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### **Leveraging the Research Capacity of the Doctoral University for Honors Education:**

#### **The “Research Collaborative” Model**

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### **Abstract**

The Sustainable Food Systems Research Collaborative (SFSRC), housed in UMaine's Honors College, provides a structure for interdisciplinary, community engaged research. It complements the academic offerings of the College to enhance opportunities for students to begin research projects with community partners. Students from any discipline may participate in helping to frame and solve problems that are posed by community groups such as food banks, institutional dining services, economic development organizations, and farmers markets, or that may arise trying to understand the social forces that drive food choice and consumer behavior. The research collaborative model promotes early exposure to research, interdisciplinary thinking, and sustained engagement with partners over time.

## **Leveraging the Research Capacity of the Doctoral University for Honors Education: The “Research Collaborative” Model**

The faculty reward structures (tenure, promotion, and post-tenure review) of the doctoral university favor an emphasis on graduate research and the associated grantsmanship with which it is intimately related. The capacity for research is high because of the accumulated expertise, instrumentation, and other resources such as graduate stipends and library holdings. However, undergraduates are regarded as less central to a thriving research enterprise because they have less time and a less developed theoretical and technical skill set to devote to a research project than graduate students and because of the time and effort needed on the part of faculty to develop their technical and content expertise (Dolan & Johnson, 2010).

Undergraduate research broadly construed has important benefits for students, including development of process skills and habits of mind as well as disciplinary identity. It has been found to be correlated with increases in retention, probability of attending graduate school and an increase in faculty job satisfaction. Undergraduate researchers also take on the organizational challenge of executing and communicating their project (Webber, Laird, & BrckaLorenz, 2013; Crowe, 2008). We argue that Honors programs have a special place in research-intensive institutions in creating an environment in which undergraduate research is valued and can thrive. Not only do Honors colleges or programs usually require undergraduate research for the thesis or other capstone, but also they generally support the enterprise with curricular offerings and advising that helps students negotiate the process successfully. Honors can mediate access to faculty mentors and can use its interdisciplinary ethos to help students reach across traditional boundaries to create and execute their projects.

Here we report on our new Sustainable Food Systems Research Collaborative (SFSRC) housed in the Honors College; we also discuss the generalizable features of this *research collaborative model* that takes advantage of the multi-disciplinary academic environment fostered by Honors to accomplish several educational goals for students. These include broad contextualization of specific research projects within a larger thematic that is generated at the nexus between many disciplines; creation of a dynamic meeting space where academics—both faculty and students—and community partners can co-define engaged research projects; opportunities for community and university partners to create longer-term relationships that span several cohorts of undergraduate researchers; and a scaffolded approach to the research that will eventually lead to the undergraduate Honors thesis.

In the following section we provide some context for the research collaborative model within the UMaine Honors College curricular framework, then discuss the development, successes, and challenges of our first example, the SFSRC. Finally we comment on the potential for broader applicability of the model.

### **Honors Context at the University of Maine**

Honors at the University of Maine was instituted in 1935, making it one of the oldest programs in the US. The program became a college in 2003 and presently features most of the characteristics of a fully developed Honors College under the guidelines published by the National Collegiate Honors Council (NCHC Online Guide, 2015). The Honors College was designated one of seven institutional Signature Programs of Excellence (UMaine Signature, 2016)—all programs identified by their strengths in research and education—and presently graduates about 100 students a year or about 5% of UMaine’s graduating class.

During the first two years, students take a required four-course core sequence, *Civilizations, Past, Present and Future*, in which they explore the foundations of western thought and culture including aspects of science and technology in small seminar style precepts. This common experience takes place in classrooms that are located in the Honors residence halls, further building the living-learning community that is Honors at UMaine. The make-up of the classes and the core curriculum promote interdisciplinary perspectives helping to broaden the students' thinking, while the rigorous year-long thesis process at UMaine encourages an in-depth look at a topic or problem in the student's major.

