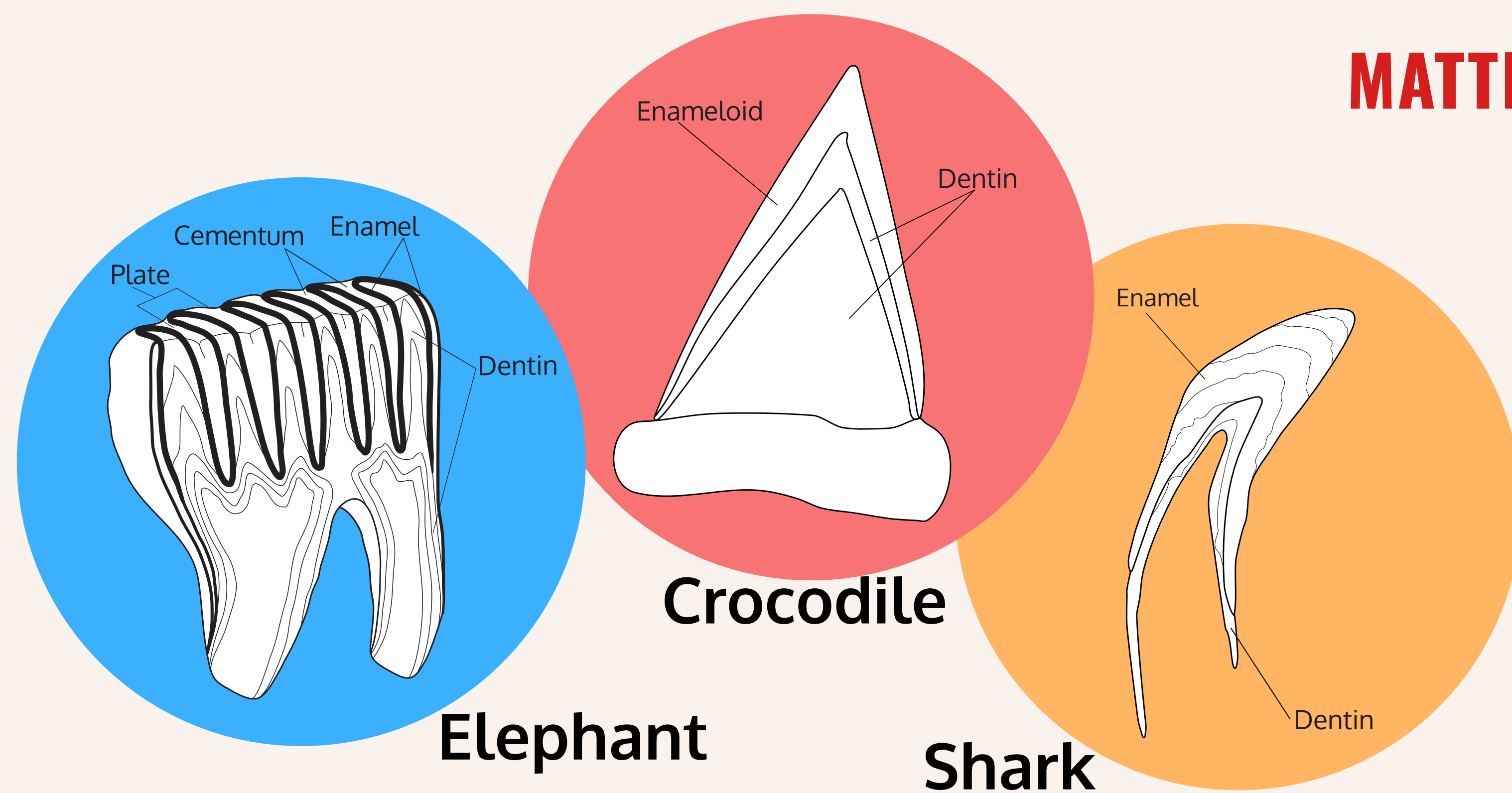


TESTING THE PERFORMANCE OF A KIEL - 253 PLUS IN Δ_{47} ANALYSIS OF APATITES



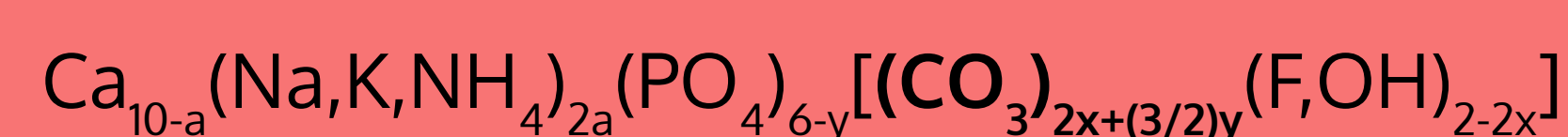
MATTIA TAGLIAVENTO, SVEN HOFMANN, JENS FIEBIG

GOETHE UNIVERSITY FRANKFURT, GERMANY



carbonate-bearing BIOAPATITE...

