DIG IN!

Gwynn Hall home to new state-of-the-art nutrition and food-science research center

ILLUSTRATIONS BY RAQUEL MENDEZ
About six years ago, Dr. Chris Hardin began taking what he calls “the dungeon tour” through Gwynn Hall’s basement. Dated equipment sat in disarray inside old, unused labs. Instead of bemoaning the sight, Hardin, chair of the Nutrition and Exercise Physiology department since 2007, envisioned a state-of-the-art research facility.

This year, Hardin’s vision has finally come to fruition with Gwynn Hall’s complete renovation. The multi-million-dollar effort included gutting and revamping the 1920s-era building. On the outside, passers-by still see the historic campus landmark, complete with its original stone masonry and elegant arched entrances. Inside, however, contractors transformed more than 4,000 square feet of inactive or under-utilized space into a world-class teaching and research facility. This crown jewel sits in the basement: the new MU Nutritional Center for Health (MUNCH).

MUNCH sprang from years of work to turn the Nutrition and Exercise Physiology department into a more collaborative endeavor among HES, the School of Medicine and the College of Agriculture, Food and Natural Resources. MUNCH houses a metabolic research kitchen, a teaching kitchen and an observational research lab to facilitate a broad range of research into nutrition, lifestyle and the impacts of various foods and diets on human health. In addition, Gwynn’s renovation includes three new classrooms, and a wet lab for chemical experiments. An area for human research is adjacent to MUNCH, including a body composition suite, blood draw and processing rooms and procedure rooms for human subjects — all critical components of the department’s new Physical Activity and Wellness Center (PAW).

Hardin hopes the facility will spur more collaboration among HES and its cross-campus partners to tackle pressing issues related to public health. He easily rattles off an exhaustive list of questions researchers here can now begin to address. How does the perception of food — how it looks, tastes and feels — impact satiety and fat absorption? Are certain types of protein better than others at suppressing hunger? What social factors impact how we eat?

Hardin envisions a research hub that pulls from disciplines like food science, biochemistry, neurophysiology and even psychology. “We’ve talked for years about the advantages of having a ‘comprehensive campus’ — a university with agriculture, medical and nutrition programs — but I think we’ve yet to fully take advantage of those opportunities to collaborate,” Hardin said. Together, various disciplines can converge at Gwynn Hall to tackle critical societal problems — for example, childhood obesity. Hardin says MUNCH will be a shining example of what truly collaborative research should look like.

This steak salad is just one example of the high protein meals that will be created in the metabolic kitchen and used to study appetite control and cognitive function in research participants.

### STEAK SALAD WITH SWEET POTATO FRIES

#### Steak (beef flank, PAM cooking spray)
- Slice 4 1/2 ounces of beef flank into 1/8 inch strips
- Heat a non-stick skillet, sprayed with PAM cooking spray, to medium high
- Add beef strips to skillet and sauté; Remove from heat; set aside

#### Beans (garbanzo beans), drained and rinsed
- In the same skillet, over medium high heat, sauté the garbanzo beans for about 2 minutes, stirring constantly; set aside

#### Salad (romaine lettuce, tomatoes, garbanzo beans & steak from above), shredded cheddar cheese
- Rinse 2 oz romaine lettuce (salad spin, if desired) and place in a serving bowl
- Slice or dice 1/3 tomato (any type); add to salad
- Top with steak and beans, then drizzle on 1 TBSP light ranch dressing (optional)
- Garnish with shredded cheddar cheese

#### Sweet Potato Fries
- Pre-heat oven to 425 F
- Peel a medium sized sweet potato (7 oz), rinse and cut into French fry style strips
- Place in a small bowl and toss in 1/2 tsp almond oil and a dash of garlic/sea salt mixture.
- Pour onto a cookie sheet and bake for 30 minutes
- Serve hot or cold
“This is a university at its best,” Hardin said.

Hardin began fundraising for MUNCH soon after he became chair of the nutrition and exercise physiology department in 2007. By 2010, he’d secured enough funding to begin renovating the Gwynn Hall basement and launch the first phase of MUNCH. The department was about to let contractors in the door when MU instead opted to renovate the whole building — a backlog of maintenance and repair projects in the building made the complete reconstruction necessary. With the prospect of an entirely revamped Gwynn Hall, Hardin expanded his vision to include a new Physical Activity and Wellness Center.

