

## Podcast: Synthetic 'light switch' boosts photosynthesis to increase crop yields

One of the limiting factors in photosynthesis is the plant's ability to take up carbon dioxide to assimilate into carbohydrates. At least part of the problem is the size of the small pores, or stomata, that are used for gas exchange between the inside of the leaf and the outside environment. Pore size is dictated by guard cells, two sausage-shaped cells that swell and deflate to open the pore. The process can be triggered by an influx of potassium ions.

Prof. John Christie and collaborators at the University of Glasgow and Milan, Italy designed a light-activated potassium switch, a channel that would allow the light influx when the plants were treated with blue light. The resulting plants incorporated more carbon into their biomass. The results show that a synthetic molecule can be used to open one bottleneck in photosynthesis, and the technology may be helpful in increasing plant yields in the future.

[https://geneticliteracyproject.org/wp-content/uploads/2019/04/181\\_Christie.mp3](https://geneticliteracyproject.org/wp-content/uploads/2019/04/181_Christie.mp3)

Visit John [Christie's website](#) and read [his recent study](#).

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