A bit more detail about the Honors thesis is germane, as this part of the Honors curriculum is strongly affected by the new collaborative model. Students assemble their own 5-person thesis committee in consultation with their thesis advisor. At least one member of the committee comes from the Honors faculty. The committee meets with the student at least once as a group in the early stages of the research where the student presents his or her thesis proposal. The student then meets regularly with the advisor throughout the research project and may also meet with other committee members as needed to assist with specific aspects of the project. The committee is brought together one final time for the defense of the thesis. One special feature of the thesis defense, in addition to the presentation and defense of the thesis project itself, is the discussion of the student's "reading list", an annotated list of texts (broadly construed) that have been influential in the student's intellectual and personal development during university. Thus even when the students have been working at a highly specialized level they are asked to construct this reading list, which reflects their broader understanding and perspectives.

SFSRC reinforces this model of breadth *and* depth in the intellectual engagement with a research topic by providing students an opportunity to explore collaboratively multiple and

varied aspects of the food system while working on individual projects of their own. We will discuss this in more detail later in the paper.

### **Origins of Research Collaborative Model**

One of the goals of the collaborative model is to engage students to begin thinking about their thesis work earlier in their college career. For more than five years, one model that accomplishes this for a particular group of bio-related disciplines is the Honors College's participation in the NIH-sponsored Idea Network for Biomedical Research Excellence (INBRE), a program that provides funding for several specialized research courses in genomics for Honors students. In addition it provides for about a dozen junior-level, thesis, and summer research fellowships each year. While not specifically tied together, the courses provide each cohort of students valuable training that prepares them for their eventual thesis work. The model we describe here is partly inspired by the scientific lab group model but is more expansive in that it incorporates multiple disciplines and a component of community engagement.

A confluence of student and faculty research interests; the Honors College's expertise in fostering undergraduate research through the thesis process; and an opportunity for funding resulted in the formation of the Sustainable Food Systems Research Collaborative. In fall of 2013, a group of Honors faculty submitted a proposal in response to an RFP for start-up funding for new sustainability initiatives that originated in our institution's Sustainability Solutions Initiative (SSI). Nearing the end of their large NSF-funded project, SSI (since renamed the Senator George J. Mitchell Center for Sustainability Solutions) was interested in seeding and collaborating in areas of interest on campus that had not previously been integrated into its research portfolio. It is worth noting that the SSI's primary focus was on faculty and graduate (rather than undergraduate) student collaboration and involvement with community-engaged

research. The originators of SFSRC (all co-authors of this paper) were already very involved in a broad attempt to foster community-engaged scholarship at the *undergraduate* level and many of them were also doing work on aspects of the food system. A search of the records of the Honors College revealed that in the prior five years, approximately fifteen Honors students had written their theses on some aspect of food production, nutrition, food policy, or agriculture. Most of these projects had little or no linkage to each other, nor did they build on or create ongoing relationships with community partners. However it was clear from all of this work on food systems by both faculty and students that the potential existed to create a different research model within Honors that could have a real impact on both our college and our community.

Thus we sketched out a proposal to establish the SFSRC that would bring together faculty from Honors and others units on campus, undergraduate Honors students majoring in a variety of disciplines, and community partners who needed research resources and expertise. As was hoped, the proposal, with its focus on *undergraduate* research, did find traction with the SSI funders (Aktas, 2015). The fundamental principle underlying the SFSRC is the Knowledge-to-Action principle (Silka, 2010) of sustainability science: to find solutions to real problems by coproducing the knowledge that is needed through “close collaboration between scholars and practitioners” (Clark & Dickson, 2003, p. 8059).

### **Goals of the SFSRC**

As outlined in the original proposal, the SFSRC was conceived as a working group that would:

- Foster broad, interdisciplinary conversations about Sustainable Food Systems (SFS) while supporting students in their research projects.
- Host seminars, workshops and informal gatherings related to SFS.

- Engage the University of Maine Honors College community in important work at the local, regional and even international levels by organizing the broader conversations and linking stakeholders to co-create particular research projects.
- Serve as an on-ramp to research for sophomores and juniors who are still seeking to define and contextualize a research effort.
- Enhance the College's ability to attract funding to support students, faculty and community partners in their joint work.

