

TRANSMEMBRANE PROTEIN TARGETED TO TREAT OBESITY AND ASSOCIATED METABOLIC DISEASES

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Value Proposition: This invention targets MXRA8 protein as a therapy for obesity and other metabolic diseases.

Technology Description

Researchers at Washington University in St. Louis have developed an MXRA8 targeted therapeutic to treat obesity and associated metabolic diseases. MXRA8 is the receptor for Chikungunya virus, is most highly expressed in white adipose tissue (WAT), and is upregulated in obesity in both mice and humans. Current treatments for obesity affect food absorption and decrease appetite.

Targeting MXRA8 can protect from diet-induced obesity by increasing energy expenditure and decreasing weight gain, fat mass, adiposity and white adipose tissue.

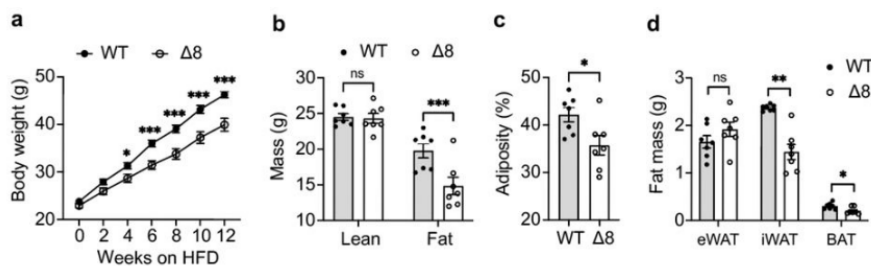


Fig 1: *Mxra8^{Δ8/Δ8}* mice, which express a truncated, secreted form of the MXRA8 ectodomains, are protected from diet-induced obesity. 8-10 week-old male wildtype (WT-n=7) or *Mxra8^{Δ8/Δ8}* ($\Delta 8$, n=7) mice were fed a HFD (60% kcal fat) for 12 weeks. (a) Body weight over time, (b) body composition analyses, (c) whole body adiposity, (d) eWAT, iWAT, and BAT masses. *P<0.05, **P<0.01, ***P<0.001.

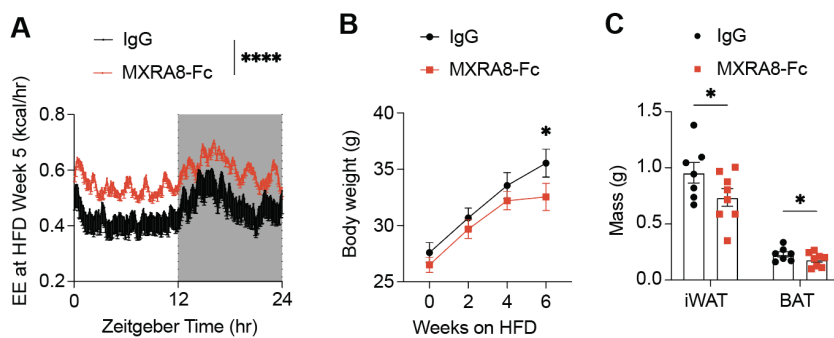


Fig 2. Administration of a novel recombinant form of soluble MXRA8 ectodomains fused to Fc (MXRA8-Fc) increases energy expenditure and protects against weight gain. (A) 8-12-week-old male wildtype mice were fed a high fat diet (HFD) and treated with 250 μ g MXRA8-Fc fusion protein (n=8) or IgG (n=7) twice per week for 6 weeks. (A) Energy expenditure (EE) over a 24h period with the light phase unshaded and the dark phase shaded at Week 5. (B) Body weight over time. (C) iWAT and BAT masses at Week 6.

Stage of Research

Proof of concept: Therapeutic tested in mice.

Publications

Wentong Jia,...Michael S. Diamond, Jonathan R. Brestoff. MXRA8 promotes adipose tissue whitening to drive obesity. bioRxiv 2024.01.31.578211; doi: <https://doi.org/10.1101/2024.01.31.578211>

Applications

- MXRA8 therapeutics
- Obesity treatment

Key Advantages

- Novel target for obesity and other metabolic diseases
- Decreases body weight and fat mass

Patents

- Patent application filed

Related Web Links – [Jonathan Brestoff Profile](#); [Brestoff Lab](#)