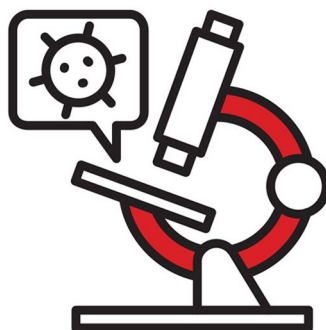# Artificial Intelligence

BenevolentAI Validates Baricitinib as Treatment for COVID-19

▶ *Trend Watch: AI solutions span counseling, selfies, biopsies and drug discovery*

London-based BenevolentAI has reported that data released from a large scale randomized clinical trial, sponsored by the National Institute of Allergy and Infectious Diseases, further validated its AI-derived hypothesis for baricitinib as a treatment for COVID-19.

The randomized control trial, which included more than 1,000 patients, began on May 8 to assess the efficacy and safety of baricitinib plus remdesivir versus remdesivir in hospitalized patients with COVID-19. The research, conducted in partnership with Eli Lilly, which owns baricitinib, includes data studying the dual basis of baricitinib's effect on patients with bilateral COVID-19 pneumonia who presented with severe disease. This provides further validation of BenevolentAI's AI-derived hypothesis of the previously unknown anti-viral activity effect of baricitinib, in addition to its predicted effects on reducing the cytokine storm.
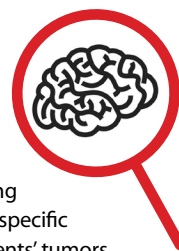
The results of randomized trials, including the recently initiated global placebo-controlled study, are expected in the next few months.

BenevolentAI creates and applies AI and machine learning to transform the way medicines are discovered and developed. BenevolentAI integrates its technology into every step of the drug discovery process, from hypothesis generation to early-stage clinical development. "We are encouraged by the ACTT-2 results from NIAID which validate our AI platform-derived hypothesis of baricitinib's efficacy as a treatment for COVID-19," says Baroness Joanna Shields, CEO of BenevolentAI.

"This data allows us to better understand baricitinib's role in potentially improving outcomes for hospitalized COVID-19 patients, and we look forward to continuing this research alongside our other initiatives to combat COVID-19," says Daniel Skovronsky, M.D., Ph.D., senior VP and chief scientific officer of Eli Lilly.

GeneScreen and Command Health Form SYNERGENOMICS

GeneScreen Counseling, a provider of independent, unbiased genetic counseling services has joined with Command Health, a provider of online workflow platforms and AI-based technology solutions to form SynerGenomics. The new company brings the full power of advanced data analytics and user friendly provider and patient engagement tools, alongside GeneScreen genetic counselors. The partnership enables cutting-edge yet practical workflow efficiencies to physicians across the United States, who want to be better positioned to offer genomic medicine options to their patients.

SynerGenomics will leverage the Command Health platform to seamlessly connect patients and physicians with GeneScreen counselors, while providing tools to maximize physician office productivity. The platform integrates with all major clinical systems and customizes to individual physician preferences and practice protocols with rigorously vetted genomic research, education, counseling, and testing services. Fully HIPAA-compliant and mobile-ready, the platform supports the clerical and administrative needs of busy physician practices with back-end analytics, secure messaging, dictation, and documentation tools. It also offers a variety of alerts and communication tools for more meaningful patient and physician engagement.

The blend of the Command Health technology platform integrated with online counseling services includes a full library of comprehension-testing interactive videos. In addition, the conversational AI toolset can revolutionize how physicians and their patients are supported in the dynamic genomic medicine environment.

Through GeneScreen Counselors, patients can access unbiased genetic counseling from the comfort and convenience of their own home. Patients review the results of genetic tests with a counselor who can work closely with their provider to give insights into the meaning of their test results, identify other potential testing needs, and help make informed medical decisions for their own personal health and that of their family members.

AI Virtual Biopsy FOR BRAIN TUMORS

A new study from scientists at UCSF Radiology and Biomedical Imaging used AI to predict the presence of specific genetic alterations in individual patients' tumors using only non-invasive brain MRI. Using this AI-driven "virtual biopsy" approach, they were able to accurately identify several clinically relevant genetic alterations including some that are under investigation as potential treatment targets.

The work represents an important step toward a fully automated method for non-invasive, imaging-based identification of glioblastomas with IDH mutations and certain other molecular biomarkers relevant for guiding therapy and determining prognosis. The study itself was a small, retrospective study; however, the rapid and automated nature of the proposed method from UCSF Radiology scientists would allow straightforward application to larger data sets and prospective studies.
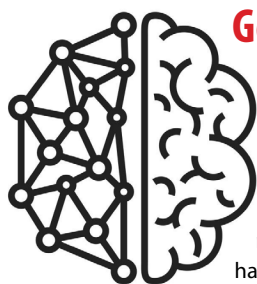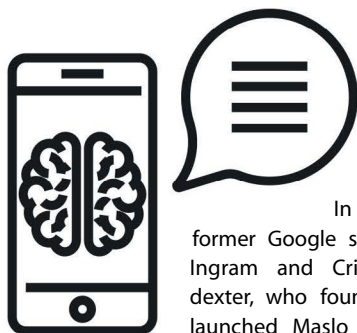
Evan Calabrese, M.D., Ph.D., radiology chief resident, is first author on the paper, published in Scientific Reports (Nature). Javier Villanueva-Meyer, M.D., assistant professor of clinical radiology; and Soonmee Cha, M.D., professor in residence and vice chair of education, are also authors.

"With further work, our overarching goal is to obviate the need for brain tumor biopsy using non-invasive MRI-based methods and to help guide the use of targeted therapies that have been shown to improve survival in patients with glioblastoma," Dr. Calabrese says.