Beyond these objectives and outcomes related directly to the topic, we also envisioned the SFSRC's collaborative model would have additional benefits, specifically related to retention, the research experience itself and community partnerships. We will say a bit more about this aspect in the Discussion section.

As will be outlined next, all of these goals and activities have been initiated and sustained through the first cohort of three students starting in May 2014 and the second cohort of five students beginning in May 2015.

### **Beginnings (Spring/Summer 2014)**

The initial funding stream from SSI (NSF-EPS-0904155) supported the formation of a steering committee consisting of the present co-authors and allowed the SFSRC to engage three undergraduate students as research fellows in a month-long exploration of community engaged research, topics in the food system, and research methods, while initiating research projects of their own (May-June, 2014). Typically students are compensated for about 3 or 4 weeks at the rate of \$500/week.

As the essence of the SFSRC model stems from the detailed collaboration of students, faculty, and community partners, we present a bit more detail on these initial collaborations,



somewhat in the spirit of a case-study. We also note that, in addition to the three undergraduate fellows who began working in spring of 2014, another student, Shannon Brenner, whose research began in 2013 and culminated in her 2014 Honors thesis: *Bridging Gaps and Building Solidarity*, can be thought of as a transitional project between the single thesis mode of work and the collaborative mode. Her thesis was based on research with a local community organization's SNAP benefits program at the local farmer's market. While the start of Brenner's work predated the establishment of the SFSRC, her thesis project and defense were entwined with the group and formed the basis for an ongoing partnership; her work was presented along with that of the first SFSRC cohort at several local and national meetings including a national meeting on Food & Agriculture in June 2014 and at the 2014 NCHC conference in Denver. (Haggerty et al., 2014a,b)

The initial cohort of Honors fellows in the SFSRC (May 2014-April 2015) included Audrey Cross '16 and Ashley Thibeault '15, both Ecology & Environmental Sciences majors who chose projects related to the *Real Food Challenge*, a national effort to move the food purchasing needs of higher education institutions towards more "real" food: food that is more local, more nutritious, and more fairly produced (Real Food, 2015). Cross examined the networks that enable and hinder institutional change at universities committed to the Real Food Challenge, while Thibeault used the Real Food Challenge's online calculator app to determine the present percentage of "real food" purchased by UMaine Dining Services. The third of the initial fellows, Danielle Walczak '15, was a journalism major whose thesis, "Forward Not Back: Young People's Search for Community and Farming in Maine," is a piece of literary journalism that has recently been published as a major online article in the state's second largest newspaper (Walczak, 2015). Again, we present a bit more detail on these projects and their authors to

emphasize both the breadth of interests that can be incorporated into the model and to point out the synergy that comes from two students (Thibeault and Cross) using a common framework to accomplish a larger project, while carving out individual thesis topics within it.

### **Ongoing work of the SFSRC**

Through Fall 2014 and Spring 2015, the faculty, students and community partners of the SFSRC have been invited to participate in local and regional workshops including the Maine Hunger Dialogue (Ladenheim et al., 2014a, b) and the University of Maine System Community Engagement Summit as a showcase project (Amar, Ladenheim, & Sheridan, 2015). The SFSRC was also invited to create an inaugural food strand at the 6<sup>th</sup> annual state-wide Sustainability and Water conference in March of 2015 (Haggerty et al., 2015). The resulting set of sessions brought together food researchers and activists from around the state and has prompted continuing conversations that have resulted in invitations to the SFSRC to participate in new projects and grant proposals. Through all of this work, students have continued to be the best ambassadors of the program.

