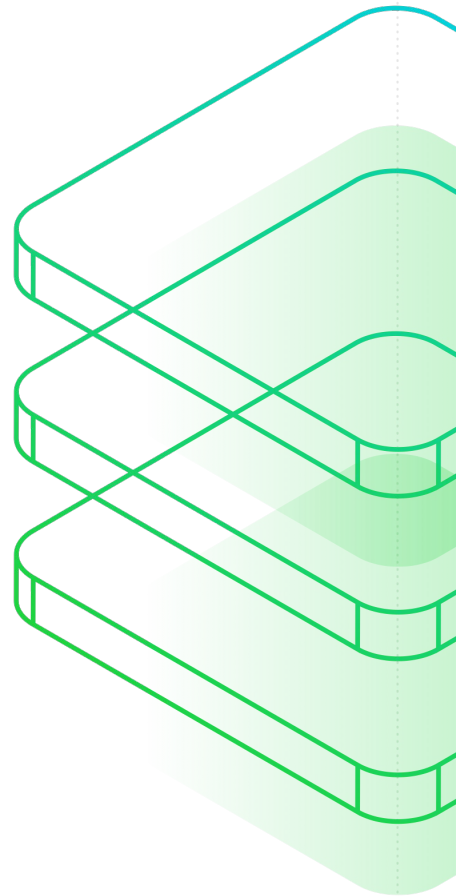


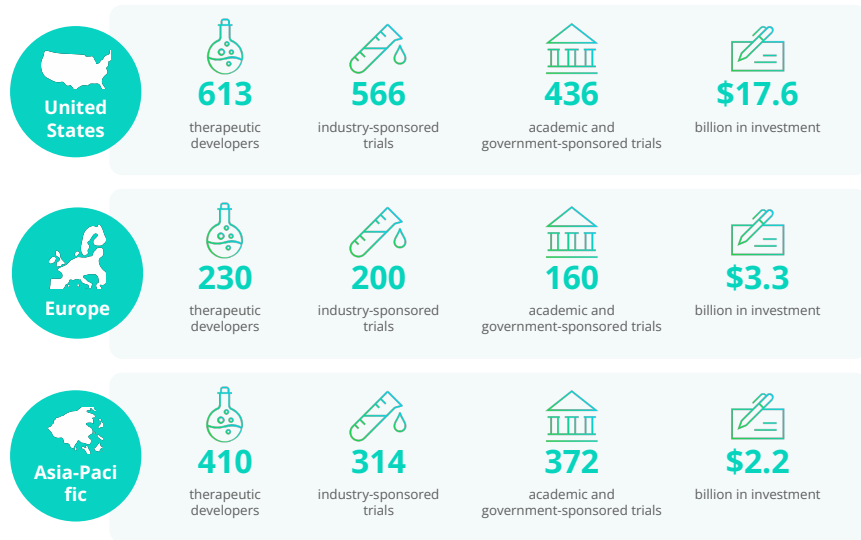
Accelerating Cell & Gene Therapies

Bespoke genome editing solutions for GCT companies



Expanding Landscape of *ex vivo*

► Gene-Modified Cell Therapies



Currently, an estimated **500% manufacturing shortfall** for cell therapy products - not enough therapies are being produced



High COGS contribute to high CGT list prices (**\$375K to \$475K per treatment**) - severely limiting patient access to treatments

Gene editing continues to advance as a therapeutic modality since the initial CRISPR gene-editing trial in 2019

- Currently **41 trials and counting ongoing in gene editing with 80% using CRISPR**

ARM 2021 ANNUAL REPORT

A key problem for cell and gene therapy developers is how to balance throughput and speed for developing editing approaches with downstream clinical compatibility and GMP manufacturing.

Balancing Speed, Safety and Costs is ► a Challenge for C> Developers



- . How can I get us to the clinic the fastest?
- . How can I get our therapy to the patient in a rapid, safe, and cost-effective manner?
- . How can I better validate the clinical efficacy of my target early?
- . How can I minimize the regulatory burden for my therapy?
- . How can I develop a gene-editing approach that can be replicated consistently for my therapies?

► Challenges & Their Impact for CGT Developers

Challenges	Company Impact		
Lack of infrastructure & build out costs			
Limited scale and resources			
Need for specialized assays and knowledge			
Fragmented providers with complicated tech transfer			
Lack of regulatory knowledge			
Clinical grade materials & supply chain			



Time



Safety



Cost

What additional challenges do you face?

