**Data Analysis Problem**

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to accompany

*The Cell: A Molecular Approach,* Eighth Edition

Geoffrey M. Cooper

**1.2 Electron Microscopic of Isolated Ribosomes**

This Data Analysis Problem is also found on page 42 of the textbook.

**Source:** Nomura, M. 1969. Ribosomes. *Scientific American*, October, 28–35.

**Level of difficulty:** Low

**Corresponding chapter(s) in the textbook:** Chapter 1 (and 10)

**Review the following terms before working on the problem:** *E.coli* cells, ribosomal fraction, heavy metal staining, electron microscopy

**Experiment**

A purified ribosomal fraction was prepared from *E.coli* cells and suspended in a solution with a low concentration of magnesium. This results in separation of the two subunits of ribosomes, since Mg2+ ions are required for ribosomal subunits to bind to each other. The ribosomal fraction was stained with uranyl formate and studied by electron microscopy (400,000-fold magnification).

**Figure**



**Questions**

1. What kind of staining is shown in the electron micrograph?

2. What are A and B pointing to on the micrograph?

3. Determine the longest diameter of A and the shortest diameter of B.