指導教授氏名	指導役割
飯田　征二　印	全般的な指導
久保田　聡　印	実験，研究方針，論文作成指導
印	

学位論文要旨

岡山大学大学院医歯薬学総合研究科

専攻分野　顎口腔再建外科学分野	身分　大学院生	氏名　明石　翔

論文題名　Metabolic regulation of the CCN family genes by glycolysis in chondrocytes
（軟骨細胞における CCN ファミリー遺伝子の糖代謝を介した制御）

論文内容の要旨（2000字程度）

The CCN family consists of 6 genes in the mammalian genome and produces multifunctional proteins involved in a variety of biological processes. Recent reports indicate the profound roles of CCN2 in energy metabolism in chondrocytes, and *Ccn2* deficiency is known to alter the expression of 2 other family members including *Ccn3*. However, almost nothing is known concerning the regulation of the CCN family genes by energy metabolism. In order to gain insight into this critical issue, we initially and comprehensively evaluated the effect of inhibition of glycolysis on the expression of all of the CCN family genes in chondrocytic cells. Upon the inhibition of a glycolytic enzyme, repression of *CCN2* expression was observed, whereas *CCN3* expression was conversely induced. Similar repression of *CCN2* was conferred by the inhibition of aerobic ATP production, which, however, did not induce *CCN3* expression. In contrast, glucose starvation significantly enhanced the expression of *CCN3* in those cells. The results of a reporter gene assay using a molecular construct containing a *CCN3* proximal promoter revealed a dose-dependent induction of the CCN3 promoter activity by the glycolytic inhibitor in chondrocytic cells. These results unveiled a critical role of glycolytic activity in the regulation of

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CCN2 and *CCN3*,which activity mediated the mutual regulation of these 2 major CCN family members in chondrocytes.