

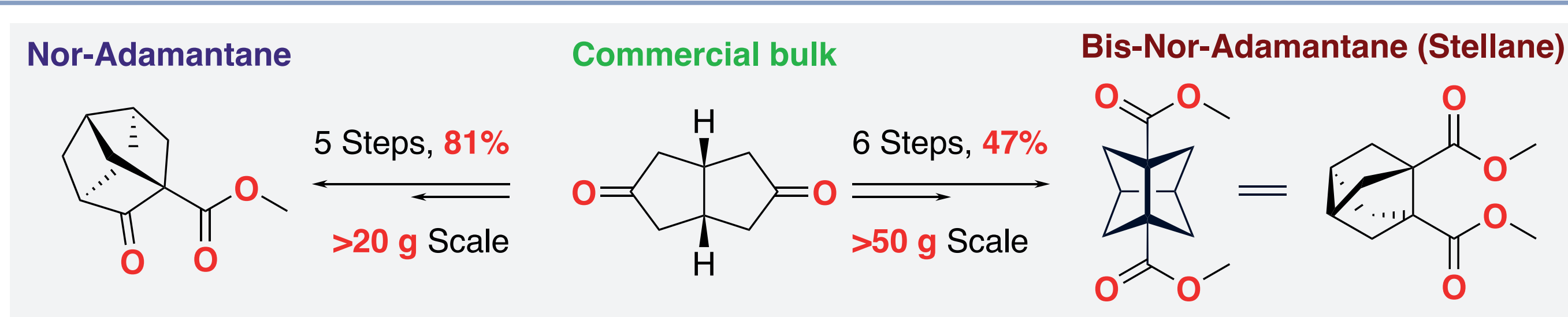
# Medchem Perspectives of Bis-Nor-Adamantane (Stellane) & Nor-Adamantane Derivatives

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## Background of the project

### Challenges in the Synthesis of MedChem Relevant Cages and their Value:

- Bis-nor-adamantanes (stellanes)** were discovered as unique **ortho-isosteres of benzene**. Together with new **nor-adamantane derivatives**, stellanes represent previously unavailable class of **cage MedChem scaffolds** with notable potential for drug discovery.
- Synthesis of both **nor- and bis-nor adamantane key precursors** poses significant challenge; however, it **has been developed in our group previously**<sup>1</sup>.



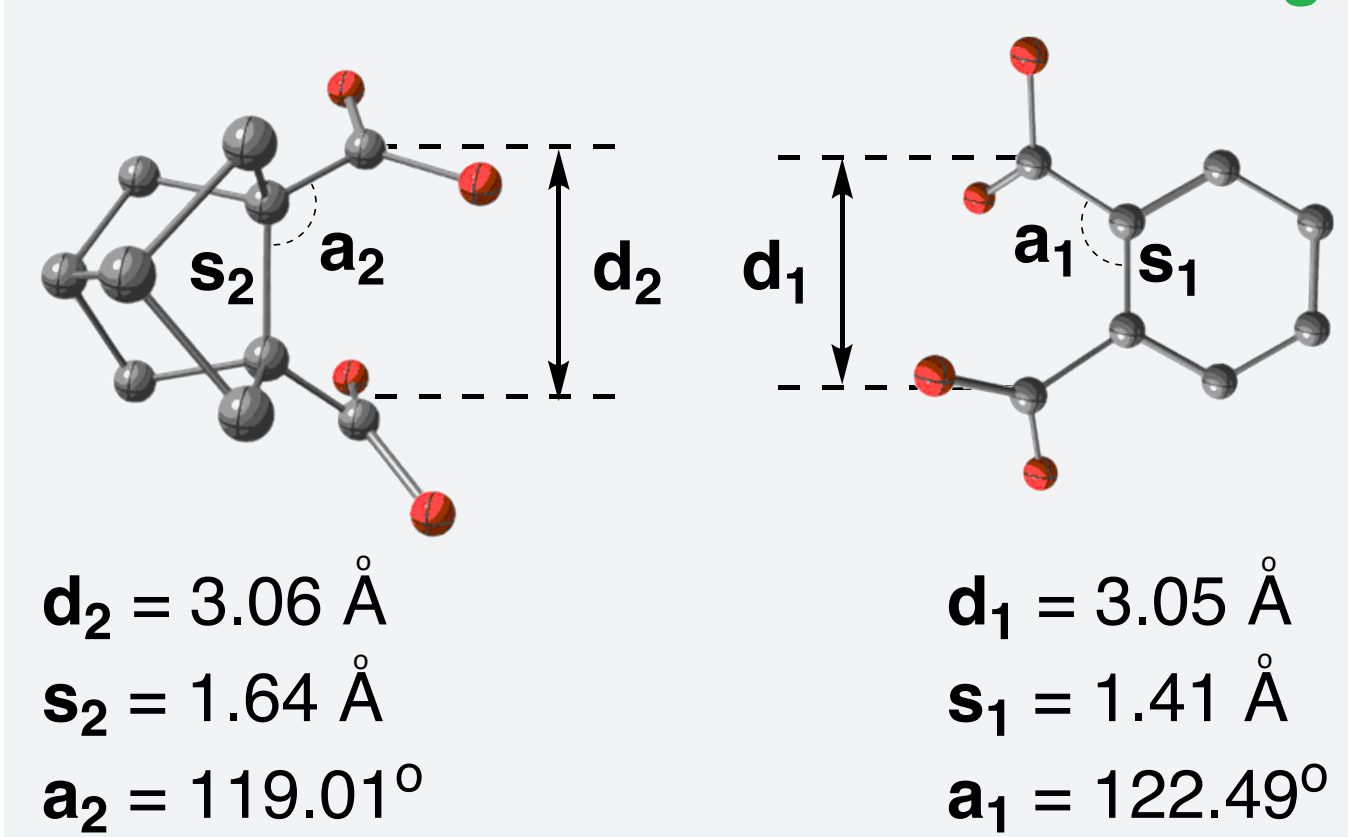
**Our Goal:** to investigate the reactivity of the nor- and bis-nor-adamantane cores and the opportunities for their derivatization; to expand the overall scope of the available building blocks based on these scaffolds.

