Improving *In Silico* Predictions in Developmental and Reproductive Toxicology

SOT 2019

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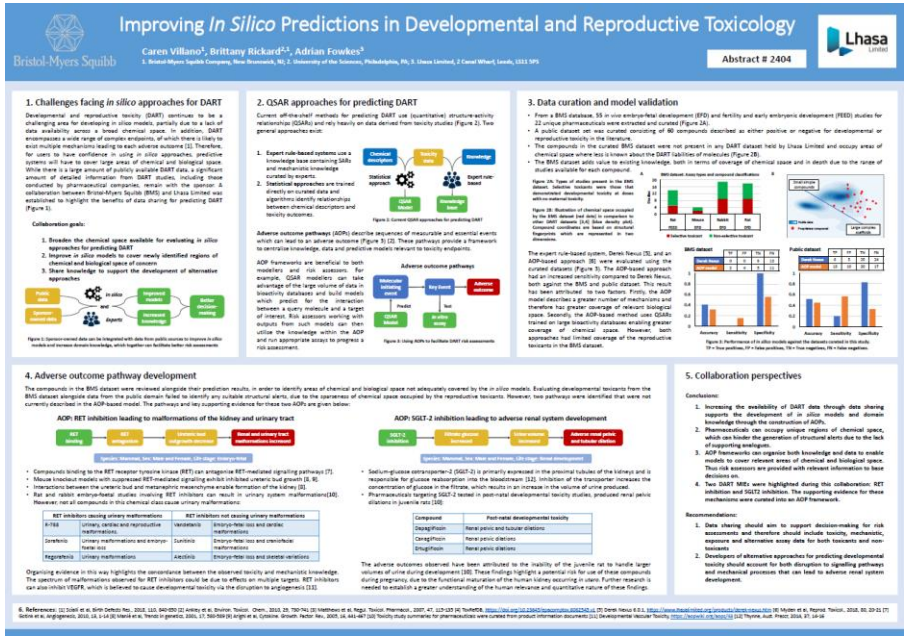
Overview

- Collaborative poster describing the results from a data sharing initiative between Lhasa and a Lhasa member
- Highlights:
  - Approaches for modelling developmental toxicity
  - Benefits of data sharing
  - Recommendations



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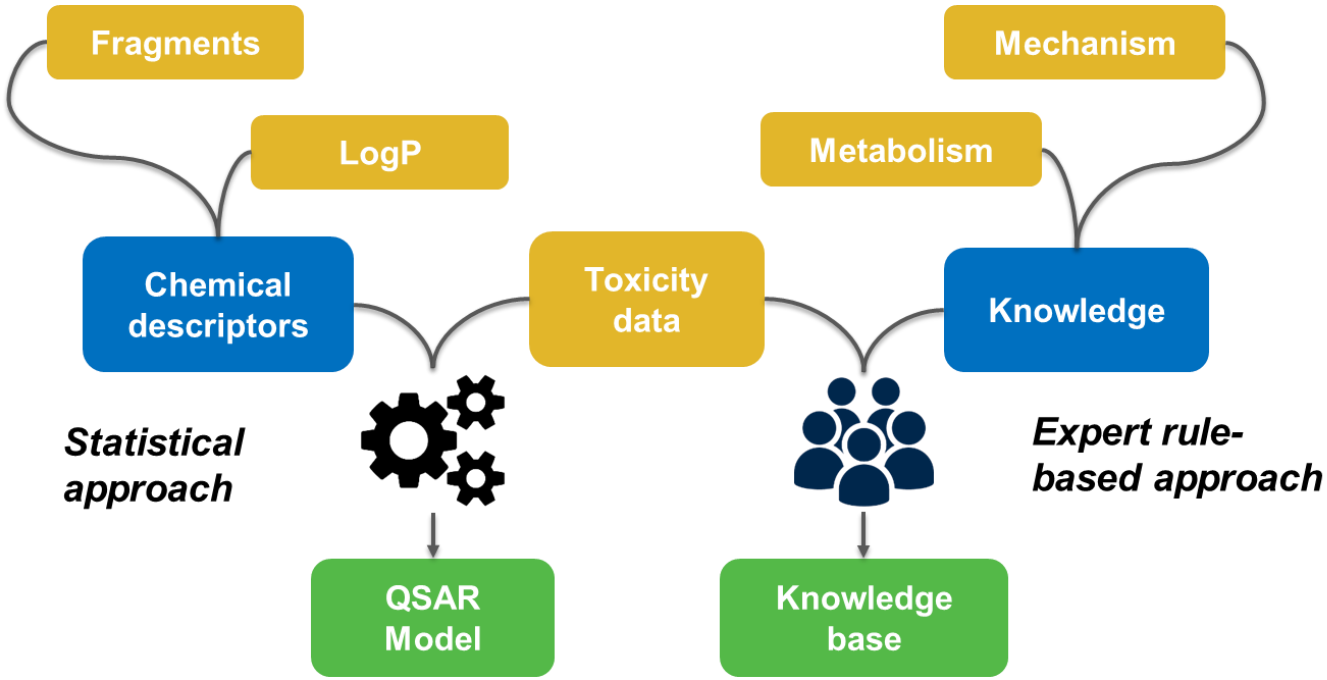
Background

