

Mail Code L584 - 505 N.W. 185th Avenue, Beaverton, OR 97006 – Lab Tel: 503-346-5111,

Website: <https://www.ohsu.edu/onprc/molecular-virology-core>

**Custom AAV Vector Production Request Form**

*Please e-mail to completed form to* [carrolju@ohsu.edu](mailto:carrolju@ohsu.edu) *and* [disseng@ohsu.edu](mailto:disseng@ohsu.edu)

**Request Date:** Click here to enter a date.

**Contact Information**

**Principal Investigator:** Click here to enter text.

**Email Address:** Click here to enter text.

**Phone Number:** Click here to enter text.

**Laboratory Contact:** Click here to enter text.

**Email Address:** Click here to enter text.

**Phone Number:** Click here to enter text.

**Institution:** Click here to enter text.

**Department Name and Code:** Click here to enter text.

**Mail code:** Click here to enter text.

**Shipping Address:**  Click here to enter text.

Click here to enter text.

Click here to enter text.

Click here to enter text.

**Project Alias Number (for internal users):** Click here to enter text.

**FAID (for internal users):** Click here to enter text.

**Name of Fiscal Authority:**  Click here to enter text.

**FedEx Account Number (for external users):** Click here to enter text.

**AAV Vector Information**

1. **AAV serotype capsid desired (e.g., AAV1, AAV2, etc.):**

Click here to enter text.

1. **Please indicate AAV vector production scale needed (see general notes for description):**

\  Medium-Scale Prep  Large-Scale Prep

1. **Name of ITR transgene plasmid and concentration (recommended concentration 1 µg/µl). We request that you send us at least 100 µg (for medium scale) or 200 µg (for large scale) endotoxin-free purified plasmid. Please clearly label the plasmid tube with the name of the plasmid, concentration, date and users name:**

Click here to enter text.

1. **Description of transgene cassette (e.g., Enhanced Green Fluorescent Protein gene driven by CMV promoter):**

Click here to enter text.

1. **Does your transgene cassette contain one of the following regulatory elements? Please note all vectors will be tittered by Free ITR qPCR.**

**CMV promoter** Yes No **CAG promoter** Yes No

**SV40 polyA** Yes No **BgH polyA** Yes No

1. **Does your transgene cassette encode oncogenes, select agents, toxins, apoptotic genes, etc. that may be more hazardous than usual?**

Yes No

1. **What will the AAV vector be used for? (e.g. research area, disease application, target tissue, cells, model organism, etc.)**

Click here to enter text.

1. **Was your transgene ITR plasmid purified endotoxin-free? (we recommend using Qiagen endotoxin-free plasmid purification kits)**

Yes No

1. **Have you confirmed both AAV 5’ and 3’ ITRs and other important elements in your transgene vector? If yes, please send us a gel image confirming ITRs.**

Yes No

1. **Do you have a map and complete sequence for your transgene ITR plasmid vector? If yes, please provide a txt copy of your vector sequence an electronic map indicating restriction sites used for analysis.**

Yes No

1. **Does your transgene ITR plasmid encode a conventional single-stranded (two ITRs) or a double-stranded/self-complementary (one ITR) AAV genome?**

Single-Stranded Double-Stranded/Self-Complementary

1. **Do you have special aliquot size needs? (100 µl is the standard aliquot size unless indicated below; total stock volumes at medium production scale may range from ~500 µl to ~1.5 ml depending on the serotype).**

Click here to enter text.

1. **What date do you need the AAV vector stock by?**

Click here to enter a date.

1. **Optional notes and comments:**

Click here to enter text.

