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Regulating adeno-associated virus

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Adeno-associated virus is an attractive vector for gene therapy as it is non-pathogenic and integrates into a specific site in the human genome. In the Early Edition of the Proceedings of the National Academy of Sciences, Toni Cathomen and colleagues, at The Salk Institute for Biological Studies in California describe a genetic screen for cellular proteins that can bind to a viral DNA sequence important for replication and integration (10.1073/pnas.261567198). They used the yeast one-hybrid assay to search for human proteins that bind to the Rep recognition sequence (RRS) from the viral genome; they identified the human zinc finger 5 (ZF5) protein that binds specifically to the RRS motif. ZF5 regulated transcription from the viral p5 promoter, repressed replication (more than 400 fold) of AAV2 viruses, and inhibited virus production. Understanding the interaction between cellular proteins and the viral genome is important for improving the recombinant AAV vectors being developed for gene therapy.

References

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