

University research and the private sector: How a jelly ingredient factors in

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An experiment demonstrating the safety of food additive pectin in specialty infant formulas exemplifies how public-private partnerships can benefit both university scientists and industry. Pictured are University of Illinois professor Ryan Dilger (left) and Stephen Fleming, Dilger's former student and co-founder of contract research startup Traverse Science. Credit: Lauren D. Quinn, University of Illinois

Food additives get a bad rap, but a natural ingredient from orange peels and apple skins, pectin, is a thickener safely added to many food products, most notably jellies. The additive is also the subject of a University of Illinois experiment highlighting both the power and the challenges of public-private partnerships in university research.

The experiment, recently published in *Regulatory Toxicology and Pharmacology*, was pretty simple. It showed neonatal pigs tolerated milk replacer with pectin included at 0.2%. The research was done at the request of and with funding from formula manufacturer Mead Johnson Nutrition (now a division of RB), who hoped to prove the safety of the natural [food additive](#) for infants against a backdrop of new European standards.

Translating basic [science](#) into actionable industry and practitioner insights is part of the DNA of the College of Agricultural, Consumer and Environmental Sciences (ACES) at Illinois. From the college's perspective, public-private partnerships help industry and the public by providing unbiased, transparent science to back up or refute industry claims and practices. These partnerships also give ACES students opportunities to work within the industry landscape before entering the workforce.

"What's beautiful about these public-private partnerships is their ability to more quickly create what's needed on the front lines of agriculture and other industries," says ACES Dean Kim Kidwell. "When industry is talking directly to our talented scientists and students, innovation is inevitable."

Ryan Dilger, study co-author and associate professor in the Department of Animal Sciences at Illinois acknowledges there can be a negative public perception about university scientists working with [private companies](#). "It's tricky, but for us, it's always science first."

In 2015, Mead Johnson approached Dilger with a proposal that would fund construction of a new research center to study infant brain and gut development using the neonatal pig as a preclinical model. Within the [scientific community](#), piglets are accepted as a more informative proxy for human infants than mice and rats. That's because, to a much greater degree than rodents, piglet digestive systems, behavioral responses, and brain development mirror those of human babies.

Dilger worked with neonatal piglets prior to 2015, but he knew having a dedicated building to conduct the research was a major boon with benefits that would go far beyond Mead Johnson's investment.

"We work with other partners using that same infrastructure. Every company we work with makes investments in the tools we need to do cutting-edge research, which then everybody gets access to," Dilger says. "We don't like exclusivity. Public-private investments build up our capacity as university scientists to be steadfast in an ever-changing world."

The partnership with Mead Johnson also led Stephen Fleming, a former doctoral student working with Dilger and co-author on the pectin study, to identify hurdles facing private companies who want to work with university scientists. To address the issue, Fleming and Dilger launched a startup company to help companies traverse the intricacies of the [university research](#) landscape. They call it Traverse Science.

"There was no service we knew of, especially in the biological sciences, connecting students and faculty with commercial presences who need help or expertise to perform and publish basic research. Traverse Science does that in the context of food and nutrition," Fleming says.

He points to a growing industry trend to downsize in-house research and development capacity, relying instead on university researchers or

contract research organizations. Traverse Science, part of the EnterpriseWorks Incubator at the University of Illinois Research Park, connects companies with Illinois experts and offers project administration, data analysis, and publication services.

"We exist so scientists can focus on the science and business can keep moving forward," Fleming notes. "We think science should enable business, not slow it down."

Many university scientists working with industry are motivated to infuse more transparent, high-quality, peer-reviewed science into product claims, industry practice, and policy.

"Conducting practical research studies is something we want to continue to promote through ACES and Traverse. We want to hold industry to the high standards of our scientific training for the benefit of the public," Dilger says. "We'll always be scientists first."

More information: S.A. Fleming et al, Dietary pectin at 0.2% in milk replacer did not inhibit growth, feed intake, or nutrient digestibility in a 3-week neonatal pig study, *Regulatory Toxicology and Pharmacology* (2020). [DOI: 10.1016/j.yrtph.2020.104669](https://doi.org/10.1016/j.yrtph.2020.104669)

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