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Loss of *ndh* pseudogenes and a copy of *psaM* in plastid genome of Korean pine

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Objectives

To determine the relationship among pines by comparing plastid genome sequence

Materials and Methods

1. Material

Plant - Pinus Koraiensis,

2. Methods:

- Plastid genome of Korean pine (Pinus Koraiensis) was sequenced and aligned against Pinus thungergii (GenBank sequence data).
- Large Indels were determined and the sequences were blasted against NCBI GenBank data base.

Results and Discussion

- Pines are losing ndh genes (both black pine and Korean pine are losing ndh genes)
- Korean pine is losing ndh genes faster than black pine.
- A copy of psaM gene is completly lost in Korean pine genome (Black pine still retains 2 copies)
- Black pine lost ndhB internal sequence after it diverged from their coancestor
- Korean pine lost ndhE and H after its diversion from their coancestor
- Therefore, pine are still losing genes from their plastid genomes. Thus it makes their genome smallest among the land plants.

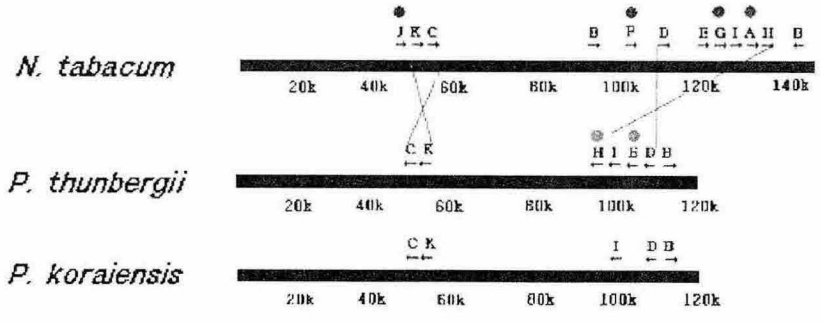

Fig. Loss of *ndh* pseudogenes in conifers. Compared to tobacco, the genes are reversely orientated. When compared to black pine, Korean pine further lost *ndh* H and E.

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