► Synthego Empowers You to Change the C> Landscape

- Proprietary sgRNA Chemistry and Bioinformatics
- Scalable sgRNA Testing in clinically relevant cell types
- Proprietary Off-target Analytics
- Deep experience in genome editing >500k edits made and analyzed
- Custom DOE workflows
- Parallel approach to balance editing efficiency and accuracy

Discover what's possible



Technical



Improve Human Health



Regulatory

- First in line GMP sgRNA Supply
- Regulatory Support for IND (GMP sgRNA)
- Clinically Validated High Quality GMP sgRNA



Economics

- Reduced Development Cycles
- Single partner from discovery to clinic
- Rapid iterative cycles

Industrialized CRISPR for Accelerated Discovery to Clinic with the Halo and Eclipse Platforms

Synthego's Genome Engineering Platforms deliver unprecedented scale and quality for gene editing tools and cell-based models to fuel your research at any stage.



Standardized CRISPR

Eliminate experimental variability with the newest gold standard in CRISPR cells.



Scale with Confidence

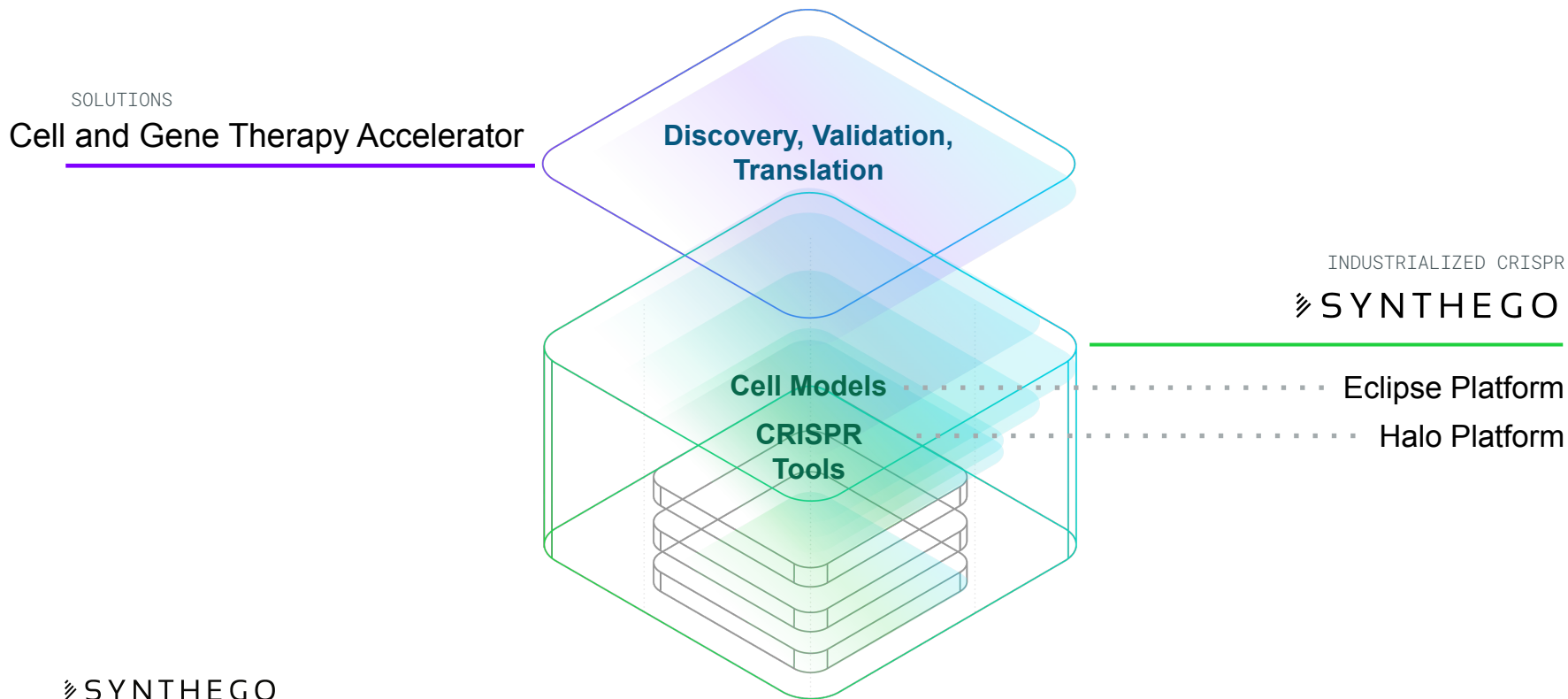
Build bigger experiments to leave no gene unstudied with platforms leveraging engineering principles.



