

This Week's Citation Classic

Westergaard M & Mitchell H K. *Neurospora* V. A synthetic medium favoring sexual reproduction. *Amer. J. Bot.* 34:573-7, 1947. [Kerckhoff Labs, of Biology, California Institute of Technology, Pasadena, CA]

In the early years of *Neurospora* genetics, crosses were made mostly on 'corn meal agar' where growth was poor and ascospore production often erratic. Described in this paper is a synthetic medium which supports prolific production of sexual spores as well as good growth. [The *SCF*[®] indicates that this paper has been cited over 355 times since 1961.]

Herschel K. Mitchell
Division of Biology
California Institute of Technology
Pasadena, CA 91125

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"Sexual spores of *Neurospora* are rugged and resistant to environmental stresses. In fact they require a heatshock of some 60°C to become activated for germination. Therefore, it seemed logical to some to believe that sexual reproduction in the fungus might be induced by starvation conditions in anticipation of harder times to come: at least that is the way the story was told. The 'anticipation' was always a bit bothersome but I had no particular urge to investigate the question until the appearance here at the California Institute of Technology of the late Mogens Westergaard from the Genetics Institute of the University of Copenhagen. Mogens was a bota-

nist-geneticist-cytologist and most other things in biology which I was not. In fact, virtually all of my time during this period was spent with *Neurospora* mutants in isolation, identification, and synthesis of metabolic intermediates in the biosynthesis of purine, pyrimidines, and various amino acids. So when Mogens asked the question of why sexual reproduction of *Neurospora* only occurred on a medium which gave poor growth, I was not particularly interested. However, I had previously been involved with the isolation of growth factors for neuroorganisms (pantothenic acid and folic acid) and it seemed possible that there might be something of the sort involved in this situation. But we were reasonably sensible from the beginning and simply rearranged the concentrations of the constituents of the standard synthetic medium which would yield good growth.

"That was in fact all there was to it. When the mold is required to reduce nitrate for a nitrogen source both sexual reproduction and good growth can be obtained. There remain some interesting questions of shifts in metabolic balances which have not been answered so far as I know, but the medium we devised worked well for genetics. Improvements were not really necessary so the original has been referenced for quite some time now. It is simple and it still works, thus accounting for the article's frequent citation."