



*Our Programs, Your Breakthroughs*

Strategic Business Plan:  
2013-2017

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## MESSAGE FROM THE EXECUTIVE DIRECTOR

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Since assuming the role of Executive Director of the California Dairy Research Foundation (CDRF) in February 2012, I feel privileged to be responsible for managing California milk producers' local dairy check-off dollars. It is an honor to be trusted with investing these dollars in research and science-based education programs to better advance the California and U.S. dairy industry.

CDRF, a not-for-profit research management organization created by the California dairy industry, completed its 22nd year of operation in 2012. Since its formation, CDRF has helped the California dairy industry achieve its vision to be competitive, innovative, and sustainable. This 2013 to 2017 Strategic Business Plan continues this important work through investment in industry-driven programs with increased focus on accountability of managing producers' check-off dollars.

During the next decade, strong growth in global dairy product consumption is expected as a result of dietary changes driven by population growth, social development, and greater wealth. For the California dairy industry, a review of its check-off dollars' investments in research is necessary to promote a sustainable dairy industry and to meet the extra demand on supply in the future.

The recent restructuring within CDRF has better equipped the organization to respond to the increasingly challenging environment for the industry going forward. CDRF will use best-research management practices to ensure that producer dollars are being spent as effectively and efficiently as possible. Our precompetitive programs are focused on protecting the "rights for dairy farmers to farm" and "turn science into trust for the industry."

CDRF plays an important role in assisting the industry in addressing the many challenges it faces across a broad spectrum of issues. Its role as a provider of technical, science-based information is an extremely important element of the industry's response to its changing environment. The availability of technical information increases the quality of decision-making and the ability of the industry to promote its activities in a meaningful and professional manner. This year CDRF worked very closely with dairy industry stakeholders to ensure that its programs are directed at issues that are relevant, actionable, and aligned with the stakeholders' goals of being a "knowledge-based" industry.

Some people have asked me why we invest in dairy research. My response is always because research creates the building blocks of knowledge upon which we base our understanding of milk and its components. Without dairy research, there will be no advances in our knowledge and we will not be able

to figure out how anything works or how anything is made. At its worst, the pipeline will dry out and there will be nothing to market.

The fact is we invest in dairy research to better the industry. And it pays off. Previous investments in dairy research have resulted in scores of breakthroughs from—farm to fork. However, like any other investments, check-off dollars allocated for dairy research should be used responsibly and with due diligence. Our investments in research must not lead to “a bridge to nowhere.” They should be innovative and advance the demand for dairy products. Therefore, CDRF’s evaluation process for future dairy research investments will include both prospective and retrospective analysis.

This Plan lays out a framework to allocate CDRF resources toward the most pressing technical issues currently facing the industry. The precompetitive programs range from assisting with improving the environmental impact of industry operations, to ensuring appropriate levels of safety and emergency readiness, and assisting to substantiate the important role that dairy products play in human health and nutrition.

CDRF will engage with the highest-caliber scientists, at home or abroad, to conduct its programs. There has been a growing trend in collaborative proposals, not only from researchers in California, but from teams across the international research community, all of whom are willing to share their expertise with our dairy industry. Although we are dedicated to funding proposals for the state’s interest, such interests often happily coincide with both national and international dairy research initiatives. We will continue to encourage such partnerships in the future to leverage our investments.

CDRF’s intention is for its programs and discoveries to be used by all in the dairy industry—farmers, processors, marketers, retailers, educators, and government officials—to identify solutions, change attitudes and practices, and develop science-based policy, both locally and nationally.

We have developed action items, both current and planned, and are looking ahead with great anticipation to continue to serve our industry. Our programs set out in this Plan are well focused, timely, and appropriate. Their implementation during the next five years will clearly support efforts to:

- ✦ Promote the nutritional and health benefits of milk and dairy products;
- ✦ Ensure dairy products are safe and maintain quality throughout the value chain;
- ✦ Promote and protect California dairy industry values and integrity; and
- ✦ Deliver short- and long-term technical industry training and facilitate technology transfer.

In conclusion, I would like to gratefully acknowledge all of the several individuals and organizations who contributed to the creation of this Plan. With their input, we have created a road map for CDRF to support the dairy industry with timely and relevant research and science-based educational programs to best meet its challenges, seize its opportunities, and poise itself for future success.

