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Special Issue Reprint

RAS Signaling Pathway in Cancer Therapy

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The RAS signaling pathway represents one of the most significant and challenging targets in oncology. Mutations in RAS genes are identified in approximately one quarter of all human malignancies, driving processes such as tumor initiation and maintenance. For decades, RAS proteins were considered undruggable, but persistent research led to a major breakthrough in 2021 with the approval of the first inhibitor targeting a specific mutant isoform of KRAS (KRASG12C), followed by the development of other RAS inhibitors targeting specific isoforms or multiple mutations at the same time. This Reprint provides a collection of original articles and reviews focusing on different aspects of RAS signaling. It explores the diverse roles of RAS signaling across various cellular contexts and identifies potential vulnerabilities that could expand treatment options for patients. By integrating genetic studies and biochemical analyses, the included works offer insights into novel therapeutic strategies designed to overcome both intrinsic and acquired resistance. A primary goal of the research presented here is to refine the understanding of these pathways to develop more effective treatments while minimizing therapy-related toxicities. As the field moves toward a more personalized approach to cancer care, understanding the intricate requirements for RAS signaling is more critical than ever. This collection serves as a valuable resource for researchers and clinicians dedicated to advancing the state of cancer therapy and improving patient outcomes through a deeper knowledge of molecular pathogenesis and targeted interventions.



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