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What's new in imaging technology: from genomics to robot

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Nanomedical imaging for personalized cancer medicine

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In vivo understanding of target molecules via molecular imaging with nanoprobe is crucial to assess indication of targeted drug and to monitor its efficacy in patients, which are the key factors in planning personalized cancer therapies. In the smart contrast agent, target contents is the cornerstone to cataloguing patient subgroups and evaluating targeted anticancer drug efficacy as well as its resistance. Further, the ultrasensitivity from high crystallized monodiverse metal oxide nanoparticle enables us to image very small sized tumor via MRI. On the other hand, in vitro measurement of target contents has a critical role to optimize personalized cancer medicine. These contents promise various nanoplatforms and nanodevices to translate precise and sensitive nanobiosensor into personalized clinical settings. Thus it is necessary to develop in vivo and in vitro diagnostic tools to measure multiple targets and/or signaling pathways of cancer toward personalized medicine.