**Brief Bio:** Dr. Ferrieri earned his Ph.D. degree in Radiochemistry from Texas A&M University in 1979, and then became a postdoctoral fellow under Alfred Wolf at Brookhaven National Laboratory (BNL). He was later hired onto the scientific staff at BNL working on the medical applications of Positron Emission Tomography (PET) for animal and human research. In 2002, he shifted his interest away from medical research, and into plant biology leveraging many of the same imaging and radiochemistry tools to study basic plant functions. Dr. Ferrieri is credited with developing the first radiolabeled PET plant hormone (jasmonic acid) to study its transport in living plants, as well as with developing a unique set of dynamic diagnostic tools for unraveling the physiological and metabolic mechanisms of plant stress. After 38 years of service as a tenured senior scientist at BNL, Dr. Ferrieri moved his program to U. Missouri (Columbia) where he has built a new integrative program at the Missouri Research Reactor Center in plant imaging and metabolic flux analysis. As a Research Professor, he holds appointments within the Department of Chemistry and the Division of Plant Sciences, and is a faculty member of the Interdisciplinary Plant Group.

**Ferrieri Lab:** The relationship between plants, microbes and their surrounding environment is highly complex since each can exert an influence on the other. For example, the exchange of carbon and nitrogen resources between plants and the soil microbiome can accelerate plant root development, thereby providing plants with better access to nutrients and water and reducing the need for irrigation and soil amendments. These relationships can also help mitigate plant stress to climatic extremes. Understanding these relationships is not only critical to stabilizing our future global food securities, but is also critical to improving our environment through improved terrestrial carbon cycling, and/or the development and management of renewable energy resources that could offset global reliance on fossil fuels. Furthermore, the relationships and chemical dynamics responsible for the flow of information and materials that occurs at the interface between plants and microbes and their environment can encompass enormous spatial and temporal scales. Their exploration and integration from subcellular through to whole ecosystem levels requires a multitude of imaging technologies. Accordingly, Dr. Ferrieri's group uses radioactive and stable isotopes to study plant-microbial interactions in the context of plant stress biology. They leverage nuclear and mass spectrometric based imaging technologies to map whole-plant physiological responses against tissue level changes in plant metabolism using powerful radiometabolite flux analysis tools to tease out changes in plant metabolites, hormones and inorganic ions both at the root-soil interface and between the plant root and shoot systems.