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Details of the Collaborative Activity

2020-21


Name of the Collaborating Institute: Department of Anatomy, Cell Biology and Physiology, Indiana University School of Medicine, 635 Barnhill Drive, MS-5055, Indianapolis, IN, 46202, USA.

Name of the Collaborating Department: Yenepoya Research Center and Dept of Surgical Oncology

Joint Research and Publications

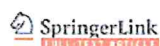
1. Najar MA, Rex DAB, Modi PK, Agarwal N, Dagamajalu S, Karthikkeyan G, Vijayakumar M, Chatterjee A, Sankar A, Prasad TSK. A complete map of the Calcium/calmodulin-dependent protein kinase kinase 2 (CAMKK2) signaling pathway. *Journal of Cell Communication and Signaling*. 2021; 15, 283–290.

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COVID-19 Information[Public health information \(CDC\)](#)[Research information \(NIH\)](#)[SARS-CoV-2 data \(NCBI\)](#)[Prevention and treatment information \(HHS\)](#)[Español](#)

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A complete map of the Calcium/calmodulin-dependent protein kinase kinase 2 (CAMKK2) signaling pathway

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Abstract

Calcium/calmodulin-dependent protein kinase kinase 2 (CAMKK2) is a serine/threonine-protein kinase belonging to the Ca²⁺/calmodulin-dependent protein kinase subfamily. CAMKK2 has an autocatalytic site, which gets exposed when Ca²⁺/calmodulin (CAM) binds to it. This results in autophosphorylation and complete activation of CAMKK2. The three major known downstream targets of CAMKK2 are 5'-adenosine monophosphate (AMP)-activated protein kinase (AMPK α), calcium/calmodulin-dependent protein kinase 1 (CAMK1) and calcium/calmodulin-dependent protein kinase 4 (CAMK4). Activation of these targets by CAMKK2 is important for the maintenance of different cellular and physiological processes within the cell. CAMKK2 is found to be important in neuronal development, bone remodeling, adipogenesis, and systemic glucose homeostasis, osteoclastogenesis and postnatal myogenesis. CAMKK2 is reported to be involved in pathologies like Duchenne muscular dystrophy, inflammation, osteoporosis and bone remodeling and is also reported to be overexpressed in prostate cancer, hepatic cancer, ovarian and gastric cancer. CAMKK2 is involved in increased cell proliferation and migration through CAMKK2/AMPK pathway in prostate cancer and activation of AKT in ovarian cancer. Although CAMKK2 is a molecule of great importance, a public resource of the CAMKK2 signaling pathway is currently lacking. Therefore, we carried out detailed data mining and

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