

Researcher presents alternative hypothesis about cause of obesity

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World-wide obesity has nearly tripled since 1975, according to the World Health Organization. Numerous causes of obesity have been hypothesized including increased dietary fat, carbohydrate or ultra-processed food (UPF) consumption, inactivity, hyperlipidemia and hyperinsulinemia.

Based on these [hypotheses](#), solutions have been sought that involved decreasing consumption of suspected agents. Well-controlled studies have shown that increased consumption of UPF is associated with increased [food consumption](#) and [weight gain](#) while decreasing UPF consumption in the same subjects was associated with weight loss. However, these studies do not identify a specific cause of obesity since the diets include multiple variables.

In a new perspective, Barbara E. Corkey, Ph.D., professor emeritus of medicine and biochemistry at Boston University Chobanian & Avedisian School of Medicine, presents an alternative testable and actionable hypothesis/model about the cause of obesity. If validated, it could indicate clear steps to reverse obesity.

Humans vary in the efficiency with which they burn and store nutrients in response to overeating. Some people waste more energy when they overeat and store less. Those individuals tend not to gain weight easily. Humans also vary in their reaction to food deprivation. Some conserve energy better than others and when they diet, they don't lose weight easily. "These are normal variations and we are each a bit different, due to genetics, but we respond to the same signals," said Corkey.

Her hypothesis postulates that obesogens (certain [chemical compounds](#) that are hypothesized to disrupt [normal development](#) and the balance of lipid metabolism) which have entered the environment in the last 50 years, generate misinformation in our bodies, such as inappropriate insulin secretion or hunger, that lead to obesity.

Obesogens, she believes, can generate changes in redox state (a normal signal of either excess or the need for energy) that are unrelated to energy needs but falsely stimulate hunger or fuel storage when not needed

"The increasing incidence of obesity correlates with heightened [consumption](#) of UPF along with thousands of potential environmental toxins including some derived from fertilizers, insecticides, plastics and air pollutants. Identifying these agents would allow us to remove them or inhibit their ability to generate misinformation," said Corkey.

Corkey's model, if validated, could impact many if not all [obesity](#)-related diseases. Her paper examines readily available ways to test her model. She believes the best outcome from this work would be identification of obesogens and their removal. The second best outcome would be treatments that block their effect on the body's normal regulatory mechanisms for insulin secretions.

These findings are published by the *Philosophical Transactions of the Royal Society B*.

More information: Barbara E. Corkey, Reactive oxygen species: role in obesity and mitochondrial energy efficiency, *Philosophical Transactions of the Royal Society B: Biological Sciences* (2023). [DOI: 10.1098/rstb.2022.0210](#)

Provided by Boston University School of Medicine

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