AI Provider Atomwise Gets FUNDING BOOST FROM COLORCON

Colorcon Ventures, a $50 million corporate venture fund of Colorcon Inc., has invested in Atomwise, a provider of AI solutions for drug discovery and inventor of the first deep learning AI technology for structure-based drug design. The company's technology, called AtomNet, removes the barriers of physical screening that have limited the success of traditional methods for small molecule drug discovery. AtomNet currently screens libraries of more than 16 billion molecules against novel biological targets in less than two days.

"Atomwise aligns with the Colorcon Venture fund's strategic focus on developing transformational technology solutions for the pharmaceutical industry, and Colorcon will be a strong partner for the company," says Martti Hedman, CEO at Colorcon. "We embrace Atomwise's approach to partnering with leading pharma companies."

Maslo Launches New AI Offering in EMPATHETIC COMPUTING

In 2018, two former Google staffers, Ross Ingram and Cristina Poindexter, who founded Maslo, launched Maslo the app, a digital assistant designed to interact with empathy and playfulness. The first iteration of Maslo was a daily check-in tool that encouraged and developed mindfulness.

Recently, the humans-first technology company debuted open-sourced tools, sparking the dawn of a new era of computing based on empathy. The new toolkits enable product developers to create solutions based on the analysis of data from various sources to encourage new and sustained behavior changes in their core audiences.

"We're partnering with Maslo to track and support quality of life in people with bipolar disorder," says Dr. Erin Michalak, director of the Collaborative Research Team to study psychosocial issues in bipolar disorder. The goal is to put quality of life assessments in their own hands and to support them to make evidence-informed and personalized adjustments to their lives to optimize wellbeing."

"There's no question that the global COVID-19 pandemic and its subsequent economic and social consequences has affected millions of people who suffer from depression," says Dr. Raymond Lam, co-lead of the Clinical Platform for the Canadian Biomarker Integration Network in Depression. "Our team is always looking for new treatment strategies and Maslo has created innovative new technologies to help our patients. With the use of Maslo's AI-led empathetic computing toolkits, we've been able to analyze each individual's behavior in the real world and their trajectory towards improvement. Maslo's technology for ecological assessment can help us to better understand what's happening in a patient's life, which is the basis for personalizing treatments to help people get well quickly and to stay well."

In addition to the company's new open toolkit options, Maslo is working on several research projects which involve grants totaling more than $40 million globally. Examples of use cases using Maslo include digital health companions (that address things from overall mental health to very specific scenarios like bipolar or depression), a COVID-19 research companion that allows the medical community to better understand the impact the pandemic has had on people's overall well-being, and a companion to help intervene for those with severe mental health issues that could lead to life threatening situations.

Aktana Introduces First Contextual Intelligence Engine FOR LIFE SCIENCES

Keeping pace with the times, Aktana has created its next-generation Contextual Intelligence Engine to optimize interactions with healthcare professionals (HCPs). Aktana's Contextual Intelligence Engine combines advanced AI technologies and human intelligence to align life-sciences commercial teams' engagement with HCPs across channels.

The new solution blends the right combination of machine learning, explainable AI (xAI), human intelligence, and other advanced technologies to mine data and insights from all sources, from prescribing habits and patient demographics to past brand interactions and field rep insights.

Aktana's Contextual Intelligence Engine provides field reps with daily, actionable suggestions that incorporate data from marketing and are effective in any HCP engagement, whether remote or in person. Likewise, it gives marketing the tools to design and deploy AI-driven, omnichannel journeys that automatically select the right channels, content, and cadence. Medical liaisons cultivate richer scientific partnerships with key experts, too, using the Engine's data-driven suggestions and insights.

"At a time when access is challenged and HCP time is even more burdened by new methods of communication and care, Aktana's contextual approach ensures that the information HCPs receive is tuned to their specific needs and preferences," says Mike Weber, VP of product management at Aktana.

New Research Uses AI to ANALYZE FACIAL PHOTOS TO DETECT HEART DISEASE

Sending a "selfie" to the doctor could be a cheap and simple way of detecting heart disease, according to the authors of a new study in the European Heart Journal.

The study is the first to show that it's possible to use a deep learning computer algorithm to detect coronary artery disease by analyzing four photographs of a person's face.
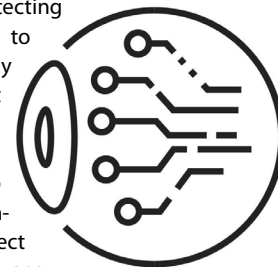
Although the algorithm needs to be developed further and tested in larger groups of people from different ethnic backgrounds, the researchers say it has the potential to be used as a screening tool that could identify possible heart disease in people in the general population or who are in high-risk groups, which could lead to these patients being referred for further clinical investigations.

"To our knowledge, this is the first work demonstrating that artificial intelligence can be used to analyze faces to detect heart disease," says Professor Zhe Zheng, who led the research and is vice director of the National Center for Cardiovascular Diseases and VP of Fuwai Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College.

Professor Zheng says this is a step toward the development of a deep learning-based tool that could be used to assess the risk of heart disease, either in outpatient clinics or by means of patients taking selfies to perform their own screening. "This research could guide further diagnostic testing or a clinical visit," he says.

The researchers tested the algorithm on 1,013 patients from nine hospitals in China, enrolled between April 2019 and July 2019. They found that the algorithm out-performed existing methods of predicting heart disease risk such as the Diamond-Forrester model and the CAD consortium clinical score.

The results showed that in the validation group of patients, the algorithm correctly detected heart disease in 80% of cases and correctly detected heart disease was not present in 61% of cases. In the test group, the sensitivity was 80% and specificity was 54%.