," lead author Marisa Yonemitsu, Research Technician at the Pacific Northwest Research Institute in Seattle, Washington, said in a summary of the study findings.

Yonemitsu said one such cancer, called a bivalve transmissible neoplasia, was previously found in a mussel species, Mytilus trossulus, in British Columbia, Canada.

Similar cancers have also been found in related mussel species around the world but it was not known if they were transmissible.

To find out, the scientists sequenced DNA from cancer cells in a related species, M. edulis found in France and the Netherlands, and M. chilensis, from Chile and Argentina.

The aim was to establish whether their cancers were transmissible and of the same line as that found in M. trossulus, or if these species had transmissible cancers of their own.

"This would help us understand how often transmissible cancers can occur, how far they can spread in nature and whether they are able to

affect new populations and new species," Yonemitsu said in the summary.

The team was surprised to discover that cancer cells collected from the European and South American mussels were "nearly identical" genetically.

"(This suggests) they came from a common origin -– likely a single M. trossulus mussel with a primary cancer at some point in the past," said Yonemitsu.

Another scientist on the team, Michael Metzger, said that since "Mytilus mussels do not live in the equatorial zone, it would have been nearly impossible for them to have spread this cancer between South America and the Northern Hemisphere on their own."

The most likely cause—"human intervention may be responsible for introducing them into new susceptible populations and species", Metzger said.

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