



Startup: Syenex

Startup Website: <https://www.syenex.com/>

Startup Description:

Syenex is an open-science genetic medicines platform company that enables drug developers to program cells with precision and scale. We aim to make genetically modified cell therapies, such as CAR T cell therapy, more efficient and accessible to patients by designing, engineering, and screening novel enveloped delivery vectors that simplify conventional cell therapy manufacturing. We work at the intersection of synthetic biology and cell and gene therapy to enable novel therapeutic solutions.

Project Title:

Development and screening of delivery vector compositions to increase therapeutic delivery to primary human immune cells

Project Description:

Cell and gene therapies hold great promise for treating a wide range of complex diseases. For example, engineered T cell therapies have proven curative for multiple cancers with potential to treat autoimmune diseases. Despite this success and promise, widespread adoption and access to these life-changing therapies remains limited by the costs, time, and logistics of conventional cell therapy production processes. To overcome these challenges, Syenex is developing advanced gene delivery vectors that transform and simplify the production of immune cell therapies to make them more accessible to patients. This internship project contributes to this mission.

This project involves designing and testing novel vector compositions for enhanced therapeutic delivery to specific primary human immune cell types. This project will also involve development of innovative screening methods to evaluate function of vector compositions. The intern will work at the intersection of molecular biology, virology, and cell culture to create and refine tools critical for advancing targeted therapeutic strategies. Central tasks will include molecular cloning techniques to construct and manipulate vectors, maintaining and culturing mammalian cells to test these vectors, and producing, purifying, and analyzing vector compositions.

The intern will also optimize production conditions for vectors, ensuring high yield and functionality, and utilize flow cytometry for experimental design and analysis to evaluate vector efficacy and specificity. A significant focus will be on maintaining comprehensive records of protocols, experimental data, and observations, enabling reproducibility and iterative improvements. Additionally, the intern will engage in collaboration with the research and development (R&D) team and present findings at company meetings, fostering cross-disciplinary communication and contributing to the project's overall success.



Startup: Syenex

Startup Website: <https://www.syenex.com/>

Project Expectations:

The intern will gain hands-on experience with molecular biology, cell culture, and data analysis while contributing to real world research. Their work will play a key role in advancing the development of new therapies. The intern is expected to be a contributing member of the R&D team, which includes training and regular lab work producing and testing viral vectors, building and prepping plasmid DNA, attending weekly R&D team meetings, and attending weekly 1-on-1 meetings with their scientist supervisor. By the end of the project, the intern will have identified vector designs that meet the project goal/application. Deliverables will include well-documented protocols, clear experimental data, and an analysis of which vector designs show the most promise towards each goal.

Desired Candidate Experience:

Required:

- Current enrollment in an undergraduate program in biological sciences, biochemistry, engineering, or related field
- Molecular biology and/or tissue culture (mammalian cell culture) lab experience
- Strong written and oral communication skills
- Strong work ethic and desire to learn and contribute to team science

Nice to have:

- Experience producing and handling viral or non-viral gene delivery vectors
- Experience cloning, prepping, and handling plasmid DNA

Training & Mentoring Opportunities:

The intern will be primarily mentored and supervised by a scientist at the company, but will also interact closely with the full R&D team. The intern will work with their supervisor to set and review project goals and receive day-to-day support, including hands-on training in experimental design, techniques, analysis, and presentation. The intern will have the opportunity to present experimental plans and data analyses for feedback and discussion at R&D team and company-wide meetings. Finally, the intern will also have opportunities to gain exposure to the business operation and strategy of the company during the program.