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AI-Powered Spatial Biology Workflow from Bio-Techne and Nucleai Enables Predictive Biomarker Discovery in Melanoma Patients

- Clinical trial data demonstrates how Bio-Techne's spatial biology technology and Nucleai's AI-powered multimodal platforms can identify predictive biomarkers in immunotherapy and targeted therapy-treated melanoma patients.
- Bio-Techne's COMET™ platform and Nucleai's multimodal spatial operating system profiled 42 biopsies, revealing immune cell interactions linked to clinical outcomes.
- Study selected by the scientific committee as one of the top 150 abstracts from over 1,200 submissions at SITC 2025.

MINNEAPOLIS and TEL AVIV, Israel, Nov. 4, 2025 /PRNewswire/ -- Bio-Techne Corporation (NASDAQ: TECH), a global provider of life science tools, reagents, and diagnostic products, and Nucleai, a leader in AI-powered multimodal spatial biology for precision medicine, today announced the presentation of pivotal data from the SECOMBIT clinical trial at the Society for Immunotherapy of Cancer (SITC) 2025 Annual Meeting.

The study, conducted in collaboration with Professor Paolo Ascierto, Full Professor of Oncology at the University of Napoli Federico II and Istituto Nazionale Tumori IRCCS Fondazione Pascale, showcases the significance of spatial biology in translational research by combining, for the first time, an immuno-oncology (IO) multiplex immunofluorescence (mIF) panel with advanced AI-driven multimodal biomarker analysis.

Study Overview

Using the COMET platform and a 28-plex mIF panel, researchers profiled 42 pre-treatment biopsies from patients with metastatic melanoma. Nucleai's multimodal spatial operating system integrated high-plex imaging, histopathology, and clinical outcome data to identify distinct immune cell interactions that correlate with progression-free survival (PFS), overall survival (OS), and clinical benefit across three treatment arms incorporating Immune Checkpoint Blockade (ICB).

Key Findings

- **Arm A (MAPKi → ICB):** Immune activation markers such as PD-L1+ CD8 T-cells and ICOS+ CD4 T-cells are linked to better outcomes.

- **Arm B (ICB → MAPKi):** PD-1+ CD8 T-cells in the tumor invasive margin and their interactions with PD-L1+ CD4 T-cells correlated with improved survival.

- **Arm C (MAPKi → ICB → MAPKi):** APC-T-cell interactions in tumor margins associated with better outcomes; macrophage interactions in outer tumor microenvironment (TME) indicated poorer prognosis.

The study shows that where immune cells are located and how they interact within the tumor matters significantly for treatment success. By using AI and spatial biology to map these immune niches, researchers can better predict which patients will benefit from specific therapies moving toward more personalized and effective cancer treatment.

"This study exemplifies how our innovative spatial imaging and analysis workflow can be applied broadly to clinical research to ultimately transform clinical decision-making in immuno-oncology," said Matt McManus, President of the Diagnostics and Spatial Biology Segment at Bio-Techne

"Our multimodal spatial operating system enables integration of high-plex imaging, data, and clinical information to identify predictive biomarkers in clinical settings," said Avi Veidman, CEO of Nucleai. "This collaboration shows how precision medicine products can become more accurate, explainable, and differentiated when powered by high-plex spatial proteomics – not limited by low-plex or H&E data alone."

"The SECOMBIT trial is a milestone in demonstrating the possible predictive power of spatial biomarkers in patients enrolled in a clinical study," added Dr. Ascierto.

Availability at SITC 2025

Bio-Techne's full spatial biology portfolio—including the new ProximityScope™ assay and the extended SPYRE™ portfolio will be showcased at Booth #603 at SITC 2025. Visual data from the SECOMBIT study will also be presented in Poster # 528, alongside additional immuno-oncology research from Bio-Techne and its collaborators.

About Bio-Techne

Bio-Techne Corporation (NASDAQ: TECH) is a global life sciences company providing innovative tools and bioactive reagents for research and clinical diagnostic communities. Bio-Techne products assist scientific investigations into biological processes and the nature and progress of specific diseases. They aid in drug discovery efforts and provide the means for accurate clinical tests and diagnoses. With hundreds of thousands of products in its portfolio, Bio-Techne generated over $1.2 billion in net sales in fiscal 2025 and has approximately 3,100 employees worldwide. For more information on Bio-Techne and its brands, please visit https://www.bio-techne.com or follow the Company on social media at LinkedIn, X, or YouTube.

About Nucleai

Nucleai is an AI-powered multimodal spatial biology company, transforming tissue imaging into actionable insights for drug development and diagnostics. Nucleai's multimodal spatial operating system integrates high-plex spatial proteomics, histopathology, and clinical data to identify predictive spatial biomarkers and power the development of next-generation precision medicine products. Nucleai partners with leading pharmaceutical, diagnostic, and academic institutions globally. Learn more at https://nucleai.ai/.

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