Creating Chicken Without the Egg

By John Cloud

The desire to eat meat has posed an ethical question ever since humans achieved reliable crop production: Do we really need to kill animals to live? Today, the hunger for meat is also contributing to the climate-change catastrophe. The gases from all those chickens and pigs and cows, and from the manure lagoons that big farms create, are playing a part in global warming. So the idea of fake meat has never been more alluring. What if you could cut into a juicy chicken breast that wasn't chicken at all but rather some indistinguishable imitation made harmlessly from plant life?

This spring, scientists at the University of Missouri announced that after more than a decade of research, they had created the first soy product that not only can be flavored to taste like chicken but also breaks apart in your mouth the way chicken does: not too soft, not too hard, but with that ineffable chew of real flesh. When you pull apart the Missouri invention, it disjoins the way chicken does, with a few random strands of "meat" hanging loosely. (Watch TIME's video "Turning Powder Into Poultry.")

The vegetarian world is buzzing about the breakthrough in Missouri. "Along with ham, chicken has always been the holy grail," says Seth Tibbott, 59, the creator of Tofurky and the dean of soy-meat inventors. Tibbott's Oregon-based Turtle Island Foods has become famous for its surprisingly full-flavored fake turkey. But Tibbott says efforts to create a credible fake chicken have foundered because of chicken's unique lean texture and its delicate flavor. ("Turkey has a gamier flavor," he says, "and it's easier to match stronger flavors.")

Like his competitors, Tibbott is now investigating whether to buy the Missouri product. A meat analogue that not only looks like chicken but also works in your mouth like chicken has great market potential. According to the Soyfoods Association of North America, a Washington-based trade group, annual sales of soy products totaled $4.1 billion in 2008, up from $300 million in 1992. But $4.1 billion is, to use a food metaphor, just peanuts. Americans spend something like half a trillion dollars on real meat every year. A meaty-tasting alternative that could capture even a tenth of this market would make someone very rich. The University of Missouri team may finally have cracked the code.

For several years, Fu-Hung Hsieh — a biological-engineering professor who, at his previous job at Quaker, figured out how to use glycerin to soften the raisins in the company's granola — had wondered how to solve the fake-chicken problem. The answer was certainly going to be a combination of soy, wheat gluten, oil and water — the building blocks of most fake meats, including Tofurky. But in what combination? And how would you get it to transform from a congealed goo into a believable simulacrum of chicken? Hsieh, a slight man who was born in Taiwan and educated at Syracuse, worked on the problem in a concrete-floored lab with an unlikely partner, Harold Huff, a tall and gruff native Missourian who runs the mechanical parts of Hsieh's lab.
What has confounded fake-meat producers for years is the texture problem. Before an animal is killed, its flesh essentially marinates, for all the years that the animal lives, in the rich biological stew that we call blood: a fecund bath of oxygen, hormones, sugars and plasma. Vegan foods like tofu, tempeh (fermented soy) and seitan (wheat gluten) don't have the benefit of sloshing around in something so complex as blood before they go onto your plate. So how do you create fleshy, muscley texture without blood?

It's at once harder and easier than it sounds. First, you take a dry mixture of soy-protein powder and wheat flour, add water and dump it into an industrial extruder, which is essentially a gigantic food processor. (You have to climb a ladder to get to the hole at the top.) At first, the mixture looks like cake batter. But as it's run through the gears of the extruder and heated to precisely 346°F (175°C), the batter firms up and forms complex striations.

It took Hsieh and Huff many years to get the temperature right, and it also took years to discover how to cool the soy cake very quickly, before it could melt. (See the top 10 food trends.)

All this processing raises a question: Will vegans and other gastronomic purists buy a product that is vegetarian but highly processed? Also, what does it taste like?

On the day I visited their lab, Hsieh and Huff had arrived early along with some of the university's culinary students. The scientists and the students worked together to create three dishes: a barbecue sandwich, a tarragon "chicken" salad and a fajita. The seasoning in all three dishes was unbalanced, and none were very good. But the way the meat broke across my teeth felt exactly how boneless chicken breast does. It was slightly fibrous but not fatty. The soy wasn't mashed together as in a veggie burger; rather, it was more idiosyncratic, uneven, al dente — in other words, meatlike.

Public-health types have long yearned for a credible soy meat because soy is a great source of protein that has significantly less fat and cholesterol than animal meat. But while Missouri's fake chicken has the right consistency, it still has to be flavored — and heavily salted — to taste like meat. That's why the next green-food frontier is real meat grown in vitro — actual flesh that is sliced away not from a living animal but a petri dish and which offers all the taste with none of the livestock slaughtering.

