'Chromosome shattering' seen in plants, cancer

June 10 2015

Plants can undergo the same extreme 'chromosome shattering' seen in some human cancers and developmental syndromes, UC Davis researchers have found. Chromosome shattering, or 'chromothripsis,' has until now only been seen in animal cells. A paper on the work is published in the online journal *eLife*.

The process could be applied in plant breeding as a way to create haploid plants with genetic material from only one parent, said Ek Han Tan, a postdoctoral researcher in the UC Davis Department of Plant Biology and first author on the paper. Although plants don't get cancer, it might also allow cancer researchers to use the laboratory plant *Arabidopsis* as a model to study chromosome behavior in cancer.

Chromothripsis involves slicing chromosomes into apparently random pieces, and reassembling it like a broken vase, often with pieces completely missing or in the wrong place. Generally speaking, this is not a good thing, although in one recently published case a woman was cured of a genetic disorder when the gene responsible was lost due to chromothripsis.

Han Tan, Professor Luca Comai and colleagues were studying centromeres, the handles by which chromosomes are moved and allocated to daughter cells during cell division. They discovered that when a variant of the model plant *Arabidopsis* with weakened centromeres is crossed to a plant with normal centromeres, the resulting embryos undergo chromothripsis, the cut-and-reassembly process

leading to 'shattered chromosomes.'

More information: *eLife*, elifesciences.org/content/earl … 15/05/15/eLife.06516

Provided by UC Davis

Citation: 'Chromosome shattering' seen in plants, cancer (2015, June 10) retrieved 8 May 2024 from https://phys.org/news/2015-06-chromosome-shattering-cancer.html