**Methods**

**Sample Sources**
- 1 µL (Hamilton)
- BSA digest (Waters)
- PicoChip source (New Objective, Inc.)

**Chip-Based Consumables**
- Syringe
- BSA digest
- PicoChip source
- Pneumatically assisted ESI

**Chip-Enabled Source Hardware**
- Syringe
- BSA digest
- PicoChip source
- Pneumatically enabled ESI

**Chip-Based Columns**
- 1 µL/min
- 0.1% formic acid
- Acetonitrile
- Formic acid

**Chromatography Chip**
- 10.5 cm ReproSil-Pur C18-AQ, 3 µm, 120 Å
- New Objective, Inc.

**PicoChip Columns**
- Gas and temperature
- 3-axes adjustable stage

**Samples**
- Chromatography chip
- PicoChip columns

**Baseline Determination**
- Mass spectrometry
- Pre-column detection

**Gas/Spray Stability/Intensity**
- Test the longevity of different types of resin at µL/min flow rates and at elevated temperatures
- Confirmed that the PicoChip column format can be used in nanoflow as well as for microflow applications

**Effect of Gas, Flow Rate and Temperature on Separation**
- Peak area plot of PicoSure peptide m/z 592.3 Da
- Data was collected at flow rates ranging from 1 to 6 µL/min with different sheath gas settings
- Ambience Pressure Traces at Different Flow Rates

**Conclusions**
- Limited 1% decrease in retention times from 45°C to ambient
- Retention times increased by 2.1% per increase in temperature

**Future Work**
- Further improve retention times at different ambient and elevated temperatures
- Evaluate performance of different types of resin at higher flow rates