

Scientists find new class of flavonoid pigments in liverworts

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Credit: Plant & Food Research

Scientists at Plant & Food Research, along with colleagues at Lincoln

University and overseas, have recently discovered a brand new class of flavonoid pigments called "auronidins."

This ground-breaking discovery, which challenges when the class of flavonoid called anthocyanins evolved in [plants](#), has just been published in the *Proceedings of the National Academy of Sciences (PNAS)*.

Flavonoids are a diverse group of phytonutrients (plant chemicals) found in almost all fruit and vegetables and, along with carotenoids, are responsible for the vivid colors.

Until now, scientists thought that the red anthocyanin flavonoid pigments evolved during the evolution to land by plants from [aquatic environments](#). In this study, scientists looking at liverworts—which may be the closest living relative to the first land plants—found that the red pigment in liverworts are not anthocyanins but an entirely new class of compound. The scientists have named this previously unreported flavonoid class "auronidins."

The discovery that there are no anthocyanins in liverworts, but rather auronidins, suggests that anthocyanins did not evolve as early as commonly thought but probably arose after the last common ancestor of liverworts and seed plants. These findings raise questions about the changing physiological role of red colored pigments during plant evolution.

The newly-discovered auronidin pigments have some significant properties. They are fluorescent and range in color from yellow/orange to purple and could be used in future applications as chemosensors, dye sensitized [solar cells](#) and pigments for food and cosmetics.

Additionally, liverworts have a remarkable ability to survive in [extreme environments](#) and it's possible the auronidin pigments may play a role in

[stress tolerance](#), helping liverworts cope with land-based stresses such as UV-B light, drought or nutrient deprivation.

More information: Helge Berland et al. Auronidins are a previously unreported class of flavonoid pigments that challenges when anthocyanin biosynthesis evolved in plants, *Proceedings of the National Academy of Sciences* (2019). [DOI: 10.1073/pnas.1912741116](https://doi.org/10.1073/pnas.1912741116)

Provided by Lincoln University

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