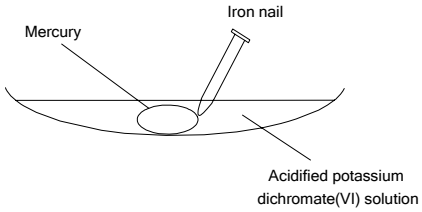
# Mercury Heart

## Student Handout

**Purpose:** To investigate electrochemical cell formation.

### Introduction

A mercury pellet, about 1 cm in diameter, is placed on a watch glass. It is covered with acidified 0.1 M potassium dichromate(VI) solution. An iron nail, tilting at about 45°, is lowered until it just touches the mercury pellet.




### Tasks

1. Observe the experiment media (http://resources.emb.gov.hk/examplars_ec.htm). The mercury pellet is beating. What would you say about the contact between the liquid mercury and the iron nail?

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2. What are the roles of the iron nail and the acidified potassium dichromate(VI) solution in the experiment?

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3. Based on your answers to questions 1 and 2 above, and in terms of electrochemical cell formation, propose a hypothesis to explain the beating phenomenon of the mercury pellet. Outline your hypothesis in the space provided.

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4. Why should the iron nail be placed sideways and not directly on top of the mercury pellet?

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5. Can we replace the acidified potassium dichromate(VI) solution with other solutions?

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6. How can we increase the "pulse rate" of the beating mercury heart?

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