**General Notes to Users**

1. Institutional Biosafety Committee (IBC) Approval and Biosafety Guidelines
   1. According to OHSU guidelines, for each particular project involving recombinant viral vectors, the investigator requires approval from the IBC (for *in vitro* use) and the IACUC (for *in vivo* use) before obtaining AAV vector stocks from the Molecular Virology Core (MVC). For links to IBC, IACUC and up-to-date RDRQ Core Viral Vector Services submission forms go to <http://www.ohsu.edu/xd/research/about/integrity> (internal users) or contact your local institutional committees (external users). The MVC has an IBC master protocol in place that describes the underlying AAV vector technology and that can be referred to in your submission (RDRQ questions 3 to 7). If needed, we can assist you in navigating the specific IBC protocol submission process for viral vectors and for training in safe viral vector handling. **Please make sure to forward us your IBC approval letter when granted.**
   2. Our recombinant AAV vectors are all helper virus-free, so replication-competent virus (RCV) testing is not required. The minimum Biosafety Level (BSL) or Animal Biosafety Level (ABSL) for work with rAAV is 1. The final BSL/ABSL level may be higher depending on the particular transgene cassette and vector configuration, as well as the cell type or *in vivo* model system used. These are general guidelines, and only the IBC and IACUC can issue project approvals and determine the specific BSL/ABSL for your work. See also <http://www.ohsu.edu/xd/research/about/integrity/ibc/upload/Vector-table-01152013.pdf>
2. AAV Insert Size and ITR Integrity
   1. The natural AAV genome size is about 4.7 kb. All viral sequences (except for 2 x 145 bp inverted terminal repeats [ITRs]) are deleted in AAV vectors. That provides a transgene capacity of about 4.3 kb. Even though slightly larger transgene cassettes can sometimes still be packaged efficiently, there is a risk of incomplete or non-packaging (i.e. no or low vector titers) with oversized genomes. Therefore, it is recommended to not exceed the AAV packaging capacity. The MVC can attempt to produce oversize vectors, but success is not guaranteed. Please contact us to discuss if this is a concern.
   2. Inverted-terminal repeat (ITR) plasmids (a.k.a. cis or vector transgene plasmids) are prone to rearrangements and deletions. This can lead to failed AAV vector productions. Therefore, many ITR-containing plasmids need to be grown in recombination-deficient (rec-) *E.coli* strains (such as Sure, Stbl2, or Stbl3) as low-copy plasmids at 30°C. Expect significantly reduced yields. We recommend using 2XYT medium and doubling growth volumes. For example, for a Qiagen Mega Prep set up a 2 x 500 ml overnight culture. Use twice the volumes of P1, P2, and P3 buffers for initial re-suspension and cell lysis. Then purify over a single Mega column following standard Qiagen protocol.
   3. Before supplying your ITR plasmid to us, validate ITR integrity by restriction digests using enzymes that cut within the ITRs, such as Xma I, Msc I, Ahd I, Pau I or Pvu II.
3. AAV Production Sizes and Expected Yields
   1. Our standard medium production scale is at ~2,000 cm2 cell culture surface area (13 x T-150 flasks). If your vector is low yielding at regular scale or if you need very large quantities, we also offer a large production scale at ~6,000 cm2 cell culture area (40 x T-150 flasks)
   2. Important note about vector yields: The MVC makes every effort to optimize and improve production protocols to provide our users with the highest possible yields. For high titer AAV serotypes, such as AAV8 and AAV9, medium-scale yields for standard or stock vectors (such as marker gene vectors) are typically in the range of E+12 to E+13 total viral genomes (vg). For lower titer serotypes, such as AAV1, 5 and 7, vector yields can range from E+11 to E+12 total vg. Note that yields for a particular AAV serotype vector can vary significantly when custom transgene expression cassettes are used, due to inherent differences between cassettes. Due to these variables, yields cannot be guaranteed for custom vector requests.
4. AAV Titers
   1. Final viral vector is tittered by Free ITR qPCR and titers are reported as viral genomes (vg)/ml. The purity of the viral vector is checked by SDS–PAGE gels. Final viral vector product is 0.22µm sterile-filtered into an injection-compatible and stability-enhanced buffer (DPBS + 35 mM NaCl + 5% glycerol).
5. If you require controls for your assays please do not hesitate to ask us. We generally have marker stocks of the most common serotypes (such as AAV1, 2, 2 retro, 3 5, 6 7, 8, 9 and PHP.B) with a CMV-driven eGFP reporter gene in our inventory (10 µl, 25 µl, 50 µl, and 100 µl aliquot sizes) for immediate purchase. Other common promoters and marker genes may be available upon request for cloning purposes or vector production.

**Shipping and Billing**

**For ONPRC and OHSU investigators**, all materials are supplied either in person or shipped directly using the Inter-Campus Courier to the laboratory address provided by the requesting investigator. An email will be sent prior to shipment to the requesting user confirming the day of shipment. Packages are normally delivered the following day (i.e. 24 h turnaround), and we request that you confirm receipt via email. If you haven’t received your package by 2pm the following day, please contact us at 503-346-5111 so we can track your package. Internal investigators receive an invoice at the end of the month with a description of the charges and the project alias number that will be billed.

In order to ship yourITR-containing plasmid to us, please use the following label and fill in the relevant information. Plasmids can be shipped via the Inter-Campus Courier service NOT Inter-Campus Mail.

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| **To:** Julie Carroll/Greg Dissen  ONPRC,  Molecular Virology Support Core  Mail Code L584  Research Building 046  505 NW 185th Avenue  Beaverton, OR 97006  Phone: 503-346-5111 | **From:** **(PLEASE PROVIDE SENDERS NAME, SHIPPING ADDRESS AND PHONE NUMBERS)**  **RESPONSIBLE PERSON**  **FOR THIS SHIPMENT** |
| Emergency Contact Number: 503-936-6103 | |

**For external (non-OHSU) users**, materials will be shipped and received via FedEx using the provided address and account number. An email will be sent prior to shipment to the requesting user confirming the day of shipment and the tracking information once available. Please inquire for specific routine or custom service requests, and we can generate a quote for you. External billing proceeds through the ONPRC business office. Note that center guidelines require that external users supply us with a purchase order (PO) before initiating a service. After the work is completed, external users will receive an invoice for review and the supplied PO will be billed.