Heat lab: save the thermobacteria!

Challenge:
You are a researcher of volcanic geysers who has just discovered a new species of hot water bacteria, and need to transport a sample of 100°C water from the geyser to the lab. You have the following supplies to achieve your mission:

- several sheets of aluminum foil, one side is shiny, one is dull
- two styrofoam cups
- napkins from a local restaurant
- plastic wrap
- a few plastic bags
- access to toilet paper
- your geyser thermal camera

You will gather a sample of hot bacteria water, then measure the temperature when you reach your lab hours away. The hotter the water, more bacteria have survived for your research. Create a diagram of your "thermobacteria transport device" so others can learn from you!

Lab questions:

1. how did you stop convection, conduction and radiation of heat from your sample?
2. which side of the shiny foil was facing the hot water and why?
3. if you were later studying DO (dissolved oxygen) in a cool water sample, what would you do differently?
4. does the hot water cool at the same rate through your trip? Explain
5. could the thermobacteria be aerobic or anaerobic? Explain
6. why do people warm their thermos with hot water before putting in their hot drink?

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