The faculty members of the SFSRC decided to offer a junior-level Honors tutorial course entitled *Sustainable Food Systems: Principles, Policies & Practices* in Spring 2015 for seven students from a range of disciplines that could function as an on-ramp for students potentially interested in working on food systems research in conjunction with SFSRC. Kate Sheridan, the then Food and Agriculture Coordinator of one the community partner organizations, was invited to join the team that taught this course. This course provided students a broad and interdisciplinary understanding of food systems and an exposure to community engaged learning that functioned as a bridge to ongoing research in the SFSRC. Specifically, research projects initiated in the course became the basis for students' applying for a new round of SFSRC

research fellowships and three of those students were successful in obtaining one. In this course, the students gained critical skills that could be transferred to the fellowship setting: critical reading of the literature, learning to think about issues from interdisciplinary perspectives, exposure to a broad range of issues in the food system, navigating a class with multiple teachers, working with a community partner, and negotiating the tension between theoretical and applied research. While the course was successful in getting several of the students involved in the SFSRC and giving them a head start on their thesis research projects, the students did struggle with the number of “cooks in the kitchen” as all were accustomed to a much more conventional model of one professor per class. In their evaluations students reported the classes were worth attending (4.20/5.00) and that they had learned a lot in the course (4.40/5.00), but their responses to questions related to organization and assessment were less positive. Thus while the course itself remains a valuable means of generating interest and imparting information, we would consider reevaluating the roles of the multiple faculty members and a community partner as instructors before repeating the course.

Supplemental funding for Spring 2015 allowed the SFSRC to engage a second cohort of five new fellows in May of 2015. Two of these students, Afton Hupper (Ecology & Environmental Science) and Brady Davis (Business) have begun a project, *Exploring Food Hub Models: Implementation and Strategy* with the local town economic development office, jointly advised by Honors faculty member, Mark Haggerty, and Geoff Gordon (Orono Economic Development Corporation). Most gratifying was the town’s willingness to continue funding one of the students to do research through the summer of 2015.

Other May 2015 fellows included Sarah Mullis (Sociology) who is currently working with John Jemison researching the impact of the Orono Community Garden on food security and

social isolation of the neighboring senior citizens who are recipients of the garden's produce. Interestingly, Mullis' project is the continuation of the initial work of another member of her cohort, Ginger Kieffer (Political Science) who originally began the work on the Orono Community Garden, though notably Mullis is asking different questions than those Kieffer explored. The fifth fellow, Alan Bennett (Journalism) is examining how the news media frame obesity in the state of Maine and he is being advised by Eric Petersen (Communication & Journalism).

The increased visibility of the collaborative is one way in which Honors has been able to attract the interest of disciplinary researchers and thus "leverage" the research capacity of the institution in the service of Honors education. Participants in the SFSRC now include faculty from Economics, Business, Food & Nutrition, Political Science, Cooperative Extension, Honors, Engineering, Journalism and more either participating or expressing interest. As the SFSRC has grown and become more well known on campus, it has been sought out by on- and off-campus constituents alike. For example, SFSRC was invited to send representatives to a newly formed Climate and Agriculture working group on campus and has collaborated on an undergraduate research training grant submitted to USDA by members of UMaine's School of Food and Agriculture. Also, the SFSRC has recently been approached by new off-campus partners, the Maine Farmland Trust and the Orono Economic Development Corporation, who expand our funding model through collaborative grant-writing and direct funding of Honors undergraduate research.

## **Outcomes and Discussion**

The SFSRC has achieved, at least in the short term, the goals outlined above. While the model described here was inspired by local concerns, it is clear that similar efforts have been and

are taking place elsewhere and in slightly different forms. For example, a paper presented by Sylvia Torti (University of Utah) at the 2<sup>nd</sup> HERU conference described her institution's "Praxis Labs" which engage students and faculty and a local community partner in a two-semester course-based research/service project (Torti, 2015). We note several other similar models of engaged research have been discussed in journals such as *CUR Quarterly* (Cutucache et al., 2014), *Honors in Practice* (Fink & Lunsford, 2009), and *Journal of the NCHC* (Stark, 2013).