People for the Ethical Treatment of Animals (PETA) has offered a $1 million prize to anyone who can bring in vitro chicken meat to market by 2012. As with so much of what PETA does, it is largely a publicity stunt: according to Jason Matheny, a vegetarian who runs a venture-capital firm called New Harvest, in vitro meat is "at least five or 10 years away." Meantime, Tibbott and other soy proponents, including the University of Missouri scientists, believe they can bridge the gap by offering realistic fake meats. Who knows? Maybe one day you'll order a chicken fajita at Chili's that is made with soy. You almost certainly won't notice the difference, but the planet will.
Missouri chancellor won't commit to Big 12

By DOUG TUCKER/The Associated Press
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KANSAS CITY — The head of the University of Missouri is giving no assurances that the Tigers intend to remain in the Big 12.

Chancellor Brady Deaton said Missouri remains a proud member of the Big 12, but "we're going to do what's best for our institution."

"We're not shutting our ears to anything," Deaton said, as he walked into a meeting of Big 12 presidents. "I'm sure every school here has a responsibility to its own institution as primary responsibility. Conference realignment is something we do for our athletic programs. That's what we're working on right now."

Big 12 commissioner Don Beebe has repeatedly said he wants to know which Big 12 member schools are committed to remaining the league. So far, that's been a difficult task.

Nebraska and Missouri have both indicated they might be interested if the more lucrative Big Ten Conference decides to expand, a move it is studying. And that has led to speculation that Oklahoma, Colorado and Texas might bolt for the Big Ten or elsewhere. The Pac-10 holds its spring meetings this weekend in San Francisco.

Nebraska athletic director Tom Osborne said this week he hoped some resolution to the whole question of conference realignment might be arrived at by the presidents this week, but that was not expected by most attendees.

"We're not making any comments about all the speculation about conferences," Deaton said. "What we're doing right now is what's best for Missouri, and we'll continue to look at all the resources as we look to the future and all alignments."

The Big 12 meetings end Friday.
Big 12 abruptly cancels news conference

By DOUG TUCKER

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After daylong discussions regarding the possible breakup of the Big 12, a scheduled news conference was abruptly canceled, fueling speculation that the 12 schools are far from agreement.

A short time earlier, Oklahoma athletic director Joe Castiglione had indicated the member schools did not reach the unity that many had hoped these meetings would achieve.

Perhaps also complicating the process was a report out of Texas on Thursday afternoon that the Pac-10 might invite six Big 12 schools to join and form two eight-team divisions. Some Big 12
and Pac-10 officials met informally several few weeks ago to discuss a possible scheduling and television alliance between the leagues.

Speculation of a possible breakup of the 14-year-old Big 12 exploded this spring when the Big Ten said it might expand and Nebraska and Missouri indicated interest.

Big 12 commissioner Dan Beebe and Texas president Bill Powers had been scheduled to brief reporters at the end of the day on Thursday, the third day of the league's spring meetings.

But after a separate meeting of the presidents ran an hour long, Beebe emerged to say - as he was pursued by reporters into a waiting elevator - that the news conference would be on Friday.

"The board is still in session. We won't conclude until tomorrow and we're not going to have any kind of comments about anything the board has been considering or acting upon until tomorrow."

He refused to elaborate.

In Thursday's joint meeting of athletic directors and presidents, Oklahoma's Joe Castiglione said the ADs all gave their recommendation about whether the league should stay together.

Apparently, the unanimity that many members were hoping to forge proved elusive.

"We all had a chance to express our thoughts," Castiglione said when asked if any of the athletic directors indicated they might want to leave.

So does that mean not everyone was united?

"Everybody expressed their thoughts," he said.

Castiglione and Oklahoma president David Boren have been adamant in their desire to keep the league intact.

"Each athletic director had a chance to convey their thoughts about the future of our conference, and that was great," Castiglione said. "A lot of passion about the Big 12 in that room, I can promise you that."

While the Big 12 presidents were meeting Thursday afternoon, Pac-10 commissioner Larry Scott played down a report that the Pac-10 planned to invite Big 12 members Texas, Texas A&M, Texas Tech, Oklahoma, Oklahoma State and Colorado. The report in Orangebloods.com, the Texas site on Rivals.com, said the Pac-10 would split into two eight-team divisions.

"We have not developed any definitive plans," said Scott. "We have not extended any invitations for expansion and we do not anticipate any such decisions in the near term."
The Pac-10 meetings are this weekend and Scott said the conference continues to conduct an "exhaustive and proactive" evaluation of the league and its future.

