

Title:

Cancer Immunotherapy development - from checkpoint-inhibition to cellular therapies to personalized mRNA therapies

Abstract:

Immunotherapy has changed the way medical oncology can treat patients with malignant diseases. “Releasing the brakes” of the immune system as a treatment paradigm has been shown to exert tumor control almost a decade ago. The steps from initial successful checkpoint-inhibitor therapies in melanoma and lung carcinomas moved the field to routine application in many cancer entities and has changed the prognosis of many oncological patients. Despite these large successes, many difficulties remain and resistance to immunotherapy is being observed in many (e.g. gastrointestinal) cancers and also in cases with liver or brain metastases. Novel therapeutic approaches address these problems, also with combinations of multiple immunologically modulating therapies. But also within the landscape of well established treatment modalities (e.g. like radiation), steps forward show how immunotherapy can be enhancing outcomes. Furthermore, better understanding of the complex immunobiology allowed to better tailor therapies to fit to the pathomechanisms within the tumor microenvironment. These novel therapies have emerged not only for hematologic malignancies but also for solid tumor diseases and show exciting results. With the advent of mRNA vaccination, immunotherapy advances into the personalized oncology era.