## 1,5-Disubstituted Stellanes as Benzene Isosteres; Novel Nor-Adamantanes

### Evaluation via XRD Analysis:

- 1,5-Dicarboxylic acid has been revealed as an optimal **saturated isostere for ortho-benzene** where substituents exhibit the in-plane topology.
- 1,5-Stellanes unique spatial properties render them **invaluable cage MedChem scaffolds**, with the potential to enhance drug efficacy and specificity.

### The closest o-benzene mimetic existing:

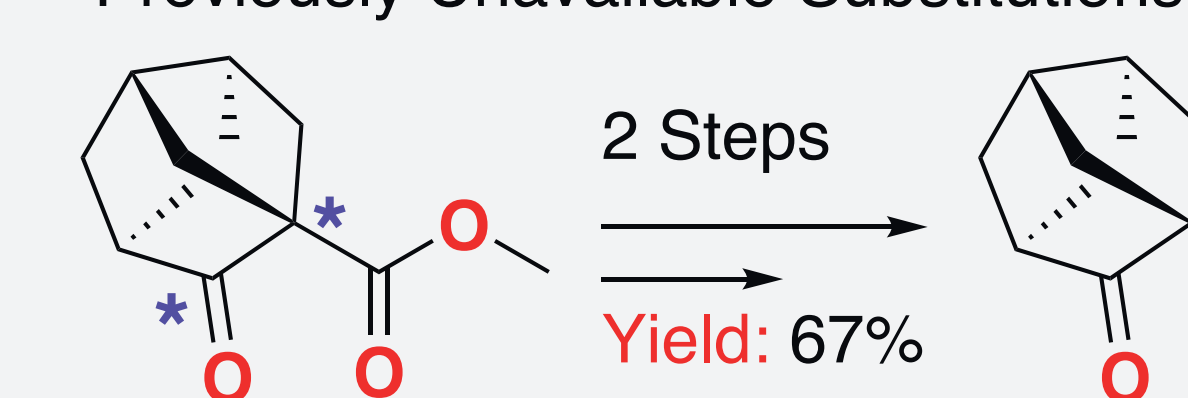


### Novel Nor-Adamantanes:

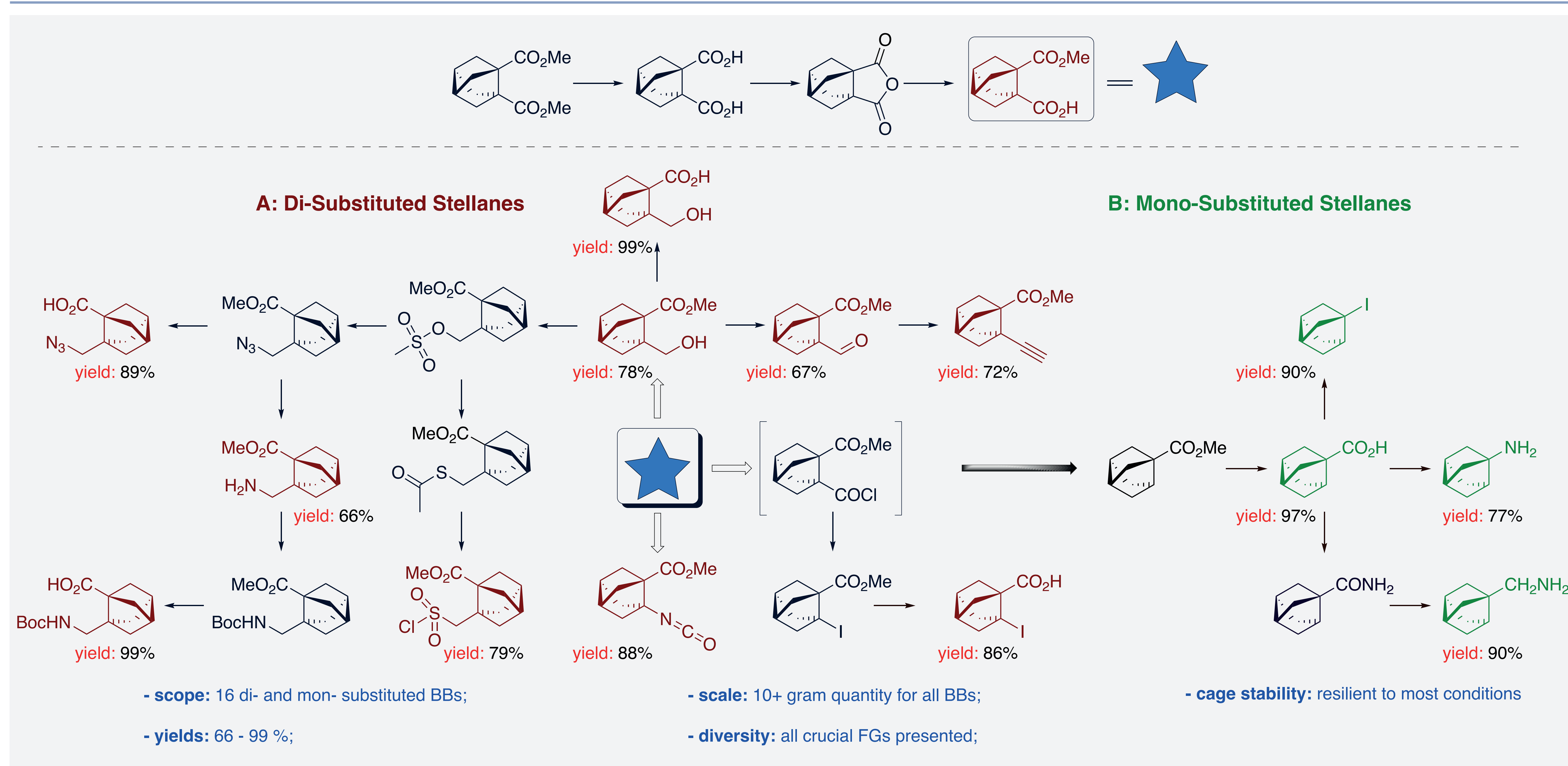
We were able to decarboxylate methyl-7-oxo-2-nor-adamantane-carboxylate to **obtain the ketone for further derivatization**.

