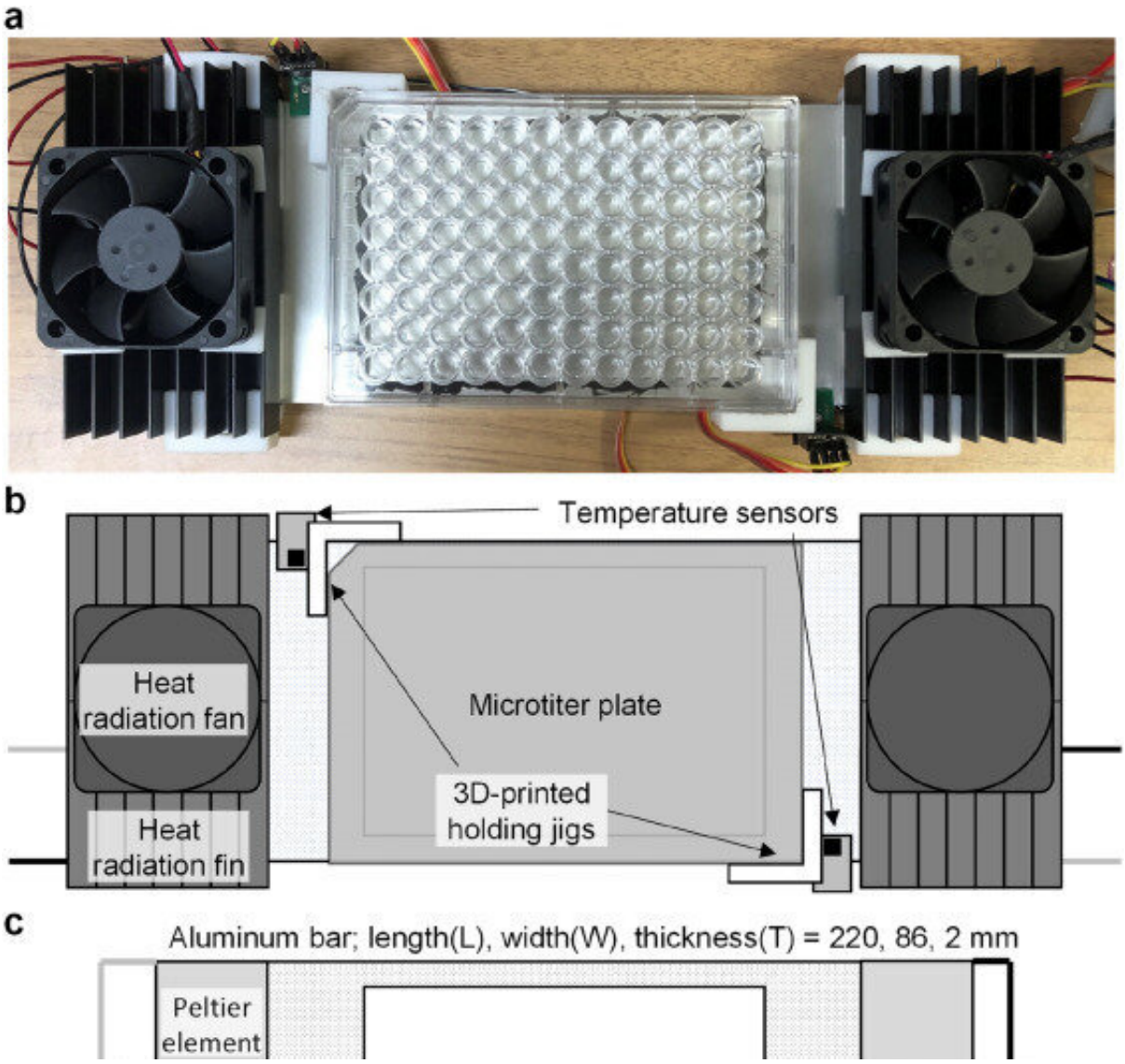
# An experimental device for generating temperature gradients on a microtiter plate

October 14 2022




Overview of temperature gradient devices. (a, b) The device holds a microtiter plate at the center of a base aluminum plate (dotted plane in b and c) with 3D-printed jigs. The device has a temperature sensor beside two corners of the

microtiter plate. Both ends are heat control units and are covered with heat radiation fins and fans. (c) Overview of the elements described above. Four Peltier elements are attached to the four corners of the flat aluminum bar. At the center of the device, there is a slightly thick aluminum plate that touches the bottom of the wells of the microtiter plate to conduct heat. Credit: *SLAS Technology* (2022). DOI: 10.1016/j.slast.2022.07.004

When it comes to biological studies of living cells, temperature is a fundamental parameter that can be challenging when attempting to test different temperature conditions concurrently. This is especially true when testing the effects of different temperatures on a single microtiter plate. Solving this temperature control issue could unlock new possibilities in studying cellular growth.

Featured in the October issue of *SLAS Technology,* the technical brief "Development of a device that generates a temperature gradient in a microtiter plate for microbial culture" by Shibai, et al, demonstrates a potential temperature control solution.

The device, derived from previously established techniques, proved to be capable of maintaining a temperature gradient of 38.2 to 43.1 degrees Celsius (100.8 to 109.6 Fahrenheit) across the wells of a single 96-well microtiter plate in an incubator. Shibai and team conducted several different types of assays using Escherichia coli to demonstrate the potential of this device, including laboratory evolution experiments and two-dimensional cell growth assays.

**More information:** Atsushi Shibai et al, Development of a device that generates a temperature gradient in a microtiter plate for microbial culture, *SLAS Technology* (2022). DOI: 10.1016/j.slast.2022.07.004

Provided by SLAS (Society for Laboratory Automation and Screening)