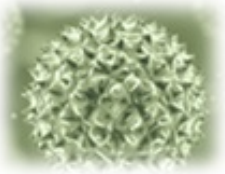
Optimize transduction

Ways to reach higher transduction levels with viral vectors

Transduction - the application of virus particles to deliver gene constructs to a cell - is one of the best and most efficient ways to genetically modify mammalian or human tissue. While its potential is endless – there are limitations. But, with expert help, these boundaries can be overcome.



We tell you how, in this short overview:

1. Add transduction boosters

Transduction boosters are reagents that are added to the transduction medium to increase success rates. Different modes of action are possible.

Many booster systems work like an adapter between the cell- and virus receptors to enable better adherence to cells that carry a fitting receptor-makeup and increase the uptake of the virus. A good example is the AdenoBOOST™ reagent. The short adapter-peptide can increase the transduction efficiency of adenovirus particles by a factor or 50, enabling transduction for cells with low CAR densities.

Other reagents are used independent of receptor biologies to improve the general physico-chemical interactions taking place between cell membrane and virion during transduction. Polybrene or the clinically applicable LentiBOOST™, for example work this way.

2. Amend your protocol

The susceptibilities to virus particles can differ greatly between cell types. Often, small changes to an existing protocol, such as increasing viral load or incubation time can have a significant effect.

Added steps can further help maximize the impact. The integration of a centrifugation step during lentiviral transduction, for example, can improve the number of transduction-positive SUDHL-1 cells from ~40% to over 80% (demonstrated in Anastasov et al, 2016).

As technology expert and service provider for vector customization, SIRION Biotech has collected and optimized transduction protocols for >150 cell type/virus pairings. This trove of vector experience is available to anyone interested enough to click "send".

3. Switch serotypes

Viral vectors come in different flavors – that is, serotypes. Cell surface antigens determine the serotype of the virus and also greatly influence what cells the virus can interact with, its immunogenicity and how easy it is to produce. Standard suppliers often rely on only one or two serotypes to back their vector portfolio, limiting their scope.

SIRION Biotech offers a wide range of virus serotypes and options to alter surface antigens for AAV, adenovirus and lentivirus – adapting them to fit your project as best as possible.

4. Find an alternative vector system

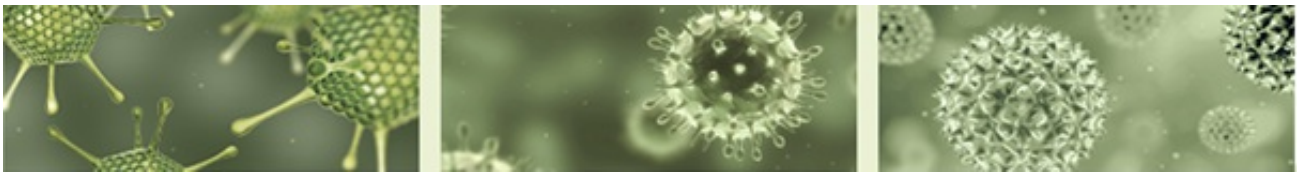
Often, one virus system can do what the other cannot. Being able to switch between systems will greatly improve the progress of your work and help you reach your goals without having to compromise to any limitations.

With three completely standalone virus systems, a continuously growing portfolio of virus modifications and understanding of game-changing modalities like **CRISPR/Cas, shRNA derived knockdown, inducible expression systems** etc., SIRION Biotech offers the most versatile gene delivery and -modification system on the planet.

5. Contact us

Sirion Biotech has been in the gene delivery business for over 10 years. With over 250 projects every year, and paired with a fully personalized consultation service, it is the ultimate one-stop shop for all your viral vector needs.

Contact us today.



About the company

Highest Technological Standards

SIRION Biotech is world leader for innovating virus vector technologies and also provides **custom services** to academic and industrial partners worldwide. SIRION is the only company mastering **all 3 major virus types** that are used regularly for genetic manipulation of cell systems.

- Customized cell models and viral vectors
- In shortest possible time frames
- Custom project managment to fit your experimental setup

Technological features include

- Control gene expression and knockdown
- All-in-one Lentivirus, AAV and Adenovirus vectors
- Inducible, tissue specific expression and transduction boosters

Licensing options for industrial use are available.

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A true dual-citizen of American and German descent, Carl has worked on both sides of the Atlantic. With his well based knowledge of cellular, neuro- and cardiac physiology and his unique bilingual background, he maintains fast and precise communications between the SIRION headquarters in Germany and US clients.

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