

CLINICAL



experience evaluated evalu

Gene Therapy Capabilties for AAV and Lentivirus Production

Millipore_®

Preparation, Separation, Filtration & Monitoring Products

SAFC®

Pharma & Biopharma Raw Material Solutions

BioReliance®

Pharma & Biopharma Manufacturing & Testing Services

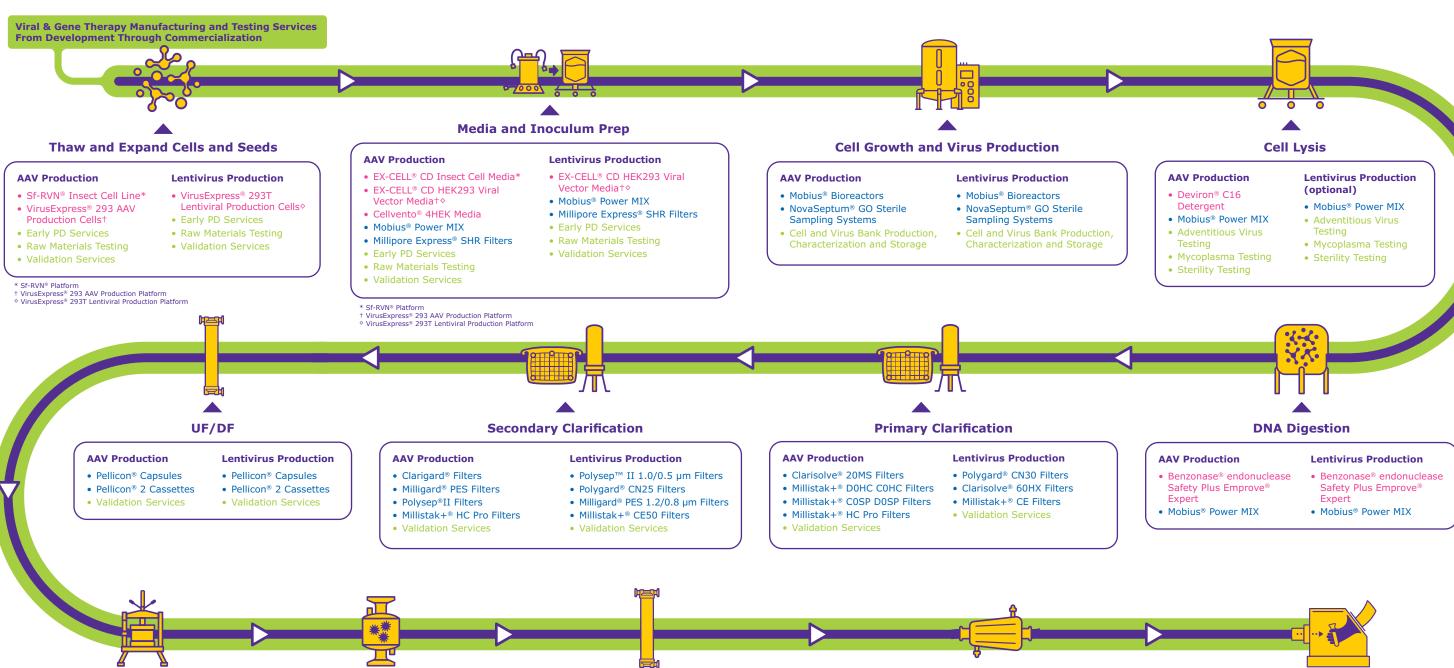
MilliporeSigma is the U.S. and Canada Life Science business of Merck KGaA, Darmstadt, Germany.





Adeno-associated Virus and Lentivirus Manufacturing

PROCESS FLOW



Chromatography (1–2 Steps)

AAV Production

- Fractogel® Family • Viral Clearance
- Services

- Fractogel® Family
- Natrix® Family
- Services

Lentivirus Production

- Viral Clearance

AAV Production

 Viresolve® NFR Filters

Virus Filtration

- Viral Clearance
- Services

AAV Production

- Pellicon® Capsules
- Safety
- Identity

- Pellicon® 2 Cassettes
- Content/Strength
- Purity

UF/DF

Lentivirus Production

• Pellicon® 2 Cassettes

Pellicon® Capsules

Content/Strength

Safety

Identity

Purity

• Durapore® 0.22 μm

- Filters
- Filters
- Millipak® Final Fill
 - Validation Services

Sterile Filtration

Filters

Filters

Millipak® Final Fill

Validation Services

AAV Production Lentivirus Production

• Durapore® 0.22 μm

- Millipore Express® SHC
- Filters

Final Fill

- Mobius® Filling Assemblies
- Mobius® FillReady
- Assemblies**

AAV Production

- NovaSeptum® GO Sterile
- Sampling Systems
- Safety
- Content/Strength
- Identity

- Assemblies** • NovaSeptum® GO Sterile
- Sampling Systems

Lentivirus Production

Mobius® FillReady

Mobius® Filling Assemblies

- Safety
- Content/Strength
- Identity Purity

Bringing Your Therapy To Life

You've created a gene therapy with the possibility to help patients. But the development and manufacturing of your gene therapy, how it's developed, produced and approved, are still being outlined. No process template exists. You have to design one as you go, despite the uncertainty and unique challenges. We're here to help. With 30+ years of gene therapy experience, we bring expertise in viral vector manufacturing and testing as well as a global organization to integrate process development, scale-up, safety testing and regulatory guidance to meet your process needs.

Our products and services for AAV, Lentivirus and other viral vectors provide solutions to your most challenging pain points around process development, speed, manufacturing and regulatory guidelines. We are ready for you to draw on our experience to help bring your gene therapy to life.

MilliporeSigma has brought together the world's leading Life Science brands, so whatever your life science problem, you can benefit from our expert products and services.

Millipore®

The Millipore® portfolio of MilliporeSigma offers an ecosystem of industryleading products and services, spanning preparation, separation, filtration and monitoring - all of which are deeply rooted in quality, reliability and time-tested processes. Our proven products, regulatory and application expertise are a strong foundation you can rely on to consistently perform at the highest level.

SAFC®

The SAFC® portfolio of MilliporeSigma offers customized and ready-touse raw material solutions, backed by deep regulatory expertise. Our high-quality products and services are supported by an experienced and responsive team of raw material and regulatory experts who are committed to understand your requirements and provide tailored solutions.

BioReliance®

The BioReliance® portfolio of MilliporeSigma encompasses biopharmaceutical characterization, safety testing and process development, as well as clinical and commercial biomanufacturing. Our experienced teams and operational expertise make us the partner who supports you all the way and always has your vital goal in mind.

No guide will replace the need to conduct process development and optimization experiments. The unique nature of every process stream combined with application and regulatory requirements play a part in determining the optimum process solutions. Use this selection guide as a starting point for selecting and sizing the most appropriate MilliporeSigma's solutions.

We provide information and advice to our customers on application technologies and regulatory matters to the best of our knowledge and ability, but without obligation or liability. Existing laws and regulations are to be observed in all cases by our customers. This also applies in respect to any rights of third parties. Our information and advice do not relieve our customers of their own responsibility for checking the suitability of our products for the envisaged purpose.

The holder of the manufacturing authorization shall ensure that the excipients are suitable for use in medicinal products by ascertaining the appropriate good manufacturing practice.

This is particularly true if the material in a certain application is regarded as high risk excipient, for example in parenteral dosage forms.

SigmaAldrich.com/gene-therapy