We asked each cohort of students to complete a written evaluation following their summer fellowship. We asked specifically about the experience of working in a collaborative and what was the most and least beneficial to them in terms of their individual research projects. Reflecting on the first two years of the SFSRC, the successes and enthusiasm of students and other stakeholders are apparent. The students report the SFSRC helped demystify the research process for them. They learned research skills such as how to access relevant materials, how to assess the usefulness of scholarly articles to their project, how to hone their research questions, how to communicate their ideas, and how to work well in a diverse team. One student in the 2<sup>nd</sup> cohort wrote:

"The biggest impact for me came in the way knowledge was shared. Instead of a one-way teacher to student transfer of knowledge, I appreciated the fact that I could sit at a table with faculty members and engage in a two way conversation where my knowledge advanced the understanding of not just students, but faculty and community members. In being viewed as a partner and not a student on this project, there was a great deal of pride in the work I did and the ideas I shared. I really felt like my insights were valued and that my efforts would contribute to a project that could have tangible benefits for the surrounding community."

And another member of the cohort reported:

"The Sustainable Food Systems Research Collaborative not only helped me decide on and narrow down a thesis topic, it helped me become a better researcher, collaborator, and critical thinker...Through the collaborative, I changed topics, debated ideas, and refined my focus into a project much more refined than I had initially proposed. I learned the value -- and the struggles and frustrations of -- independent research, and I couldn't be more

pleased with the results.”

Also in this initial period, members of the SFSRC have collectively participated and presented in 11 conferences and 8 workshops including several invited talks. A student thesis has been published as a major newspaper article (Walczak, 2015) and several other theses are in process as the projects they are based on near completion. One student developed a website to summarize and disseminate her work on food hubs (Hupper, 2015). New partnerships have been forged and funding streams are in the pipeline.

As Table 1 shows, seven of the eight students selected as SFSRC research fellows in the last two years remained part of SFSRC, three have completed their theses and the rest are on track to do so. The eighth student is continuing to work on a food-related topic but outside the SFSRC “umbrella.”

Table 1: Student Outcomes				
Student/ Major(s)	Academic Year*	Community Partner	Thesis/ Other outcomes	Funded work
Brenner/ Sociology	Senior	Food & Medicine	Completed/ 2 presentations	N/A
Cross/ Ecology & Environmental Science	Junior	Real Food Challenge	Anticipated Spring 2016/ 3 presentations	Summer Research Fellow, Travel Support
Thibeault/ Ecology & Environmental Science	Junior	UMaine Dining	Completed/ 2 presentations	Summer Research Fellow, Travel Support, Thesis Support
Walczak/ Journalism	Junior	N/A	Completed/ 5 presentations, Publication	Summer Research Fellow, Travel Support
Bennett/ Journalism	Junior	N/A	Anticipated Spring 2016/ 3 presentations	Summer Research Fellow, Travel Support
Davis/ Business	Sophomore	Orono Economic Development Corp	Anticipated Spring 2017/ 2 presentations	Summer Research Fellow
Hupper/ Ecology & Environmental Science	Sophomore	Orono Economic Development Corp	Anticipated Spring 2017/ 2 presentations, Website	Summer Research Fellow, OEDC Intern
Kieffer/ Political Science	Sophomore	Orono Community Garden	Continuing Honors food research outside SFSRC	Summer Research Fellow
Mullis/ Sociology	Junior	Orono Community Garden	Anticipated Spring 2016 1 presentation	Summer Research Fellow, Thesis Support

\*The second column refers to the academic level of the student when they first engaged with the SFSRC.

In spring of 2015, at least a dozen Honors theses with some connection to food and agriculture, whether from a historical, cultural or biological/nutritional perspective were

successfully defended including the two completed under the aegis of the SFSRC and listed in Table 1. This represents a large increase from the 15 or so in the prior 5 years. Clearly SFSRC's emergence is timely with respect to the growing interests of stakeholders at the University of Maine and around the state.

