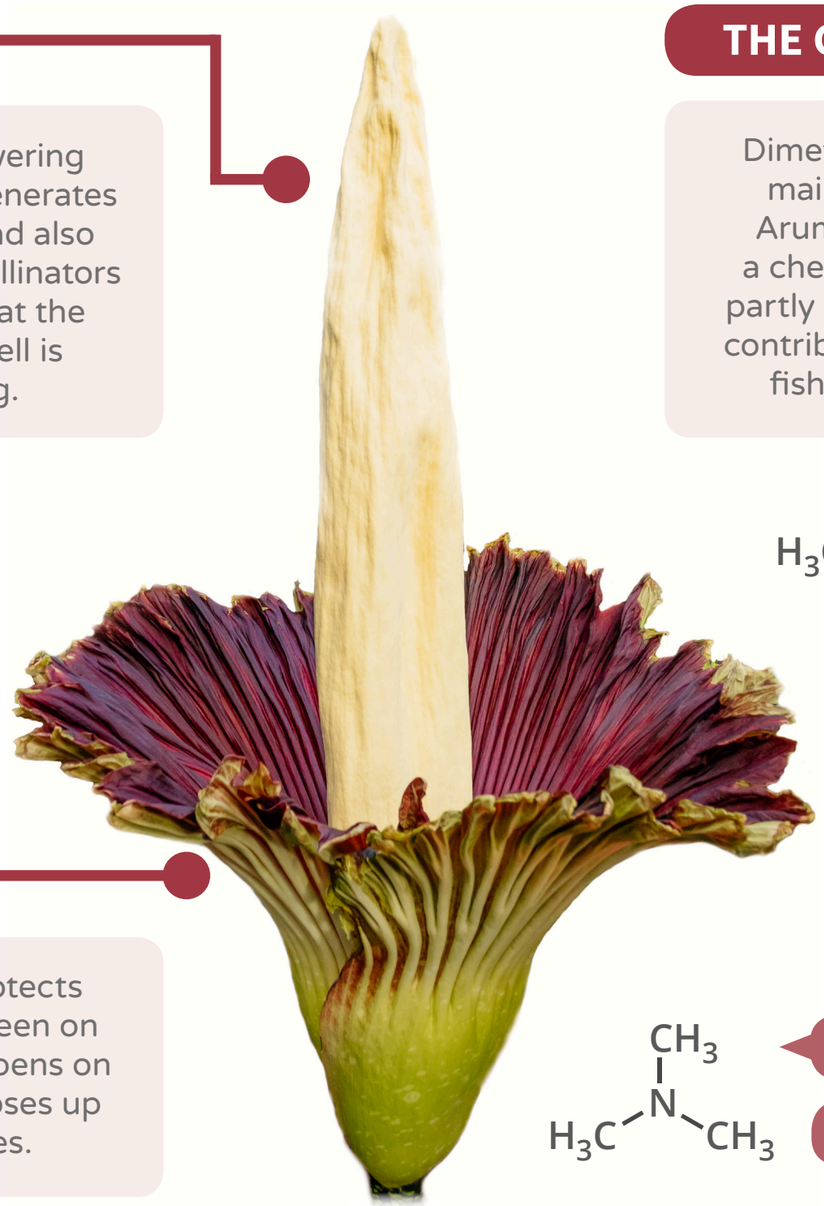
THE SMELLY CHEMISTRY OF THE TITAN ARUM

Titan Arum (*Amorphophallus titanum*) can go years without flowering – but when it does, it produces an odour like dead flesh! Here's the chemistry behind it.

THE SPADIX

The spadix rises from the centre of the flowering structure. During flowering the spadix self-generates heat (a process known as thermogenesis) and also produces smelly compounds. This attracts pollinators to the clusters of small flowers which form at the base of the spadix (shown below). The smell is strongest on the first night of flowering.



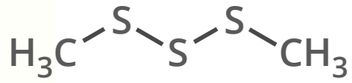
FLOWERS

THE SPATHE

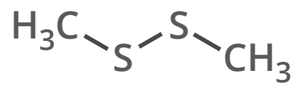
The spathe is a frilly adapted leaf which protects the flowers at the base of the spadix. It is green on the outside, and blood red on the inside. It opens on flowering; after two days have elapsed, it closes up again and the spadix eventually collapses.

THE COMPOUNDS BEHIND THE STENCH

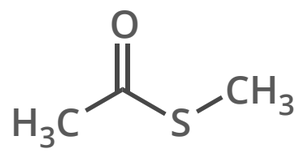
Dimethyl disulfide and dimethyl trisulfide are the main compounds behind the stench the Titan Arum produces. Methyl thiolacetate (which has a cheesy, garlicky odour) and isovaleric acid (also partly responsible for the smell of sweaty feet) also contribute, and trimethylamine is behind the rotten fish smell towards the end of the flower's life.



DIMETHYL TRISULFIDE



DIMETHYL DISULFIDE



METHYL THIOLACETATE

TRIMETHYLAMINE

ISOVALERIC ACID