

# Characterization of new discovered viruses in declining birch

Elisha Bright Opoku<sup>1</sup>, Maria Landgraf<sup>1</sup>, Martina Bandte<sup>1</sup>, Susanne von Bargaen<sup>1</sup>,  
Martin Schreiner<sup>2</sup>, Barbara Jäckel<sup>2</sup>, Carmen Büttner<sup>1</sup>

<sup>1</sup> Humboldt-Universität zu Berlin, Lebenswissenschaftliche Fakultät, Albrecht Daniel Thaer-Institut für Agrar- und Gartenbauwissenschaften, Fachgebiet Phytomedizin; Lentzeallee 55/57, D-14195 Berlin, Germany

<sup>2</sup> Pflanzenschutzamt Berlin, Mohriner Allee 137, 12347 Berlin, Germany

## ABSTRACT

Data from next generation sequencing have shown the complexity of the birch virome. Based on molecular biological diagnostics of *Cherry leaf roll virus*, *Apple mosaic virus* and *Badna- and Carlavirus* from birch in 2016 and 2017 data on distribution of the viral complex were collected in the urban landscape of Berlin. Characterization of new discovered viruses is one major goal in the next years to determine pathogenicity and evaluation their impact in urban green and forests. Especially interesting for management and maintenance of urban green is the mode of viral transmission. Transmission experiments for *Carla-* and *Badnaviruses* were carried out in 2017 using biotest plants (*Chenopodium quinoa*) and mechanical inoculation by infected leaves. First positive results were obtained for *Badnaviruses*. This gave the impression that *Badnaviruses* found in birch are mechanically transmissible. Consequences for hygienic practices during tree management and maintenance wait until confirmation of *Badnavirus* pathogenicity. The complex symptomatology will be further investigated to correlate mixed viral infection and symptomatology. Viruses will be localized within the observed symptoms based on microscopic technologies and thereby contribute to their role in the birch leaf roll disease.

## References:

Büttner, C., von Bargaen, S., Bandte, M., Mühlbach, H.-P., 2013: Forest diseases caused by viruses. Chap. 3 In: Infectious forest diseases. Gonthier P., Nicolotti G. (eds), CABI, S. 50-75.

Landgraf, M., Gehlsen, J., Rumbou, A., Bandte, M., von Bargaen, S., Schreiner, M., Jäckel, B., Büttner, C. 2016: Absterbende Birken im urbanen Grün Berlins – eine Studie zur Virusinfektion. In: Dujesiefken, D. (Ed.), Jahrbuch der Baumpflege, Haymarket Media, Braunschweig, 276-283.