

Bloodmobile

2.009 Yellow A
Sketch Model Review

Why Blood?

“Appropriate transportation ... for blood units remains a major challenge to many countries.”

- WHO Africa

Background

- ◆ > 50% countries lack temperature monitored facilities
- ◆ public transportation
- ◆ 2 million units/year (need 7 million)
- ◆ need cold-chain



Partners

- ◆ Dr. Amit Srivastava

- ◆ Harvard Medical School
- ◆ Boston Children's Hospital

- ◆ Jose Gomez-Marquez

- ◆ Innovations in International Health (MIT)

Two Requirements

Keep it cold

+

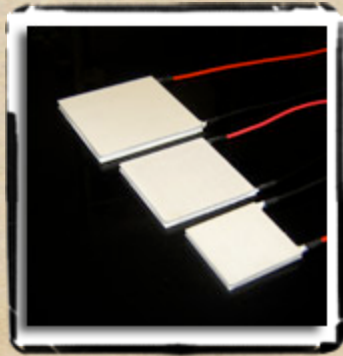
Keep it moving

How do we keep blood cold?

Peltier effect

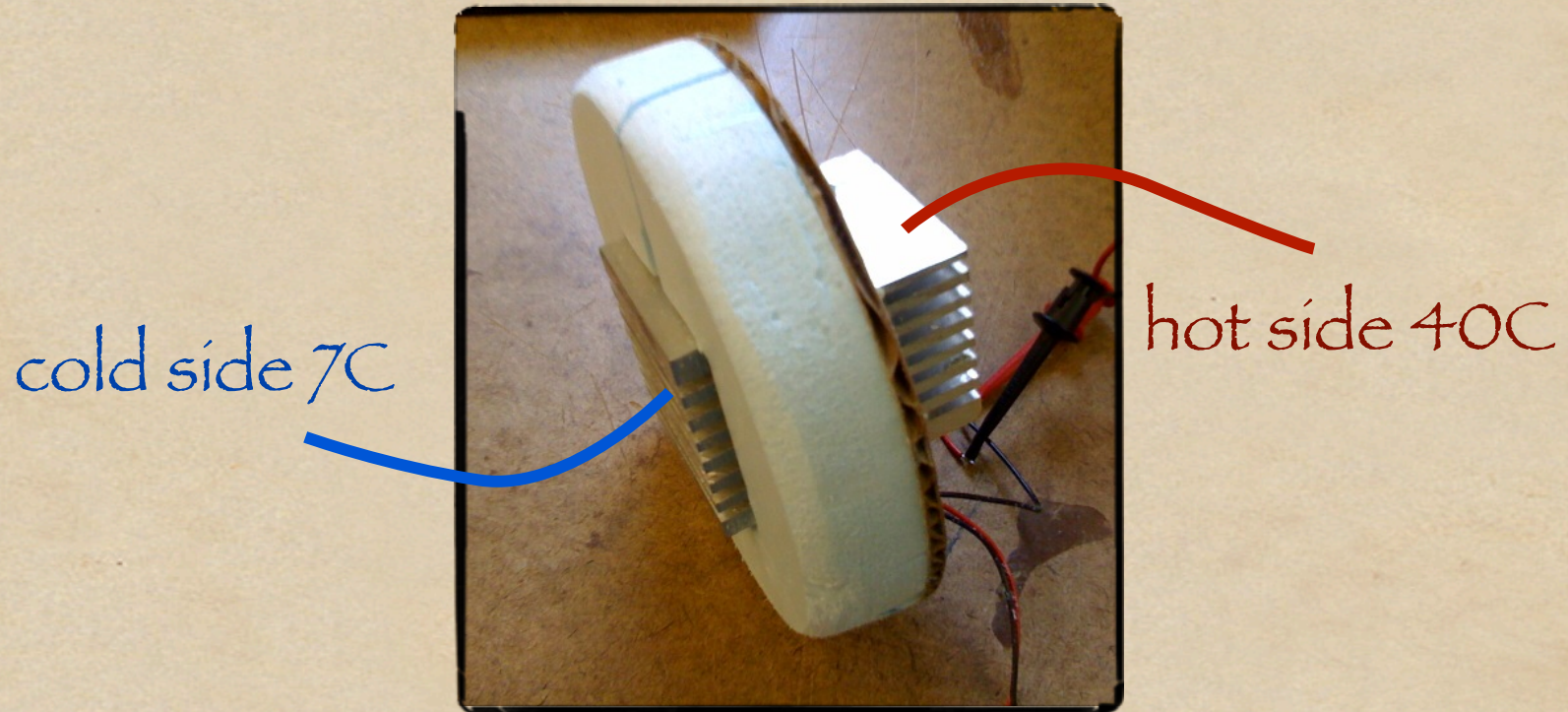


"backwards thermocouple"



thermoelectric chip

How cold can we get?



Home-made device reaches 7C in
under 3 minutes with ~15 W

Can we cool blood?



- ♦ “Princess” can cooler/warmer
- ♦ 50 W
- ♦ cools 355 ml 10C in 30 minutes

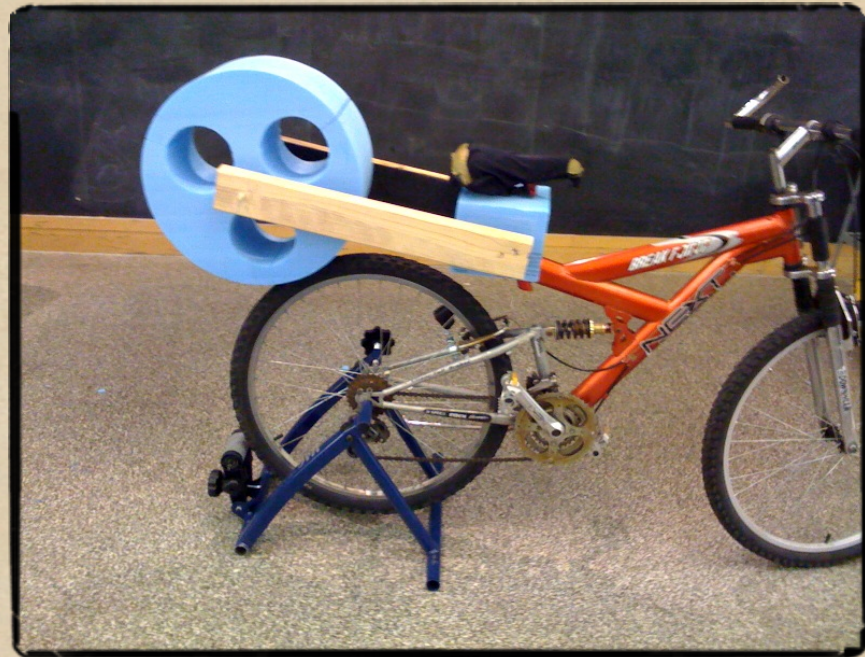
sufficient to keep blood cold
during transport

How do we power it?



bicycle provides at least 100 W

How do we keep the blood moving?



vertical movement + rotation