Sincerely,

Gonca Pasin, RD., Ph.D.

## EXECUTIVE SUMMARY

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This Strategic Business Plan represents a five-year vision and future direction for the California Dairy Research Foundation (CDRF). CDRF's strategic objectives align with the goals of the global dairy industry. This is to promote and protect the consumption of milk and dairy products.

The sustainability of the California and U.S. dairy industry depends on its ability to respond to future opportunities and risks. Its capacity to adapt to change, innovate, improve competitiveness based on efficient use of all inputs, and differentiate across all sectors of the value chain is a key element of its ongoing success.

The current California dairy industry is experiencing a period of significant change. Milk production has shifted towards an intensive farming model and production volumes-per-head are at record rates. With so much milk being produced, the industry is challenged with finding enough profitable markets for its dairy products. This situation exists at a time when the industry is facing numerous challenges, including variable demand for products, increased costs of production, questioning of dairy product health benefits by consumer activist groups, and increased pressure to reduce its impact on the environment.

The need for a technical understanding of the many issues facing the industry is growing. New research, as well as the substantiation of existing research into the health benefits of dairy, is necessary in order to address issues associated with the demand for milk and dairy products. A full investigation and understanding of the impact of milk production on the environment is required to address community and regulatory environmental performance expectations, and so are technologies to protect the industry from the risk of a disease outbreak within its now densely populated operating conditions.

CDRF works very closely with the dairy industry to identify, align, and develop effective strategies to serve its stakeholders. In preparing this Plan, CDRF solicited input from a diverse range of dairy industry stakeholders—locally, nationally, and globally. The consultation process assisted with the identification of specific areas in need of CDRF assistance. It is unclear whether the current level of CDRF funding, even when combined with funding from other technical service providers, will enable the required outcomes to be delivered within a reasonable timeframe. This issue will require further analysis.

In addition to the provision of financial support, CDRF's involvement could extend to facilitating coordinated efforts between various industry organizations to achieve common goals in a transparent and efficient manner. Ongoing communication of the progress being made within the areas identified

during the compilation of this report, including the level and manner of CDRF's involvement, is also a valuable service for the industry.

The program areas identified for CDRF involvement have been grouped into four major precompetitive program areas: Nutrition and Health, Safety and Security, Sustainability, and Industry Outreach. Each is addressed individually within this Plan.

## Program Areas, Outcomes, and Areas of Priorities

PROGRAM AREAS	OUTCOMES	AREAS OF PRIORITY
<b>NUTRITION AND HEALTH</b>	Promote the health and nutritional benefits of milk and dairy products	<ul style="list-style-type: none"> <li>▪ Focusing on the unique benefits of milk</li> <li>▪ Clinical trials demonstrating consumer benefits</li> <li>▪ Supporting dairy's status in US nutritional guidance</li> <li>▪ Encouraging the translation of dairy science for user benefits</li> </ul>
<b>SAFETY AND SECURITY</b>	Ensure dairy products are safe and maintain quality throughout the value chain	<ul style="list-style-type: none"> <li>▪ Improving biosecurity response preparedness</li> <li>▪ Ongoing support of safety and security systems</li> <li>▪ Microbial profiles of safety and quality in milk processing systems</li> <li>▪ Ensuring the safety of dairy products</li> </ul>
<b>SUSTAINABILITY</b>	Advance and protect California dairy industry values and integrity	<ul style="list-style-type: none"> <li>▪ Life-cycle analysis measurement and tool development</li> <li>▪ Nitrate contamination in groundwater</li> <li>▪ Volatile organic compound and nitrogen oxide pollution</li> <li>▪ Enteric methane emissions</li> <li>▪ Regulatory compliance and performance reporting</li> <li>▪ Limiting the need for further regulation</li> </ul>
<b>INDUSTRY OUTREACH</b>	Deliver short and long-term technical industry training and facilitate technology transfer opportunities through short courses and symposia	<ul style="list-style-type: none"> <li>▪ Ongoing science-based education in dairy production, safety, and innovation</li> </ul>

## NUTRITION AND HEALTH PROGRAM

Per capita consumption of dairy products in California is not keeping pace with the increases in production despite the fact that the U.S. Dietary Guidelines recommend an increase of dairy in the diet for most age groups<sup>1</sup>. A key driver of dairy consumption has always been its nutritional value; however, various elements of its health benefits have been challenged by consumers, health professionals, and regulators, which may represent a barrier to consumption growth.

