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## Targeting the BCR-ABL Tyrosine Kinase in Chronic Myeloid Leukemia as a model of rational drug design in cancer

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Many biological and clinical features of chronic myeloid leukemia make it as a paradigm of rational drug design in human cancer. Chronic myeloid leukemia was the first malignancy to be linked to a clear genetic anomaly, the <a href="Philadelphia chromosome">Philadelphia chromosome</a> and at present, it is probably the best understood of all human malignancies. Studies of the disease pathology revealed, that the molecular consequence of the Philadelphia translocation is a novel fusion gene, <a href="BCR-ABL">BCR-ABL</a>, which encodes a constitutively active tyrosine kinase with wholesale range of biological activities. Animal models have validated the direct role of the BCR-ABL protein in malignant transformation and subsequent research confirmed that the enhanced tyrosine kinase activity of BCR-ABL is essential and sufficient for the leukemogenesis. The very existence of a single genetic abnormality, presented in essentially all patients made it a potential target for molecularly designed therapeutic approaches for the disease. The advent of tyrosine kinase inhibitors, designed specifically to inhibit the tyrosine kinase activity of the BCR-ABL protein represents one of the major innovations in cancer therapy and may serve as a pattern how discoveries of disease pathogenesis may be translated into the development of successful targeted therapies in cancer medicine.

## **Biography**

Dr, Zámečníkova Adriana, PhD has a Masters degree from Clinical Genetics and has completed her Ph.D from Comenius University, Slovakia in 2001. Registered by Health Professions Council, UK, London, as a Clinical Scientist and by Health Practitioners Competence Assurance, New Zealand, as a Medical laboratory Scientist. From 1997 she was appointed as a Head of the Department of Cancer Genetics at National Cancer Institute, Slovakia and from 2001 she is working as a supervisor of Cancer Genetics Laboratory at Kuwait Cancer Control Center, Kuwait. She has published more than 40 papers in reputed journals and participated as a speaker in various meetings and conferences.