

Narisa Juejun 2013: The Genetic Linkage Map of *Dendrobium* Orchid Based on Microsatellite and EST-derived Markers. Master of Science (Agricultural Biotechnology), Major Field: Agricultural Biotechnology, Interdisciplinary Graduate Program. Thesis Advisor: Associate Professor Julapark Chunwongse. Ph. D. 88 pages.

Three hundred and one EST-derived markers were developed from *Dendrobium*, *Phalaenopsis* and *Oncidium* EST. Twenty (6.6%) of EST-derived markers and 100 (33.9%) of microsatellite markers showed DNA polymorphism between *Dendrobium* 'Caesar' and (*Dendrobium* 'Sri-Racha' x *D.* 'Snowfire') x *D. bigibbum*. A genetic linkage map of *Dendrobium* orchid was constructed using microsatellite and EST-derived markers on an F_1 diploid population ($2n=2x=38$) of 224 individuals from a cross between *Dendrobium* 'Caesar' and (*Dendrobium* 'Sri-Racha' x *D.* 'Snowfire') x *D. bigibbum*. Total of 134 loci comprised of 90 microsatellite and 17 EST-derived markers were used in linkage analysis. Forty markers were found to be segregating at 1:1:1:1 ratio (29.6%), 83 at 1:1 ratio (62.2%) and 11 at 3:1 ratio (8.1%). About 8% of loci showed a distorted segregation at $P<0.05$ and 36% at $P<0.01$. The genetic linkage map was constructed using JoinMap v.3 (Van Ooijen and Voorrips, 2001) with minimum LOD score of 3 and maximum distance of 50 cM. The linkage map comprised of 25 groups with 110 loci and spanned 1,024.7 cM.

Student's signature

Thesis Advisor's signature