

## GUEST COLUMNIST



### Perspective: Ingredient Technology

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*CMN Exclusive!*

largest population, the biggest agricultural industry and the largest dairy industry. These issues will eventually come to a head. People need to eat, but not at the expense of poor air and water quality. Media hungry legislators will continue to put pressure on regulators. With scant data upon which to construct a reasonable regulation, these regulators will err on the protective side with initial regulations deemed unreasonable from the perspective of the producer. Negotiations will follow. It's a never-ending cycle. The report points out very clearly that many more data are needed on the environmental side of the business to create reasonable and well-balanced regulations. Where are these data going to come from? Dairy checkoff funds are not allowed to address these emerging facets of marketing. New strategies are required.

Another major finding in the report is the growing need for innovation in the product line. This is where we can come out swinging. To me, the trump card in dairy product innovation will be tied to milk's mission to deliver health and nutrition. The better we understand the functionality of milk, the better we can manufacture and market the information. This is the primary function of organizations like the national and regional dairy councils. We know dairy products are nutritionally superior. The challenge lies in funding the data to support dairy's role in nutrition. The other major innovation angle lies in product functionality. The chemistry used to

assemble milk requires an elaborate work of nature to be able to achieve nutritional density without allowing the individual components to conflict with one another. As we unwrap this secret, we will open the door to immense discovery and innovation.

Who pays for this innovation? Through the dairy checkoff program, producers have supported research for many years. Processors cooperate with producers in support of dairy foods research centers. While this is a start, it's not enough — especially if you have a great idea that will establish new ways of thinking about milk. The key to the future is attracting co-funding from outside sources like government grants and affiliated industries.

How does such a partnership work? Let's use lactose, the most abundant solid in milk, as an example.

Several years ago UC-Davis' Bruce German came up with the concept that the oligosaccharides (OS) — lactose-related carbohydrates — in milk must be specialized for some bioactive purpose. German suspected these oligosaccharides had something to do with immune stimulation and/or establishing a microbial profile in the gut. He lined up carbohydrate chemist Carlito Lebrilla and microbiologist Dave Mills to help him and approached the dairy industry to seek funding for his research. At the time, the concept was so novel it was difficult to attract support. He proposed supplementing

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## A vision for the future of dairy in California and beyond

Have you heard about the McKinsey report commissioned by the California Milk Advisory Board (CMAB)? This monumental effort focused on addressing how dairy producers and processors can grow in the next 20 years. The first part of the report recently was released and is creating tremendous dialog within California which has many in the industry reexamining their business plans.

And there's a precedent for taking this report seriously. A Stanford Research Institute report generated 20 years ago for CMAB made the recommendation that the California dairy industry get into the cheese business. Today, cheese represents 49 percent of California's total milk production. California milk production has grown at

about 3-4 percent over the last 20-plus years. Today, that level of annual milk production runs close to 40 billion pounds, ranking California easily within the top 10 milk producing regions of the world. Moreover, even with environmental constraints and low prices, milk production continues to expand in the Golden State. Cheese was and will continue to be a good place for this milk but the McKinsey report comes at a critical time. Environmental constraints and supply/demand balances will catch up to California very soon.

If you live outside of the state, why should you care? Because as California goes, so goes the rest of the nation. The fact is, California is a weather vane for the rest of the country. We have the

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dairy industry money with dollars from a special state fund (UC Discovery) used to move new technology out to the marketplace. The package worked with no one partner having to bear the full risk.

As this work progressed, the chemistry side caught the attention of Agilent Technologies, an offshoot of Hewlett-Packard that makes the equipment to analyze these strange carbohydrates. Analysis of OS was a major obstacle in the program. Agilent had the vision that once scientists understood the role of OS in human breast milk, the entire infant formula industry would be turned upside down trying to reformulate and they would need Agilent technology to do so. On the dairy side, the idea was

that once we discovered the chemical basis for dairy's health benefits, we go about separating our marketing messages from all other food groups. Over the course of the three-year project, the dairy industry's investment was matched dollar-for-dollar by UC Discovery grant funding. Agilent invested an additional \$400K in equipment to the program.

This is a true example of innovation in action — the type of innovation essential to future growth for California's dairy industry. Investing in innovation takes commitment but, as you can see, it also can attract others with the same vision for a group win in the long run.

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