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horizonTM
INSPIRED CELL SOLUTIONS

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CREATING RELEVANT CELL MODELS

A conversation with **DR. DANIELLA STEEL**, Senior Product Manager, Horizon Discovery



Cell lines are used early in drug discovery and development to create relevant models that reflect human biology, in both health and disease, for *in vitro* research. However, engineering cell lines to carry the appropriate characteristics can be a lengthy process. Small companies and academic institutions may not have the required resources, and even larger pharmaceutical companies can experience constraints with their in-house facilities. Horizon uses its gene editing platforms to develop genetically engineered cell lines, both off-the-shelf and custom, that can support all researchers.

What do researchers consider when choosing cell lines for research?

The biological context of different cells is very important when choosing the most appropriate and relevant models. Obviously, the cell line should have the target of interest, whether that be expression of a particular protein or an intact pathway. Ideally, the cell line should also be dependent on that target for a measurable phenotype, such as growth. Researchers, however, may have to balance their need for the right biology with a range of prices and timelines of specific projects.

At Horizon, we can support researchers with this balancing act — our clients can choose the model that is most relevant to them, in a defined timeframe and at a defined price. We work with multiple clients: we have partners in academia and industry looking to understand more about basic biology, as well as pharma and biotech companies seeking target validation post screening.

How do you support early researchers?

For early research, we have off-the-shelf cell lines that are ideal for projects where time or budget are important factors, or where teams can find the information they need from commonly used cell types. These include common cancer cell lines such as DLD1, MCF10

and HCT116. Also included is our proprietary HAP1 cell line, with more than 3,000 genes ready to go in this one background. We use CRISPR-Cas9 and rAAV to create the knockout, knockin and reporter mutations, and are always working to increase our ready-to-go cell line offering

How about when the scientists need to dig a bit deeper?

Some research needs more specific models — to focus on a particular cell type, such as cancer or immune cells, or to validate hits from drug screening. We provide an express engineering service, where clients can choose from ten different cell types and define the genotype. The cells are supplied as stable clones, which provide a defined cell model for experimental consistency.

Our express engineering pipeline includes colon and breast cancer cell lines and immune-like cells. We also offer a mouse cell line, as alternative species are not readily available from other companies in the field.

Can you support the researchers who have more specific needs?

For some in-depth research, we appreciate that custom-engineered cells lines are required. Our clients often request models elucidating

WE HAVE A RICH HISTORY IN GENE EDITING

gene function or disease biology; validating drug targets; understanding the effects of specific genetic modifications on drug response; or develop a basis for patient stratification in clinical trials and prescribing.

We can custom engineer almost any cell line, including cancer cells, induced pluripotent stem cells (iPSCs), immune cell lines for immuno-oncology, CHOs, and primary cell lines such as T cells. During each project consultation, we provide options on the best strategies to achieve a desired outcome. For example we would consider the location of the gene, the known presence of overlapping genes, and how to target all relevant transcript variants.

For knockin mutations, it's important to know what genotypic changes are needed to trigger a phenotypic change in the cell. This requires an understanding of the number of alleles in the cell, as a single allele knockin might not be sufficient to produce the desired phenotype. Downstream application is also an important consideration — scarless editing may be preferred, or options for selection may be an influencing factor for our clients. We provide cells with homozygous and heterozygous

knockin mutations, as well as hemizygous cells with both a knockin and a knockout mutation.

These models can be delivered in as little as 13 weeks, with the timelines dependent on the number of alleles that need to be changed, and the impact of the mutation on growth rate.

Aren't all cell line suppliers the same?

Horizon has a rich history in gene editing, with more than decade of experience in providing cell line development options. We can ensure more accurate cutting of the DNA, higher likelihood of functional knockouts and fewer off-target effects by using machine-learning algorithms to design the guide RNA for targeted gene-editing.

Creating relevant cell models also comes down to having a talented team of scientists who are supported with cutting-edge machine learning technology. At Horizon, our teams include people with experience and a great knowledge of the 'art' of biology, and who know how to nurture cell lines. We also understand what our clients need to know from their research, and what they want from their engineered cell lines.



Choose the cell model most relevant for your application

Ensure consistent performance across every project

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