HES opened the doors to MUNCH late this past winter. At first glance, the kitchen and dining facility at the west end of Gwynn Hall’s basement look like those of a standard new restaurant or diner. The metabolic kitchen, however, is designed for fully-controlled feeding studies of 35 to 50 people at a time. Designing studies that fully control what people eat and drink is crucial for asking specific diet-related questions. By controlling diet and diet-related questions, when concurrently monitoring their physical activity, researchers can glean a more nuanced picture of an issue, leading to a better, more complete study.

But studies can fail if subjects don’t adhere to their diets or cheat, and some feeding studies may stretch on for weeks or even months. The key, researchers say, is to get subjects to actually like the food.

That’s where Lana Merrick comes in. With a background in both culinary arts and food science, Hardin calls Merrick MUNCH’s “geek iron chef.” Merrick works behind the scenes as the kitchen’s research chef and lab supervisor. She custom designs menus that must fit within specific dietary parameters unique to each feeding study. “It has to meet the researcher’s needs, but it also has to taste good,” Merrick said.

Another MUNCH mission will be integrating the new facility into NEP’s extension and outreach programming. “Sadly, people have forgotten how to cook healthy meals,” Hardin lamented. NEP’s extension program already conducts diet and exercise outreach across the state. Nutrition Extension has a presence in every county in Missouri and two-thirds of children in Missouri public schools get nutrition and exercise instruction from Nutrition Extension — including many children from families on supplemental nutrition assistance programs. The research kitchen will help extend that outreach. High-definition video cameras point toward the food-prep areas of the kitchen. Behind a one-way mirror sits a control-room similar to that of a small television studio. “This will sort of be like our version of the Food Network,” Hardin said.

NEP plans to record healthy-cooking segments for both streaming on the web and to send out across the state. MUNCH also plans to bring in families for live cooking demonstrations. In the dining room, chairs and tables can be swapped out for rolling kitchen countertops for a hands-on learning environment.

MUNCH’s dining room also doubles as an observational behavior laboratory. High-definition cameras hang from the room’s four corners to observe people’s behaviors surrounding food — such as how parents’ attitudes toward new foods may influence their children’s approach to trying new diets. “This will study how we choose the foods we eat, hopefully to answer why we choose the foods we eat,” Hardin said.

MUNCH will also have easy access to study subjects. Just down the hall is the Child Development Laboratory, a teaching and research lab and child care center, which is part of the department of Human Development and Family Studies. “Down the hall, we have dozens of children that come in and out of here every day,” Hardin said. Some in the department already

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endearingly call the kids “MUNCHkins.”

Gwynn Hall will also house NEP’s new Physical Activity and Wellness Center. The new facilities include human subjects rooms, a 3,000 square foot wet lab for chemical experiments and a body composition suite.

Heather Leidy, an assistant professor with NEP, already has plans for the new lab and research kitchen. Leidy has been studying how eating breakfasts rich in protein significantly improves appetite control and reduces unhealthy snacking on high-fat or high-sugar foods in the evenings. Her latest findings were published in the American Journal of Clinical Nutrition.

Leidy says the new facilities at Gwynn will allow for faculty to perform more interdisciplinary research — from nutritional and exercise physiology to food science and behavioral science. “The possibilities for research and collaboration are endless,” she said. Leidy plans to start using the new facilities right away. She just began a study to examine the effects of higher protein meals on appetite control and cognitive function in overweight women. The study will utilize the new metabolic kitchen to prepare breakfast, lunch and dinner for 32 women for the 4 month-long study.

Catherine Peterson, an associate professor with NEP, is excited to use the new facilities to further her research. Peterson most recently examined how simple vitamin D supplements can help obese children and teens control blood-sugar levels, potentially helping them stave off type 2 diabetes. Among her findings, also recently published in the American Journal of Clinical Nutrition, Peterson found that by simply increasing vitamin D intake alone, subjects saw decreased insulin levels, meaning better glucose control, despite no changes in body weight, diet or physical activity.

However, Peterson is perhaps most eager to start teaching in Gwynn Hall’s new ultramodern research facilities. “It’s going to be an incredible place to teach and train budding dieticians and nutritionists,” she said. “I think that’s what I find most exciting.”
The children in MU Child Development Laboratory, located just down the hall from MUNCH, are gaining a working knowledge of growing and eating healthy foods thanks to the new MU Children’s Learning Garden. Here, the youngsters help with the entire process from planting to composting. But now, with the teaching and observational research capabilities in MUNCH, the children will learn how to prepare healthy meals and we will learn from them about what influences child food choice behavior.