

HEAD IN THE SAND?

How reproducible are detrital zircon U-Pb age spectra?

Contribute to a community-wide inter-laboratory round robin test

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Why?

- The **relative abundance of age components in detrital zircon (DZ) age spectra** plays a **key role** in interpretations of DZ data (e.g., in statistical models; Fig. 1)
- Insufficient understanding** of the **reproducibility** of DZ age spectra produced under different conditions despite inter-study DZ comparison being common

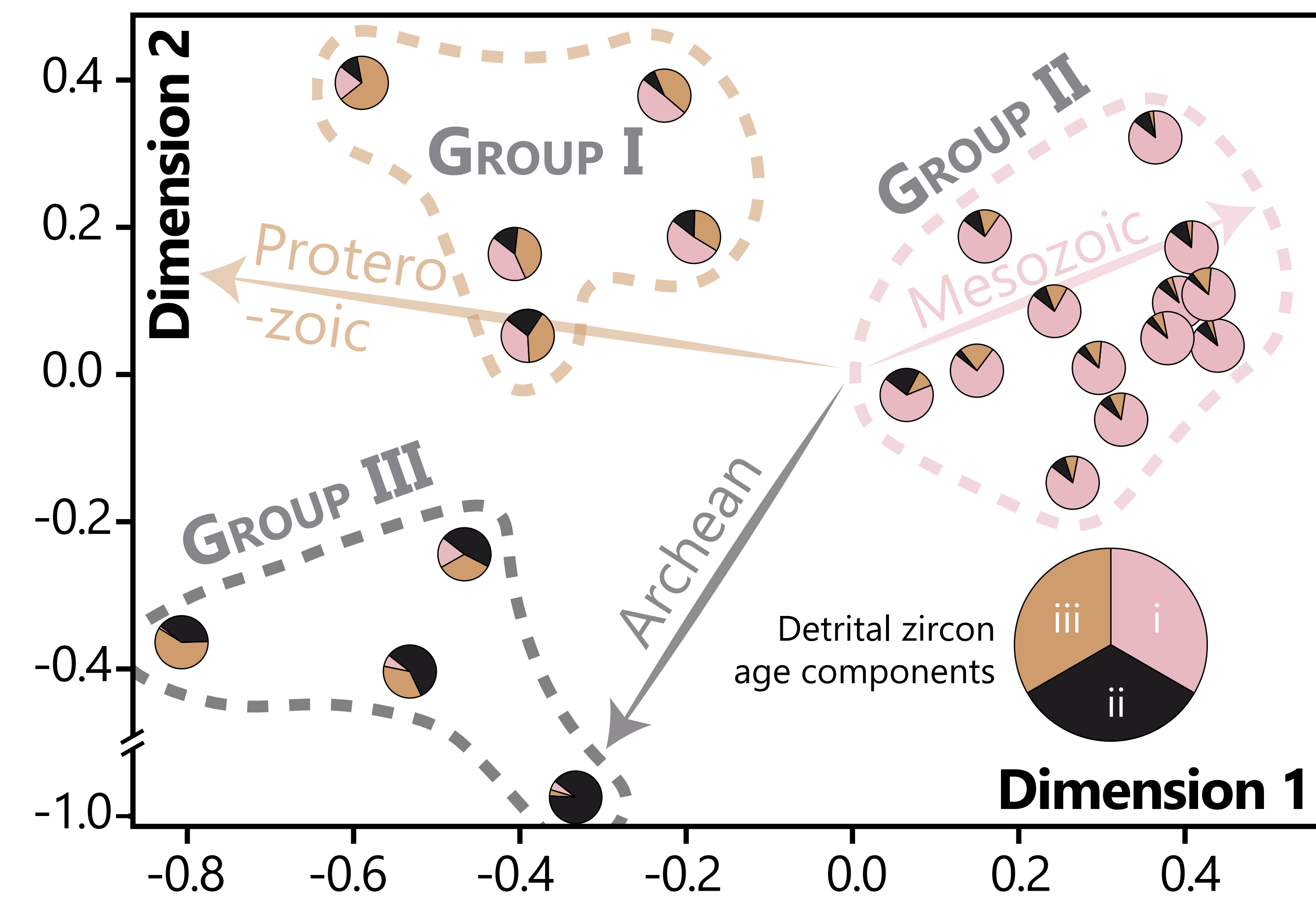
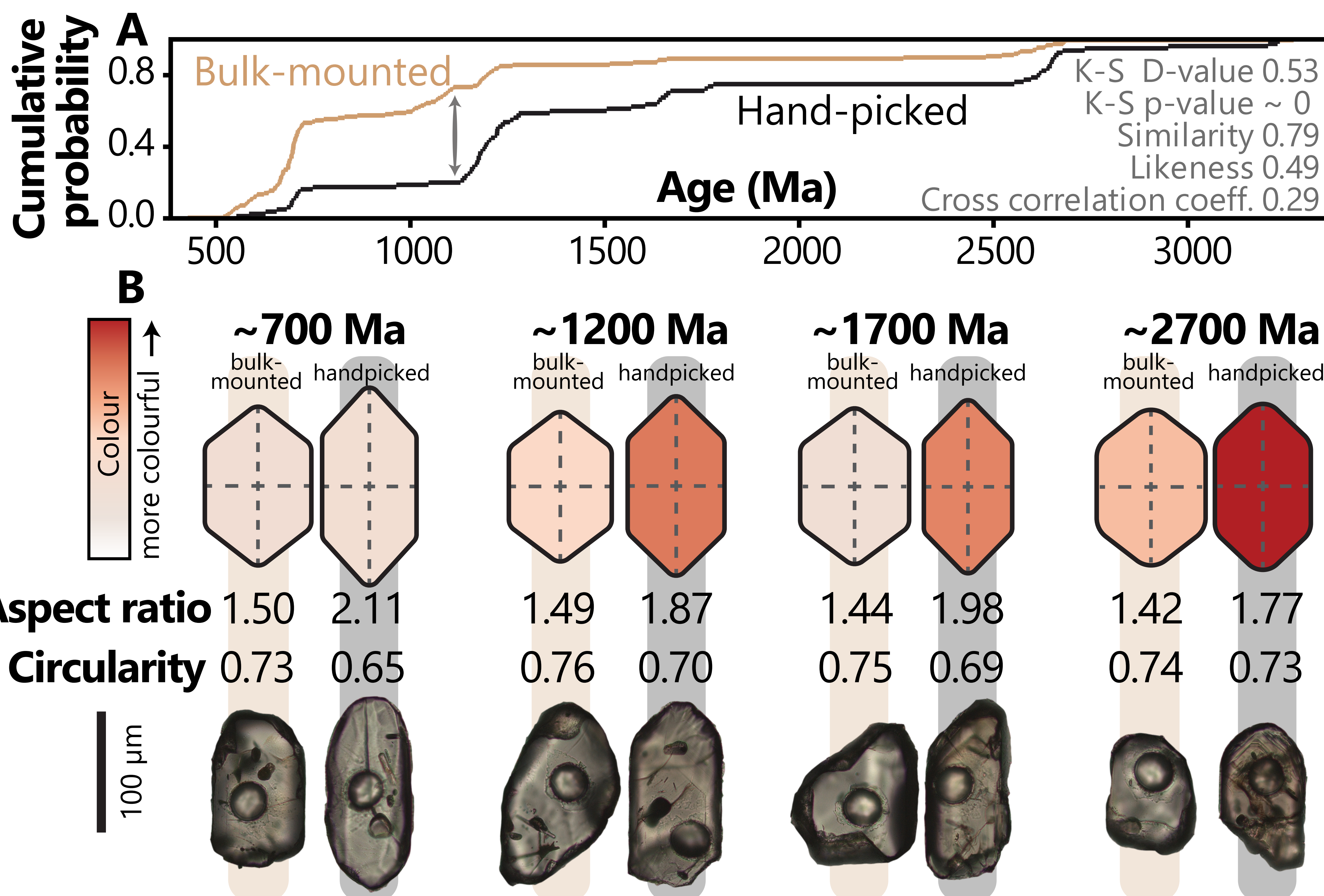