- Current off-the-shelf approaches for predicting DART rely heavily on data derived from toxicity studies



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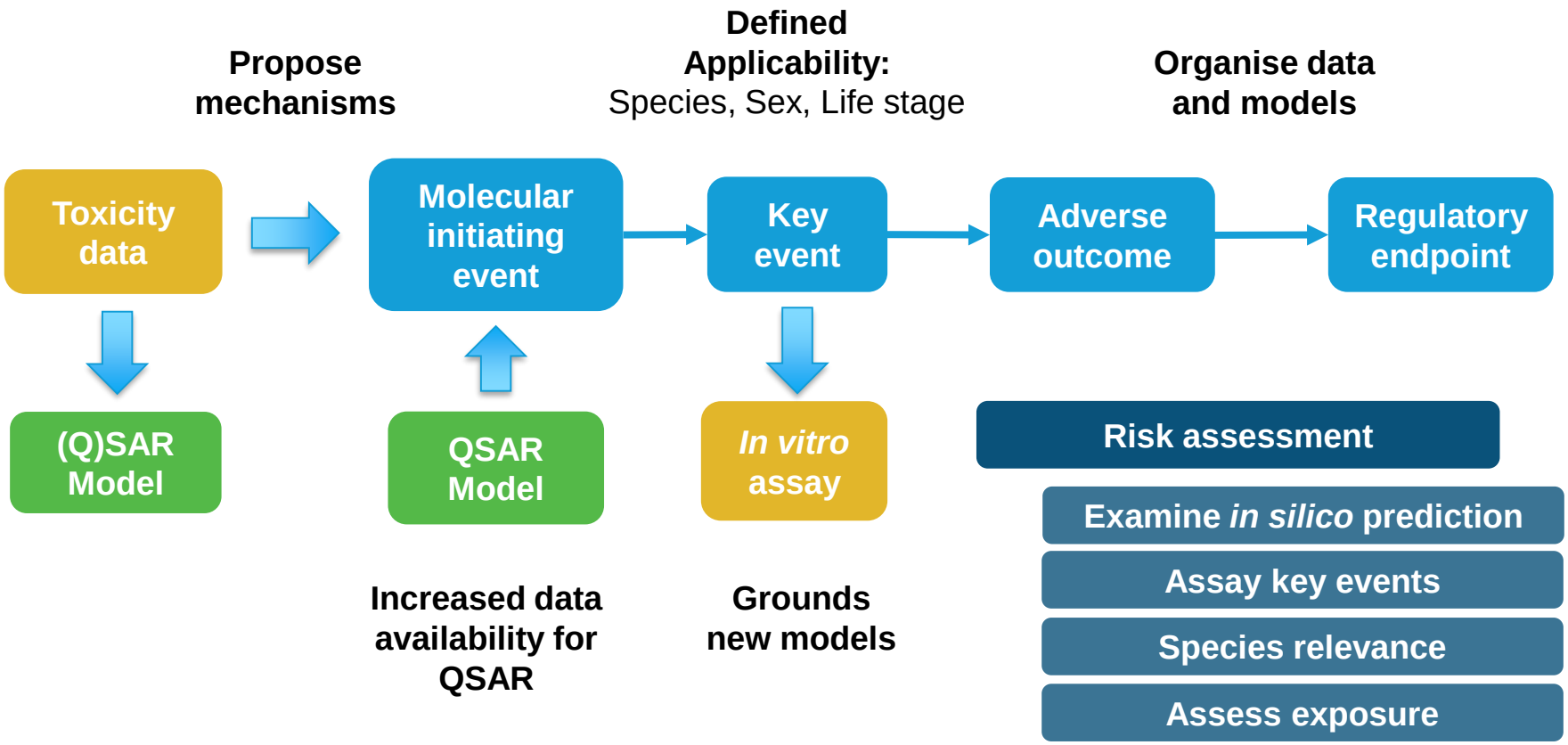
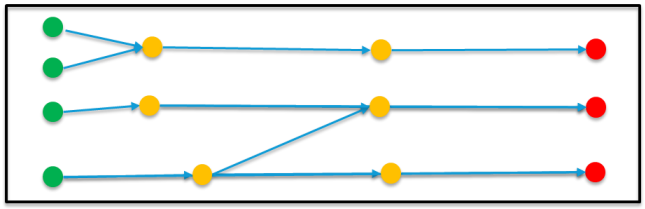
Background