Castiglione said possible ties with the Pac-10 were discussed on Thursday.

"I think there's some potential value there," he said. "We had one meeting with some of the members of the Pac-10. It wasn't a scheduled meeting. We brainstormed some of the possibilities that may exist. Since then, both our commissioner and Larry Scott have had conversations. It leads one to believe there are some real viable opportunities for both leagues."

Colorado athletic director Mike Bohn said he and others had been led to believe the Pac-10 was on the verge of issuing invitations to six members of the Big 12.

"The longer that we were together in Kansas City it appeared that that rumor or speculation did have some validity to it," Bohn told the Boulder Daily Camera.

As the meetings were beginning Thursday morning, the head of the University of Missouri gave no assurances the Tigers intend to remain in the Big 12.

"We're not shutting our ears to anything," said chancellor Brady Deaton. "I'm sure every school here has a responsibility to its own institution as primary responsibility. Conference realignment is something we do for our athletic programs."

AP sports writers Anne M. Peterson in Portland and Josh Dubow in San Francisco contributed to this report.
Big 12 may be on the verge of fracturing

By BLAIR KERKHOFF

Big 12 commissioner Dan Beebe came to Kansas City this week to galvanize his athletic directors and school presidents in keeping the conference together. But as the Big 12’s annual meetings come to a close today, it appears the conference is closer than ever to falling apart.

Reports that the Pacific-10 Conference would target six Big 12 teams started surfacing early Thursday afternoon. Later, Colorado athletic director Mike Bohn said that he believed his school would be invited to join the Pac-10, along with Texas, Texas A&M, Texas Tech, Oklahoma and Oklahoma State.

“The longer that we were together in Kansas City, it appeared that the rumor of speculation did have some validity,” Bohn told the Boulder Daily Camera.

Asked directly if Oklahoma had been contacted by the Pac-10, Sooners athletic director Joe Castiglione said, “Not yet.”

Beebe and University of Texas president Bill Powers, chairman of the Big 12 board of directors, were scheduled to meet with reporters Thursday after the third day of meetings concluded at the InterContinental Kansas City on the Plaza. They instead canceled the news conference, and both got on an elevator.

Contacted later by The Kansas City Star, Beebe declined to comment.

“I have to honor the board’s directive,” he said.

Pac-10 commissioner Larry Scott said his league, which begins its annual meetings today in San Francisco, does not expect to take action soon.

“We have not developed any definitive plans,” Scott said. “We have not extended invitations for expansion, and we do not anticipate any such decisions in the near term.”

The Big 12 previously faced a threat from the Big Ten Conference, which is also exploring expansion. But only two Big 12 teams, Missouri and Nebraska, have been rumored to be targets, and the Big 12 could withstand the loss of a few teams, especially if Texas remained.
If the Pac-10’s reported move happens, the Big 12 won’t exist.

The league would be cut in half, and if the Tigers and Cornhuskers wind up in the Big Ten, then Kansas, Kansas State, Iowa State and Baylor may not have a place to land. Those schools would also be left out of a conference that automatically qualifies for college football’s Bowl Championship Series, which creates multimillion-dollar payouts for the top six conferences.

The Big 12, which opened for competition in 1996, will conclude weeklong meetings today that Beebe hoped would bring about a sense of unity. Instead, there were indications that the schools weren’t on the same page.

“Each athletic director had a chance to convey their thoughts about the future of the conference,” Castiglione said.

Was there agreement?

“Everybody expressed their thoughts,” he repeated.

Missouri chancellor Brady Deaton said several times during an interview that the Tigers were “proud members of the Big 12. (But) we’re not shutting our ears to anything. I’m sure every school here has a responsibility to its own institution as a primary responsibility.

“Conference alignment is something we do for our athletic program. That’s what we’re working on right now.”

Last month, Big 12 athletic directors met with Pac-10 counterparts in Phoenix to discuss working together in negotiating television contracts and scheduling. The conferences account for 31 percent of the nation’s TV markets.

“I think there’s some potential value there,” Castiglione said. “We brainstormed some of the possibilities that may exist. Since then, both our commissioner and Larry Scott have had conversations. It leads one to believe there are some real viable opportunities for both leagues.”

But one Pac-10 president said the conference could be on the verge of big news involving its own television entity.

In a question-and-answer session with the University of California Alumni Club of New England, Cal-Berkeley chancellor Robert Birgeneau said Monday that he would be “surprised if something did not happen that revolutionized college athletics” at the Pac-10 meetings.

