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Global Conference on CELL AND GENE THERAPY

May 03-04, 2023 | Webinar

Can acquired drug resistance be reversed/prevented?

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Targeted therapies have improved the pharmacological treatment of cancer patients. Unfortunately, in many cases, after an initial response, their efficacy is lost. This undesirable situation is called Acquired Drug Resistance (ADR). The involvement of the signal transducer and activator of transcription 3 (STAT3) in the development of ADR has been demonstrated in studies conducted in animal models and in cancer patients. Stat3 is present in all cells and under normal conditions is transiently activated. However, in pathological conditions, such as cancer, STAT3 becomes constitutively phosphorylated resulting in the aberrant persistent form called p-STAT3. STAT3, considered the master regulator of intracellular signals, is located downstream of all signaling pathways involved in cancer. As result of the significant crosstalk among them, the pharmacological inhibition of any of these pathways activates STAT3 resulting in p-STAT3 which is responsible for all the changes that cause the development of ADR. ADR has been observed during treatment with all types of anticancer therapies, chemotherapies and targeted therapies including checkpoint inhibitors and the two recently approved KRAS inhibitors. The anticancer efficacy of STAT3 inhibitors, used alone or in combination has been shown in animal models and in patients that harbor p-STAT3. Several Stat3 inhibitors are currently in clinical development. As soon as they reach the market, any rational pharmacological treatment should include a STAT3 inhibitor. This combination will reverse/prevent ADR and induce long-term, effective responses.

Biography

Hector J. Gomez, MD, PhD is a senior pharmaceutical executive with more than twenty years of experience in drug development. During his career, he led the development of 10 drugs currently in the market. He has experience in private and public financing including an IPO. He has served in Boards of private and public companies and as Chairman of a public company. During his career at Merck, Ciba-Geigy, Vertex Pharmaceuticals and Transcend Therapeutics he moved progressively from Director to Senior Director, Executive Director, VP and President & CEO. He founded GLG Pharma in 2009 and has consulted for several biotech companies.. He obtained his MD degree at National University, Bogota Colombia, his PhD in Pharmacology at Marquette university, Milwakee, WI and his Clinical Pharmacology Diploma at Tulane University, New Orleans, LA. He has more than 80 peer reviewed publications.