

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 Philadelphia chromosome 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, *BCR-ABL*, 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.