Virginia-Maryland College of Veterinary Medicine

VetMed Analytical Research Laboratory Service Center

What Do We Do?

The VMCVM Analytical Research Laboratory provides analytical chemistry analysis and investigational research support to a wide variety of scientific and engineering disciplines within the Virginia Tech community as well as various external universities and corporate clientele.

Analytical Services

- Trace quantitative analysis of targeted organic molecules by ultra high pressure liquid chromatography with tandem mass spectrometry detection (UPLC-MS/MS)
- Elemental analysis of almost any sample matrix by inductively coupled plasma with mass spectrometry detection (ICP-MS)

Consultation and Educational Services

In addition to the instrumental analysis, we also offer analytical and consultation services for:

- Sample preparation for ANY matrix
  - ***Plasma, urine, tissues, foods, polymers, soils, metals, ceramics, nanomaterials, etc.***
- Custom method development, experimental design, and validation procedures
- Troubleshooting and optimizations
- Writing for publications, grant proposals, or other sources to secure funding opportunities

Educational services are also available for both students and other clients in the form of:

- Individual or group training sessions
- Lectures
- Presentations
- Seminars

UPLC-MS/MS

Waters H-Class Ultra-high Pressure Liquid Chromatograph (UPLC) in tandem with a Waters Xevo TQD for mass spectrometry detection (MS/MS)

Instrumentation Highlights:

- High specificity – more selective than UV/FLD
- High sensitivity – more sensitive than UV/FLD
- Shorter analysis times vs. HPLC

Excellent option for targeted, quantitative analysis of **low concentration analytes**. The UPLC-MS/MS system can typically achieve quantitation limits of ***1 part per billion (ppb) in solution or less***!

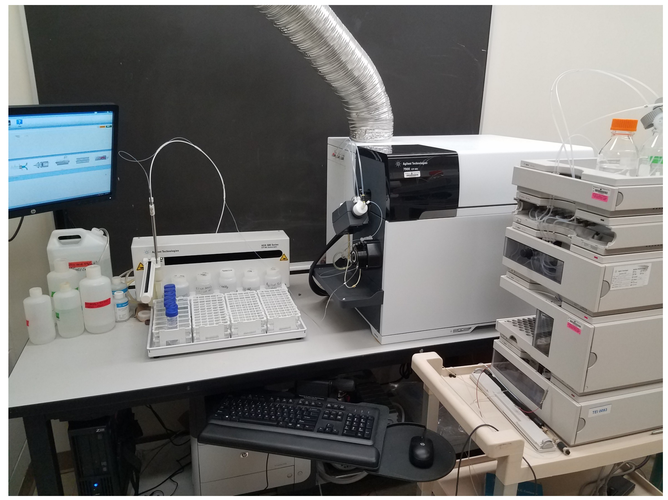
Full graphical, statistical and pharmacokinetic analysis of the data is also available using the following software:

- Phoenix NLME
- SigmaPlot / SigmaStat

If you know what organic molecule(s) you're interested in, we can quantify it for you. We can also help with unknowns.

ICP-MS

Agilent 7900 Inductively Coupled Plasma with Mass Spectrometry detection (ICP-MS) system equipped with a helium octopole reaction cell system (ORS)



Instrumentation Highlights:

- High specificity – ORS removes interferences
- High sensitivity – more sensitive than OES/AES
- Excellent for quantitation of multiple trace elements

Coupled with MS detection for extremely low elemental detection limits, typically reaching ***100 parts per trillion (ppt) or less.*** Also coupled with HPLC for element speciation within sample extracts.

If your samples can be digested or extracted, we can analyze it

Additional Instrumentation

- HPLC with fluorescence (FLD), ultraviolet (UV) and electrochemical detection (ECD)
- Gas chromatography with MS detection (GC-MS)

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