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# Rose floral scent

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## Abstract

The rose is the queen of flowers and is widely used as garden plants and for the cut flower market. Roses are also used for the production of essential oil for the cosmetic and perfume industries. A lot of botanical roses are scented and use their perfume to attract pollinators. Fragrances in garden roses are very diverse and scent has always been an important character in the selection process. Breeders have recently tried to introduce new fragrances, for instance reminiscent of fruit or spice odours. But despite their efforts, some roses on the market are not very fragrant, specially the ones bred for the cut flower market. The cause of this lack of scent is not known. In spite of numerous chemical studies of rose scent, the biosynthetic pathways of many compounds are unknown. Terpenoids, especially monoterpenoids, are the major floral constituents of rose flowers, mostly responsible for the typical rose scent. Generally, terpenoids biosynthesis in plants is achieved by various terpene synthases. However, with a combination of transcriptomic and genetic approaches, our group recently discovered a terpene synthase-independent pathway. A key enzyme of this pathway is RhNUDX1, belonging to the nudix protein family. It has geranyl diphosphate diphosphohydrolase activity *in vitro*. A positive correlation was found between the expression levels of RhNUDX1 and the production of geraniol, indicating the essential role of this protein in scent production in roses. Magnard et al., 2015: Biosynthesis of monoterpene scent compounds in roses. *Science* 349, 6243.

**Keywords:** scent rose terpenes

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