



THE  
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## Delivering medicines for a global population

**Arnab Chatterjee, PhD**

Vice President of Medicinal Chemistry

Calibr-Skaggs Institute for Innovative Medicines

### ABOUT THE LECTURE

Although infectious diseases such as HIV, malaria and tuberculosis continue to threaten vulnerable communities worldwide, innovation in treatment has been hindered by insufficient investment and drug resistance. Accessibility to existing treatments is also problematic, as people in disadvantaged countries often can't afford lifesaving medicines. In his Front Row lecture, Arnab Chatterjee, PhD, explored how Scripps Research's drug discovery arm—the Calibr-Skaggs Institute for Innovative Medicines—is leveraging new approaches and technologies to overcome these obstacles in a mission to advance the global distribution of safe and effective drugs.

### TOP TAKEAWAY POINTS

- Medicinal chemists often work on ways to more quickly and effectively make compounds that could benefit human health by screening collections of drug-like molecules and then improving their activity and safety. This need led to Calibr-Skaggs' development of ReFRAME, an open-access drug-repurposing library that allows scientists to rapidly test thousands of drugs already considered safe for humans that have been developed for a range of conditions and determine if the drugs could treat nonindicated conditions. Calibr-Skaggs created the library primarily for illnesses with no immediate commercial benefits, such as tuberculosis and malaria, with support from the Gates Foundation. Thus far, about 75% of screens have been run on infectious diseases. ReFRAME has already helped to develop novel treatments for illnesses including COVID-19, malaria and pulmonary fibrosis.
- A major obstacle in global health is adherence to treatment regimens. Infectious diseases like HIV may require daily oral dosing, and missing doses can lead to a relapse from an increased viral reservoir. That's why affordable, long-acting injectables have become a key focus at Calibr-Skaggs. Institute researchers are currently working on a related molecule for treating and preventing HIV. The molecule can be dosed as infrequently as once every three months and is now in clinical study. Another long-acting treatment on the horizon is an anti-malarial compound for phase 1 studies in the coming months.

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### TOP TAKEAWAY POINTS (cont'd)

- An additional objective at Calibr-Skaggs is finding novel ways to prevent and treat seasonal influenza. Institute scientists are aiming to develop oral antivirals that could target viral proteins of influenza virus A and B, as well as novel strains with pandemic potential for which humans have no preexisting immunity. These antiviral compounds may also be used for other respiratory viruses like coronavirus and rhinovirus. The problem is that influenza viruses are notorious for quickly developing drug resistance. Therefore, institute scientists want to create a pill that combines existing and improved influenza drugs along with a combination of new mechanisms of action with novel compounds discovered at Calibr-Skaggs that can significantly reduce antiviral resistance. This allows for greater efficacy from the onset of a new pandemic virus.
- Next on the agenda is pandemic preparedness beyond COVID-19—a growing and urgent need. Therefore, it's imperative to research viruses of pandemic potential now, develop drugs well in advance, determine their safety in humans and ensure that patients can access the drugs quickly—not only as oral options but also as injectables and inhaled agents to improve efficacy and compliance. Chatterjee highlighted that the institute's work on related treatments is not for commercial benefit but to protect the global community from respiratory viruses that may be deadlier than SARS-CoV-2, like H5N1: the virus responsible for bird flu. Institute scientists are currently working on repurposing compounds to use as H5N1 treatments, including those that could address the inflammatory component of lung infections.

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