# The Molecular Basis of the Transdifferentiation of Embryonic Chick Limb Chondrogenic Precursors into a Beige Fate

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The discovery of lipid-burning beige fat may potentially have the ability to serve as a therapeutic option for obese patients. While the therapeutic implication of beige fat have been seen in both clinical studies and animal models, the inability of current drug targets to stimulate beige fat has hindered the possibility of beige fat to be a viable treatment. In this study, we have proposed using an alternative tissue source, chondrogenic precursors, as opposed to white adipose tissue in current literature, to generate beige fat. As indicated by previous literature, chondrogenic precursors, under certain inductive conditions, generate lipid containing cells, staining positive for Oil Red lipid staining. Our study consisted of two phases in which the first identified the molecular and morphological nature of pre-chondrogenic tissue that had converted into beige fat, in order to better understanding factors that change and influence the machinery of the cell. In order understand the metabolic functions of beige fat, the AMPK (adenosine monophosphate kinase) was detected in the beige adipocyte. Next, developmental analysis comparing beige and chondrogenic precursors at distinct points of development was performed to understand factors influencing the conversion process. PGC1 and PPAR mRNA expression levels were compared among the chondrogenic and beige fat cell types; as expected, both PGC1 and PPARexpression levels in the beige fat tissue were over 30 times the expression of that in the chondrogenic cell.

**Awards Won:**

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