The challenge to the long-held nutritional position of dairy has fueled the introduction of competitive products that function as substitutes for dairy in the diet. In response, the global dairy industry is increasing its efforts in the substantiation of its health messaging through clinical demonstration of its claimed benefits and the continued investigation into newly discovered health benefits.

CDRF has an important role to play within the global effort. California researchers have a long history of delivering important findings in milk science and have developed considerable research expertise and infrastructure, which is a valuable asset in the global search for answers.

There are extensive options available for the allocation of CDRF funding in this area. Industry consultation has provided insights into the types of projects considered most beneficial to the industry. CDRF funding should be aligned with this criterion, which will direct its resources towards projects that focus on the unique benefits of milk, improving consumers' health and nutrition, supporting dairy's status in U.S. Dietary Guidelines, and encouraging the translation of dairy science for targeted industry benefits.

## SAFETY AND SECURITY PROGRAM

The California dairy industry has a very good record in regard to its safety and security performance with no major issues for a long period. California dairy products are considered safe by consumers and there have not been any recent impediments to the supply of dairy products for safety or security reasons. There are, however, opportunities to improve the efficiency of the food safety system, as well as the industry's ability to respond in the event of a crisis.

There is a growing realization within the industry that the current response plan to an outbreak of an infectious disease would not be sufficient enough to protect the industry from reputational and economic damage. Various recommendations have been made to rectify the situation that addresses the need for an improved response system.

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<sup>1</sup> The Dietary Guidelines for Americans, 2010; Foods and Nutrients to Increase

A number of opportunities for improvement of the dairy food safety system have been identified, including improving the efficiency of laboratory test result reporting, addressing potential issues that may arise from the Food and Drug Administration (FDA) drug residue testing program, and ensuring high standards of dairy food safety compliance within the higher-risk segments of the industry, including artisan cheese makers.

## SUSTAINABILITY PROGRAM

The sustainability of the dairy industry and all industries is of increasing importance to consumers and communities. For the dairy industry, sustainability is not new. Innovation and efficiencies in milk production, processing, packaging, and transportation have all contributed to the industry's ability to do more with less—to be profitable and to provide wholesome dairy products to feed a growing population.

The reputation of the California and U.S. dairy industry is at risk if the industry cannot promote and demonstrate to consumers that it is taking action to continually improve sustainability performance. This has been recognized at a national level with the introduction of the Innovation Center for U.S. Dairy's multi-million dollar sustainability project, which aims to assist the industry to decrease its greenhouse gas emissions by 25% by 2020.

The Innovation Center for U.S. Dairy's Dairy Sustainability Commitment incorporates a range of activities including a full life-cycle analysis of milk production and distribution, determination of how to measure environmental impacts, the development of a toolkit of measurement devices for use by producers and processors, as well as an investigation into reducing the greenhouse gas impact of dairy cows.

The national program is undertaking these activities from the perspective of the general needs of the national dairy industry; however, California has issues that are unique to the region that are not specifically covered within this work. California will need to meet these extra requirements to be able to effectively promote its sustainability commitment to the region's consumers.

Improving future performance begins with the measurement of current performance. A key initiative will be the development and introduction of life-cycle measurement tools that enable individual California producers and processors to measure the impact they are having on the environment. Many aspects of these tools are being developed within the national program; however, areas that represent significant challenges for California, including nitrate contamination in groundwater, volatile organic compound and nitrogen oxide pollution, and enteric methane emissions will need to be considered in greater detail to determine measurement mechanisms, as well as an appropriate industry response.

