How biotech companies can save time and money with ready-to-go technologies

The race against time and financial constraints is a constant struggle in the world of drug discovery. Developing life-saving medications and finding cures for debilitating diseases like cancer and degenerative conditions often requires years of painstaking research and immense financial resources.

Temps de lecture : minute

9 August 2024

However, there is a revolutionary tool which offers a faster and more cost-effective approach: CRISPR gene editing technology.

How CRISPR technology has advanced

CRISPR's meteoric rise since its first use in 2012 has cemented its position as a transformative force in various scientific fields, particularly medicine. Its ability to precisely edit genomes at the source of diseases like cancer, neurological disorders, and genetic blood conditions, like sickle cell and cystic fibrosis, has opened doors to therapeutic possibilities previously unimaginable.

But the true game-changer lies in its potential for regenerative medicine. Researchers are actively exploring how CRISPR can be harnessed to repair tissues and even regenerate organs. This could revolutionise organ transplantation and offer groundbreaking solutions for treating injuries and degenerative diseases like Parkinson's and ALS.

The role of CRISPR-engineered knock-in cell lines

One of the most crucial developments in CRISPR technology lies in the creation of knock-in reporter cell lines specifically designed for drug discovery and development, such as those incorporating HiBiT technology by Promega.

This 11-amino acid peptide can be fused to a target protein to serve as a luminescent tag. Through CRISPR gene editing, HiBiT can be integrated by knocking in the tag to the endogenous locus of the target. This will produce a very bright and highly sensitive luminescent readout correlated to the endogenous target protein level.

Using HiBiT allows for quantitative assays in both endpoint and live-cell formats, without needing target-specific antibodies. This endogenous tagging strategy provides a truer picture of protein behaviour and regulation in a natural cellular environment. This breakthrough technology opens up possibilities in biomedical research, particularly within drug discovery, by enabling precise and efficient screening of drug effects on cellular proteins.

Challenges with accessibility and affordability

However, despite the immense potential of CRISPR technology, accessibility and affordability remain significant challenges that need to be addressed for widespread adoption and impactful change. Collaboration between researchers, policymakers, and the private sector is crucial to ensure the integration of CRISPR.

Promega, a leader in this field, offers a comprehensive range of pre-built CRISPR-edited cell line pools and clones, including HiBiT fusions, which significantly reduces the entry barrier for researchers. Their use helps

alleviate budgetary constraints by up to £6m a year and accelerate the drug development timeline by up to a year, as researchers no longer need to build cell lines from scratch. This not only saves valuable time and resources but also hastens the delivery of life-saving drugs to patients in need. But others need to catch up, and this approach needs to be adopted widely to ensure CRISPR technology can enable real change.

Final thoughts

Looking ahead, the future of CRISPR technology is brimming with excitement. As scientists continue to unlock the secrets of genetic engineering, the entire drug discovery landscape stands poised for a paradigm shift. Efforts to maximise the potential of CRISPR-engineered reporter cell lines through increased affordability and accessibility are crucial steps in this direction. With its ability to reshape the landscape of genetic research and drug discovery, CRISPR undoubtedly holds immense significance in the ongoing quest to develop new and effective therapies for a healthier tomorrow.

Learn more about Promega's ready-to-use CRISPR-generated Knock-In Reporter Cell Lines, and explore the possibilities this cutting-edge technology offers in advancing genetic research and drug discovery.

Dr Leanne Wickens is Senior Product Manager at *Promega UK.*

Article by Dr Leanne Wickens