- We are working on the synthesis of the acid.

\*Previously Unavailable Substitutions

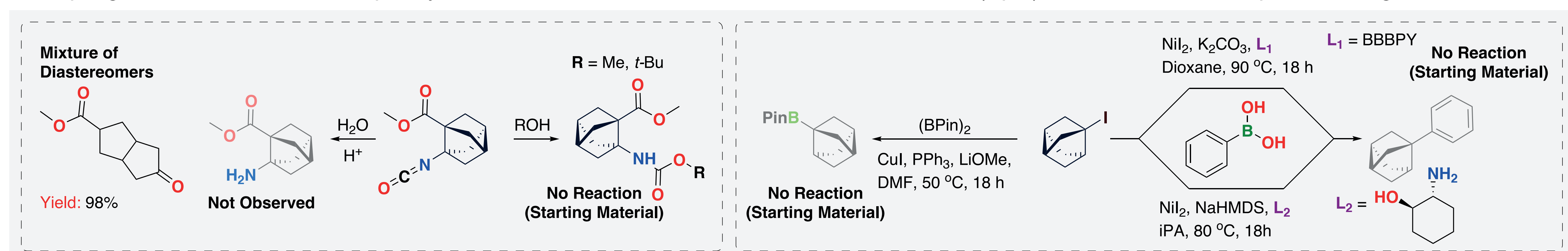


## Scope of Di-Substituted Stellanes (A) and Mono-Substituted (B)



## Current Limitations to Derivatization of Stellanes

- Hydrolysis of **methyl-5-isocyanato-stellane-1-carboxylate** leads to fragmentation of stellane core, while alcoholysis leaves it intact.
- Coupling of **1-iodostellane** with phenylboronic acid in various conditions, as well as with (Bpin)<sub>2</sub> ester also resulted pure starting material



## Contact

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## References

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