

# Can we better prepare hens for cage-free living?

April 20 2018, by Diane Nelson

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Hens have more room to roam in cage-free housing, but the extra space comes with added risk for collision and broken bones. Credit: Joy Mench/UC Davis

Consumers are clamoring for cage-free eggs, and producers are scrambling to meet the demand.

In 2017, nearly 16 percent of all [hens](#) in the U.S. were in cage-free production. According to the U.S. Department of Agriculture, about 75 percent of all laying hens will need to be cage free by 2026 to meet market demand.

Cage-free housing is more spacious for hens, but the extra room comes with added risk of collisions and broken bones. Many cage-free hens are developing breast or "keel" bone fractures when they misjudge the distance between perches and platforms and collide with other birds and features in their environment.

But help is on the way. A team of animal welfare experts from the University of California, Davis, is leading efforts to explore whether complex rearing systems for chicks can reduce bone fractures. Funded by a \$432,000 grant from the Foundation for Food and Agriculture Research, the project will measure whether an active upbringing can help chicks develop stronger bones, as well as cognitive and navigational abilities.

"With improved navigational skills, hens may be less likely to collide with other birds on route to food and water," said Maja M. Makagon, an assistant professor with the UC Davis Department of Animal Science who is leading a team of collaborators from UC Davis, Iowa State University, the University of Bristol in England and the University of Bern in Switzerland.

## **When landings fail**

Laying hens have experienced keel-bone fractures for decades, but the incidence is rising as more flocks are raised in open, multi-tier systems. "Cage-free" can mean different things on different farms, but typically cage-free birds flap around in large, vertical, enclosed spaces to reach food, perches and nesting areas. Today's hens are not especially adept at

flying, and sometimes their landings fail.

Broken keel bones are likely painful. Research shows that when given a choice of feed, hens with [broken bones](#) will select feed laced with anti-inflammatory medication. There is also evidence that fractures can affect egg quality.

## **Can active upbringing help?**

Farmers have various ways of raising chicks in the first 16 weeks of life. Some farmers rear chicks in flat, enclosed spaces, like on a barn floor, and others raise chicks in multi-tiered systems.

Makagon and her team will test whether birds reared in more complex, multi-tiered settings will fare better in cage-free housing.

"We hypothesize that if you expose birds to environments that are vertical in nature, two things will happen: keel bones will develop stronger and birds will be better at navigating space," she said.

The team will measure the prevalence of keel-bone damage on a broad scale at commercial farms in the United States and identify the relationship between rearing environment and keel-bone strength.

Then, researchers will conduct similar tests on a small scale at UC Davis. They will rear chicks in pens with different levels of vertical complexity and evaluate how that affects keel-[bone](#) development and a bird's cognitive and navigational skills.

## **A team effort**

From UC Davis, Makagon is working with Richard Blatchford, an

assistant Cooperative Extension specialist, and Kristina Horback, an assistant professor, both with the Center for Animal Welfare in the UC Davis Department of Animal Science.

Project members also include Suzanne Millmann, professor of biomedical sciences at Iowa State University; John Tarlton, professor of regenerative medicine at the University of Bristol, England; and Michael Toscano, group leader at the Center for Proper Housing: Poultry and Rabbits (ZTHZ), University of Bern, Switzerland.

The Foundation for Food and Agriculture Research is funding two additional grants to address the health and productivity of laying hens: Purdue University will test whether nutritional interventions can strengthen bones, and the University of Edinburgh will expand efforts to breed hens with stronger bones.

Provided by UC Davis

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