NIIMBL

Supplement to Project Call 2.1 RFP

To help give more definition to what types of topics the technical project areas are aiming for, the NIIMBL TAC and staff created an example list of projects.

Technical Topic Area Examples

The Project Topic Areas described in the Project Call 2.1 RFP were chosen through a series of polls of NIIMBL Technical Activities Committee (TAC) representatives, and a recent series of individual discussions with technology leaders from Tier 1 industry members. These descriptions are not arranged by of order importance, but they all have been described as industry priorities by at least one Tier 1 company.

Many of these Project Topic Areas have long-term goals that could take multiple years to achieve. In Project Call 2.1, NIIMBL is seeking technical proposals from NIIMBL member teams that will make significant progress towards reaching these long-term goals in time periods of 12-18 months. The most attractive projects for funding will offer a combination of the best alignment with industry objectives, and the best promise of making significant progress towards these long-term goals in the shortest time. This is the best way to guarantee that the results of NIIMBL technical projects will provide the best return of investment to industry members, both in the short- and long-term. Examples of projects that could meet short- and long-term progress are listed below to stimulate consideration on "types of specific projects" within a technical topic area. This list is not exhaustive or prescribed.

6.1.1. Process Analytical Technologies (PAT)

Examples include:

- Single-use robust sensors that do not require recalibration
- In-line monitoring combined with multi-variate analysis
- Spectroscopy methods applied in-line, on-line, or at-line as sensors
- Flexible technologies to make risk-based decisions using pooled Critical Quality Attributes or Quality-by-Design data

6.1.2. Rapid Release of Drug Substance and Drug Product

Examples include:

- Reduced contaminant detection time from 28 days to 24 hours
- Validation methods for new adventitous agent test methods
- Tools or methods to reduce the number of false rejects

6.1.3. Viral Clearance Technology Development

Examples include:

- Downstream viral clearance methods for mAbs and proteins
- Viral clearance platform technology
- Standardized high-titer viral challenges
- Measurement tools and methods to support decision-making

6.1.4. Cell Line Development and Engineering

Examples include:

- Improve cell line yield or manufacturability
- Create novel cell lines for mAb or protein development
- Reduce cell line production time
- Measurement tools and methods to support cell line processes

6.1.5. Manufacturing Platforms for Cell Therapy Products

Examples include:

- Scale-down models for allogenic operations
- Measurement tools and methods to support small volume sampling, < 1mL
- Process controls with integrated imaging at same manufacutring timepoints to support decision-making
- Custom bioreactors for T-cell manipulations with low shear stress, high mass transfer capability and integrated on-line, in-line sensors
- Reliable low-cost reagents and growth factors

6.1.6. Drug Substance Manufacturing - Chromatography Technology Development

Examples include:

- Single-use, low cost, can handle very high titers, and are amenable to integration into continuous manufacturing operations
- Novel separation methods for the selective flow-through removal of antibody fragments and other product impurities

6.1.7. Continuous Processing Technology Development – Biologics

Examples include:

- Methods and techniques to transistion from single-batch to continous manufacturing
- Scale-down “test bed” platforms for continous manufacturing
- Novel in-line methods to determine the metabolic state of cells in a continuous or semi-continuous process and strategies for optimizing media/nutrient feed protocols

6.1.8. Scale-down Models for Biologics Manufacturing Process Development

Examples include:

- Automated, improved scale-down models with high-throughput testing capability and predictive modeling for the entire process
- Scale-down approaches for high-throughput screening of filtration or product formulation processes
- Multivariate analysis (MVA) driven models or mechanistic models to support predictive scaling throught the entire manufacturing process

6.1.9. Mechanistic Model Development

Examples include:

- Models of mixed-mode chromatography and overload/elution chromatography that can be used for future feedback control of manufacturing steps
- Adaptive process control based on *in-situ* metabolite or product attribute measurements that help control metabolism, glycosylation and other features of the process

- Models to guide scale-down high-throughput approaches to accelerate screening of operating variables, as well as scale-up efforts

6.1.10. Cost-Effective Gene Vector Production

Examples include:

- Novel cost-effective alternative processes for production of clinical grade gene vectors
- New processes utilizing novel materials and other approaches specifically designed for gene vector production

6.1.11. Improved Drug Product Stability

Examples include:

- Tools or methods to eliminate cold-chain supply issues
- Tools to reduce aggregation and immunogenicity of drug product
- Models, tools, or methods to understand excipient interactions with biologics and their impact on the properties of a formulation

6.1.12. Novel Materials for Biomanufacturing

Examples include:

- Films with better extractable profiles for storage and transport of cryopreserved drug substance (50-100 mL bags)
- Novel materials with low expansion coefficient and low leachables/extractables profiles for cryopreservation of cell therapy products in syringes
- Alternative drug product containers such as IV bags that can withstand low and high temperatures, exhibit low to no particulates, leachables and extractables
- Silicone-free container closure components and devices (e.g. high-volume pumps and syringes)