

**Fig. 4- figure supplement 4. Earliest evolutionary origins of shared plastid residues.** This figure shows the number of residues in the concatenated alignment of HPPGs of verified green origin, which have been subsequently vertically inherited in all major photosynthetic eukaryotes that are present in green algae and ochrophytes, and are not found in red algae and glaucophytes. Residues are divided by inferred origin point, and are shown as per fig. 4, panel D. The values here are calculated as the earliest possible origin point for each uniquely shared residue, in which all gapped and missing positions within the alignment are treated as potential identities. 100 of the 147 residues inferred to have originated within green algae in this analysis originated either within a common ancestor of all chlorophytes, or in a common ancestor of all chlorophytes excluding the basally divergent lineages *Prasinoderma*, *Prasinococcus* and *Nephroselmis*.

