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Engineering a complex plant biosynthetic pathway in the giant duckweed

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Duckweeds are promising photosynthetic chassis for plant synthetic biology. Yet, it remains unclear whether they can support the heterologous production of complex specialized metabolites and which expression strategies are best suited for multigene pathway reconstruction. Here, I first provide an update on our transformation protocol for the giant duckweed (*Spirodela polyrhiza*). I then show that a six-gene construct driven by an inducible promoter was the most effective strategy to stably produce the complex anti-diabetic flavonoid glucoside mini-Montbretin A in *S. polyrhiza*. Together, these results establish *S. polyrhiza* as a promising chassis to produce complex plant metabolites and highlight the potential of duckweeds for synthetic biology.

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References

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