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The immediate impacts of whole genome duplication (neopolyploidy) in *Spirodela polyrhiza* on its functional traits and competitive outcomes.

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Whole genome duplication, leading to polyploidy, is a common macromutation throughout the tree of life and especially in plants. It can have strong impacts across biological scales, from gene expression to cellular processes, to morphology and ecological dynamics. This presentation will summarize knowledge gained in our labs on these impacts using *Spirodela polyrhiza* as a model study system. We have generated replicated neotetraploid genetic lineages and report both shared and divergent changes across genetic backgrounds. Furthermore, we leverage the unique advantages of this aquatic plant to test population level hypotheses advancing insights beyond most other polyploid plant study systems. For instance, we find that polyploids grow more slowly in abundance and reach lower carrying capacities than their diploid progenitors. In addition, our experimental work shows that neotetraploid populations are generally more resistant to urban pollutants, but the extent depends on the pollutant type and the genetic background. Finally, population-level competition experiments applying methods from The Modern Coexistence Theory have revealed how stress alters competitive outcomes and sets the stage for more comparative work in other systems.

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References

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