Targeted Metabolomics and Proteomics Laboratory – it's the intermediates that keep you alive! Bevill Basic Research Building, room 709; (205) 934-3462

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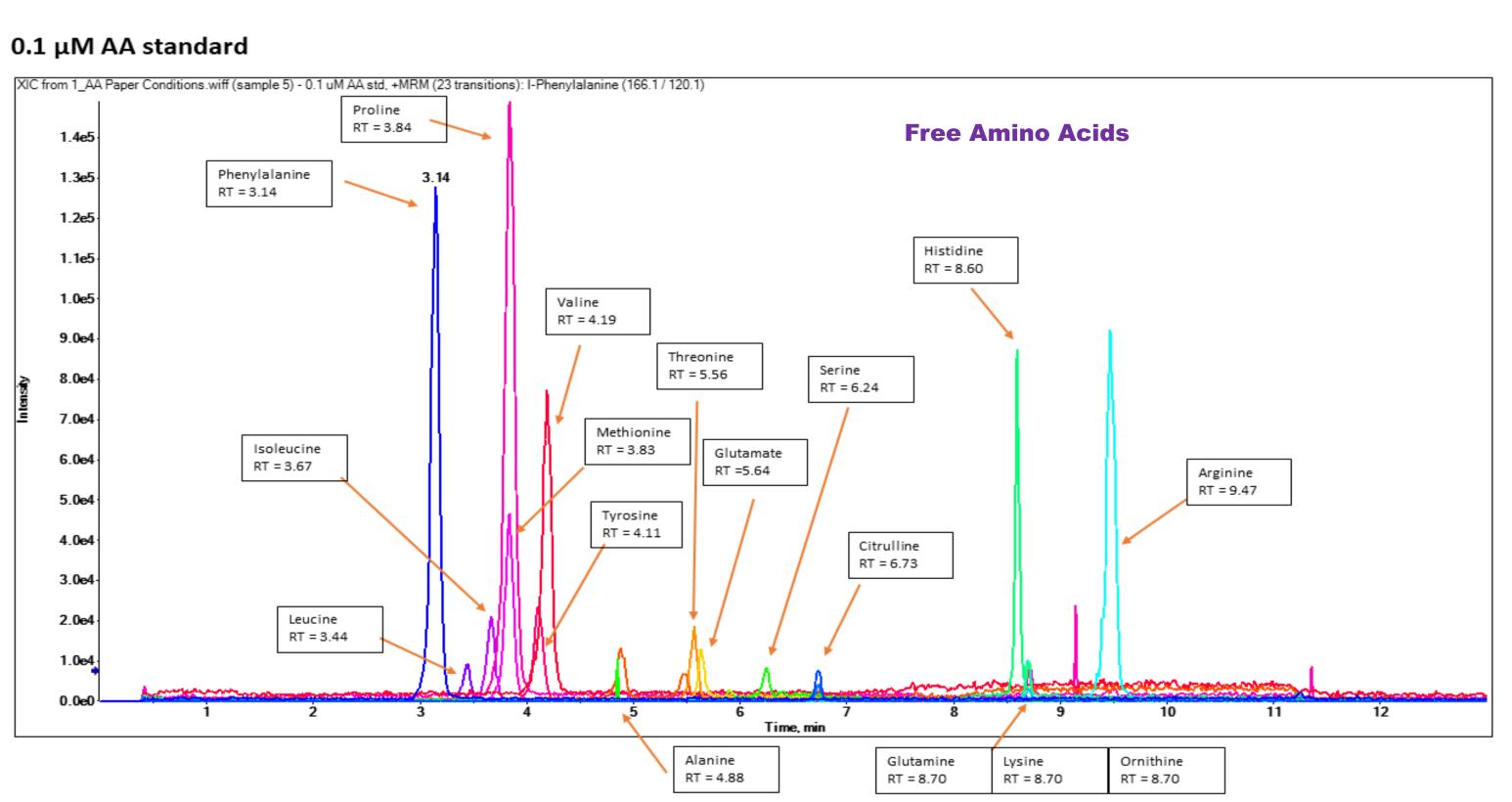
Using mass spectrometry, TMPL specializes in measuring intermediates from known metabolic pathways, as well as exploring the metabolome and lipidome (the sum of all the known and unknown small molecules) in cells, body fluids and tissues of animal models from fruit flies to humans. The small molecules can be pathway intermediates, members of novel pathways, bacterial metabolites, small bioactive peptides, therapeutic drugs and their metabolites, and other chemicals in our environment (personal products, food additives, etc.).

