This Week's Citation Classic™ CC/NUMBER 42 OCTOBER 15, 1984

Carlile M J. The photobiology of fungi. *Annu. Rev. Plant Physiol.* **16**:175-202, 1965.
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Light is essential for spore production in many fungi. Other effects of light are phototropism, carotenoid formation, and the timing of spore discharge. Blue light is usually most effective, a flavoprotein photoreceptor being probable, but ultraviolet wavelengths are required for sporulation in some species. [The *SCI*® indicates that this paper has been cited in over 100 publications since 1965.]

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May 9, 1984

"During the period 1954-1961, as a graduate student and a young lecturer at the Universities of Cambridge and Bristol, I carried out research on the photobiology of fungi. I found the literature voluminous, uneven in quality, and frequently neglected or misinterpreted in reviews and textbooks. In the course of my research, I confirmed work dating from the period 1928-1930 but subsequently generally overlooked that showed that in some fungi it was the ultraviolet component of sunlight that caused sporulation. I found also that, by the use of appropriate wavelengths or mutants, sporulation could be obtained in the absence of carotenoid production, which was interesting because a frequent association of carotenoids and sexuality was at the time widely interpreted as indicative of a causal relationship. I also concluded that evidence for the orthodox view that carotenoids were the photoreceptors for blue light responses was weak and that the receptors were more likely to be flavoproteins, as suggested by Galston[1] and Reinert.[2] Thus, by the early 1960s, I had developed a clearly defined viewpoint as well as a thorough knowledge of the literature of fungus photobiology.

"During the period 1961-1963, while at the University of Ibadan in Nigeria, I realised that my research interests were moving away from photobiology. I therefore felt that I should review fungal photobiology while my knowledge was up-to-date. The review was written in a leisurely fashion in 1962-1963 while I was at Ibadan and taken by me to the US when I went to work with Leonard Machlis at Berkeley for 1963-1964. Machlis, then editor of the *Annual Review of Plant Physiology*, liked the review and asked me to update and revise it to meet the format of the journal.

"In 1970, I wrote a second review on the subject,[3] research in the intervening period enabling me to give a more satisfactory treatment of some topics. Notable among these was the important work of Charles Leach[4] showing that the interaction of ultraviolet wavelengths, blue light, and temperature meant that some important plant pathogens needed a 'warm day, cool night' regime for sporulation. Unfortunately, this review, published in a book instead of a journal, is often overlooked.

"The success of my earlier review can be explained on the basis of being a thorough piece of work, much needed at the time. It may have led to an invitation to give the opening lecture[5] at the First International Conference on the Effect of Blue Light on Plants and Microorganisms in Marburg in 1979. I suspect that the organisers felt that the awakening of a Rip van Winkle would make an entertaining opening for the conference. The meeting was excellent, and it was delightful meeting both old friends and bright young newcomers. Amusingly, I find that the flavin-carotenoid photoreceptor controversy continues 35 years after Galston began it in 1949, although the flavin supporters are now orthodox and the carotenoid fanciers the rebels."[6,7]

1. **Galston A W & Baker R S.** Studies on the physiology of light action. II. The photodynamic action of riboflavin. *Amer. J. Bot.* **36**:773-80, 1949. (Cited 55 times since 1955.)
2. **Reinert J.** Über die Bedeutung von Carotin und Riboflavin für die Lichtreizaufnahme bei Pflanzen. *Naturwissenschaften* **39**:47-8, 1952. (Cited 15 times since 1955.)
3. **Carlile M J.** The photoresponses of fungi. (Halldal P, ed.) *Photobiology of microorganisms*. London: Wiley, 1970. p. 309-44. (Cited 70 times.)
4. **Leach C M.** Interaction of near-ultraviolet light and temperature on sporulation of the fungi Alternaria, Cercosporella, Fusarium, Helminthosporium and Stemphylium. *Can. J. Bot.* **45**:1999-2016, 1967. (Cited 60 times.)
5. **Carlile M J.** The biological significance and evolution of photosensory systems. (Senger H, ed.) *The blue light syndrome*. Berlin: Springer Verlag, 1980. p. 3-4.
6. **Gressel J & Rau W.** Photocontrol of fungal development. (Shropshire W & Mohr H, eds.) *Photomorphogenesis*. Berlin: Springer Verlag, 1983. p. 603-39.
7. **Briggs W R & Ilno M.** Blue-light-absorbing photoreceptors in plants. *Phil. Trans. Roy. Soc. London B* **303**:347-59, 1983.