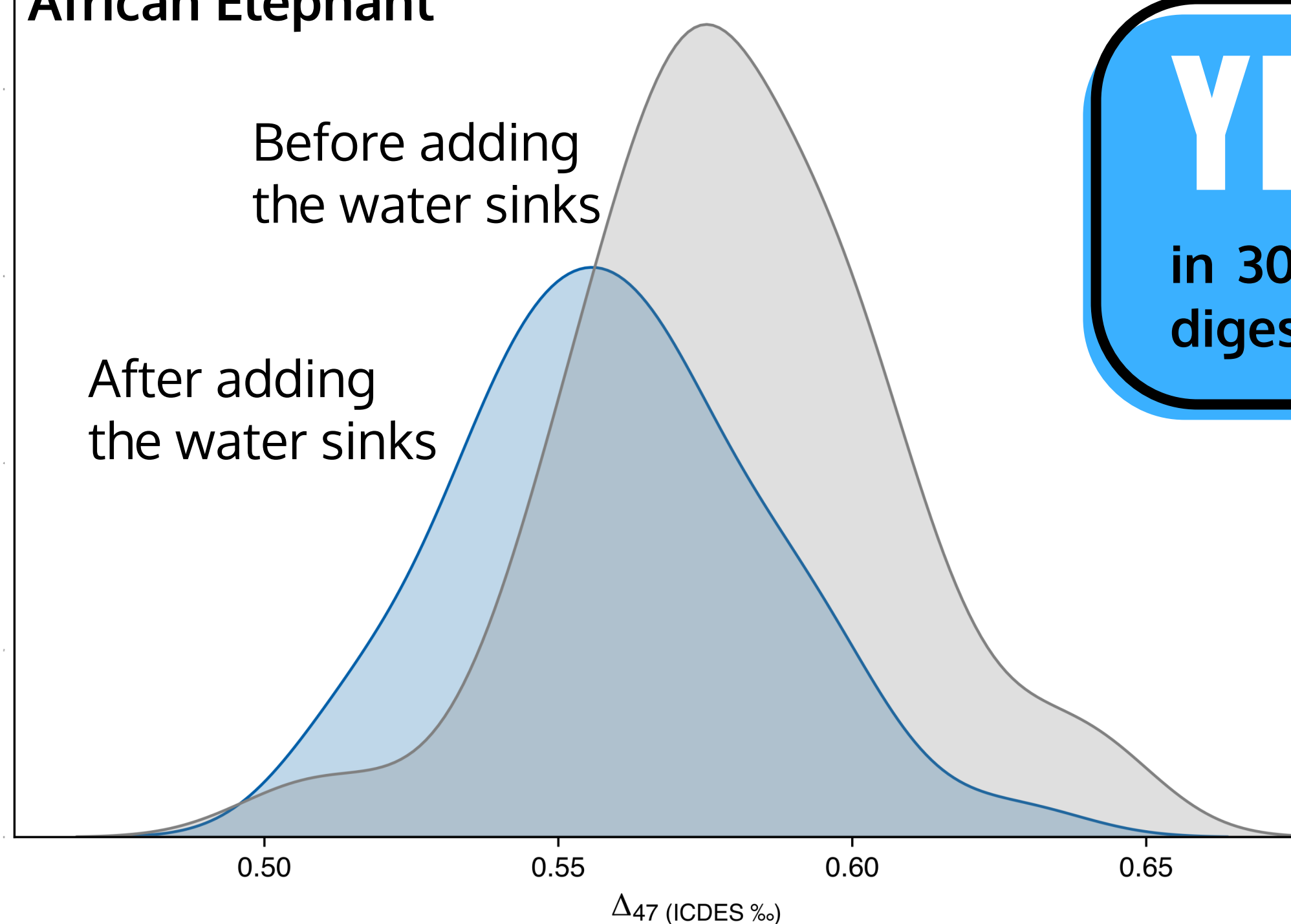
...can be a valuable archive of a variety of information for it represents the main component of bones, teeth and dermal scales of vertebrates.



HOWEVER, due to low and variable carbonate content (2–8%), the necessary amount of sample material for clumped isotope analysis can grow up to about 70–250 mg per replicate: a major obstacle when dealing with unique fossil specimens. Kiel IV represent a possible solution...

...BUT CAN APATITE BE REACTED AT 70 °C ?

African Elephant



YES!

in 30 minutes the material is fully digested, but...

...installation of additional **WATER SINKS** between purification line and pumps is necessary to generate correct data:

African elephant b. w. s. : 0.5785 (30 °C)

African elephant a. w. s. : 0.5594 (37 °C)

CONCLUSIONS:

- Kiel IV Carbonate Device is able to produce data in line with Anderson et al. (2021) calibration line.
- Enamel appears to yield better results than dentin, probably due to its more compact structure (less organics trapped in pores).
- Data from our study differ from the apatite-specific calibration of Löffler et al. (2019), which present a flatter slope.
- Greenland shark reconstructed temperatures are much warmer than expected.



Some more info



ClumpUP



My Website

