RFP 02: Genetic, environment and management effects on the nutrition of culturally, historically, and economically important foods in the Northeast

The Food Systems Research Center is excited to announce a request for proposals to understand how genetic, environment, and management (GEM) interactions affect the nutritional composition of culturally, historically, and economically important foods to the Northeast US.

Background:

The genetic traits of a crop or animal, the environment in which the crop or animal exists, and the ways in which crop and animal systems are managed are critical for many components of animal and crop productivity. Furthermore, GEM components in a system can interact in unique ways to affect crop and animal outcomes. Growing evidence also suggests that GEM interactions may affect the nutrient composition of crop and animal products, thereby having a direct link to human nutrition. For example, there is evidence that milk resulting from grass-based dairy production, compared to grain-based production systems, have higher levels of essential fatty acids.

The Northeast includes a variety of examples of unique GEM interactions, which may affect the nutrients found in crops and animals. Small and medium farms and food producers often utilize unique alternative management or production systems, rely on culturally or historically important traits, seeds, or breeds, incorporate manure-based fertilizers in production, and invoke terroir into their product profiles. As such, Vermont and New England's small and medium farm and food producers may enable further understanding of how these characteristics affect the nutrients found in foods grown in these different conditions.

Linking GEM interactions from lab to farm to plate is fundamentally a food systems challenge requiring inter- and transdisciplinary research. The USDA ARS currently manages a large database—Food Data Central—that provides data and information about the nutritional profiles of foods. In 2020, the Agency announced a new distinct data type within FoodData Central, Experimental Foods, which contains nutritional information about "foods produced, acquired or studied under unique conditions, such as alternative management systems, experimental genotypes, or research/analytical protocols". This data will allow further understanding of how a range of factors, including GEM interactions, may affect the nutritional profiles of foods, as well as the sustainability of food systems.

Given the collaborative relationship between UVM and ARS, as well as the unique attributes and potential GEM interactions in Northeast crop and animal systems, UVM is partnering with ARS to fund research through this proposal that can be included in the Experimental Foods section of Food Data Central.

We encourage collaborative projects across Departments, Colleges, Centers, and Institutes, with an emphasis on inter- and transdisciplinary research that can establish seed funding and preliminary data for extramural grant submission.

Proposal Description and Directions:

Proposals are welcome from across all UVM Departments, College, Centers, and Institutes. We invite proposals across all disciplines and encourage those that emphasize inter- and transdisciplinary research required to understand GEM interactions and nutrition.

Project Components: Proposals should integrate GEM interactions explicitly within their study design and must include nutritional composition analysis as a component of their study.

Proposals that only focus on GEM interactions or only conduct nutritional analysis of foods without an explicit GEM interaction will not be considered for funding. Proposals are not required to include all components of GEM interactions and nutritional composition to be eligible for funding. In other words, a proposal may explore how management techniques, or environment, or genetics alone influence nutritional composition, rather than the complexity of multiple interacting factors.

Given that existing experiments may be ongoing at UVM to explore GEM interactions in cropping and animal systems, we will consider proposals that integrate nutritional composition analysis into existing experiments, or proposals that design new experiments. We expect third party vendors would conduct the nutritional composition analysis of foods resulting from these experiments, and use of funds in this way is appropriate.

Proposals that consider GEM interactions in crops, animals or foods that are native to the region, provide cultural or historical importance to Indigenous, New American, or underserved communities, or are of critical economic importance to the region's food systems are especially encouraged. Community partners including farms, non-profit organizations, Tribal communities, or businesses are encouraged as relevant to contextualize the understanding of GEM interactions, as well as the historical, cultural or economic importance of crops, animals and foods of interest.

Expected Funding: More than one application per College/Center is acceptable, but consideration will be given to diversifying allocation of funding across the University as relevant. The FSRC anticipates funding this effort at up to $250,000, which may be through a single proposal or multiple proposals, depending on the requested budgets. Project durations will be for up to two years, to be completed no later than September 2024.