- AOP-based approaches support QSAR approaches to cover a broader range of chemical and biological space

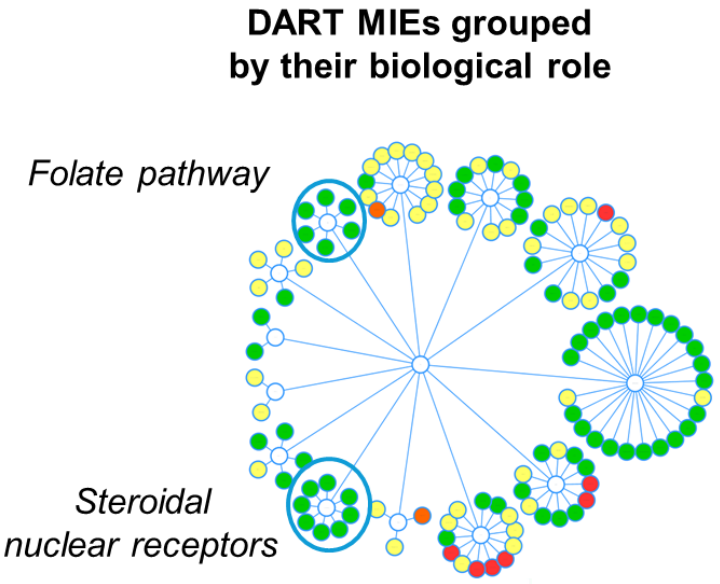


Background

- Lhasa have synthesised a putative AOP network for DART
  - Extracted mechanisms from Derek Nexus
  - Performed literature review

