Plant Systems 🖘 The gain and loss of genes during Biology VIB UNIVERSITEIT GENT 600 million years of vertebrate evolution Tine Blomme, Klaas Vandepoele, Stefanie De Bodt, Cedric Simillion, Steven Maere and Yves Van de Peer Department of Plant Systems Biology, Flanders Interuniversitary Institute of Biotechnology (VIB), Ghent University, Technologiepark 927, B-9052 Ghent, Belgium. Fax: +32 9 3313809, tiblo@psb.ugent.be, http://www.psb.ugent.be **Duplications in the evolution of vertebrates:** Continuous mode of small-scale duplications Large-scale duplication events (whole genome duplications): > 1R/2R: common ancestor of land vertebrates and fishes > 3R: fish-specific Number of duplication events on branch 1 41 42 93 7 9 13 396 9 13 利了 5: 2 RN 68 298 -0.1 -0.2 -0.3 -0.4 -0.5 Fraction of genes, coming from duplication events in branch -6 83 13, that are lost on branch 6 28

TN 01 01

XT .01

MYA

1,265

363

11



217

Origin of duplicated genes in current vertebrate genomes

2.97

13

IR/2

525-875 MYA

0 0.1 0.2 0.3 0.4

ЗR

545

About 1,400 duplicated gene pairs in the *Tetraodon nigroviridis* genome originated through duplication events at a time coinciding with 1R/2R

Ancient duplicates that have survived

Large differences in the number of species-

for many years can still be lost

specific duplication events

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Effect of time and mode of duplication on the retention of duplicated genes

