The Vector Core at the University of Michigan produces gene transfer vectors that facilitate the transfer of specific genes into either normal or aberrant cells. The Vector Core also provides advice to researchers regarding the optimal use of these systems. Gene transfer vectors require special handling precautions and manufacturing systems that lend themselves to a Core structure that optimizes efficiencies of scale and cost to the research community.

The Vector Core provides a shared laboratory space for the construction, purification and characterization of recombinant vectors containing genes relevant to the study of disease models for use as in vitro and in vivo gene transfer reagents.

These systems include both non-viral (expression plasmid) and viral (recombinant lentivirus, recombinant retrovirus, recombinant AAV, and recombinant adenovirus) technologies. The expert staff collaborate closely with researchers to ensure the Vector Core provides the platforms our customers require, and to institute the use of new technologies. The Core provides high quality, cost effective products and project guidance to our researchers.

### Products & Services

- **Adeno-Associated Virus (AAV):** AAV provides broad host range and long-term expression in vivo. The Core is working to bring a full-range of AAV serotypes and will offer several scales of viral production.

- **Adenovirus** provides high expression, transient transfection to a wide variety of dividing and non-dividing cell types. Adenovirus is a widely used viral transfection vector for in vivo and in vitro applications.

- **Lentivirus** is a retrovirus that provides stable integration in both dividing and non-dividing cells. Lentivirus is used for the production of permanent cell lines and long-term modifications for in vivo and ex vivo applications.

- **Retrovirus** (MMLV/MSCV) provides stable integration in dividing cells. Retrovirus is used for the production of permanent cell lines and long-term modifications for in vivo and ex vivo applications.

- **Plasmid services,** including adenoviral shuttle plasmids, retroviral plasmids, lentiviral plasmids, CRISPR/Cas9 genome editing plasmids and pUMVExpression plasmids.

- **shRNA library clones:** The Vector Core currently stocks all GE Dharmaco pGIPZ V2L (Oligo ID #) clones and a selection of lentiviral miRNA/shRNA clones in the pGIPZ V3L, pTRIPZ, and pLKO backbones. Non-stock lentiviral clones (Sigma pLKO clones) will be purchased on request for $50/clone.

- **CRISPR/Cas9 genome editing plasmids:** The Vector Core offers consultation on targeted genome editing technologies to U-M investigators. In collaboration with Sigma, the Vector Core offers special pricing on Sigma’s CRISPR/Cas9 all-in-one (multiple platforms) and ready-to-use Cas9 plasmids as well as guide RNA (gRNA).
Offering services that often go above and beyond gene transfer systems, the Vector Core’s knowledgeable staff is committed to providing high-quality, cost-effective products to our researchers.

— Thomas Lanigan, Ph.D., Director, Vector Core

Getting Started
To begin using the Core, all customers must register with MiCores at https://umich.corefacilities.org and place your order online. Note: all recombinant viral vectors must be registered with the University of Michigan Institutional Biosafety Committee (IBC). This registration is a safety precaution to protect our employees from possible safety concerns. The IBC is responsible for tracking recombinant DNA work at the University of Michigan.

Training Opportunities
Core Director Tom Lanigan offers a virus safety-training course, sponsored by OSEH and the IBC. Individuals planning to work with viral vectors are recommended to enroll in the course “Working Safely with Viral Vectors” (course #BLS008), which is offered every other month starting in January. The course is free to University of Michigan employees.

The Vector Core also provides protocol sheet downloads on their website, covering procedures such as “Cell Transduction with Virus,” “Virus Titering,” and more.

Cost Estimates and Fees
The Vector Core offers a wide variety of products and services at cost for U-M investigators. Technical expertise and economies of scale help keep the price low with a quick turnaround time.

For current costs and fees, please visit the Quick Facts page online at research.med.umich.edu/vectorcore. Note: members of centers that support the Core (Cancer Center and MGPRC) may qualify for discounted pricing.

About the BRCF
The BRCF, part of the University of Michigan Medical School Office of Research, is a collection of centralized labs and services offering state-of-the-art instruments, resources and expertise to biomedical researchers, investigators and educators.

For more information on the BRCF, visit research.med.umich.edu/brcf

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