

## Neurospora crassa Life Cycle <sup>[1]</sup>

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This diagram shows the life cycle of *Neurospora crassa*, a mold that grows on bread. *N. crassa* can reproduce through an asexual cycle or a sexual cycle. The asexual cycle (colored as a purple circle), begins in this figure with (1a) vegetative mycelium, which are strands of mature fungus. Some of the strands form bulbs (2a) in a process called conidiation. From those bulbs develop the conidia, which are spores. Next, (3a) a single conidium separates from its strand and elongates until it forms mycelium. The sexual cycle (colored as an orange circle) also starts with the (1b) vegetative mycelium. The strands develop into a structure called the proto-perithecium, and reproduction involves the proto-perithecium interacting with the conidia from a different mycelium. Reproduction also involves two mating types, called type A and type a. In reproduction, type A pairs with type a, and a conidium can be of either type, as can a proto-perithecium. A proto-perithecium fertilized by a conidium of the opposite mating type (2b) will develop into a perithecium. Inside the perithecium, croziers develop and mature into asci. (3b) In a maturing ascus, there are two nuclei (one represented as a white circle and one as a black circle), one of which comes from the conidium and the other from the proto-perithecium. Each nuclei has only one set of chromosomes (haploid). The two haploid nuclei fuse into a diploid nucleus (represented as a half black half white circle). The nucleus then divides, separating into two nuclei each with one set of chromosomes. Those nuclei duplicate themselves (represented as two white circles and two black circles), and then all the nuclei duplicate themselves again (represented as four white circles and four black circles). This process yields eight haploid ascospores within a mature ascus. Ascospores are spores, and function for the mold as do seeds for plants. The mature perithecium releases its ascospores (4b), which germinate and grow into mycelium. In the 1930s and 1940s, George Beadle and Ed Tatum collected the spores of irradiated *N. crassa* to study how genes produced enzymes.

### Subject

Pink bread mold <sup>[2]</sup> Microbiology <sup>[3]</sup> Beadle, George Wells, 1903-1991 <sup>[4]</sup> Spore <sup>[5]</sup> Microscopy <sup>[6]</sup> *Neurospora crassa* <sup>[7]</sup> growth <sup>[8]</sup> Development <sup>[9]</sup>

### Topic

Organisms <sup>[10]</sup> Processes <sup>[11]</sup> Theories <sup>[12]</sup>

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## Format

Graphics <sup>[13]</sup>

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