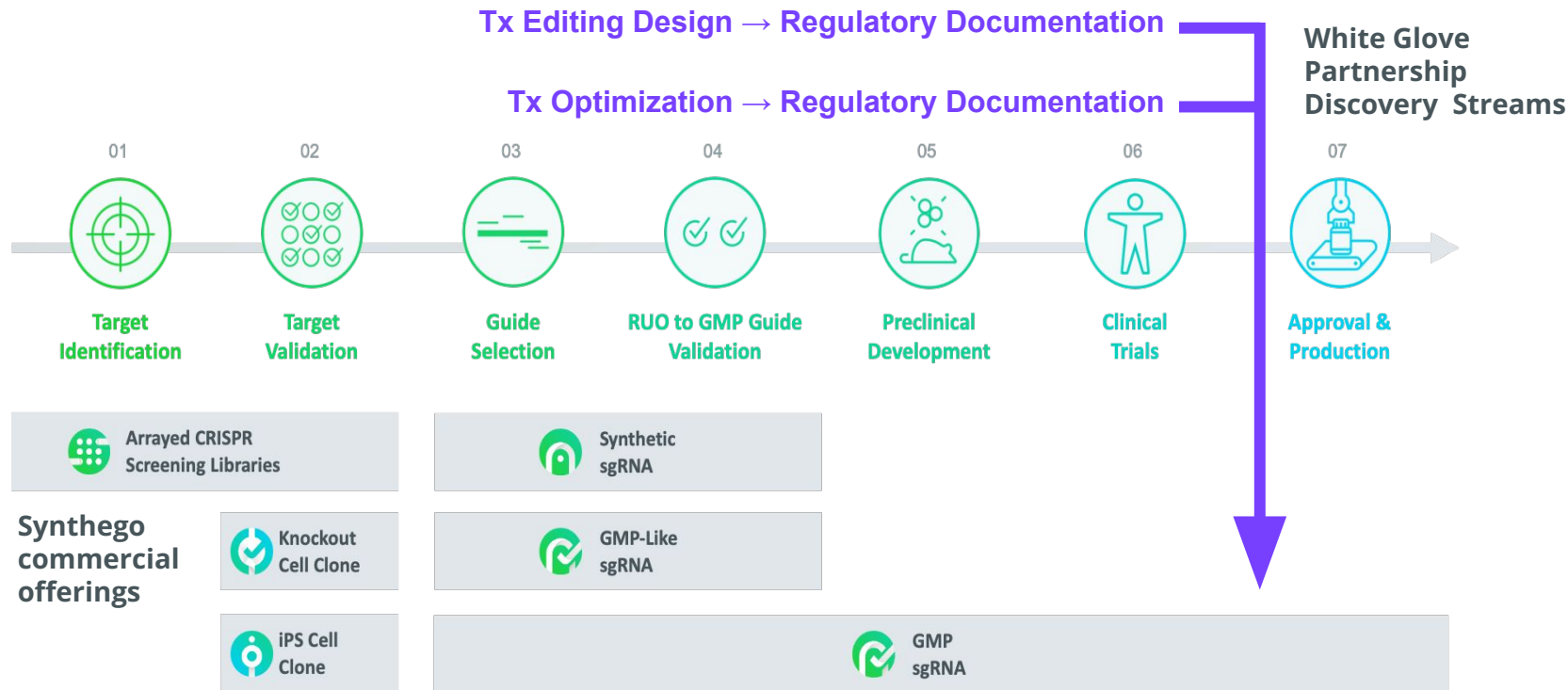
Continuous Optimization

We're improving CRISPR for you for higher predictability of project success.

