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The road ahead in pancreatic cancer: Emerging trends and therapeutic prospects

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This review explores the challenges and emerging trends in pancreatic cancer therapy. We focus on the tumor microenvironment and the potential of immunotherapy for pancreatic cancer. Pancreatic ductal adenocarcinoma, characterized by its dense stromal architecture, presents unique challenges for effective treatment. Recent advancements have emphasized the role of the tumor microenvironment in therapeutic resistance and disease progression. We discuss novel strategies targeting the desmoplastic barrier and immunosuppressive cells to enhance immune cell infiltration and activation. Recent clinical trials, particularly those involving novel immunotherapeutic agents and tumor vaccines, are examined to understand their efficacy and limitations. Our analysis reveals that combining immunotherapy with chemotherapy, radiation therapy, or drugs targeting epigenetic processes shows promise, improving overall survival rates and response to treatment. For instance, trials utilizing checkpoint inhibitors in combination with standard chemotherapies have extended disease-free survival by up to 6 months compared to chemotherapy alone. Importantly, vaccines targeting specific tumor neoantigens have shown the potential to increase patient survival. However, these approaches also face significant challenges, including overcoming the immunosuppressive tumor microenvironment and enhancing the delivery and efficacy of therapeutic agents. By providing an overview of both the promising results and the obstacles encountered, this review aims to highlight ongoing efforts to refine immunotherapy approaches for better patient outcomes.

Biography

Chris TP Do received his bachelor's degree from Texas Christian University and is currently in the MD-PhD Medical Scientist Training Program at The University of Texas Health Science Center at San Antonio. As a 3rd-year PhD student in Dr. Manjeet Rao's lab at the Greehey Children's Cancer Research Institute, Chris Do focuses on novel ECM-mediated signaling pathways and therapeutics in pancreatic ductal adenocarcinoma (PDAC). In Dr. Rao's lab, Chris TP Do has contributed to numerous seminal discoveries in the field of cancer, leading to co-authored publications in revision in several top-tier journals, including Nature Communications and Cancer Discovery. Chris TP Do has been recognized with several prestigious awards, including the Greehey's Scholar Award and multiple best pre-doctoral poster awards. He has also secured institutional extramural grants from the National Institutes of Health, including the prestigious NRSA T32 MSTP and NRSA T32 Cancer Biology training grants.