**Supporting Information 1**

**1.1 Estimated divergence times for orders represented by experimental taxa**

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|  | **Monilophytes** | **Gymnosperms** | **Angiosperm** |
| **Order** | Polypodiales | Equisetales | Cupressales | Araucariales | Ginkgoales | Ranunculales |
| **Family** | Polypodiaceae | Equisetaceae | Cupressaceae | Araucaceae | Gingkoaceae | Ranunculaceae |
| **Genus** | Polypodium | Equisetum  | Metasequoia | Araucaria  | Gingko | Ranunculus |
| **Species** | *P. vulgare* | *E. hyemale* | *M. glyptostroboides* | *A. araucara* | *G. biloba* | *R. acris* |
| **Divergence estimate for order (Ma)**  | 291 (Kumar et al., 2017) | 380 (Wikstrom & Kenrick, 2001) | 224 (Kumar et al., 2017) | 211 (Kumar et al., 2017) | 323 (Wikstrom & Kenrick, 2001) | 112 (Kumar et al., 2017) |