One downside to a 16-team conference that spans three time zones would be more time on the road, which is already an issue for many schools.

“I’ve heard a lot about the distances we’d have to have our student-athletes travel,” Texas A&M athletic director Bill Byrne said. “We had a really tough experience in April when we had to bring our teams from Seattle and Spokane and after ballgames, and we got into College Station
at, I believe, 6:30 in the morning. Then we expect for our kids to go to class at 8 o’clock. That’s tough.”

Beebe and Powers are expected to meet with reporters today, and the conference is expected to announce future championship sites. Kansas City could get the Big 12 men’s and women’s basketball tournaments through 2014, and if that happens, 2013 will be a hoops festival — the city already is one of eight sites for NCAA Tournament first- and second-round games that season.

But will there even be a Big 12 to contest tournaments and championships that year?

Castiglione, previously the athletic director at Missouri, has been the league’s most vocal supporter throughout the meetings, often harking back to challenges of the Big 12’s fusion of the Big Eight and four members of the Southwest Conference, which disbanded after 1995. He’s said throughout the week that his preference is for the Big 12 to continue.

“There are people who really love this conference,” Castiglione said. “As far as I know, we have a football season coming up, a whole academic year coming up, sports planning to compete, new-student athletes coming into our conference.”

But on Thursday, there was a sense that the Big 12 wasn’t business as usual.
Record freshman enrollment could result in housing shortage

By Zachary Murdock

The class of 2014 is set to break enrollment records this fall.

As of May 24, the university has received 17,148 applications -- 14,319 of which were accepted, Vice Provost for Enrollment Ann Korschgen said. Of those applicants accepted to MU, 6,249 students have made enrollment deposits, which secure a student's place in the freshman class.

These numbers are subject to change, MU spokesman Christian Basi said. The number of students officially enrolled in the fall will only be finalized in mid-August at the close of all enrollment deadlines. Although unofficial, current enrollment numbers for the fall semester are up 8 percent, from 5,765 enrollment deposits at the same time last year.

The increases have had an adverse effect on on-campus housing and Residential Life has been unable to shelter all the students who might have wanted to live on campus.

"We typically house between 85 to 90 percent of the incoming class and historically have been able to house all incoming freshmen students," Director of Residential Life Frankie Minor said.

Minor said with increased enrollment for the upcoming school year, there are an estimated 200 incoming freshman without beds for the fall semester. In addition, many returning students were unable to get housing contracts because of a limit imposed by Residential Life to ensure there would be ample housing for a large freshman class.

"A strategic decision was made by senior campus leadership advised by the Division of Enrollment Management," Minor said. "We wanted to house as many returning students as possible and accepted 1,900 contracts from returning students, which was the maximum number we projected we could accept and still have sufficient housing for incoming students."

Residential Life is pursuing several other options to help house the large freshman class. Minor said, in addition to adding 340 spaces at Tiger Diggs off-campus, Residential Life is offering incentives for returning students to cancel unwanted housing contracts and is researching future contract cancellations from men joining fraternities in the fall.

Much of the increase in enrollment over the past several years has been attributed to an increase in college-bound Missouri high school graduates. MU's offices for Enrollment Management and
Residential Life work with projections for future student enrollment and are able to somewhat account for changes in enrollment before they occur.

"Next year, the number of high school graduates in Missouri starts to decline and continues to decline for several years," Korschgen said. "This will very probably affect our enrollment growth."

In conjunction with projections for future enrollment, the Division of Enrollment Management takes steps to increase access to in-state students and make MU the focus of many students' college goals.

Director of Access Initiatives DeAngela Burns-Wallace said it is part of MU's role as a public flagship to help increase access to college in general and MU has many initiatives working to bring students to MU's campus and programs.

These initiatives include MAC and Kauffman Scholars programs to help underrepresented minority and lower income students gain access to college through college prep and counseling as well as summer academies that bring students to campus.

"These programs are not necessarily designed to be a recruitment program, but it does make students more comfortable and focused on MU," Burns-Wallace said. "It's a relationship."
Summer construction projects blanket campus

By Megan Donohue

Decreased traffic on campus this summer will allow Campus Facilities to step up construction on several facilities and roads. The installation of chilled water lines underground, renovations to residence halls and road repairs are all slated as summer construction projects at MU.

There are 19 road closings scheduled for the summer for construction, with 13 scheduled by MU and the remaining six scheduled by the city of Columbia.

