



6 GROWING Areas where BioPharma is Investing their Money & Resources

1

More Testing of “Difficult Diseases”

Drug development companies have been able to address a phenomenal number of health issues; however, one could consider these diseases to be easier-to-treat or better understood, as to the factors that cause the disease. Now, the industry is turning their efforts and focus towards more difficult conditions, such as cancer, neurological diseases, emerging infectious diseases and rare or orphan diseases. This requires substantially more investment.

2

New Manufacturing Facilities

The facilities used to manufacture pharmaceuticals are known to be less modern than other industries. We will soon see pharmaceutical companies ‘catching up’, with an increased investment in machinery and infrastructure, in order to avoid heavy FDA fines. Recently, the FDA announced a number of regulatory actions taken against drug manufacturers based on their lack of CGMPs (Current Good Manufacturing Practice), the regulations enforced by the US Food and Drug Administration.

3

Artificial Tumors

Tumors can now be 3-D printed and subjected to different drugs, to better simulate their effects on the body and any adverse drug reactions. One example, created in North Dakota, clones three-dimensional tumors from the patients’ own cancer cells in order to test a multitude of anti-cancer drugs. Because multiple drugs can be tested at once, the process saves the patient precious time, money, and physical distress.

4

Machine Learning to Find and Develop Potential New Drugs

Today, under the radar screen, there are a myriad of examples of the application of ‘machine learning’. For instance, researchers at Michigan State University have begun to use artificial intelligence to evaluate the most effective cures for Parkinson’s disease based on information provided about the condition. Expect this technology to continue to develop and become more widespread in the future. You can call it in silico modeling, computational biology, artificial intelligence or ... pure genius!

5

Drug Repurposing

Many drugs on the market today can have multiple applications, and doctors prescribe certain drugs “off label” for certain indications. For example, the lymphoma drug Rituxan is also being prescribed for Multiple Sclerosis, in some cases. Pharmaceutical companies can obtain a bigger return on their R+D investment when they can apply a drug to multiple medical problems. Additionally, drugs which have never made it to market also have the potential to be re-evaluated with tools like machine learning, in order to identify uses for them that may not have previously been considered.

6

Bioinformatics

Informatics technology will allow patients to interact with their healthcare data, providing the tools and information for real change. For example, we expect to see personalized evaluations of biomarkers, which will help determine the best treatment course for each individual person, as well as provide a more direct comparison of drugs to find the most effective one, and avoid potential adverse effects.



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Sunset Blv. 748, USA

+511 989 898 765

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