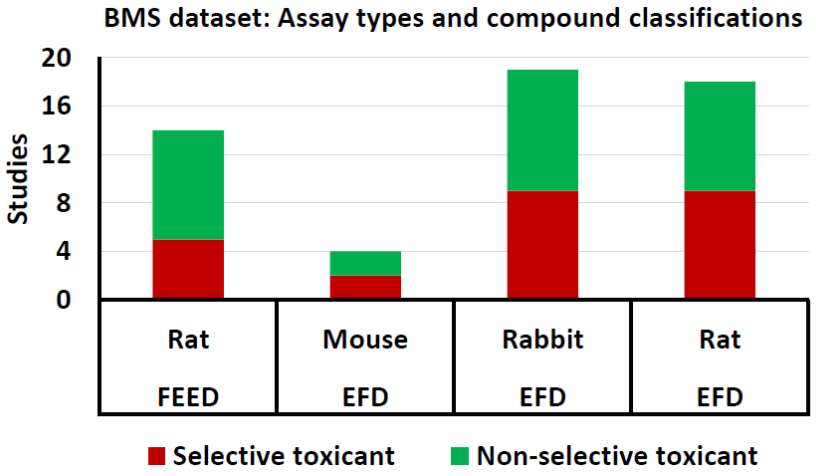


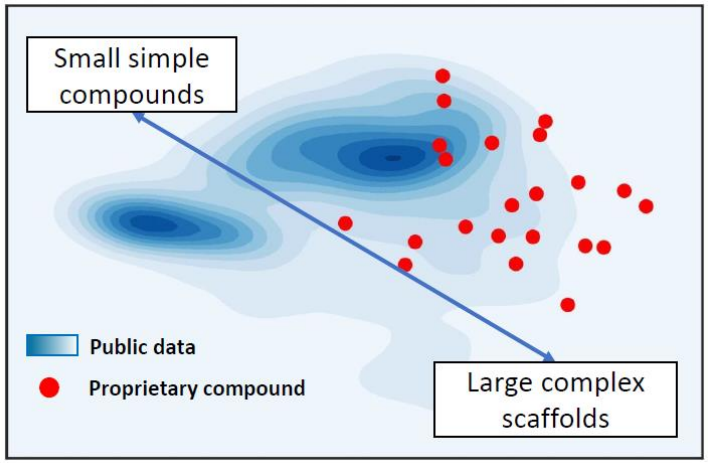
Event Type	DART
MIE	57
KE	119
AO	5



Working with members

- How well do Lhasa's models perform against a member's chemical space?
- Reprotoxicity data was curated from a Lhasa member's database.





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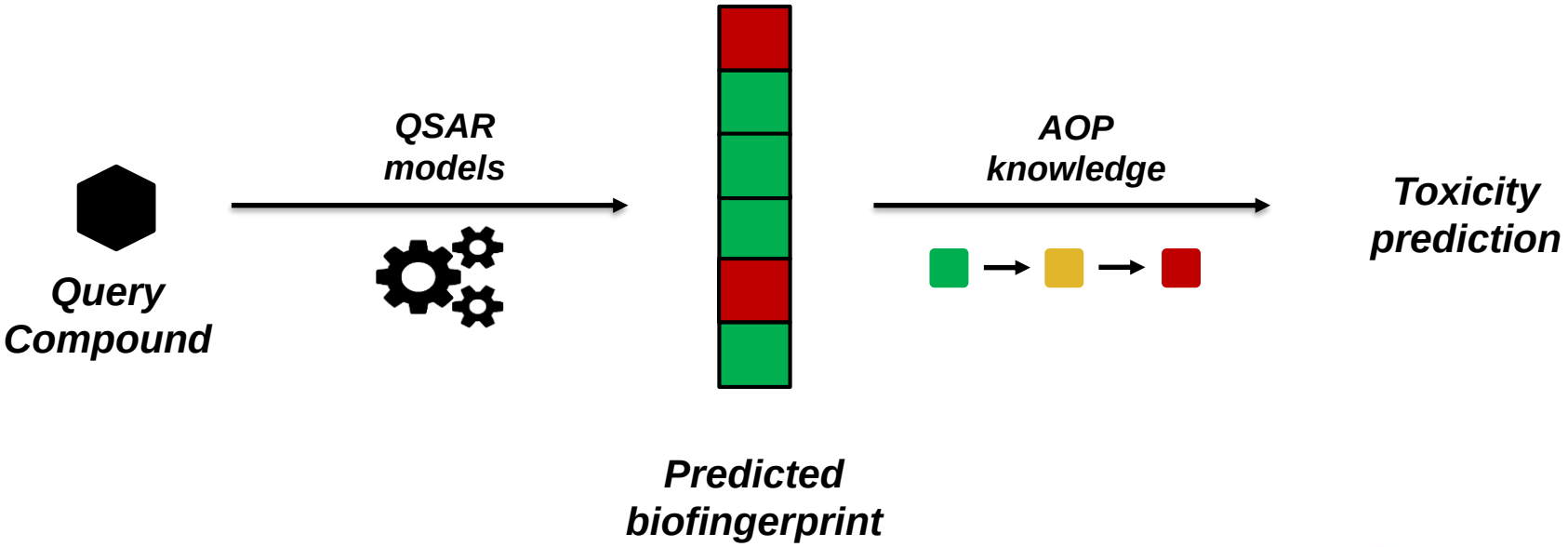
AOP-based model

