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Origins of ‘bad’ fat traced back to embryo

Scientists have traced where the dangerous hidden fat that gets deposited around vital organs in the body comes from.

The findings will help to increase our understanding of obesity and its health consequences and could lead to new opportunities for prevention or treatment.

Visceral fat is the fat that forms around the heart, intestines and other vital organs. It is different from subcutaneous fat that sits under the skin and is a much bigger threat to health. Until now it was not known where visceral fat originates in the body.

Using laboratory mice, researchers have now shown that up to 80 per cent of visceral fat in the body can be traced back to a single type of cell in a developing embryo.

These early fat cells express a gene called *Wt1* but subcutaneous fat cells do not, suggesting that the two types of fat come from different sources.

The team also found cells expressing *Wt1* in the visceral fat of adult mice. These cells continued to make more fat cells throughout the life of the animal, in a similar way to stem cells.

Understanding how to regulate these cells could lead to interventions that help stop the body from laying down any more ‘bad’ fat around the organs, the scientists suggest.

Visceral fat is particularly dangerous because it is not visible from the outside and people with a lot of it can still appear slim. Having a lot of visceral fat increases the risk of cancer, type 2 diabetes, heart disease and Alzheimer’s disease.

Although all fat carries health risks, subcutaneous fat can be beneficial because it provides us with energy, cushioning and insulation. It is sometimes referred to as ‘good’ fat.

The study’s lead author Dr You-Ying Chau from the MRC Human Genetics Unit said: “Determining the origins of good and bad fat has been one of the big unanswered questions in obesity research.”

Ranked among the top universities in the world

Professor Stephen Hill, Chair of the Medical Research Council's Molecular and Cellular Medicine Board, said: "Visceral fat can be a silent killer because it's possible to have a lot of it without looking fat on the outside."

The study is published today in the journal *Nature Cell Biology*.

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