FUJIFILM
Value from Innovation

INSIGHT BRIEF

Conduct Early-Phase Studies to Improve Manufacturability and Mitigate Risk

Creating effective, scalable manufacturing strategies for adeno-associated virus (AAV) therapies means sponsors and contract development and manufacturing organizations (CDMOs) must identify creative and collaborative solutions in the early phases of development. In a recent webinar hosted by FUJIFILM Biotechnologies, Ian Goodwin, Director of CMC Program Design, provided his expert insight into the benefits of implementing early-phase studies like candidate screening and feasibility assessments for AAV manufacturing. In the post-webinar Q&A session, Goodwin tackled listener questions on manufacturability vs. clinical efficacy, regulatory support, and more.

Q: What information do you consider critical for clients to have in hand when starting a program?

Goodwin: When starting a program, it is straightforward — it's target based. We want to know where the material is going and how it is going to be used so that we can set the appropriate purity and productivity targets. Working backwards from these attributes is critical so that R&D supply runs can be scaled appropriately to be cost- and time-effective. Additionally, considerations for plasmid construct design need to be taken into account when considering the costs and time demand to getting a program kicked off. All this information is, quite simply, covered by a conversation or an intake form that drives alignment of overall partnership expectations.

Q: How do you balance manufacturability versus clinical efficacy when guiding construct selection?

Goodwin: Clinical efficacy is going to drive 99% of our partners' decisions. However, if we could be the 1% voice, let us tell you how manufacturable something is before you promise that construct to internal stakeholders, or at least, let us try and troubleshoot or de-risk potential manufacturing challenges. With things like self-complementary versus single-stranded, serotype dependencies, etc., there are key manufacturing pros and cons that should be considered when evaluating future manufacturing costs, dosing, etc. You need to weigh your clinical data against a manufacturing feasibility to do a cost of goods assessment to see if the product will be viable at Phase 1 and later during the commercial lifecycle and sustainable.

"Having a ready-for-clinic process supporting your construct design and feasibility will save time bridging material attributes later."

Q: After feasibility, what does your platform entail?

Goodwin: It is largely scale-up. [In the webinar example,] when we scaled from 10 L to 200 L, host cell DNA removal was identified as a particular challenge during the feasibility to scale-up. Successful reduction of host cell DNA required an element of process optimization, specifically because of the concentration concerns allowable for the clinical application. When we talk about manufacturability, clinical efficacy, and next steps when scaling up, they are highly dependent on the dose, route of administration, and stability of the product at the specified concentration (and serotype). Impurity analysis and empty capsids need to be balanced and focused on as we scale up. We allow for mid-scale runs prior to a toxicology supply run to make sure that when we get into this supply it utilizes a representative process that is understood, locked, and ready for implementation in clinical manufacture.

Q: Do you provide support when it comes to preparing regulatory documents that may require details from these studies?

Goodwin: Absolutely. Regulatory considerations are considered in various discussions and regular communications. We provide program plans, study designs, and summary reports of the data, as well as decision-making rationale(s) for construct selection. Though the content may not be in the exact format needed to file an IND, it is certainly IND appropriate. In terms of what is provided back to you, [we share] the content of the small-scale runs, the construct design runs, the feasibility runs, the toxicology supply run, and the drug substance, all with standard in-network and out-of-network supporting analysis. You get everything from batch records through execution of the sample plan and raw data.

Q: What are some of the benefits of choosing FUJIFILM Biotechnologies over another CDMO?

Goodwin: Speaking for FUJIFILM Biotechnologies, the level of experience based on our history of IND support, the transparency and level of planning that go into the studies that we execute to produce material for pre-preclinical, preclinical, toxicology, and Phase 1 manufacture set us apart from other CDMOs. Many of us have come from pre-IND companies that understand the amount of support needed to achieve preclinical and clinical milestones. Our teams are experienced and are harmonized in the mission to bring late-phase manufacturing concepts to Phase 1/2 and Phase 1/2 manufacturing and analytical concepts to preclinical. This what we refer to as process continuity [from construct design through toxicology/Phase 1/2], which — as we have hopefully highlighted here — is a critical consideration when selecting a CDMO partner. In the end, having a ready-for-clinic process supporting your construct design and feasibility will save time bridging material attributes later. Representative material, process continuity, and clear alignment on material requirements will enable cost- and time-effective plans to deliver a consistent product from concept to clinic. Our joint efforts to capture challenges early during conceptual design will be vital to setting clear expectations in understanding what it will take to bring the product to clinic and — eventually — product to market.

If you are interested in learning more about FUJIFILM Biotechnologies' approach to candidate screening and feasibility studies, click the link to **listen to the full webinar** or read more about these offerings in a **white paper**.

About FUJIFILM Biotechnologies

FUJIFILM Biotechnologies is a global CDMO operating in Europe and North America with integrated platforms to meet client demands and deliver medicines to patients faster. FUJIFILM Biotechnologies has capabilities not only with drug substance manufacturing but also with finished goods manufacturing on both sides of the Atlantic, allowing a customer to work with a single provider for their end-to-end manufacturing needs. To learn more about their CDMO offerings, **contact the FUJIFILM Biotechnologies team**.

About the Expert

IAN GOODWIN
Director, CMC Program Design
in Advanced Therapies,
FUJIFILM Biotechnologies

Ian Goodwin is Director of CMC Program Design in Advanced Therapies covering Cell and Gene Therapy services. He has been with the company for six years, having also served as Director of Upstream Process Development and in scientific roles within the Process Development group. Ian is currently responsible for providing strategic CMC guidance, technical design, and project scope development support to prospective clients engaged in CDMO selection for viral and non-viral cell & gene therapy products. Ian's previous experience includes 10+ years working on process development and manufacturing strategies for stem cell, regenerative medicine, and gene therapy viral vectors, specifically adeno-associated virus (AAV) and lentivirus vectors (LV) in academic, start-up, and CDMO environments. Ian holds a Master's Degree in Microbiology and Immunology from Drexel University College of Medicine and a B.Sc. in Microbiology from the University of Pittsburgh.

Partners for *Life*

CDMO LEADERSHIP AWARDS2024

"Partners for Life" represents a transformative approach to development and manufacturing, emphasizing relationships founded on trust and transparency — founded in people-centric values, transformative science and innovation, and unprecedented delivery.

Contact us to discuss your science — get the latest updates on our network and capabilities.

USA

College Station, Texas
3940 Fujifilm Way
College Station, TX 77845
+1 979 431 3500

Holly Springs, North Carolina
100 Biotechnology Avenue
Holly Springs, NC 27540
(Coming online 2025)

Research Triangle Park, North Carolina
101 J Morris Commons Lane
Morrisville, NC 27560
+1 919 337 4400

Thousand Oaks, California
2430 Conejo Spectrum Street
Thousand Oaks, CA 91320
+1 805 699 5579

DENMARK

Hillerød
Biotek Allé 1
3400 Hillerød
+45 7741 6000

UNITED KINGDOM

Teesside
Belasis Avenue
Billingham, TS23 1LH
+44 1642 363511

JAPAN

Tokyo
R7 Building, 7-12-2 Roppongi
Minato-ku, Tokyo 106-0032
+81 3 6871 7736

FUJIFILM Biotechnologies

fujifilmbiotechnologies.fujifilm.com

Email: contactfdb@fujifilm.com

FSC

MKT-0127-IB-Rev02