The six scheduled by the city are resurfacing projects, while none of the 13 scheduled by MU are for resurfacing issues, Campus Facilities spokeswoman Karlan Seville said.

According to several maps released by MU, Locust Street will be closed until June 8, Fifth Street until mid-June, Conley Avenue until Aug. 15, and Sixth Street until Aug. 15. These streets, in addition to Speakers Circle, will be closed to add chilled water lines underground.

"A chilled water loop is more efficient than having individual chillers at each building," Seville said. "By connecting buildings together with piping and strategically locating chiller plants, MU is able to cool over 100 buildings from just 16 locations."

A new steam tunnel will also be installed to replace the aging tunnel from the power plant to the corner of Maryland Avenue and Conley Avenue. It will be completed Aug. 1. Hitt Street, Rollins Street and Conley Avenue will be the main roads affected by the steam tunnel replacement.

"The tunnel will include new steam, condensate and compressed air piping with expansion room for future capacity," Seville said.

Manhole work will close the road in front of Defoe-Graham residence hall until June 12, according to maps released by MU.

The summer construction projects that will last the longest are the road closures due to MU Power Plant upgrades, which will close Stewart Road from Province to Fifth Street until late 2012.
Some of the work includes installing a new biomass boiler, repairing the existing north and south stacks and replacing current cooling towers and electric systems to support auxiliary loads, Seville said.

Utility lines will be laid for the Patient Care Tower off of Pershing Drive. According to the Road Closings 2010 map, the project will be completed in 2012.

The tower, which is partially funded by a $30 million bond, will replace the existing Ellis Fischel Cancer Center.

"By all accounts, it's an inadequate facility in just about every way you look at it," Bo Fraser, a member of the UM system Board of Curators, said of the existing structure.

The center will occupy the first two floors of the tower. It is slated for completion in 2013.

"The citizens of this state deserve an up-to-date cancer hospital," Fraser said.

Seville said all of the utility projects are necessary to supply reliable and efficient utilities to the campus and hospitals and MU has made sure to create the least amount of inconveniences possible.

"We communicate with faculty, staff and students to keep them aware of upcoming projects that might change their routine," Seville said. "This is the best time of year for us to close streets for long periods of time. It impacts the least amount of people."

Seville said MU is not anticipating any major problems from the road closures this summer beyond circumstances beyond control, which may add delays.

"We plan well in advance so that we do not run into problems, but you cannot predict the weather," Seville said.
MU updates student ID system

By Caroline Sykes

This summer, MU is making updates to the student ID system, along with a few other minor modifications.

Changes include a new host and network for the ID system, replacement of existing card readers and lower costs for ID card replacements. Additionally, Greek Life and the Missouri Students Association Department of Student Activities will be provided with card readers for events.

"The main reason it is being updated is the system is getting extremely old," MSA President Tim Noce said. "It was supposed to be updated a long time ago."

The server that manages the entire ID card system, the host, is being switched to a new operating system. This update is being done through the Division of Information Technology.

"The main computer that runs it is switching from Unix to Windows," DoIT Director Terry Robb said. "Secondly, we are changing the network. It's quite an upgrade."

The system to be upgraded is the one that processes student ID card transactions, not the system that makes the physical ID cards. Student fees will not go toward paying for the transaction system. Instead, DoIT will foot the bill.

"It costs us about $450,000 to upgrade it," Robb said.

Robb said the upgrade should be unnoticeable to students. An update students will notice is the lowering of replacement costs for ID cards. Student ID card replacement charges are being lowered from $20 to $15. DoIT is able to make these replacements cheaper, without losing money and without having to add charges or extra costs to student fees.

"We analyzed total ID card production costs and decided that we could still cover our costs at $15 versus $20 for each replacement," Robb said.

Noce said he is very happy with the lowering of costs, and said lowering the cost of ID replacements is an issue MSA has been pursuing for a while.

"High prices of ID replacements were originally told to be a deterrent, and nobody understood how that would prevent you from losing your ID," Noce said.
Sophomore Garrett Nissenbaum lost his student ID four times throughout his freshman year at MU, costing him $80.

"Students are always misplacing their IDs, so I think they'll be very happy with this change," Nissenbaum said.

Another update includes providing Greek Life and DSA with card readers for various events they host. Benefits from these card readers include the ability to monitor attendance of events and additional statistics from those in attendance, which helps with collecting information and to better future events.

"They will get demographic information, such as what year you are," Noce said. "The readers will make a guest list. For example, they can see what kind of people come to a DSA movie event, such as mostly freshman come. There are a lot of opportunities from a marketing standpoint that would be a good benefit."