► Synthego Acts as a Cell and Gene Therapy Accelerator

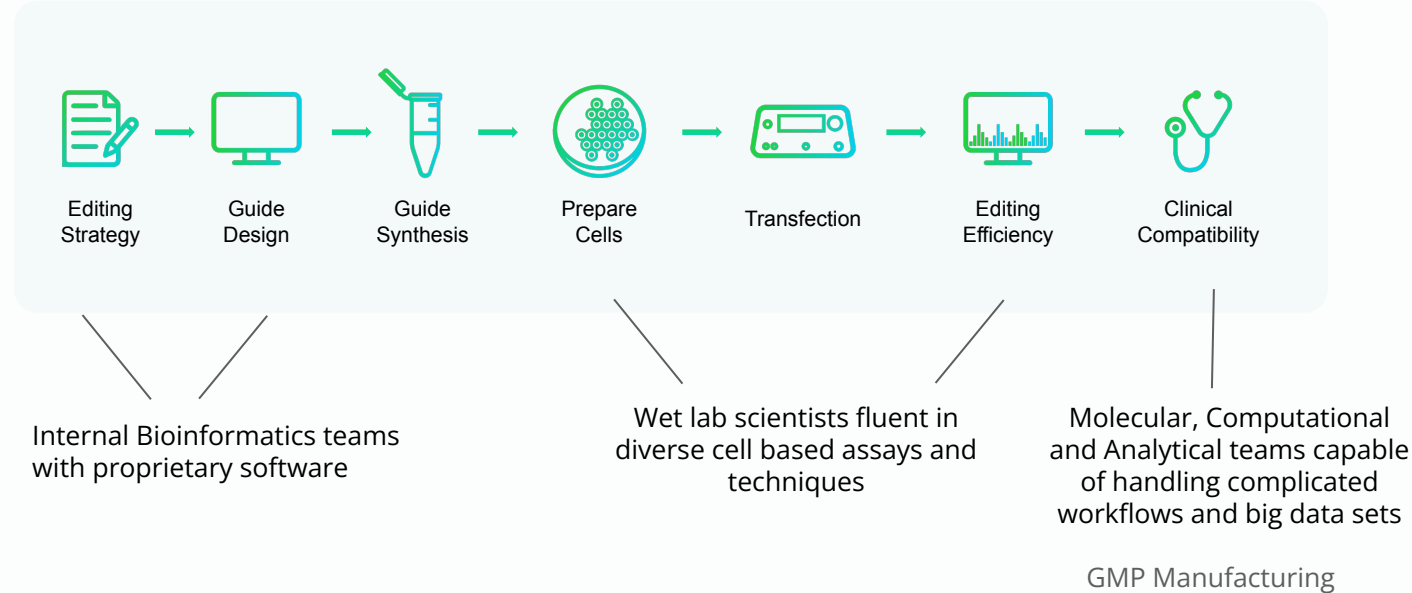


Optimizing Gene Editing Workflow for C> ► with an Eye on the Clinic



Synthego Brings Expertise and Infrastructure

Building out the teams, equipment and workflows are expensive and time consuming.



Focus on your Strengths
Reduce your time to clinic by partnering with Synthego

► Focus on Your Strengths by Leveraging Ours

Reduce your time to clinic by partnering with Synthego



Reduce Your Timeline

- Access to market leading, proven automation infrastructure for high throughput testing & optimization
- Rapid optimization of gene editing strategy with scalable testing in clinically-relevant cells
- Eliminate tech transfer & multi-vendor risk with a single partner for end-to-end genome editing workflow



Create Safer Therapies

- Balance on- and off-target editing with industry-standard & proprietary off-target analytical strategies
- Secure supply chain for clinically-validated high quality GMP sgRNAs
- Receive regulatory support for IND filing with data documentation & QA consulting



Leverage Synthego's Proprietary Technology

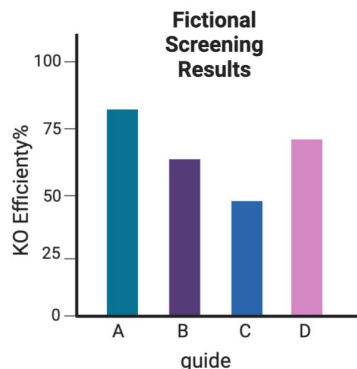
- Industry-leading expertise with >1M sgRNAs manufactured, >500K edits made & analyzed, ~1000 publications & 30+ patents
- Industry leading, automation-based gene editing platform for clinically relevant cells (e.g. iPSCs & primary T cells)
- Co-build unique editing strategies and technical solutions for your target and cell type

Eliminate Uncertainty

Rapidly screen for editing efficiency and accuracy simultaneously

Projects often run into major delays when an optimized editing strategy is analyzed in greater depth for rare off-target events.