## INDUSTRY OUTREACH PROGRAM

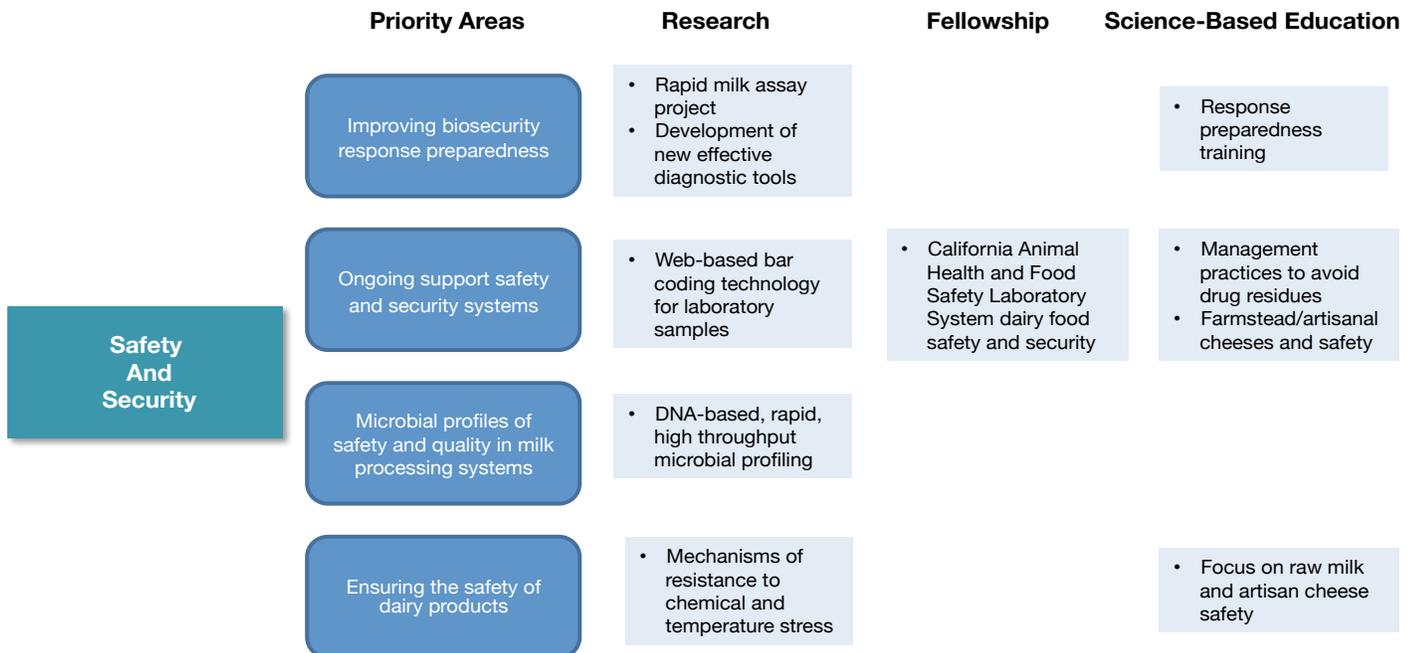
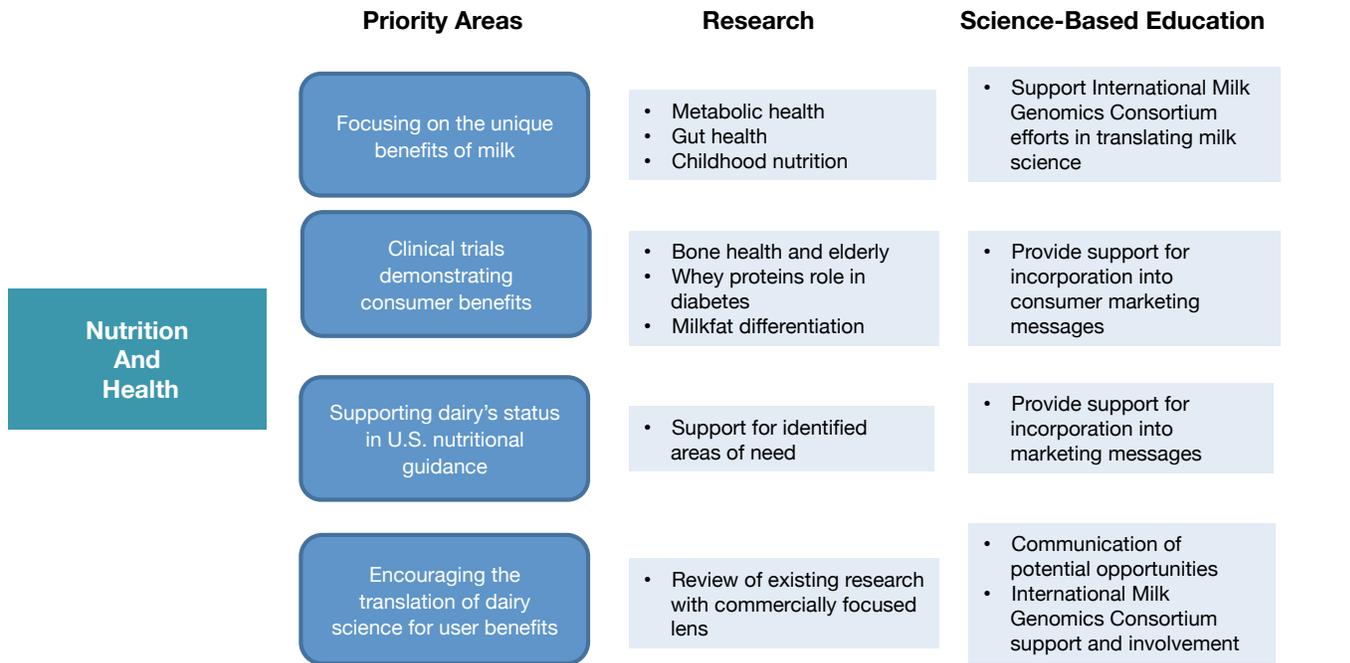
The long-term success of the dairy industry is dependent on its continued growth and development. With the growing complexity of the dairy processing sector and the rapid expansion of new information and approaches, the need for continuing science-based education is greater than ever before.

