

# Mechanism of cancer-induced wasting identified in flies

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Affecting up to 80 percent of patients with advanced-stage cancers, cachexia is a condition where tumors cause muscles and body fat to waste away.

This loss of muscle and fat makes patients more prone to falls and less able to tolerate chemotherapy. There are currently no treatments for cachexia and due to the lack of good models to study this disease, our understanding of it is poor.

But new research led by Peter MacCallum Cancer Centre's Associate Professor Louise Cheng, and published overnight in the journal *Developmental Cell*, is beginning to change that.

Using a fruit fly (*Drosophila melanogaster*) model of [cancer](#) cachexia, Cheng and her team discovered that tumors secrete an enzyme called Mmp1 which is responsible for breaking down fat and muscle.

"Fruit flies share 70% of human disease genes. For the first time, we were able to image the whole process of cachexia in an animal, allowing us to

gain an understanding of the sequence of events that leads to tumor induced muscle wasting," she says.

"Using powerful genetic tools in flies, we were able to discover a mediator of this process that helps us better understand how tumors communicate with muscle and fat."

By digging through The Cancer Genome Atlas, the researchers found that high levels of Mmp enzymes are also correlated with cachexia in humans.

"It is therefore likely we have found a mediator relevant in human cachexia," Cheng says.

She hopes the study will lead to the development of new tools to diagnose cachexia earlier, and the identification of therapeutics that might be able to treat it.

"One strategy is to prevent tumors from releasing this [enzyme](#)," Cheng says.

"At the same time, understanding what causes [muscle](#) and fat breakdown will help us discover ways to save these tissues even in the presence of tumors."

**More information:** William Lodge et al, Tumor-derived MMPs regulate cachexia in a *Drosophila* cancer model, *Developmental Cell* (2021). [DOI: 10.1016/j.devcel.2021.08.008](https://doi.org/10.1016/j.devcel.2021.08.008)

Provided by Peter MacCallum Cancer Centre

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