

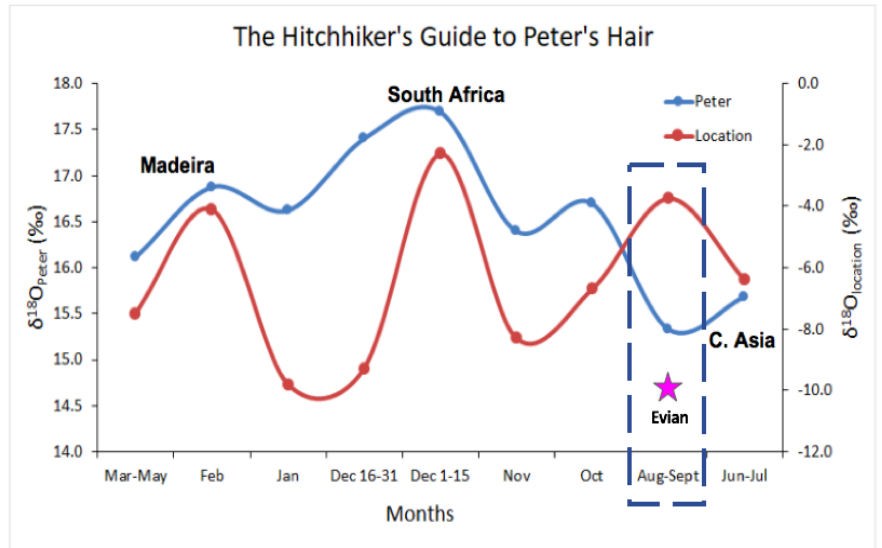
PETER'S HAIR: Path Estimate for the Travel Escapades of a Royal Subject: Has Anything Interesting been Retained?

Research Question: Can stable isotope analysis provide evidence of Peter's whereabouts in the past year?

Hypothesis: The defendant states that he has remained in the United Kingdom during the past 6 months. We propose that the $\delta^{18}O$ values from the defendant's hair should record periods of absence from Oxford, UK

Methods: A sample of hair was taken from the defendant and sectioned from 12 cm in intervals for analysis to pre-date back to June of 2018. Samples were cleaned with ethanol, analysed for $\delta^{18}O$ and plotted against the $\delta^{18}O$ of precipitation from potential regions of travel.

Results: Peter's hair shows fluctuations in values congruent with the $\delta^{18}O$ values for each travel destination, with the exception of August to September of 2018. This has been attributed to participation in an extreme physical activity in which he underwent an isotopic cleanse, replacing his U.K. tap water signature with those from Evian bottled waters (-10.7‰).



NAILED IT: Novel Approaches to Isotopic Learning for Estimating Diet while Integrating Time [using fingernails]

Hypothesis: C, N, and S isotope ratios will reflect the self-identified diet (vegan, vegetarian, omnivore, and carnivore) provided by individuals and corroborate geographic regions of inhabitation six months prior to sample collection

Methods: Plaintiffs provided 1 nail clip and self-identified diet and geographic region of inhabitation (6 mo pre data collection). Nails were cleaned with high-tech equipment (DI water + toothbrushes), soaked in 2:1 chloroform methanol, washed with water, and dried.

Results: $\delta^{15}N$ values support that some vegetarians fed at a higher trophic level than omnivores. $\delta^{34}S$ call into question the geographic location of plaintiffs who claim to live near the coast/eat seafood. $\delta^{13}C$ calls into question the patriotism of some USA plaintiffs who are not eating strictly corn-based products. Finally, a self-identified omnivore is the apex predator.

Hypothesis

Reality