For many years, CDRF has supported programs that educate people in the technical aspects of dairy food production and technological innovation. These programs have trained more than 2,500 industry professionals over 25 years. In particular, most of the artisan/farmstead cheese makers in California have gained valuable insights that have enhanced their ability to successfully launch their businesses. CDRF's continuing support of these programs is considered an important element of its contribution to improve the technical abilities of the industry.

**SUMMARY OF POTENTIAL AREAS OF INVESTMENTS**

The following figure provides a summary of areas of potential CDRF involvement identified throughout the consultation process. It is designed to provide a big picture perspective of the range of technical requirements identified throughout the process. It is a preliminary (not exhaustive) list of opportunities for CDRF involvement.

**Summary of Potential Areas of Investments**



## Summary of Potential CDRF Investments

	Priority Areas	Research	Science-Based Education
Sustainability	Life-cycle analysis measurement and tool development	<ul style="list-style-type: none"> <li>• Identification of specific California needs and web-based tools</li> </ul>	<ul style="list-style-type: none"> <li>• Program to roll-out tools to industry</li> </ul>
	Nitrate contamination in groundwater	<ul style="list-style-type: none"> <li>• Investigation options for mitigation of impact</li> </ul>	<ul style="list-style-type: none"> <li>• Communication of best management practices</li> </ul>
	Volatile organic compound and nitrogen oxide pollution	<ul style="list-style-type: none"> <li>• Dairy digester</li> <li>• Feed management practices</li> </ul>	<ul style="list-style-type: none"> <li>• Communication of best management practices</li> </ul>
	Enteric methane emissions	<ul style="list-style-type: none"> <li>• Support for Cow of the Future research priorities</li> </ul>	<ul style="list-style-type: none"> <li>• Communication of best management practices</li> </ul>
	Regulatory compliance and performance reporting	<ul style="list-style-type: none"> <li>• Sustainability practices web-based tool</li> </ul>	<ul style="list-style-type: none"> <li>• California Dairy Quality Assurance Program</li> <li>• Dairy Cares</li> </ul>
	Limiting the need for further regulation	<ul style="list-style-type: none"> <li>• Science-based evidence to support sustainability practices</li> </ul>	<ul style="list-style-type: none"> <li>• California Dairy Quality Assurance Program</li> <li>• Dairy Cares</li> </ul>
Industry Outreach	Ongoing science-based education in dairy processing and innovation		<ul style="list-style-type: none"> <li>• Dairy Products Technology Center short courses/workshops and symposia</li> </ul>

# BACKGROUND

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## OVERVIEW

CDRF is an independent non-profit 501 (c)(3) public benefit Corporation that plans and manages research funds on behalf of its stakeholders, the California dairy industry. CDRF believes that investment in dairy research is very important for maintaining and extending the competitive edge of its stakeholders.

