

NSBRI JSC Summer Projects

Your Name: Forrest “Ryan” Dowdy

Current University/Institution: University of California, Davis

Degree Expected: Ph.D. Food Science & Technology

Career Goal: Applied Research

JSC Mentor and Supervisor (if applicable): Mentor: Grace Douglas, Supervisor: Maya Cooper

NASA JSC Research Area: Space Food Systems Lab

Description of Summer Project:

1. Write a **CONCISE** overview of the project you were involved with this summer. The focus should include a **BRIEF** description of the project and how it will be used, your contribution and duties, and any important outcomes. Avoid minutia, technical jargon (NASA acronyms), and do not repeat information given above.
2. Write this as if your reader is not familiar with this area.
3. Your limit is **120 words** so this is an exercise in concise writing. Let’s see those writing skills.
4. Please write in the third person referring to yourself as **he or she**.

DEADLINE FOR SUBMISSION: Friday, July 25 (please submit before this date if possible)

This project optimized the calorie content in a breakfast meal replacement bar for the Advanced Food Technology group. Use of multivariable optimization yielded the highest weight savings possible while simultaneously matching NASA Human Standards nutritional guidelines. The scope of this research included the study of shelf-life indicators such as water activity, moisture content, and texture analysis. Key metrics indicate higher protein content, higher caloric density, and greater mass savings as a result of the reformulation process. The optimization performed for this study demonstrated wide application to other food bars in the Advanced Food Technology portfolio. Recommendations for future work include shelf life studies on bar hardening and overall acceptability data over increased time frames and temperature fluctuation scenarios.