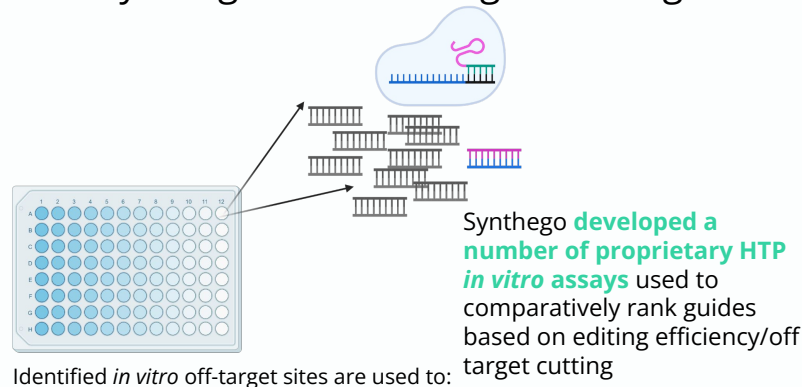
Efficiency Ranking



Editing approaches are often determined in 1 dimension: Editing Efficiency

Multiplexed Screening Approach

Synthego's On/Off Target Ranking



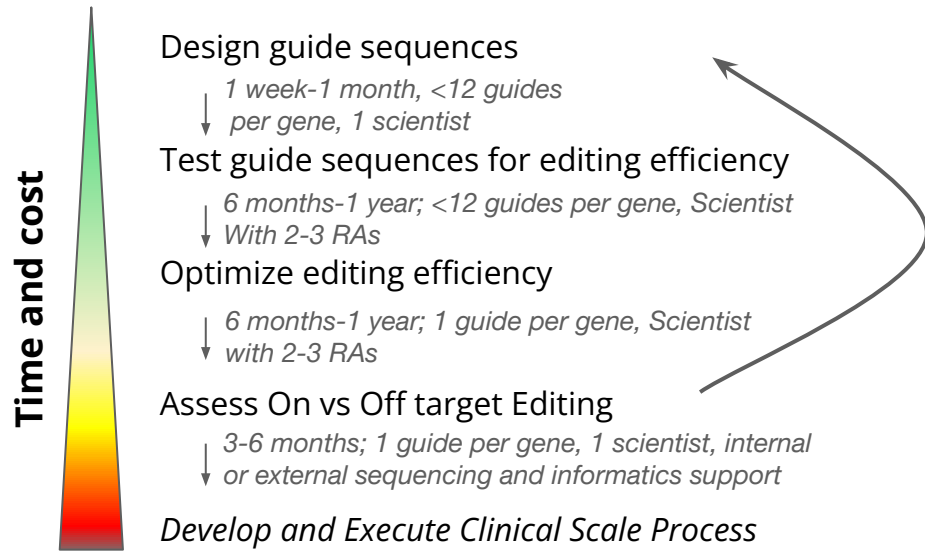
Identified *in vitro* off-target sites are used to:

1. Rank Editing Approaches
2. Inform future amplicon sequencing in edited cells

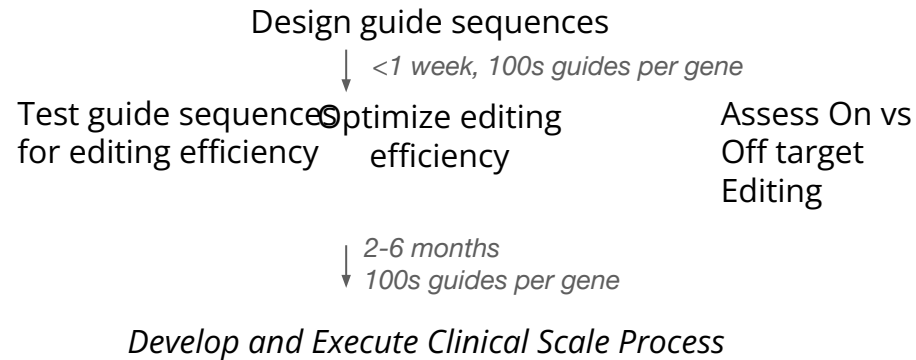
By moving in parallel assessing editing efficiency and a high level *in vitro* assessment of off-target events, **Synthego funnels a large number of designs balancing editing efficiency and accuracy.**