A Board of seven Directors governs CDRF. The Board represents multiple perspectives within the dairy industry: producers, processors, marketing boards, and research management organizations. The Board provides leadership and oversight of the activities of CDRF, setting policy and approving budgets. The day-to-day operations are carried out by a management team at CDRF's head office in Davis, California.

### **Vision and Mission**

CDRF's vision is to lead and deliver most relevant research and science-based educational programs to support an innovative and sustainable California and U.S. dairy industry.

CDRF's mission is to manage, coordinate, and communicate research and science-based educational programs to stakeholders and support the implementation of effective state and national initiatives designed to increase consumer and customer demand for California- and U.S.- produced milk and dairy products.

### **Strategic Objective**

CDRF's objective is to promote and protect the consumption of milk and dairy products, based on their benefits, throughout the entire value chain.

### **Outcome**

CDRF will grow its knowledge and innovation through managing dairy research and science-based educational programs and measuring program excellence and providing advice.

## ROLE WITHIN THE CALIFORNIA AND U.S. DAIRY INDUSTRY

The primary role of CDRF is to provide the dairy industry with technical and science-based information obtained through investments in new research and existing research knowledge.

CDRF works alongside other industry organizations to promote the benefits of milk and dairy products in an attempt to secure and grow consumption rates of California and U.S. milk and dairy products on both a national and global basis.

The California dairy industry is of great economic and cultural importance to the state and is home to most of the nation's largest milk, milk powder, butter, ice cream, cheese, yogurt and whey protein processors. The 2007 McKinsey Report<sup>2</sup> predicted that more milk was likely to be produced in California than could economically be processed for consumption and this is certainly the case in 2012. Increasing the demand for milk and dairy products is key to improving the economic prospects for the dairy industry, especially as California producers are predicted to become even more productive.

CDRF is deeply embedded in the California dairy industry and its communities and uses its independent structure to lead and deliver best-practice research and science-based educational programs to promote innovation and sustainability of the industry.

## PROGRAM AREAS

CDRF has identified four major programs as priority areas for the allocation of funding. They were selected based on their level of importance to the California dairy industry. The programs provide structure and enable a coordinated approach to exploring specific areas. Each program consists of a collection of individual projects that seek to meet a defined set of objectives, where each project is a targeted research and/or science-based educational activity, funded under that program.

The pre-competitive strategic programs are:

-  Nutrition and Health
-  Safety and Security
-  Sustainability
-  Industry Outreach

These four pre-competitive areas represent the entire dairy industry's collective needs and those of its wider community. They align with the priorities of the U.S. and international dairy industries, providing CDRF with opportunities to collaborate and leverage funding for greater outcomes.

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<sup>2</sup> Options for a consumer-driven dairy growth strategy; McKinsey and Company; Spring 2007

In addition to funding its research and education programs, CDRF invests in two other programs as part of its overall management program:

- ✚ Communication
- ✚ Planning and Evaluation

The objective of the Communication Program is to increase awareness and knowledge of check-off funded precompetitive strategic programs, their outputs, and implications for the California and U.S. dairy industry and the wider community. An effective communication strategy is vital for building this awareness.

The objective of Planning and Evaluation Program is to identify industry needs, prioritize programs and projects, identify and allocate resources (i.e., researchers, budget, etc.), identify risk factors, assure service delivery, plan and conduct project funding, evaluate program activities, and outcomes, as well as, anticipate and plan response strategies for emerging issues.

### Management Programs and Expected Outcomes

<b>Communication</b>	Communicate clearly and timely relevant information to stakeholders through various means
<b>Planning and Evaluation</b>	Provide the road map and evaluate performance of programs

## FUNDING STRATEGY AND SOURCES

CDRF invests in both short-term and long-term projects. Approximately 60% of CDRF projects are expected to deliver outcomes within one to three years. The other 40% of the projects are longer-term investments, with expected outcomes in three to 10 years.

