**Access 3D high-plex spatial information across scales**

**Leica Microsystems unveils next generation STELLARIS with SpectraPlex**

**18 October 2024, Wetzlar, Germany –** Leica Microsystems, a leader in microscopy and scientific instrumentation, has released SpectraPlex, a groundbreaking innovation for the next generation STELLARIS confocal platform. SpectraPlex sets a new benchmark for 3D Spatial Phenotyping in life science research.

In recent years, Omics techniques **–** Genomics, Transcriptomics, Proteomics, and Metabolomics **–** have taken a central role in life science research. Understanding the spatiotemporal relationships between various biological components has become crucial for elucidating biological functions in both healthy and diseased states.

“SpectraPlex was developed to enable researchers to obtain more spatially resolved 3D data when interrogating complex disease states, allowing for a deeper analysis of pathological conditions.”, said James O´Brien, Vice President of Life Sciences and Applied Solutions at Leica Microsystems. “The data acquired using SpectraPlex can propel the discovery of new cell types, the identification of cell states and the mapping of functional relationships in a 3D spatial context, aiding in the understanding of disease progression and the identification of potential therapeutic targets.”

With a fully integrated workflow, SpectraPlex enables scientists to capture detailed information at the right resolution and in 3D, with 15+ markers in one go, significantly surpassing conventional multicolor imaging. In addition, SpectraPlex offers an offline option to design experiments and explore optimal dye combinations to create panels for high-multiplex imaging. Defining a panel triggers real-time calculations, forming the basis for suggested microscope settings to maximize the signal-to-noise ratio and minimize crosstalk. Experienced users can still finetune these settings to accommodate sample-specific variances.

In SpectraPlex, the unmixed data along with the corresponding raw images is automatically generated to facilitate further analysis and interpretation. Users will benefit from tailored segmentation and downstream analysis for accurate interpretation of high-resolution, 3D data for over 15 labels, all powered by Aivia , Leica Microsystem’s cutting-edge AI image analysis software.

The next generation STELLARIS is a versatile, advanced confocal platform. Together with SpectraPlex and Aivia, it provides a fully integrated solution from imaging to analysis.

For more information on SpectraPlex, [go to the Leica Microsystems homepage](https://www.leica-microsystems.com/products/confocal-microscopes/p/stellaris-spectraplex).

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A green and yellow splattered grass

Description automatically generated

3D high-plex imaging in Cancer Immunology. Overview of a pancreatic tumor section (1.8 x 0.8 mm) in mouse model, labeled with 15 markers and imaged in one pass using STELLARIS with SpectraPlex

3D high-multiplex imaging in cancer immunology. Kunz L., Speziale D., et al., Nat. Methods (2024).

<https://www.nature.com/articles/d42473-024-00260-7>

**About Leica Microsystems**

Leica Microsystems develops and manufactures microscopes and scientific instruments for the analysis of microstructures and nanostructures. Ever since the company started as a family business in the nineteenth century, its instruments have been widely recognized for their optical precision and innovative technology. It is one of the market leaders in compound and stereo microscopy, digital microscopy, confocal laser scanning microscopy with related imaging systems, electron microscopy sample preparation, and surgical microscopes.

Leica Microsystems has six major plants and product development sites around the world. The company is represented in over 100 countries, has sales and service organizations in 20 countries, and has an international network of distribution partners. Its headquarters are in Wetzlar, Germany.