► Multiplexed Optimization Strategy Saves Time & Money

Traditional approaches: Linear optimization



Synthego's approach: HTP Multiplexed Optimization



Synthego can save years and up to \$XM in FTE costs

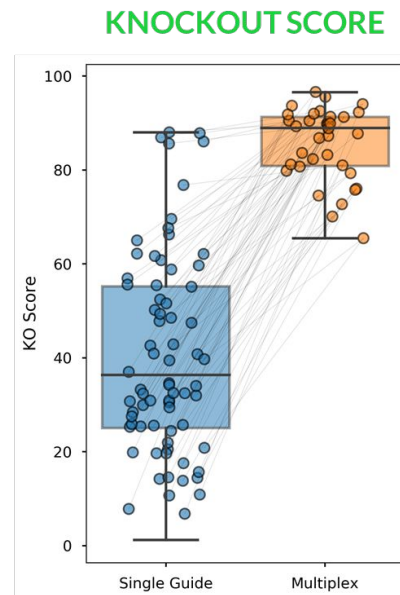
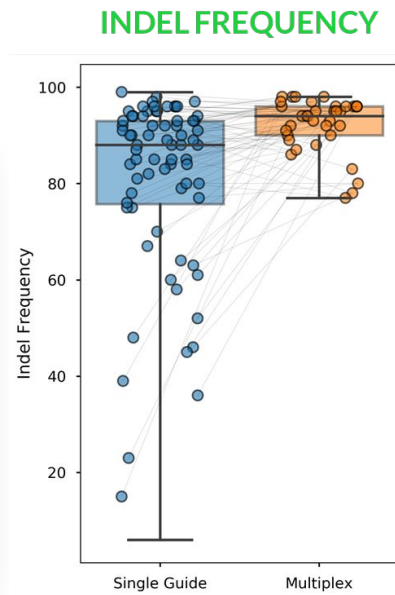
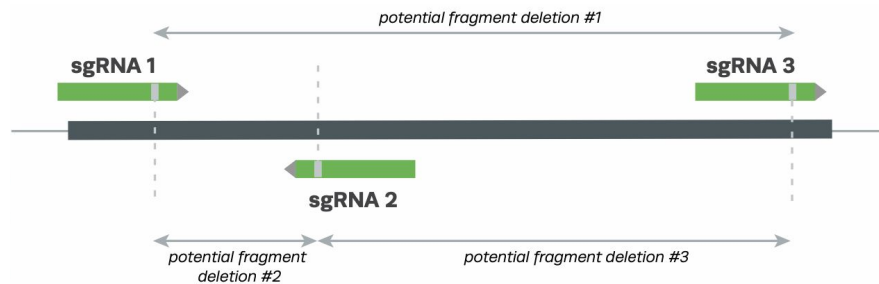
► Designs for Better KnockOuts

Synthego Editing Expertise

The left graph here depicts indel frequency as assessed by our ICE analysis tool between single guides and multi-guides designed to the same gene.

Novel Design Strategy

Proprietary guide design algorithm powers multi-guide design



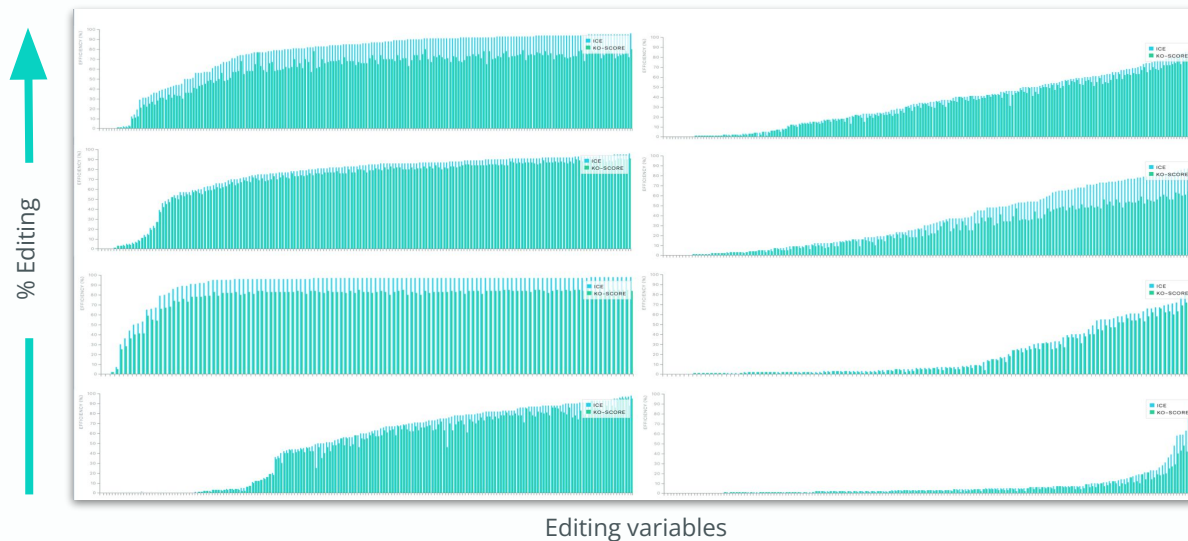
Synthego brings 10 years experience in improving editing outcomes starting with sgRNA chemistry, guide design and editing optimization techniques

► Merging Machine Learning, Automation and Biology for Optimized Editing

The figure to the left shows the editing optimization of multiple cell lines:

