

BNEIR NEWSLETTER

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Biomedical National Elemental Imaging Resource



WHAT'S NEW AT BNEIR?

Keeping users up to date on everything related to using LAICPMS in biomedical research.

NEW LA-ICPTOF-MS HAS ARRIVED

While the laser ablation component of BNEIR's new instrument arrived in October 2022 (and is generating great data for our users), the ICPTOFMS component (the [Vitesse](#)), which arrived before Christmas, is far more challenging to unpack and install, weighing in at 1300 lbs. **It is only the 12th Vitesse to be installed worldwide.** BNEIR staff are working closely with Dartmouth to upgrade the lab space to accommodate this exciting new instrument, with an install date set for February 27th.



The Vitesse ICPTOF has arrived!



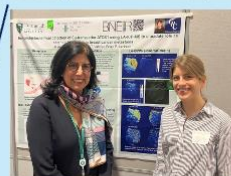
WHERE IN THE WORLD HAVE BNEIR SCIENTISTS BEEN?

January 2023 VENTURA, CA



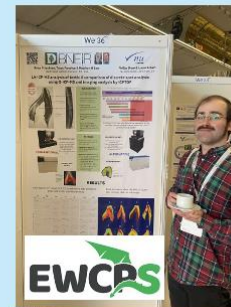
Tracy and Ramsey attend the Gordon Research Conference (GRC)

January 2023 LEBANON, NH



Ramsey at the Dartmouth Cancer Center Annual Retreat with collaborator Dr. Linda Vahdat.

February 2023 LJUBLJANA, Slovenia



Brian and Matt attend the European Winter Conference on Plasma Spectrochemistry.

October 2022 HOUSTON, TX



GIVING LIFE TO POSSIBLE

Tracy invited to give departmental seminar at the Children's Nutritional Research Center at Baylor College of Medicine on the use of elemental imaging in the biomedical sciences

December 2022 BOSTON, MA



Ramsey presents a poster at the Boston Regional Bioinorganic Colloquium (BRIC) at Athinoula A. Martinos Center for Biomedical Imaging.



UPDATE: MICROANALYSIS TOOLKIT ONLINE



BNEIR welcomes new software engineer, [Joy A. Wood](#) to the team. Joy will be working closely with Dr. [Sam Webb](#) on our newly funded administrative supplement:

“Laying the groundwork for web-based elemental imaging software: The MicroAnalysis Toolkit.”

Joy comes to us with a background in education and is passionate about teaching, having spent the last five years teaching high school students how to code.

Joy will re-factoring the MicroAnalysis Toolkit to become the first fully online elemental imaging software platform. If you're new to Sam's MicroAnalysis Toolkit, you can download it here:

<https://www.sams-xrays.com/smak>.

The process of launching an application online involves a redesign phase, where Joy will identify and group the critical functionalities of the Toolkit, refactor the routines independent of the graphical interface, and then use them to build a standard application planning interface (API) toolbox. She will integrate the new APIs into the Larch framework, which already encompasses software applications for X-ray spectroscopy and diffraction.



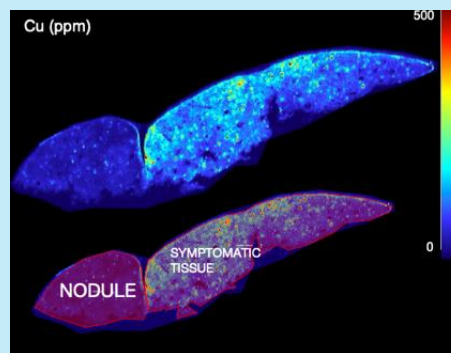
NEW USER SPOTLIGHT



[Clavia Ruth Wooton-Key Ph.D.](#) is an Assistant Professor at the Baylor College of Medicine who works on Wilson's Disease (WD)

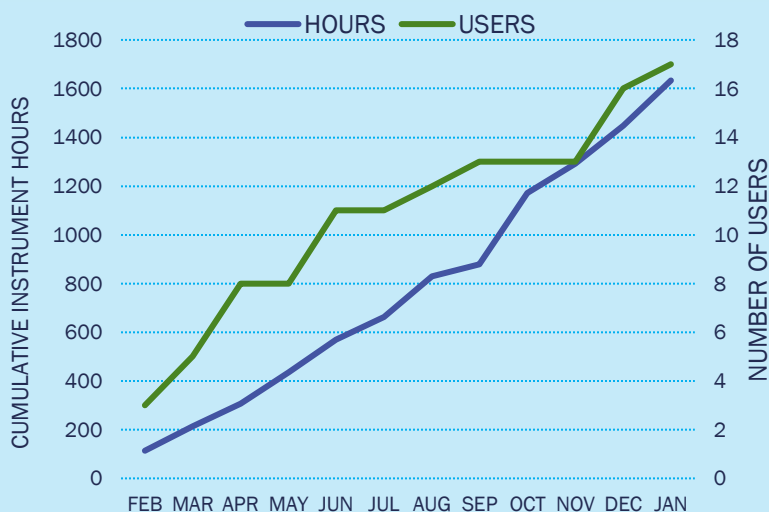
Wilson's disease (WD) is the result of mutations in the *Atp7b* transporter, which causes excess copper accumulation and is lethal if untreated. WD is characterized by steatosis, fibrosis, cirrhosis, and liver failure. Ruth's group showed that hepatic nuclear receptor activity (PXR) is impaired in WD patients.

Preliminary LA-ICP-MS analysis of regenerative nodules in *Atp7b*/*PXR* double knockout mice at BNEIR has shown disruption not only in copper, but in calcium, iron, zinc and manganese.



BNEIR STATS

BNEIR growth since 2022



To help BNEIR track its impact, please include this acknowledgement statement when presenting or publishing BNEIR-generated data:

“LA-ICP-MS elemental imaging was performed at the Dartmouth Biomedical National Elemental Imaging Resource (BNEIR) supported by NIGMS R24GM141194.”



NEW STAFF

[Dylan Davis](#), a recent graduate of Dartmouth's Earth Sciences Department joins the lab in sample preparation and analysis. Welcome Dylan!



MEETINGS

[8th Georgian Bay International Conference on Bioinorganic Chemistry \(CANBIC-8\)](#)
23-27 MAY 2023

[Gordon Research Conference \(GRC\) – Cell Biology of Metals](#)
30 JUL-4 AUG 2023

[NORTH AMERICAN WORKSHOP ON LASER ABLATION \(NAWLA\)](#)
5-9 JUNE 2023