

Is the Lucifer cultivar of daffodil descended from the Princeps cultivar?

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Overview

Our project looked at the aims of obtaining genetic information and data on the understudied genus of daffodil cultivars, we specifically studied Lucifer and Princeps. Within our school location we are privileged to have planting areas to allow the daffodils to grow and mature into the needed state to investigate their genetic information. DNA will be taken from plant leaves and genetic information from daffodil cultivars will be sourced using Polymerase Chain Reaction techniques to then replicate the genetic information. Our school is part of a wider project which features 8 other schools throughout Scotland, led by researchers at the University of Dundee.



Aims

We are hoping to discover if the Lucifer cultivar of daffodil is descended from the Princeps cultivar. Through the analysis of genetic material from these daffodils using PCR equipment, we will be able to determine the relationship between the two cultivars. We aim to conduct further research into the genetic material of daffodils, which are vastly understudied.

Background Information

The Princeps cultivar is one of the oldest daffodil cultivars. It is early flowering, with a yellow trumpet and cream petals. It is a member of the Amaryllidaceae family.

The Lucifer cultivar is a large-cupped daffodil. It has a trumpet that starts off as yellow and becomes bright orange, with slightly twisted cream petals. It is also a member of the Amaryllidaceae family.

The fact that these two cultivars are from the same family indicates that when we conduct our experiment we may find that there are certain genetic similarities.



Methodology

We received our daffodil bulbs from the collections in the Botanic Gardens in Dundee. We then planted our bulbs in the raised beds in the school grounds. When the daffodil plants are growing and have green leaves, we can transfer them into the greenhouse, to take good care of them. We are then going to extract the DNA from the chloroplasts in the leaves of the plants. We will then sequence the DNA extracted using the miniPCR equipment. A software computer programme will be able to compare the sequences of the DNA from the two cultivars and then analyse these sequences and note any similarities.

Predicted Results

The process will allow us to sequence the DNA and find any differences or similarities between the Lucifer and the Princeps cultivars respectively. After this we can successfully evaluate the findings that the project had come up with and we can find out which division the two cultivars lie in and we will, from there, be able to predict their phylogeny.

Conclusion

In conclusion, it is hoped that we will be able to highlight any similarities in DNA sequences between our two given daffodil cultivars - Lucifer and Princeps.

Next Steps

We are excited to use the equipment we have been able to purchase and practice our laboratory skills. We are hoping to continue our project with younger pupils and across our feeder primaries.

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