

Analysis of gene expression regulating differentiation of slow and fast muscle fibers

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2005 Fiscal Year Final Research Report Summary

Analysis of gene expression regulating differentiation of slow and fast muscle fibers

Research Project

Project/Area Number

16500423

Research Category

Grant-in-Aid for Scientific Research (C)

Allocation Type

Single-year Grants

Section

一般

Research Field

Sports science

Research Institution

Kanazawa University

Principal Investigator

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Project Period (FY)

2004 – 2005

Keywords

Skeletal muscle / Slow muscle fiber / Fast muscle fiber / Myofiber differentiation / Muscle atrophy / Gene expression / DNA array / Exercise

Research Abstract

Skeletal muscles consist of slow-twitch and fast-twitch muscle fibers, which have distinct physiological and biochemical properties. The relative proportion of slow and fast muscle fibers is an important factor determining the contractile velocity and fatigability of skeletal muscle. To investigate the differentiation of muscle fibers, we first examine the composition of myofiber types in mice and rats skeletal muscles. It revealed that there was a group of skeletal muscles, which were extremely rich in slow muscle fibers and useful to study gene expression in slow muscle fibers.

Using cDNA prepared from the slow fiber-rich soleus muscle and the fast fiber-rich tibialis anterior muscle, we examined the gene expression profile by competitive

hybridization to a DNA array (Agilent co ltd), and verified fiber-type specificity of differentially expressed genes by the cDNA panel prepared from 15 rat skeletal muscles, whose myofiber composition was determined. About more than 500 genes showed ... More

Research Products (21 results)

	All	2006	2005	2004	
	All	Journal Article	Book	Patent(Industrial Property Rights)	
[Journal Article] Beta-adrenergic receptor trafficking by exercise in rat adipocytes : roles of G-protein-coupled receptor kinase-2, beta-arrestin-2, and the ubiquitin-proteasome pathway.				2006	▼
[Journal Article] Laminin 5 expression protects against anoikis at aerogenous spread and lepidic growth of human lung adenocarcinoma.				2005	▼
[Journal Article] Seven skeletal muscles in the rodent hind limb are extremely rich in slow muscle fibers.				2005	▼
[Journal Article] Laminin 5 expression protects against anoikis at aerogenous spread and lepidic growth of human lung adenocarcinoma.				2005	▼
[Journal Article] Seven skeletal muscles in the rodent hindlimb are extremely rich in slow muscle fibers.				2005	▼
[Journal Article] Kinobeaon A, purified from cultured safflower cells, is a novel and potent singlet oxygen quencher.				2005	▼
[Journal Article] Followup study of mercury pollution in indigenous tribe reservations in the Province of Ontario, Canada, 1975-2002.				2005	▼
[Journal Article] Simple method for the identification of oxidative fibers skeletal muscle.				2004	▼
[Journal Article] Effects of dietary calcium restriction and acute exercise on the antioxidative stress in rat diaphragm.				2004	▼
[Journal Article] Down-regulation of beta2-adrenergic receptor expression by excrcise training increases IL-12 production by nacrophages following LPS stimulation.				2004	▼
[Journal Article] Acute exercise alters G i2 protein expressions through the ubiquitin-proteasome proteolysis pathway in rat adipocytes.				2004	▼
[Journal Article] Simple method for the identification of oxidative fibers in skeletal muscle.				2004	▼
[Journal Article] Wide use of merthiolate may cause mercury poisoning in Mexico.				2004	▼
[Journal Article] Acute exercise alters Ga i2 protein expressions through the ubiquitin-proteasome proteolysis pathway in rat adipocytes.				2004	▼
[Journal Article] Effects of dietary calcium restriction and acute exercise on the antioxidative stress in rat diaphragm.				2004	▼
[Journal Article] Down-regulation of beta2-adrenergic receptor expression by exercise training increases IL-12 production by macrophages following LPS stimulation.				2004	▼
[Journal Article] Contribution of the calcineurin signaling pathway to overload-induced skeletal muscle fiber-type transition.				2004	▼
[Journal Article] Effect of hyperventilation during resistance exercise on hormonal response in humans.				2004	▼
[Journal Article] Hematological responcees in juveniles after training at moderate altitude.				2004	▼
[Book] 百寿者になろう : 運動・栄養・休業のトライアングル				2004	▼
[Patent(Industrial Property Rights)] 遺伝子導入促進剤およびそれを含む遺伝子導入用組成物				2004	▼

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