

Science**Scientists at Oak Ridge National Laboratory Detail Research in Science**

2011 OCT 25 -- A report, "Karyotype analysis of buckwheat using atomic force microscopy," is newly published data in *Microscopy and Microanalysis*. According to the authors of recent research from Oak Ridge, Tennessee, "Karyotype analysis and classification of buckwheat chromosomes were performed without chemical banding or staining using atomic force microscopy (AFM). *Fagopyrum esculentum* (common buckwheat) and *Fagopyrum tartaricum* (Tartarian buckwheat) chromosomes were isolated from root tissues using an enzymatic maceration technique and spread over a glass substrate." "Air-dried chromosomes had a surface with ridges, and the height of common and tartary buckwheat were approximately 350 and 150 nm. Volumes of metaphase sets of buckwheat chromosomes were calculated using three-dimensional AFM measurements. Chromosomes were morphologically characterized by the size, volume, arm lengths, and ratios. The calculated volumes of the *F. esculentum* and *F. tartaricum* chromosomes were in the ranges of 1.08-2.09 m<sup>3</sup> and 0.49-0.78 m<sup>3</sup>, respectively. The parameters such as the relative arm length, centromere position, and the chromosome volumes measured using AFM provide accurate karyomorphological classification by avoiding the subjective inconsistencies in banding patterns of conventional methods. The karyotype evolutionary trend indicates that *F. esculentum* is an ancient species compared to *F. tartaricum*," wrote S. Neethirajan and colleagues, Oak Ridge National Laboratory. The researchers concluded: "This is the first report of a cytological karyotype of buckwheat using AFM." Neethirajan and colleagues published their study in *Microscopy and Microanalysis* (Karyotype analysis of buckwheat using atomic force microscopy. *Microscopy and Microanalysis*, 2011;17(4):572-7). For additional information, contact S. Neethirajan, Biological and Nanoscale Systems Group, Biosciences Division, Oak Ridge National Laboratory, Oak Ridge, TN 37831-6445, United States. Keywords: City:Oak Ridge, State:Tennessee, Country:United States, Region:North and Central America. This article was prepared by Science Letter editors from staff and other reports. Copyright 2011, Science Letter via NewsRx.com.

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