NEW APPLICATIONS: validating expressed intact proteins, protein and peptides posttranslational modifications, pathway analyses, and multiomics.

NEW INSTRUMENTATION: A NIH S10 application for a SCIEX ZenoTOF 7600 system has a good priority score and we are anticipating funding later this year.

NEW CAPABILITIES: We applied a multi-omics approach (metabolomics/transcriptomics) to a study (see right) with Stan Spinola (U Indiana) looking at the interaction of H. *ducreyi* with a human tissue wound and discovered a network explanation for the persistence of the infection.

With the ZenoTOF 7600, we plan to study previously unrecognized lipid isomers in biological systems.

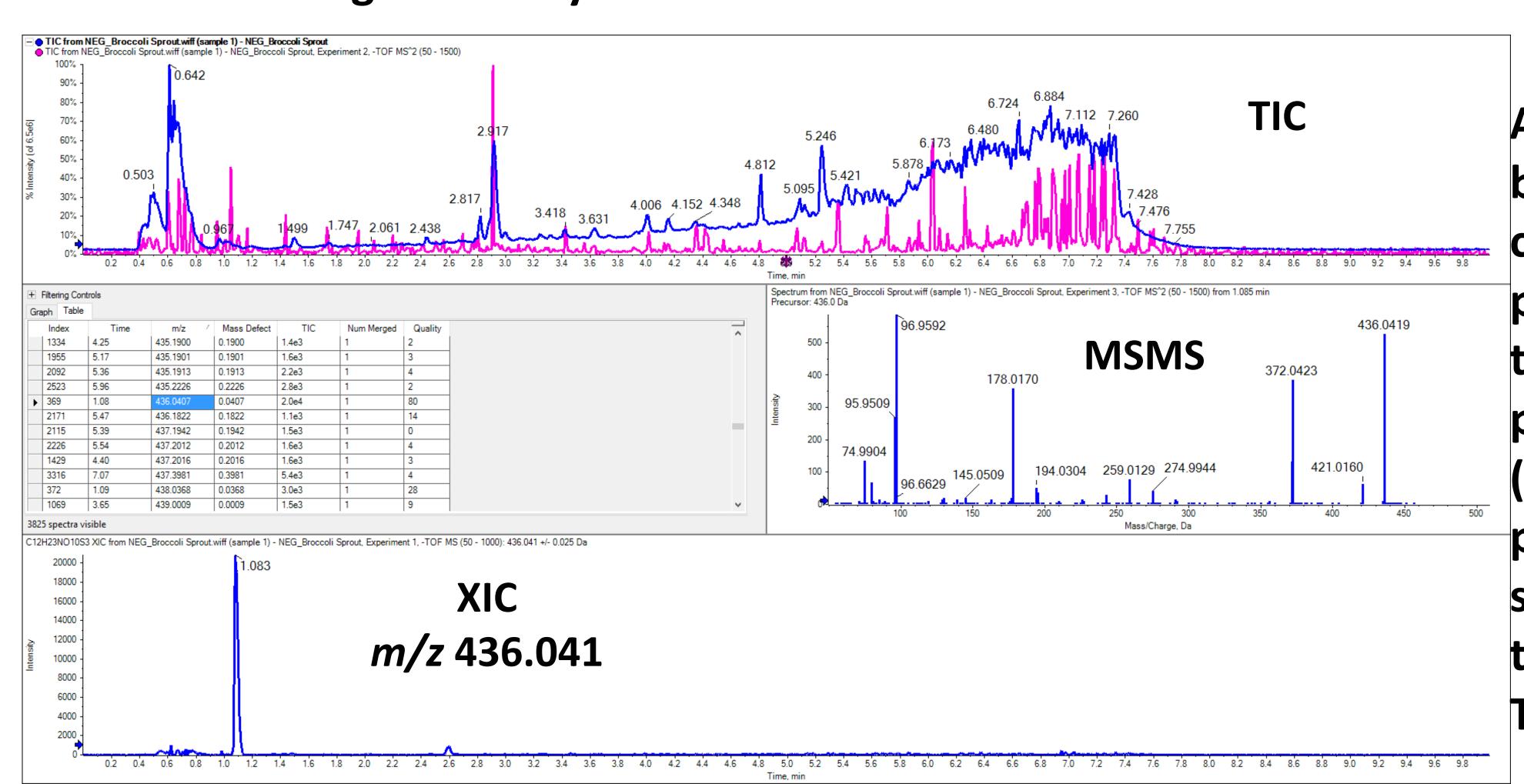


Contact TMPL for more information using this QR code to learn about available assays, published work and teaching courses