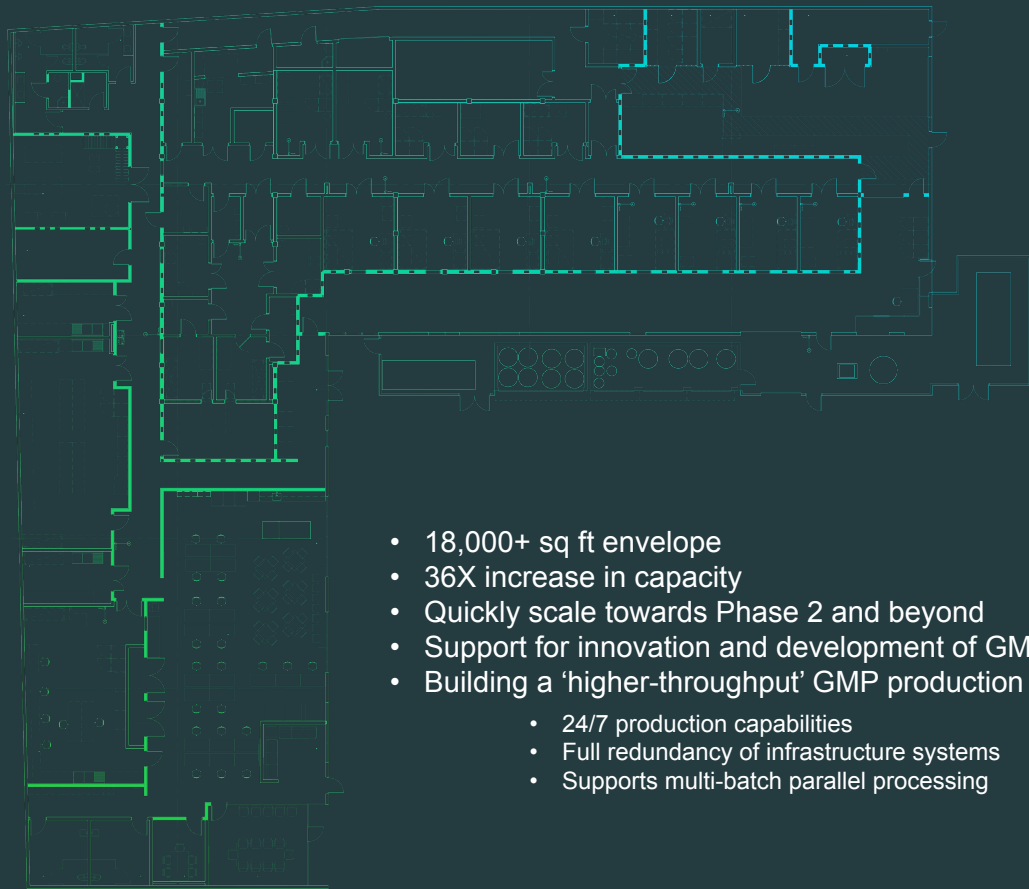
- Same target locus
- Iterating editing variables

Improvements were made through sgRNA synthesis and design tools, machine learning and HTP automation.



Synthego has optimized payload delivery in ~450 cell lines and types including numerous primary cell types and iPSC lines.

