

Tight Junctions and Signaling Pathways in Cancer

6

Sana Khurshid, Burhan UlHaq, Sadaf Khursheed, Hana Q. Sadida, Tariq Masoodi, Mayank Singh, Ammira S. Al-Shabeeb Akil, Ajaz A. Bhat, and Muzafar A. Macha

Abstract

Tight junctions (TJs) are intercellular connections that close the gap between the individual cells and limit the paracellular entry of harmful antigens, toxins, microbes, etc. In addition, they also regulate vesicle trafficking, signal transduction, transcription, and cytoskeletal dynamics. In contrast to other specialized cell connections such as adherens, gap junctions, and desmosomes, TJs form an uninterrupted intercellular contact at the apical-most end of the lateral side of epithelial cells. Compared to other junctions TJs are made up of different proteins, including claudins, which form the distinctive network of interconnected strands; the multi-PDZ proteins ZO-1, ZO-2, ZO-3, MAGI-1,

S. Khurshid · M. A. Macha (✉)

Watson-Crick Centre for Molecular Medicine, Islamic University of Science and Technology, Awantipora, Jammu and Kashmir, India

B. UlHaq

Department of Zoology, School of Life Sciences, Central University of Kashmir, Ganderbal, Jammu and Kashmir, India

S. Khursheed

Department of Microbiology, Sher-I-Kashmir Institute of Medical Science (SKIMS), Soura, Jammu and Kashmir, India

H. Q. Sadida · A. S. A.-S. Akil · A. A. Bhat

Department of Human Genetics-Precision Medicine in Diabetes, Obesity and Cancer Research Program, Sidra Medicine, Doha, Qatar

T. Masoodi

Laboratory of Cancer Immunology and Genetics, Sidra Medicine, Doha, Qatar

M. Singh

Department of Medical Oncology, Dr. BRAIRCH, All India Institute of Medical Sciences, New Delhi, India