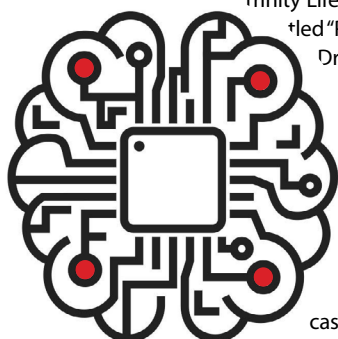


90% of Large Pharma INITIATED AI/ML PROJECTS IN 2020

► *Trend Watch: AI Use Grows in Drug Research, Development, Analysis, and Diagnosis*



Trinity Life Sciences is sharing findings from its latest TGaS Landscape report entitled "Perspectives on Use of Artificial Intelligence/Machine Learning (AIML) for Driving Commercial Performance." The report, based on responses from 23 different biopharma companies, finds that 90% of large pharmaceutical companies initiated AI/ML projects in 2020 compared with 60% of emerging biopharma companies. Marketing mix, patient identification, and healthcare practitioner targeting were the most frequently cited use cases for AI/ML within large pharmaceutical companies, while marketing mix, patient identification, and patient journey are the most mentioned within emerging companies.

The report covers the adoption, capabilities, perceptions, and use cases of AI/ML within pharmaceutical companies and is the first report from the newly formed TGaS AIML Solution.

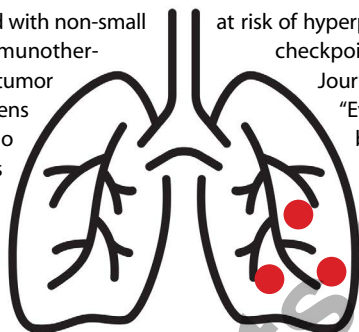
AI Identifies Lung Cancer Patients at Risk of Harm CAUSED BY IMMUNOTHERAPY

In a subset of patients diagnosed with non-small cell lung cancer (NSCLC), immunotherapy paradoxically exacerbates tumor growth and significantly shortens survival. Currently, there are no clinically validated biomarkers that can identify patients at risk of this paradoxical response called hyperprogression.

Using AI analysis of simple tissue scans, researchers at Case Western University claim they have discovered biomarkers that could tell which lung cancer patients might get worse from immunotherapy.

In addition to those who would benefit from immunotherapy, and those who might not, researchers and oncologists can now identify a third category of patients called hyper-progressors who would be harmed by the same immunotherapy, says Pranjali Vaidya, a Ph.D. student in biomedical engineering and researcher at the university's Center for Computational Imaging and Personalized Diagnostics (CCIPD).

"This is a significant subset of patients who should potentially avoid immunotherapy entirely," says Dr. Vaidya, first author on a paper titled "Novel, non-invasive imaging approach to identify patients with advanced non-small cell lung cancer



at risk of hyperprogressive disease with immune checkpoint blockade," published in the *Journal for Immunotherapy of Cancer*. "Eventually, we would want this to be integrated into clinical settings, so that the doctors would have all the information needed to make the call for each individual patient."

Combining medical imaging and machine learning, scientists at CCIPD at Case Western University, led by Anant Madabhushi, Ph.D., Donnell Institute professor of biomedical engineering and senior author on the study, aim to diagnose and characterize cancers and other diseases.

Using this retrospective approach, reviewing electronic medical records of 109 patients with NSCLC, 19 patients with hyperprogression, who received a single immunotherapy with either programmed cell death protein-1 (PD-1) or programmed death-ligand-1 (PD-L1) checkpoint inhibitor drugs between Jan. 1, 2015, and April 30, 2018, the authors identify radiomic biomarkers that distinguish hyper-progressors from responders and non-responders.

The team of scientists found some of the most significant clues to which patients would be harmed by immunotherapy outside the tumor.

Seed Health Uses AI to ANALYZE PHOTOS OF FECES

Seed Health has acquired Auggi, a startup that uses AI to analyze photos of human feces, using Auggi's AI technology to launch its first digital product monitoring gastrointestinal health. Those photos train AI to recognize healthy versus unhealthy stool, and make it easier for those with chronic gut conditions to better track their own health. With the acquisition, Seed Health plans to integrate Auggi's unique digestive tracking tool with its microbiome knowledge to gain insights into gut health in both clinical and at-home settings, according to the company.

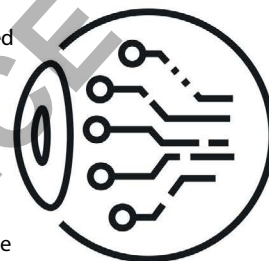
The two companies teamed up in 2019 to launch the #GiveAShit campaign that put out a call for people to email photos of their number two with the aim of creating the world's first and largest crowdsourced database of stool images. That campaign also aimed to change the conversation around gut health and stop the stigma that exists around gut conditions.

Seed Health works on developing ways to use bacteria to develop treatments and sells a daily probiotic supplement. The company's current pipeline includes interventions for infectious disease, allergy, and inflammatory conditions.

Traditional methods of tracking and characterizing a patient's stool are subjective, inconsistent, burdensome, and hampered by poor adherence. With their proprietary image database, Auggi's deep neural networks can accurately detect and characterize stool with 94.07% accuracy as compared with 75% accuracy from self-assessment.

Seed Health plans to launch its first consumer-focused digital product using the AI and stool database in 2021. The company also is currently testing a unique companion tracking and educational experience for its flagship probiotic to improve adherence, outcomes, and retention.

Seed Health's pre/probiotic has received FDA approval as an IND around irritable bowel syndrome (IBS).



W2O Acquires Data TECHNOLOGY FIRMS SWOOP AND IPM.AI

W2O has bought data technology firms Swoop and IPM.ai, which represent the ninth and tenth acquisitions in just more than a year. The company also established a new health tech division that combines data and analytics software with the

Symplur, Swoop, and IPM.ai tech. Swoop and IPM.ai are pioneers in using machine learning, AI, and real-world data to solve big challenges in healthcare. Swoop creates precise patient audiences, improving targeting of healthcare engagement

and empowering patients to become active participants in their treatment journey. IPM.ai uncovers the ideal patient, enabling accelerated research, development, and marketing of life-saving therapies in underdefined patient populations. W2O has been on the acquisition trail since it announced a partnership with New Mountain Capital in 2019.

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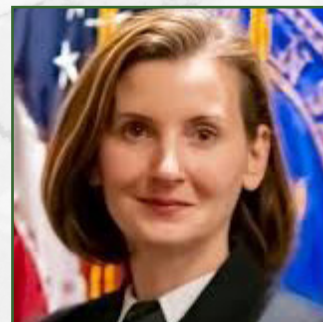
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