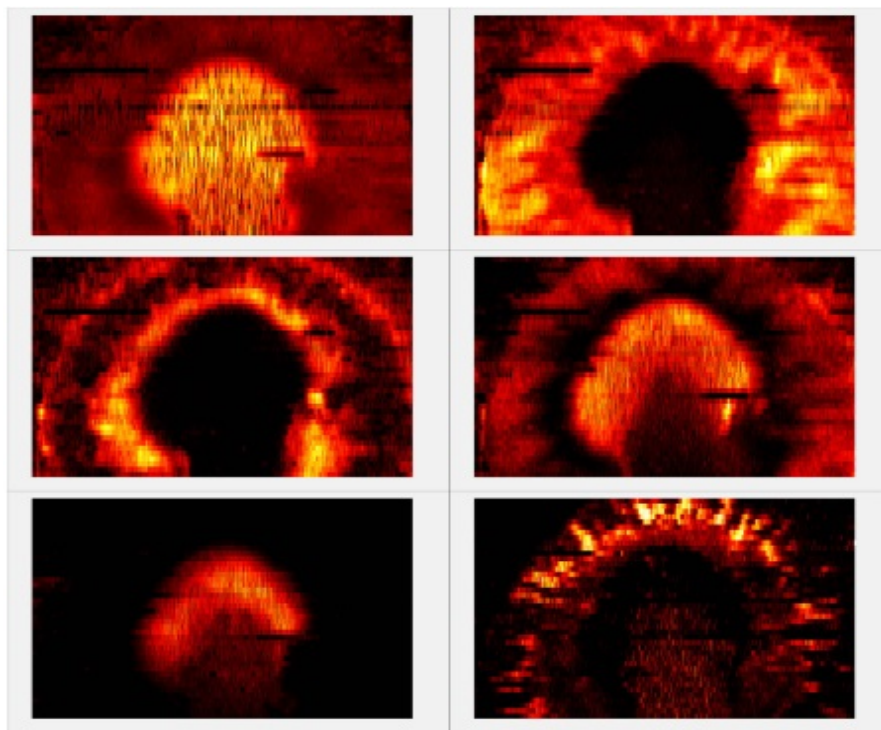


Master project in image analysis to understand the chemistry behind diabetic kidney disease



Patients suffering from diabetes have increased risk of developing chronic kidney disease. Risk factors include hyperglycemia and dyslipidemia, but the underlying chemical alterations in kidney tissue are poorly understood. This master project involves developing an automated workflow for finding chemical alterations in ion images of thin tissue sections of diseased and healthy kidney. Ion images, as the examples shown in the figure, are obtained using mass spectrometry imaging technology called nanospray desorption electrospray ionization (nano-DESI), which generates ion images of small biomolecules, such as lipids and metabolites. By developing an automated image analysis workflow the project aims to enable spatial and chemical comparisons of diseased and healthy kidney sections. The project therefore involves image registration, segmentation and data processing of nano-DESI image data using programs such as MATLAB. A successful project will provide novel insights into the spatial distribution of molecules involved in diabetic kidney disease.

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