λ gt22, an improved λ vector for the directional cloning of full-length cDNA

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We have previously reported the construction of a λ gt11-derived phage vector, λ gt18, which utilizes a unique SalI restriction site as the cloning site (1). Combined with the use of primer linkers which serve as primers for the synthesis of both strands of cDNA and also supply SalI cleavage sites at the ends, this vector allows increased efficiency of full-length cDNA cloning. To improve the usefulness of the vector, we have further introduced the following modifications into the λ gt18: a synthetic chi sequence (2) was inserted, XbaI and SacI sites were removed, and an in-frame polylinker was introduced near the 3' end of the lacZ coding region. The resultant phage vector, λ gt22, is stabilized for phage replication and contains five unique cloning sites at the following restriction sites: NotI, XbaI, SacI and EcoRI (Fig. 1). This vector accommodates DNA fragments up to 8 kb and allows expression of the cloned DNA as a lacZ fusion protein. The new phage vector is particularly suitable for cloning of full-length cDNA in a defined orientation into SalI and NotI sites as depicted in the Figure. While it maximizes the expression of the cloned DNA in *E. coli*, possible introduction of partial cDNA clones into the library is minimal since both SalI and NotI infrequently cleave eucaryotic DNA.

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