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**Title: SpatialOMx for regiospecific in-depth 4D-Omics(proteomics , metabolomics and Lipidomics) analysis of tissue samples**

**ShinKwon Kang / Bruker Korea Daltonics Divion**

MALDI Guided SpatialOMx represents a quantum advance in how tissue is analyzed. It combines a label-free imaging technique that delivers sensitive distribution mapping for both targeted and untargeted compounds, ranging from metabolites to lipids to proteins with regionally targeted 4D-Omics analysis. The timsTOF fleX is the SpatialOMx tool - integrating a high-speed MALDI Imaging source with the fastest and most sensitive platform for 4D-Omics, from the well-established timsTOF Pro, into a single high-performance mass spectrometer. SpatialOMx improves on conventional solution-based Omics approaches by providing the same molecular depth while also retaining spatial information critical to gaining insight into disease development and treatment. CCS-Aware 4D-Omics, based upon TIMS and PASEF technologies, provides unmatched selectivity, specificity, and throughput for MALDI. The integrated workflow delivered by the timsTOF fleX provides researchers with the best tool for deep dive into regionally targeted biochemical diversity associated with tissue state, in a single platform offering improved operational efficiency.

표지(Label)가 필요 없는 MALDI imaging 분석과 ESI LC/MS 분석을 결합한 SpatialOMx 분석을 통해 target compound를 ID하고 조직 내 분포를 시각화할 수 있습니다. 먼저 MALDI 소스를 이용하여 조직 내 약물, 대사체, 지질, 펩티드, 단백질 등을 mapping 하고 ROI (region of interest) 를 식별합니다. 이후 LC/MS 분석을 위해 해당 영역을 추출 및 전처리하고 ESI 소스를 이용해 LC/MS 분석하여 높은 신뢰도로 ID 합니다