Budget and Allowable Expenses:
All reasonable research expenses are allowable under this RFP, with some restrictions within specific budget categories, as detailed below. Subawards, tuition and fees is not an allowable expenses.

Salary: Key personnel are required to include time on these proposals. The minimum amount of FTE required for 9 month, 1.0 FTE or 12 month 0.8 FTE faculty on this proposal is listed below. These should be multiplied by 0.8 for 12 month 1.0 FTE faculty.

- Principal investigator: minimum 5% academic year salary.
- Co-Principal (co-PI) investigators: minimum 3% academic year salary.
- Key personnel: minimum 1% academic year salary.

Summer salary for 9-month, 1.0 FTE employees is allowable, only after the minimum academic year salary allocations are included as listed above. Summer salary is allowable, up to 2 weeks, for any Principal investigator, co-PI or key personnel. Other project personnel salary is allowable, including for project management and coordination. All budgets should include the appropriate fringe rates.

Students and Post-doctorates: Funding for undergraduate and graduate students and post-doctorates is allowable. All budgets should include the appropriate fringe rates.

Equipment: All equipment requests should follow UVM policy, and include price quotes, as relevant for equipment over price thresholds detailed by UVM: https://www.uvm.edu/finance/quotes-bids.

All Other Expenses: All other expenses, including materials and supplies, travel, publication charges, computer services, human subject(s) costs, and consultant/lab services (including for external nutritional composition analysis) should be detailed in the budget justification. Compensation for community partners for participation within research projects is encouraged, and should follow university protocols relevant to how partners will participate in the project (e.g. as human subjects, as farmer advisors, etc.)

Non-allowable Expenses:

- Subawards
- Tuition and fees for students

Proposal Description and Application

The following materials are required for submission:

1. **Project Description (limit 3 pages):**
    1. A detailed description of the project to include the following:
        a. Specific crop(s), animal(s) or food(s) focus of the proposal and its relevance to Vermont and the Northeast, including for specific populations including Indigenous, New American, or underserved communities as relevant.
        b. Methods including experimental approach and design to assess GEM interactions, and nutritional composition analysis. Adequate controls or conventional crop, animal or food for comparison must be identified to enable comparison (e.g., if considering the genetics of a heritage breed animal, what is the comparable standard or conventional animal genetics to compare nutritional analysis outcomes).
        c. Methods should explicitly identify whether nutritional composition analysis will be additional to an existing experiment, or whether an entirely new experiment is proposed. Existing experiments must fully describe the GEM interactions under current investigation and their duration.
        d. Ways in which the project utilizes inter- or transdisciplinary approaches.
        e. Timeline for which investigation of GEM interactions will occur.
    2. Key personnel, including identification of a Principal investigator, co-Principal investigators, and other key personnel. A proposal may only have one Principal investigator and up to three co-Principal investigators.
    3. Description of the project outcomes or deliverables.
    4. A plan for disseminating the findings of the project including an explicit plan for how the results of the research will be integrated into the USDA ARS Food Central Database, and UVM Scholarworks for the FSRC.
    5. A proposed plan for how the research can be leveraged for additional external funding, including specific funding agencies or calls.

2. Budget and Budget Justification

- Budgets should utilize the budget template.
- Budget justifications are limited to 2 pages.
- Please follow details on allowable expenses and minimum time commitments as detailed above.

3. PI and Co-PI Short CVs/Biosketches

- No specific format required. CVs should be limited to 2 pages for each individual.

Applications should be in a standard font, 11 point or larger. Margins should be at least 0.5". A list of references/bibliography should be included in the proposal and does NOT apply to the page limit.

Application materials should be submitted no later than **June 13, 2022**

If you have any questions about the funding proposal, please contact ARS Research and Outreach Manager, Chris Skinner: chris.skinner@uvm.edu.