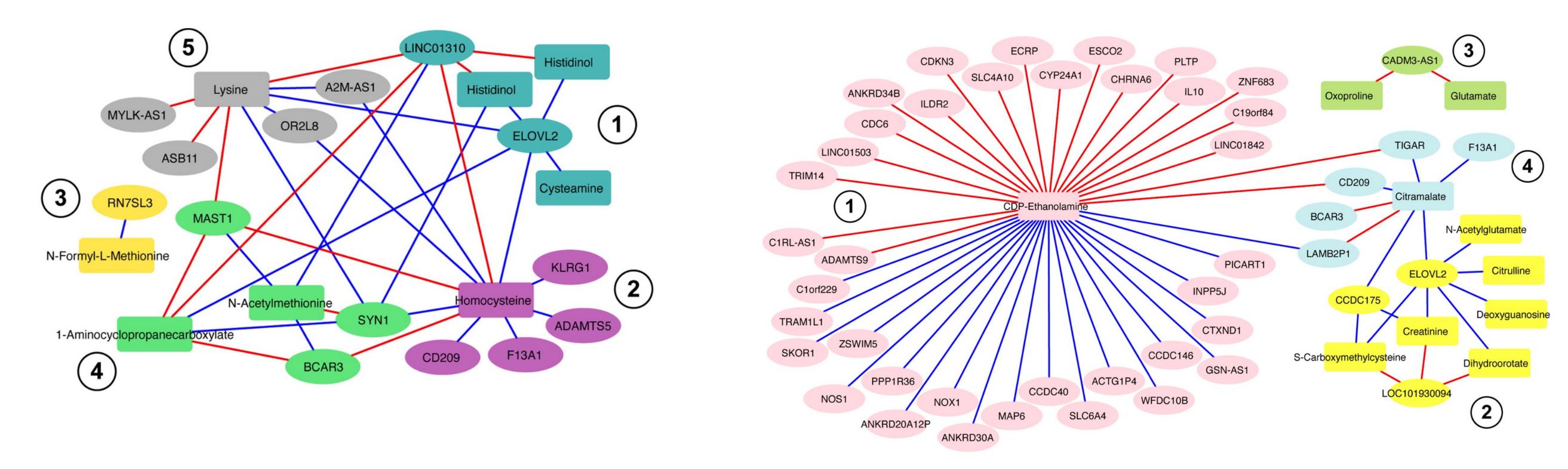




Targeted assay for free amino acids



An example of a metabolomics assay of broccoli sprouts used in a cancer chemoprevention experiment. The top panel is the total ion current (TIC) of all the compounds present. The bottom panel is a selected ion chromatogram (XIC) for glucophoranin. The middle panel (right) contains the MS/MS spectrum validating the identification of this bioactive glucosinolate (for the Tollefsbol group).



Metabolites and gene interaction networks for positive ion metabolites (left) and negative ions (right) Haemophilus ducreyi Infection Induces Oxidative Stress, Central Metabolic Changes, and a Mixed Pro- and Anti-inflammatory Environment in the Human Host. Brothwell et al., mBio 2022 Dec 20;13(6):e0312522.