Predictive models annotated to appropriate key events can act as entry points to the AOP network



Model performance

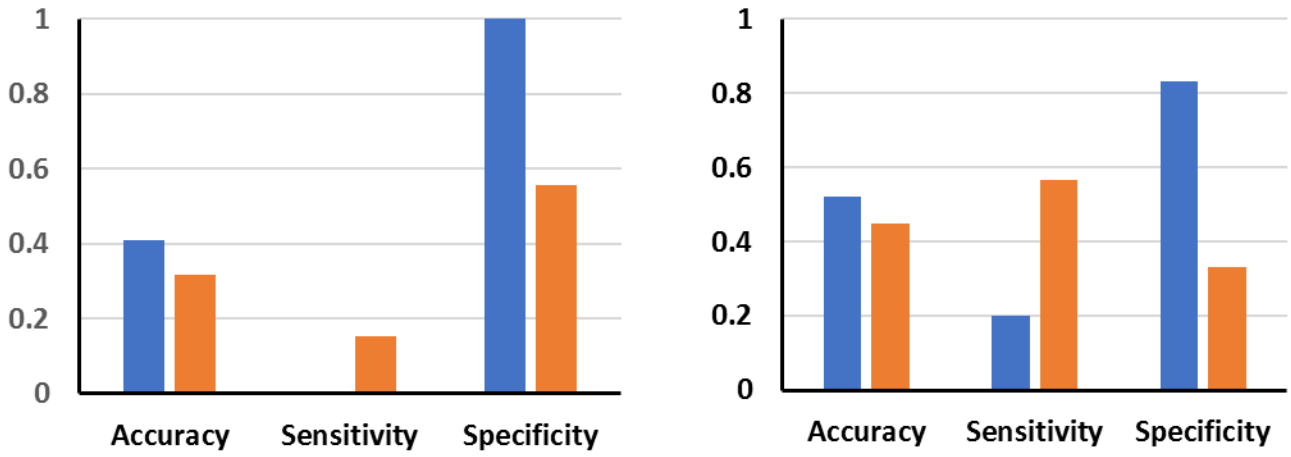
The performance of the AOP-based model, and Derek Nexus, was evaluated against public and member data

