MedicalXpress

Research breakthrough targets genetic diseases

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(PhysOrg.com) -- A cure for debilitating genetic diseases such as Huntington's disease, Friedreich's ataxia and Fragile X syndrome is a step closer to reality, thanks to a recent scientific breakthrough.

The finding, which was published in *Science* on January 15, is the result of a collaboration between a team led by Dr Sureshkumar Balasubramanian at The University of Queensland's School of Biological Sciences and Professor Dr Detlef Weigel at the Max Planck Institute for Developmental Biology in Germany.

It identifies an expansion of a repeat pattern in the DNA of the plant *Arabidopsis thaliana* that has striking parallels to the DNA repeat patterns observed in humans suffering from neuronal disorders such as Huntington's disease and Fredereich's ataxia.

Lead researcher from UQ, Dr Balasubramanian, said being able to use the plant as a model would pave the way toward better understanding of how these patterns change over multiple generations.

"It opens up a whole new array of possibilities for future research, some of which could have potential implications for humans," Dr Balasubramanian said.

The types of diseases the research relates to, which are caused by "triplet repeat expansions" in DNA, become more severe through the generations but were difficult to study in humans due to the long

timeframes involved.

A plant model with a relatively short lifespan would allow scientists to study DNA mutations over several generations, Dr Balasubramanian said.

The study, called “A genetic defect caused by a triplet repeat expansion in Arabidopsis thaliana”, also had implications beyond human diseases, Dr Balasubramanian said.

While the DNA patterns were previously only seen in humans, current findings have shown the patterns occur in in distant species such as plants, providing new scope for researchers in all disciplines of biology.

Provided by University of Queensland