How the daffodil got its trumpet

February 20 2013

Paintings of daffodil development by Oxford University botanical artist Rosemary Wise.

The daffodil is one of the few plants with a 'corona', a crown-like structure also referred to as the 'trumpet'. New research suggests that the corona is not an extension of the petals as previously thought, but is a distinct organ sharing more genetic identity with stamens, the pollen-producing reproductive organs.

The origin of the corona has long been a subject of debate in botany, and in the 1930s botanist Agnes Arber claimed that it was an extension from

the petals. With its colourful petal-like appearance, it's easy to see why this was believed for so long. Yet by studying the corona's development and genetic information, this new study has shown that it is in fact related to stamens.

Dr Robert Scotland of the University of Oxford led the research, and was supported by colleagues at Harvard University, the United States Department of Agriculture and the University of Western Australia. The researchers were funded by the Gatsby Charitable Foundation and the United States National Science Foundation. The study is published online in *The Plant Journal*.

By studying the development of daffodil flowers, the researchers found that the corona only begins to form after the other parts of the flower are fully established. 'This shows that the corona could not be a straightforward modification of either petals or stamens,' explains Dr Scotland, 'Since it develops independently of both, it is more accurately described as a separate organ.'

The different parts of daffodil flowers are located on a small cup-like platform termed the 'hypanthium'.

The researchers analysed genetic activity in all parts of the daffodil flower, and found that daffodil coronas were genetically similar to the stamens and hypanthium, but not the petals.

'We found that the corona develops from the hypanthium, and is not simply en extension of the petals or stamens,' says Dr Scotland, 'The corona is an independent organ, sharing more genetic identity with stamens, and which develops after the other organs are fully established.'

More information: onlinelibrary.wiley.com/doi/10 … 1/tpj.12150/abstract