Proposal: Sticky roots - how viral infection changes the ability of plant roots to destabilise mineral-organic associations in soils

Beamline: ID21
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Report: The beamtime was highly successful in that we were able to complete analysis of 8 thin sections. Of the 8 sections, 4 were of virus infected plants and four of non-infected control treatments. Within each treatment, two were longitudinal sections of a plant root and two were perpendicular sections of a plant root (=cross-section). For the longitudinal sections, we collected XRF maps along the plant root tip zone, the elongation zone, and the suberized more mature root zones (see example below). Within each zone, we further collected 10-15 Fe XANES point spectra along transects spanning from the root surface into the surrounding soil. For the cross-sections, we collected one large XRF map as well as 3-4 transects with 10-15 Fe XANES spectra each. XRF maps and XANES spectra are fully analyzed. The PhD student is currently working on synthesizing the X-ray microprobe data with the wet-chemical data as well as bulk XAS measurements we recently conducted at NSLS-II.