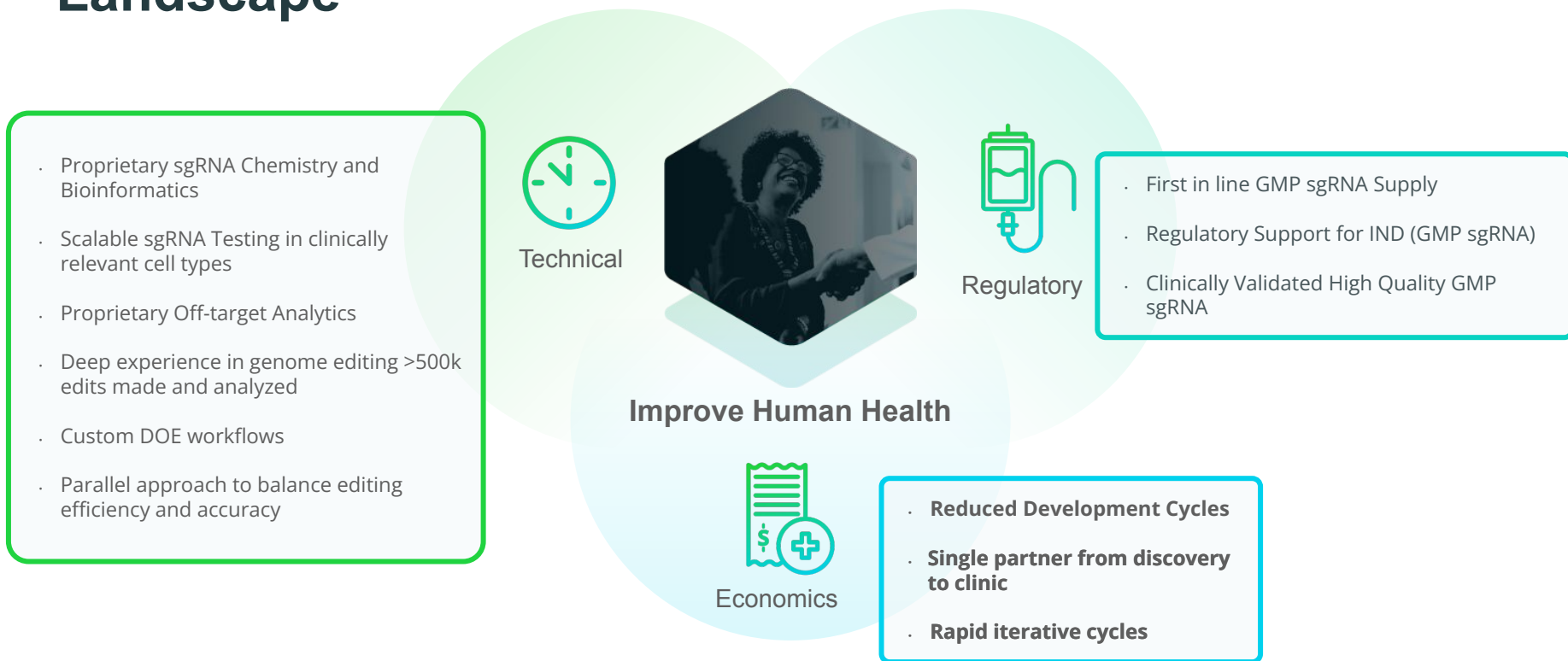
Expanded GMP Production Facility



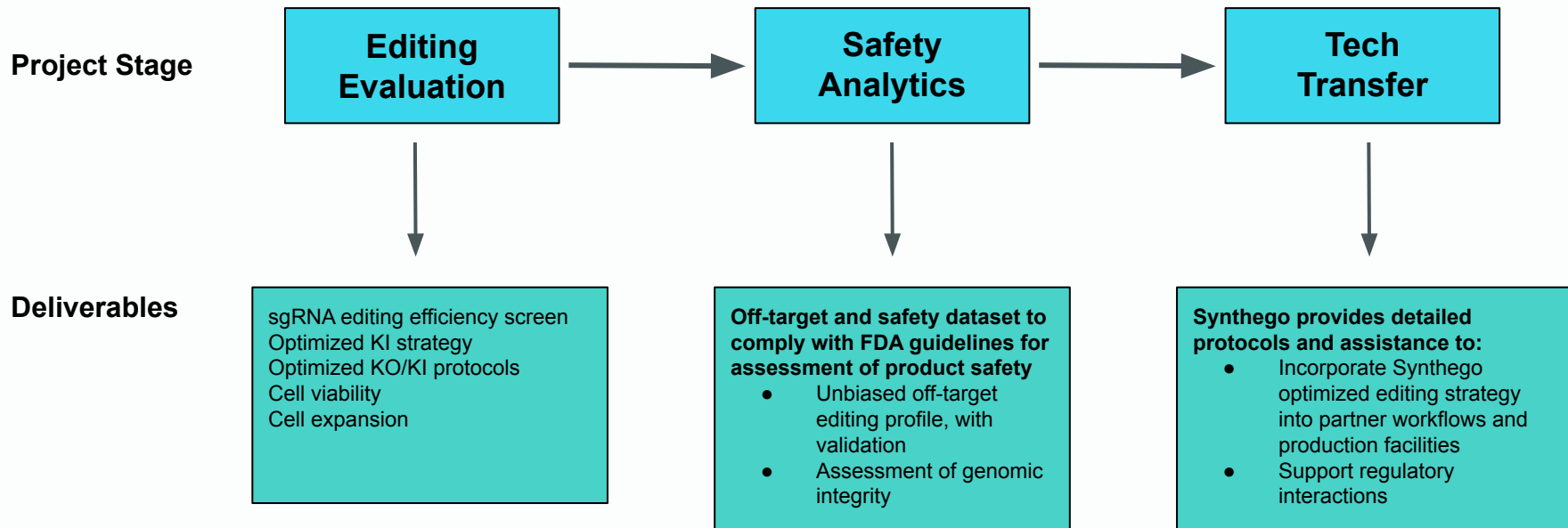
The next revolution of
GMP sgRNA manufacturing
to accelerate growth of
cell & gene therapies

- 18,000+ sq ft envelope
- 36X increase in capacity
- Quickly scale towards Phase 2 and beyond
- Support for innovation and development of GMP & RNP product lines
- Building a 'higher-throughput' GMP production facility
 - 24/7 production capabilities
 - Full redundancy of infrastructure systems
 - Supports multi-batch parallel processing

► Synthego Empowers You to Change the C> Landscape



Example Synthego partnership stages



End deliverables: Data packages, editing protocols, continuing support throughout development

Synthego end-to-end partnerships enable close collaboration throughout projects to enable projects to move rapidly towards the clinic

