

Position: Chemical Engineer/Electrical Engineer - Technical Platform Development in US Molecular Biology Dept.

Location: Piscataway, New Jersey, US

The Chemical Engineer/Electrical Engineer - Technical Platform Development for plasmid, minicircle, nanoplasmid, linear long dsDNA euchromatin/chromosome, and ssDNA production platform operations for mammalian cell transfection.

Contributes to the engineering of automated platforms for plasmid/linear DNA production development and utilization activities for gene therapy products using proprietary GenScript DNA production workflows. This includes, but may not be limited to, oligo production, cloning, sequencing, plasmid optimization, PCR amplification, ssDNA transfections, cell banking, mammalian strain selection, cell culture, transfections, ELISAs, cell imaging, NGS sequencing, and DNA assembly techniques.

Key Responsibilities:

1. Works with analytical and process development to design strategies in gene therapy product characterization primarily as it applies to DNA plasmid (or linear DNA) production plasmid operations in a 24/7 operation paradigm for use in mammalian cell transfections.
2. Characterizes plasmids used in manufacturing of gene therapy products using in-process real-time sampling and machine learning.
3. Maintains and assesses stability of plasmids and their associated cell bank stocks.
4. Maintains cell culture lines for vector generation and assay development.
5. Determines expression efficiency of gene-of-interest constructs.
6. Uses GBG and Benchling software to maintain detailed electronic data collection for tracking samples with 1D and 2D barcode, sample data handling /analysis, and robotic scheduling logs
7. Sets up order-driven Oracle and/or SQL relational databases for machine learning and artificial intelligent operations in automated 24/7/365 DNA / viral production

lines for production and delivery of client samples.

8. Optimizes reagent and disposables use on integrated manufacturing lines for biosample production and inventory in complex storage and retrieval systems.
9. Has experience in encoding digital controllers for new instrumentation.

Qualifications:

1. A Master's or Bachelor's degree in Chemical Engineering, Mammalian Cell Genetics, Biochemical Engineering, Biochemistry, Molecular Biology or other relevant discipline and demonstrable laboratory expertise and/or gene therapy automated process development using microfluidic experimental pumps.
2. Demonstrated engineering competency and applied experience with automated cell and molecular biology laboratory techniques, hyper-scheduled manufacturing robotic workflows, microfluidic subintegrations, and robotic lines primarily for continuous plasmid and amplicon DNA production and downstream uses at scale, such as linear dsDNA templates, ssDNA, minicircles, nanoplasms, and PCR and other assemblies.
3. Demonstrated ability to write and document SOPs and protocols for experimental procedures to be scripted on workcells and robotic workflows on industrial / laboratory robotic platforms.
4. Experience with integrated platforms from at least one but not limited to one of the following or equivalent ABB, Fanuc, Mitsubishi, Kuka, Beckman, Thermo, Yaskawa, HighRes Bio, Staubli, Bionex, Molecular Devices, Universal Machine and Engineering, Calvary Robotics, Beckman, ThermoCRS, Hudson Robotics, and/or BioNex.
5. Experience with microfluidic platforms using custom control and chip combinations of modular standardized plug-and-play fluidic circuit board (FCB) for operating microfluidic building blocks (MFBBs) from, but not limited to, ElvFlow, uFluidix, Enplas Life Tech.
6. Demonstrated ability to characterize AAV vectors and the corresponding gene-of-interest for GMP compliance in automated plasmid manufacturing for gene

therapy products.

7. Experience with viral vectors (including lentiviral vectors and adeno-associated viral vectors (AAV)) and nonviral delivery methods, gene editing technologies (e.g. CRISPR, TALON, etc.), cell engineering, and cell line generation.
8. Experience cleaning and calibrating liquid handler performance using Artel Proficiency .

Key words: automated vector design, synthetic chromosomes, microfluidic platforms, minicircles, nanoplasids, and artificial intelligence

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