Member dataset

	TP	FP	TN	FN
Derek Nexus	0	0	9	13
AOP model	2	4	5	11

Public dataset

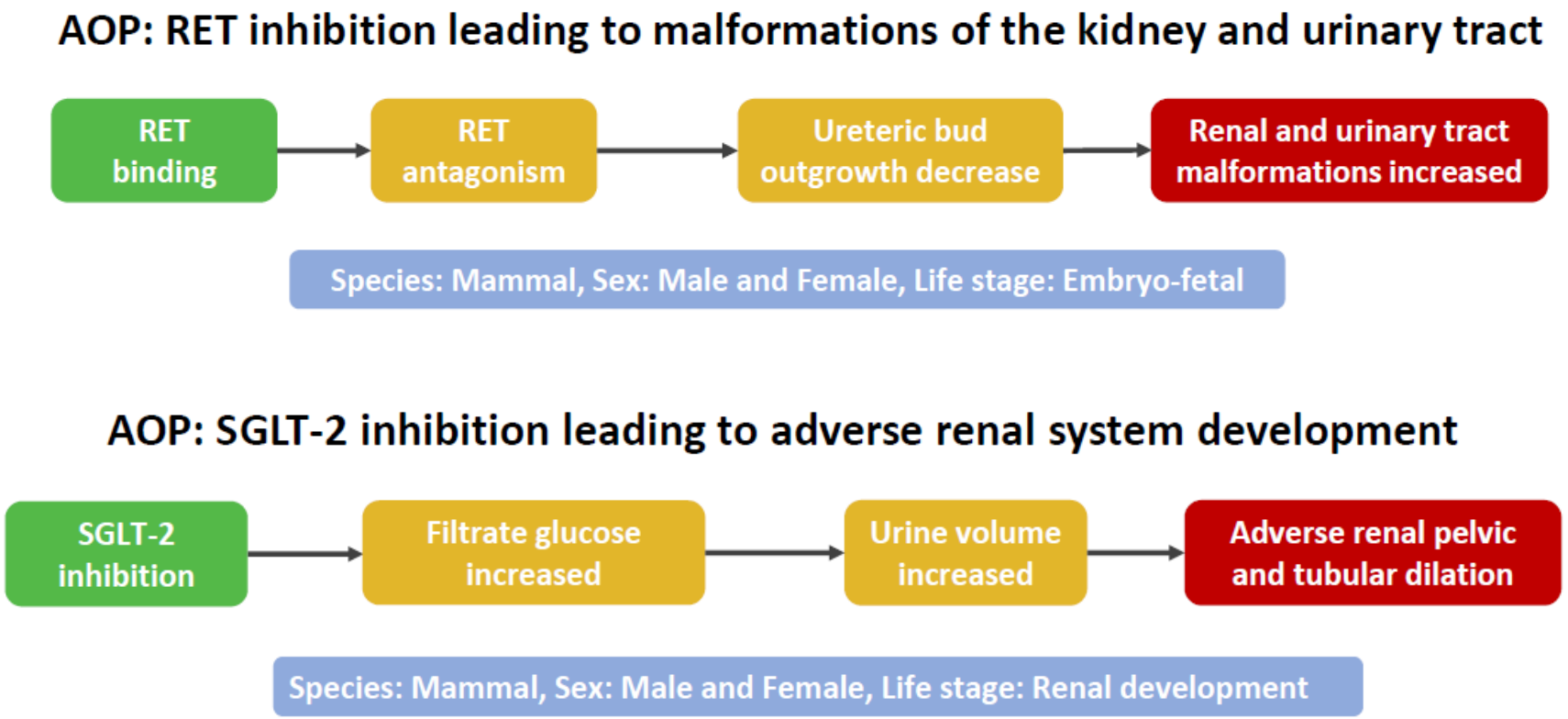
	TP	FP	TN	FN
Derek Nexus	6	5	25	24
AOP model	13	10	20	17



Performance of *in silico* models against the datasets curated in this study.
TP = True positives, FP = False positives, TN = True negatives, FN = False negatives.

The AOP network contains additional mechanisms allowing the AOP-based model to cover wider areas of chemical space

New knowledge



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Acknowledgements

- Caren Villano
- Brittany Rickard

- Lhasa Limited members who have shared DART data

Interested in knowing more or supporting this initiative

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shared **knowledge** • shared **progress**

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