Budget allocations for each program are determined according to targeted/defined research priorities. Changing economic conditions and new interests will alter CDRF's program priorities over time; however, priorities should always be relevant, actionable, and aligned with the goals of CDRF's stakeholders. All potential projects under each program must meet CDRF's strategic objective "to promote and protect the consumption of milk and dairy products based on their benefits throughout the entire value chain."

CDRF makes investment decisions based on its vision and commitment to:

- ✚ Fund projects that positively affect the dairy industry and communities in California and the United States;
- ✚ Fund fellowships in support of attracting and retaining outstanding early-career researchers focused on excellence in dairy research;
- ✚ Respond to the changing needs of the industry;
- ✚ Align with overall priorities of the industry and work towards shared goals; and
- ✚ Encourage innovation and forward-thinking ideas and projects.

CDRF programs should predominantly benefit the California and U.S. dairy industry, but some will have benefits beyond national borders, as in the case of defending dairy franchises against competing products such as soy and others. A good example of this is the International Milk Genomics Consortium and other collaborative projects with national and international entities.

CDRF is mainly funded by the California Milk Advisory Board (CMAB), which receives check-off dollars from local dairy producers and is governed by the regulations set out in the Marketing Order for Research, Education and Promotion of Market Milk and Dairy Products in California, and the subsequent federal Dairy and Tobacco Adjustment Act 1983. In addition, CDRF contracts with the Dairy Research Institute, Dairy Council of California, International Milk Genomics Consortium, and other organizations to provide research management services, if needed.

CMAB has provided about \$1.9 million per year over the past 10 years. CDRF has an ongoing commitment to a number of programs that are mainly California dairy industry-driven, such as the California Dairy Quality Assurance Program, Industry Outreach, and Dairy Cares. CDRF's capacity to fund new activities in 2013, after allocation of funds to its ongoing commitments and infrastructure, is estimated to be approximately \$0.6 million. These funds need to be allocated across all CDRF's remaining programs, limiting the impact they are able to have in any one area. Therefore, CDRF will request an increase of its funding to about \$3

million from CMAB for 2013 investments in order to have a greater impact (return on investments) for the dairy industry.

Through the producer check-off dollars, dairy producers invest in research. There are many opportunities to increase demand for milk and dairy products; however, successfully meeting and creating market demand in a very competitive environment requires innovation. Investment in research is critical to driving innovation to fuel future industry growth.

Although United States' investment in dairy research is significant to support innovation, it lags behind many countries, such as Australia, New Zealand, and others, in term of dollars invested per million pounds of milk produced.

CDRF's four precompetitive programs seek to enhance the growth, effectiveness, and funding of dairy investments through two key strategies:

- ✚ Direct funding: Base funding for CDRF's programs and infrastructure from CMAB.
- ✚ Partner/collaborative funding: Partner funding in support of CDRF and its partners' mutual program priorities.

The latter is a type of funding designed for cost-sharing purposes. It can include cash and in-kind contributions, such as personnel time, facilities, equipment, etc. Projects of a collaborative nature must best leverage CDRF funding and this will be an important consideration during the research project selection process. Collaborative funding may not be available to assist in all cases. CDRF will initiate an ongoing dialogue with organizations including Dairy Management Inc., Dairy Research Institute, U.S. Dairy Export Council, and Dairy Council of California, as well as international organizations such as Dairy Australia and others, and the U.S. Department of Agriculture (USDA)-Agricultural Research Service to ensure that it is not duplicating work that is being done elsewhere and look for collaborative opportunities to leverage its funds.

#### THE IMPORTANCE OF INDUSTRY CONSULTATION

CDRF supports the technical needs of the California dairy industry by assisting with addressing current challenges and potential risks. Some of the potential investment areas are easily and commonly identified by various industry organizations. CDRF's ongoing success will also require close communication and collaboration with all stakeholders throughout the value chain. Therefore, CDRF intends to work together with these organizations to remain relevant to their needs and assist in achieving common desired outcomes.

Third-party consultation provided guidance to help best determine the industry's needs and to identify the specific areas within each CDRF program that require focus in order to maximize the success of the California and U.S. dairy industry. The focus areas highlighted in this Plan are predominantly the result of information provided by major stakeholder groups within the industry and research communities. Input was

obtained from approximately 40 key personnel of the more than 50 people contacted during the March and May 2012 consultation period. They represent a range of organizations from California, the rest of the United States, and from around the world.

