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Systems biology approach in the discovery and development of cyclin-dependent kinase inhibitors as new therapeutics in oncology and cardiology

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Systems biology is an innovative approach, which brings together quantitative experiments, mathematical modelling and simulations. This approach has accelerated the discovery of new drug targets, development of new drugs and treatment options. Here the application of systems biology in the discovery and development of cyclin-dependent kinase inhibitors as new therapeutics with specific examples in oncology and cardiology is discussed. The benefit from the use of mathematical and computational modelling in drug target identification and validation, lead optimisation and preclinical and clinical development of drug candidates is illustrated. In addition, the results from recent clinical trials with CDK inhibitors are brought up to date.

Biography

Nikolai Zhelev is professor of medical biotechnology and director of CMCBR atAbertay University, Dundee, Scotland. He is also honorary professor in eight universities in UK, China and Bulgaria. He has been involved in founding four start-up biotech companies and has worked as head of the departments of Biochemistry, Cell Biology and Proteomics in Cyclacel Pharmaceuticals Inc. He has published three books in the field of systems biology, cancer research and treatment, DNA damage and repair as well as papers in high impact journals, including Nature Medicine, with more than 1000 citations.

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