

A short hairpin RNA or small hairpin RNA (shRNA/Hairpin Vector) is an artificial RNA molecule with a tight hairpin turn that can be used to silence target gene expression via RNA interference (RNAi).

Expression of shRNA in cells is typically accomplished by delivery of plasmids or through viral or bacterial vectors. shRNA is an advantageous mediator of RNAi in that it has a relatively low rate of degradation and turnover. However, it requires use of an expression vector, which can pose safety concerns.

The promoter choice is essential to achieve robust shRNA expression. At first, polymerase III promoters such as U6 and H1 were used; however, these promoters lack spatial and temporal control. As such, there has been a shift to using polymerase II promoters to regulate shRNA expression.

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