**Hypotheses Brainstorming Practice**

1. Imagine that you are a sculpture conservator responsible for the maintenance of outdoor sculpture in a regional group of national parks. One park has a large and very popular brass sculpture depicting a bear. It is located on the yard next to a visitor's center, along with several picnic tables. You notice that dark discolored patches have appeared here and there on the surface. Your research question is: What is causing the visible deterioration? Try to think of as many possible answers as you can (your hypotheses).

   In real life, once you have listed all possible hypotheses, a literature search is likely to eliminate some of them. You could then devise some simple tests to eliminate others (after thinking of their implications). If more than one remains as appearing to be an important potential cause of deterioration, you could then devise an experiment to identify which contributes the most and thus where the conservation priorities may lie.

2. A private collector donated he book he had inherited to your institution, and the curator is concerned about the state of preservation. It is an early 20$^{th}$ century rare book bound in leather, perhaps one of a small number of Art Deco books with design elements on the cover incorporating gilding, painted elements, ivory, and enameled plaques. The cover is cracking, and there are losses in the design areas; the paper itself is discolored and shows areas of loss. The curator asks you, why might this book be deteriorating? Based on your answers, decisions will be made about how to best preserve it to get conservation treatment for it, but first the curator wants to know why this not-so-old book might be in such poor condition. This is an important book, so you have been asked to identify all the possible causes of deterioration.

   Before starting any detailed examination or analysis of the object, try first writing down the original observation: ***The decorated leather cover and bound pages of this early 20$^{th}$ century book are severely deteriorating***; and then research question that follows: ***Why? What past or current conditions might have led to the deterioration observed***?

   Then try to come up with as many hypotheses as you can, with a rationale stated for each of the hypotheses.

   Some of these will be hypotheses you can refute or support through a literature search, or from a quick examination of the object, perhaps under the microscope. Others may require researching details about the past or current environmental conditions and handling; and still others may require detailed analytical testing.