Link found between types of lipid metabolism and species lifespan

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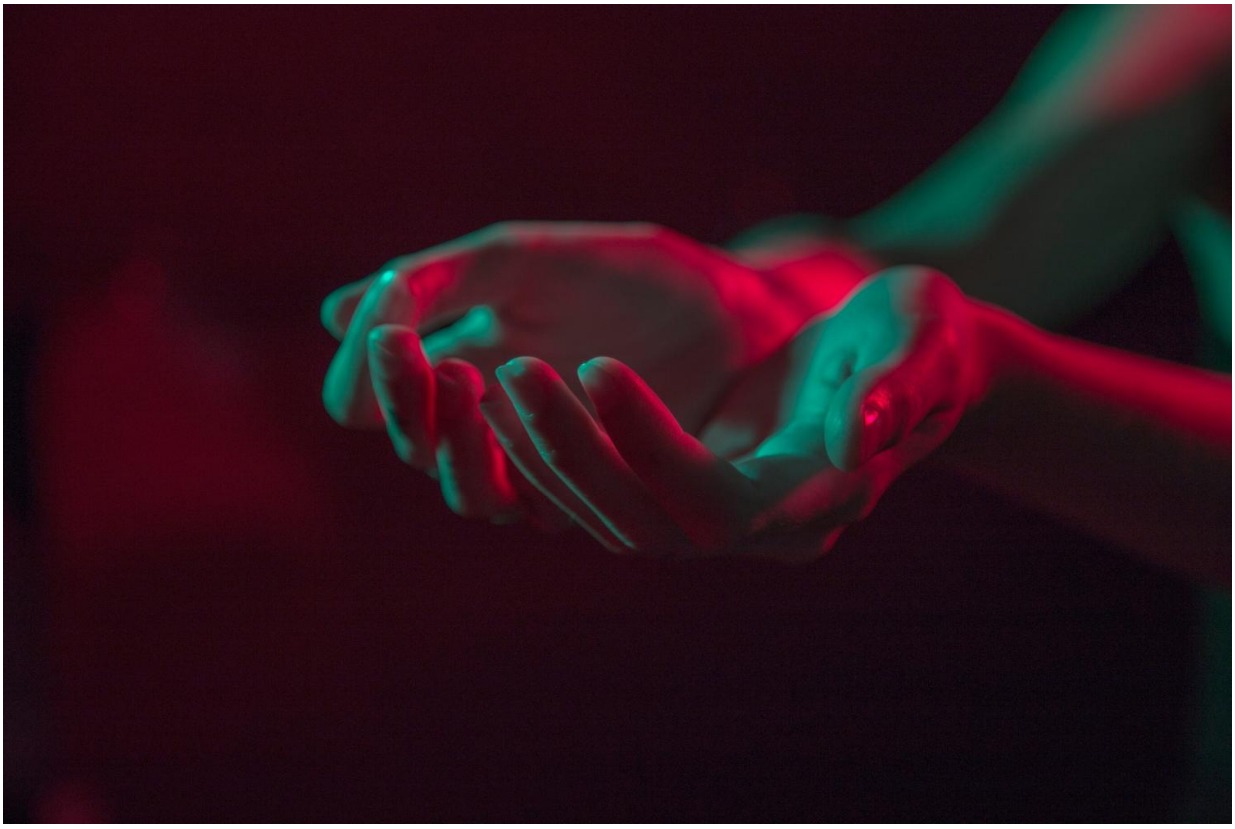

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An international team of researchers has found a link between types of lipid metabolism in different species and differing lifespans. In their paper published in the journal *Scientific Reports*, the team describes their

study of multiple species and the differences they found regarding lifespan and the distinctiveness of lipid metabolism.

Why species have different lifespans has puzzled scientists for many years. Why do dogs have such short lifespans, for example, while some tortoises of about the same size live much longer? Scientists do not know but the group with this new effort suspected it had something to do with lipids and how they are metabolized—they conducted a study to find out.

Lipids are defined as fatty acid substances that are soluble in organic solvents but not in water—they are prevalent in most organisms and are often used to store energy. Lipid metabolism occurs when lipids are broken down in cells, releasing the stored energy for use by the body. Scientists have known for a long time that animal species metabolize lipids in different ways, but until now, there has been no proven link between lipid metabolism and lifespan.

In this new effort, the researchers studied lipid metabolism in 35 mammal species, noting their average lifespan. In so doing, the team discovered patterns in lipid composition—those with similar lipid composition had similar lifespans. This led them to the conclusion that lipid composition and metabolism is linked to how long a species can live.

The researchers also found that differences in lipid metabolism were related to the chemical structure of the lipids—those made with lipids more saturated with hydrogen, for example, tended to show up in longer-lived species. This, the researchers suggest, is because hydrogen-saturated lipids are more resistant to the oxidation process. They also found species with unsaturated energetic lipids tended to live longer, as well. This, the team suggests, is because they require more from cells to convert them into energy.

It is not clear what the findings by the team with this new effort will have on efforts aimed at extending the human lifespan—changing how we metabolize lipids could prove daunting.

More information: Katarzyna Bozek et al. Lipidome determinants of maximal lifespan in mammals, *Scientific Reports* (2017). DOI: 10.1038/s41598-017-00037-7