



**FIGURE 2.20.** Matthew Meselson and Franklin Stahl's demonstration that DNA replication is semiconservative—the first-generation DNA molecule carries one parental strand of DNA and one newly synthesized strand. (*Top*) In this elegant experiment, a population of bacteria was made to reproduce synchronously in a medium containing the heavy isotope of nitrogen ( $^{15}\text{N}$ ). The bacteria were then transferred to unlabeled medium and the density of the DNA molecules was measured in an ultracentrifuge. This photo shows the DNA bands that resulted. Regions of equal density occupy the same horizontal position on each photograph. Adjacent are microdensitometer tracings of the DNA bands. (*Bottom*) In generation 0, all of the DNA is labeled. In generation 1, all of the DNA consists of one labeled strand and one unlabeled strand. In generation 2, half the DNA is hybrid and the other half unlabeled.

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