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## Frozen Frogs Hit New Lows But Come Back Stronger Than Ever

0 Comments | July 24, 2014 | Paul Seaburn

After digging through my freezer and finding a pork chop that's been frozen solid for six months, I've often wondered – how do Alaskan wood frogs manage to stay frozen that long and come back to life every spring? A University of Alaska Fairbanks researcher recently sat with them in the frozen wilderness and found out how firsthand.

[Alaskan wood frogs](#) spend up to six months each winter in ground with a minimum temperature of minus 4 Fahrenheit (minus 20 Celsius). Don Larson, UAF graduate student, and Brian Barnes, director of the [UAF Institute of Arctic Biology](#) and an expert in cold-climate physiology, set up a fenced hibernacula on the campus to observe the frogs freezing and thawing in a natural habitat, which had never been done before.



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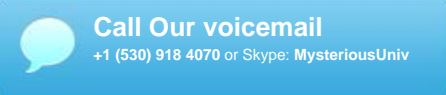


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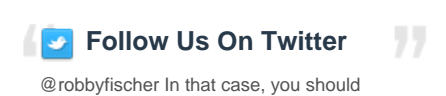
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An Alaskan wood frog getting ready for winter.

In their report in the [Journal of Experimental Biology](#), Larson describes what happens when normal living cells freeze.

“Imagine what happens when you suck on a freeze pop. After you’ve sucked out all the sweet stuff, you’re left with just ice. That’s what happens to cells when they freeze. As ice formation pulls the water out of cells, the cells desiccate or dry out and eventually die.”

But not in the frogs. They found that the frogs load their cells with glucose which holds water in the cells instead of it being drawn out by the salts which form outside the cell when ice forms around the frog. This allows them to stay frozen for up to 218 days with 100 percent survival.

Larson also found that wood frogs in their natural environment accumulate much higher concentrations of glucose in their tissues than frogs frozen in the lab. The outdoor frogs are constantly freezing at night and thawing in the morning in early autumn and that process allows them to create and store glucose.

This won’t help my pork chops from developing freezer burn but Larson says it may have an impact on human organ transplants.

“If science can figure out how to freeze human organs without damage it would allow more time to reach people in need of organs.”

I’ll never eat frogs legs again.

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