

Fewer mitochondria in offspring of parents with diabetes

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Image courtesy of Blausen Medical

Normal-weight, insulin-resistant individuals whose parents have type 2 diabetes have fewer mitochondria in their muscles due to lower expression of lipoprotein lipase, according to a study published in the April issue of *Diabetes*.

(HealthDay) -- Normal-weight, insulin-resistant individuals whose parents have type 2 diabetes have fewer mitochondria in their muscles due to lower expression of lipoprotein lipase (LPL), according to a study published in the April issue of *Diabetes*.

Katsutaro Morino, from the Yale University School of Medicine in New Haven, Conn., and colleagues examined gene expression and their potential involvement in regulating mitochondrial biogenesis in skeletal muscle from 11 young, lean, insulin-resistant offspring of parents with type 2 diabetes and 11 insulin-sensitive subjects without a family history of type 2 diabetes.

The researchers found that the insulin-resistant subjects had significantly lower [messenger RNA](#) and [protein expression](#) of LPL in skeletal muscle, which was associated with reduced mitochondrial density. [Muscle cells](#) deficient in LPL had lower mitochondrial content due to reduced fatty acid delivery and reduced activation of the peroxisome proliferator-activated receptor- δ (PPAR- δ).

"Taken together, these data suggest that decreased mitochondrial content in muscle of insulin-resistant offspring may be due in part to reductions in LPL expression in skeletal muscle resulting in decreased PPAR- δ activation," Morino and colleagues conclude.

More information: [Abstract](#)
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