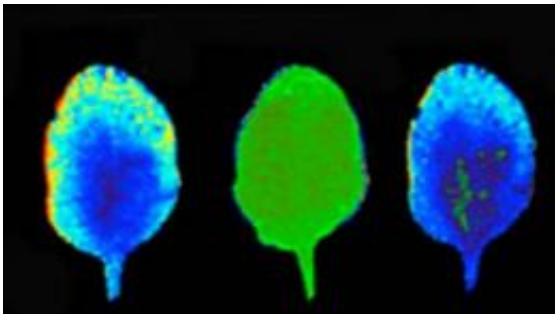


# Scientists say plants can remember properties of light

July 16 2010, by Lin Edwards

---



The images showed chemical reactions in leaves that were not exposed to light

(PhysOrg.com) -- Researchers in Poland say plants are able to remember and react to information on light intensity and quality by transmitting information from leaf to leaf.

The scientists, led by Professor Stanislaw Karpinski of the Warsaw University of Life Sciences, used fluorescence imaging to view the response of specimens of the *Arabidopsis* plant to light shone on them. They found that when light was shone on one leaf at the bottom of the plant the entire plant responded. The response, in the form of a cascade of chemical reactions induced by the light, continued even after the light source was removed, suggesting the plant was remembering the information contained in the light.

Karpinski and colleagues discovered that when light is shone on a leaf a

chemical reaction begins in one leaf cell and the reaction is immediately signaled to the rest of the plant by photo-electro-physiological signals (PEPS) from specialized cells called bundle sheath cells. Karpinski said the cells function in a similar way to a [nervous system](#) in animals.

Professor Karpinski said animals have a “network of neurons, synapses, electro-physiological circuits and memory, but [plants](#) have their network of [chloroplasts](#) (connected by stromules), photo-electro-physiological signals transduced by bundle sheath [cells](#), and cellular light memory.”

Another discovery made by the team was that the plants responded differently to red, white and blue light. Karpinski thought the different responses might produce [chemical reactions](#) that protected the plant against disease. To test this idea the team shone light on the plant for an hour and then infected it with either [bacteria](#) or viruses.

The results showed that if plants were infected before having the light shone on them there was no resistance to the disease, but if the light was shone on them for an hour and then they were infected 24 hours later, the plants did resist the infection. Karpinski said this demonstrated exposure to the light built up the plant’s immunity to pathogens, and that they were able to adjust to varying light conditions.

Karpinski said that the quality of light varies from season to season and it appears the plants might use the information in the light to determine the season and immunize themselves against diseases prevalent at that time of year.

The findings were presented at the annual meeting of the Society for Experimental Biology in Prague, Czech Republic.

**More information:** via [BBC](#)

© 2010 PhysOrg.com

Citation: Scientists say plants can remember properties of light (2010, July 16) retrieved 26 April 2024 from <https://phys.org/news/2010-07-scientists-properties.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.