Fig. 1: Relative abundance of DZ age modes often govern the outcomes of statistical comparisons of DZ age spectra of different samples (e.g., Multidimensional scaling; [1]).

Sampling bias!

- DZ age spectra can be modified (i.e., biased) by a wide range of geological and **methodological** factors [2]
- Different sample handling** techniques can result in statistically different DZ age spectra (Fig. 2)
- Yet, no **community-wide study** addressing the sampling bias due to methodological differences

DZ inter-laboratory round robin test

- We are **distributing heavy mineral and zircon concentrates** to DZ specialists (Fig. 3)
- Contributors should use **established workflows** and report DZ data for comparison
- Study objectives are to estimate **reproducibility** of DZ samples and to improve our understanding of the **drivers of variability** caused by different methodological approaches
- Contributors are expected to provide raw isotopic data and a summary of their methods
- Individual outputs of contributors will remain **anonymous** and all contributors are invited to co-author resulting publications
- Anticipated outcomes include **guidelines** to improve the robustness of **future DZ studies**, such as best practices to handle pooled DZ data collected in different laboratories

Interested in joining this endeavour?

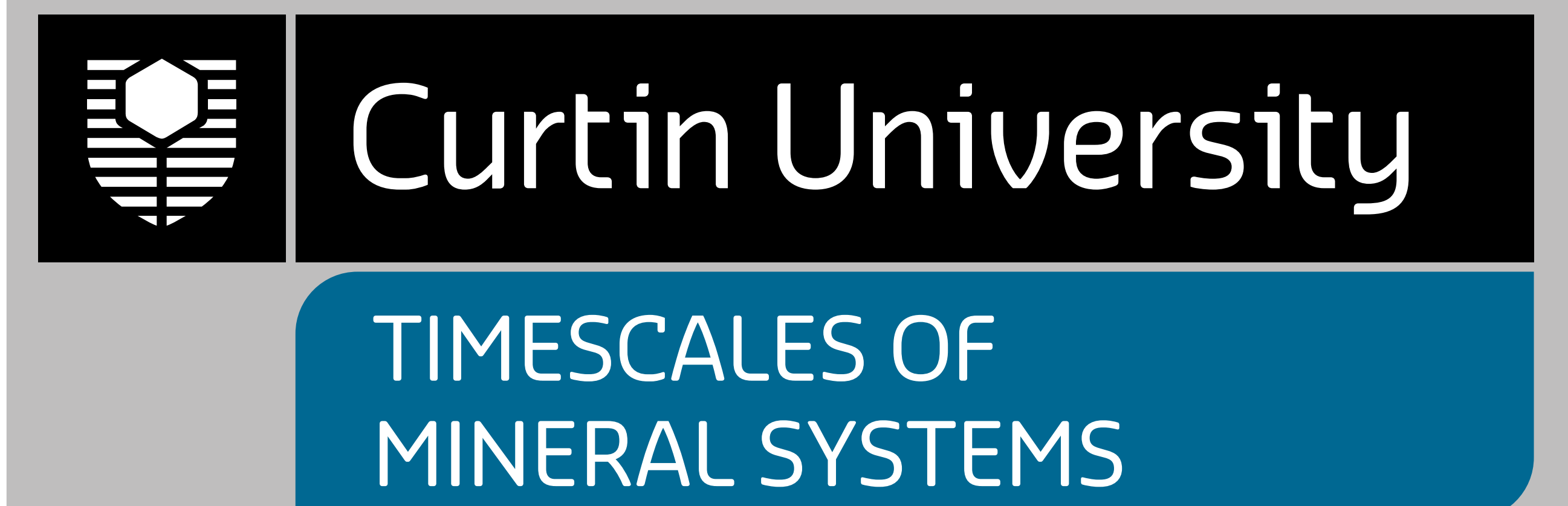
- We are **seeking additional participants** with access to analytical facilities
- Any level of experience** with DZ geochronology is welcomed
- Samples are available **here at the IAS meeting**



Scan me!

Contact

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References: [1] Dröllner et al. (2022), Earth Planet Sci Lett, 579; [2] Chew et al. (2020), Earth Sci Rev, 202; [3] Dröllner et al. (2021), Geol Mag, 158

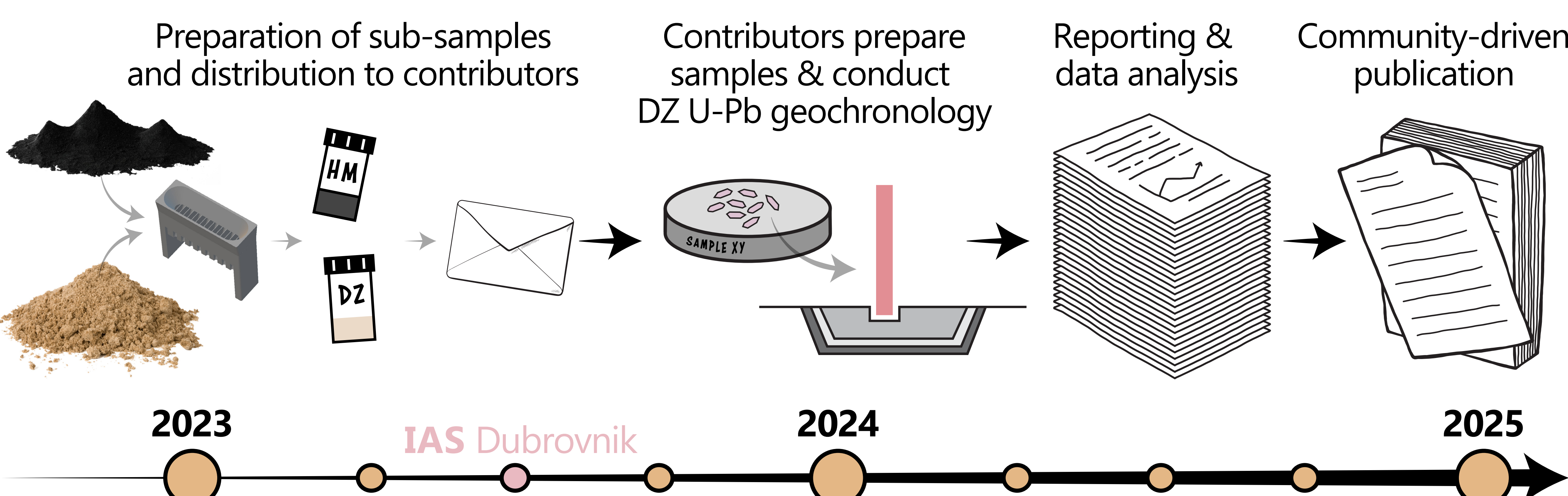


Fig. 3: Schematic workflow and tentative timeline for the inter-laboratory comparison of the reproducibility of DZ U-Pb age spectra.