While any of the food systems research projects sponsored by the SFSRC might have been undertaken by any one of the students on their own, as previous history indicates, we anticipated that working collaboratively would add value to the research experience. For example, we expected that the collaboration would yield cross-fertilization of ideas and approaches to research, that students would benefit from exposure to multiple perspectives, that certain synergies would occur among and between that would not otherwise be possible, and that research questions might be addressed from different disciplinary perspective both simultaneously and longitudinally. Overwhelmingly, students commented on the value of learning together, of "bouncing" ideas off one another. One student wrote in her evaluation of the experience: "Being able to collaborate [with] community partners, [fellow students], and Honors Faculty was the most beneficial for me during the fellowship...because I always had someone to bounce ideas off of" while another student wrote, "Every conversation revealed different insights from all of our different backgrounds and perspectives."

It is worth reflecting also on the *challenges* posed by the collaborative model. Central to a collaborative of this type is the question of how to satisfy the needs of both academic and the community partners. One clear issue is the tension between the academic requirements of a student thesis and the needs of partner organizations for other kinds of deliverables (such as a data summary or brief policy analysis). Another is the difference in timelines and calendars of the organizations impacting availability of students and other stakeholders to participate in



particular meetings or meet certain deadlines. Clearly there is no simple answer to this question except to establish strong and equitable lines of communication calling on the best practices of community-engaged research and sustainability science (Wolff & Maurana, 2001).

Another important question is under what conditions is the SFSRC model sustainable? The initial phase of the project has been supported by grant funding. While most of this funding has gone to support student research fellowships, faculty members have also received modest stipends (on the order of \$1000) to manage the intensive May fellowships. In addition, the College has been able to assign some administrative time to help manage this effort. While the core faculty members have incorporated the SFSRC into their own research programs, the extra overhead associated with intensive collaboratives can be problematic. Some form of released time will be required to continue this key aspect of the collaborative and to account for differential commitments of different faculty members. Also the work product of collaborative project with a student and a community partner may be less valued in the academic reward structure.

The start-up funding allowed us to create the structures that enabled community members to partner with the research university to help foster and support undergraduate research both organizationally and financially. However, it remains challenging to find institutional support for faculty work and to run the broader, interdisciplinary elements of the collaborative that support and train students.

As more students become interested in the topic of the food system and more faculty and community partners become involved, the question of scalability arises. Given the size of our thesis cohort (about 100 students per year), it is unlikely that the student numbers in any one cohort would grow beyond about 8 to 12 or roughly 10%. However, the collaborative includes

students from sophomores to seniors and so events, workshops, and other working sessions could eventually involve 20 or more students in various stages of the work. Peer mentoring models and a managed set of commitments by participating faculty should help propel this effort. Thus we do not see a specific, topical research collaborative as a model that needs to scale to reach *all* Honors students in the institution. A set of three or four such topical collaboratives (see below) could reach say 50% of our Honors students, leaving room also for the individually mentored projects that have been the norm up to now.

Another question that arises is that of ownership of the SFSRC. Piloted in Honors, could students who are not in Honors but interested in the work be allowed to participate? How can a relatively porous structure be designed that could allow non-Honors students to be accommodated with appropriate institutional support? Is this model another case of using Honors as an engine of pedagogical innovation that then exports the model for the benefit of the institution as a whole?

It is quite likely that the collaborative model will find itself replicated for other thematic areas. Already, the INBRE/genomics cluster team has been working to form a Genomics Research Collaborative to supplement the course and research efforts already in place for that area of study. An area such as climate change, which has a very strong research presence at UMaine, will also be a good candidate for the collaborative model. It will be most interesting to see if the model can be exported to the arts and humanities that tend to be a bit more solitary enterprises. Honors has worked closely with the University of Maine Humanities Center (UMHC, 2016) and one of our Honors preceptors has already experimented with the creation of a Humanities Lab (Harlan-Haughey & Warner-Evans, 2014).

The Sustainable Food Systems Research Collaborative at UMaine is an instance of a model for community-engaged research that provides an early on-ramp to research for Honors students by creating an environment for early access to multi-disciplinary perspectives, workshops that build research skills and practical connections with community organizations with needs in applied research, and a nexus for building a longitudinal set of partnerships and funding streams. The model adds both breadth (in terms of interdisciplinary thinking) and depth (in terms of training and partnering opportunities) to the existing models of Honors thesis research.

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