Optimizing Pharmaceutical Laboratory Efficiency and Productivity

Within the pharmaceutical industry, an immense pressure exists to progress potential therapeutic candidates through the pipeline quicker than ever before. Pharmaceutical laboratories building on the front line of drug development, the pressure for lab leaders to optimize the speed and efficiency of their operation is one crucial element of the bigger picture. When medicines have the potential to address critical unmet medical needs, the pharmaceutical laboratory needs for speed becomes vital.

Drug discovery, development and delivery: a timeline

1. Discovery
   - Genetics and molecular research
   - Identification of new targets
   - Pre-clinical studies

2. Pre-clinical studies
   - Determining whether the potential medicine is safe and efficacious
   - Animal studies
   - Preclinical trials

3. Clinical trials
   - Phase I
     - Dose-finding studies
     - Safety and tolerability
   - Phase II
     - Efficacy
     - Further safety
   - Phase III
     - Large-scale safety
     - Efficacy
   - Phase IV
     - Post-marketing surveillance

4. Drug approval process
   - Submission of New Drug Application (NDA)
   - FDA review
   - Approval

5. Post-marketing surveillance
   - Collecting and analyzing data to monitor drug performance
   - Identifying potential safety concerns

Drug discovery and development can take around 12 years from discovery to approval, depending on various factors such as complexity of the drug and success rate of clinical trials.

Promoting efficiency to improve lab productivity and economics

The more time spent at each stage within the drug discovery process, the higher the cost for the laboratory. When working with academic institutions, pharmaceutical laboratories have more therapeutic targets to explore. This pressure for lab leaders to optimize the speed and efficiency of their operation is one crucial element of the bigger picture.

The Pharma Laboratory Leaders Survey tells us that:

- 65% of lab leaders would welcome new strategies to improve laboratory efficiency
- 83% of lab leaders find that current methods require optimization
- 70% of lab leaders say one of the most common strategies they are exploring to improve laboratory efficiency is speeding up the sample chain of custody
- 6% of lab leaders say increased automation helps them meet their productivity goals

What drives productivity pressures in pharmaceutical laboratories?

1. The sample chain of custody
   - Streamline laboratory workflows and aid laboratory leaders in meeting their organizational and regulatory needs
   - The molecules themselves
   - Are complex
   - Take longer to analyze
2. Complex drug candidates
   - More therapeutic targets
   - Longer preclinical studies
   - Preclinical models
   - Drug approval process

Key facts and figures

- Drug discovery, development and delivery: a timeline

- 3 billion USD
   - Cost of a standard 100 molecule screen

- 1 out of 10,000
   - Medicine brought to market

- 7000+
   - Number of agencies involved

- 12 years
   - Average number of years to bring a drug to market

- 20 years
   - Average number of years to develop a new treatment

The Pharma Laboratory Leaders Survey

Agilent Technologies, an independent pharmaceutical research company, surveyed 650 lab leaders working in big pharma, academic institutions, bio-tech and CRO laboratories. The survey included laboratory leaders working in big pharma, academic institutions, bio-tech and CRO laboratories. The survey included leaders working in big pharma, academic institutions, bio-tech and CRO laboratories.

The Rise of Generic Medicines

Generic medicines are often shorter, relatively quick to perform, and more complex (with smaller margins for error). This means that laboratories are under increasing pressure to prove that the generic medicines are the same as the original medicines, and that the company, they need to prove their regulatory timelines for any new medicines, and need to prove that the generic medicines are comparable. But even post-approval, generic medicines are often not comparable. Therefore, it is important to develop and compare generic medicines with the original medicines. This can be done by using the same drug delivery systems, and comparing the oral bioavailability of the generic medicines with the original medicines. This can be done by comparing the bioavailability of the generic medicines with the original medicines. This can be done by comparing the bioavailability of the generic medicines with the original medicines.