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University of North Carolina system president Erskine Bowles contends his strong work ethic will allow him to juggle his duties leading one of the nation's premier university systems with his appointment to President Barack Obama's commission on deficit reduction. Given his track record, it would be dangerous to dismiss that claim outright.

However, it is appropriate to wonder if serving in both capacities is the most responsible approach to this unique situation. With Bowles having announced his intention to leave the UNC helm at year's end, the search for his replacement should be accelerated to allow for a smoother transition upon his departure.

With his experience in government and administration as well as a lifelong commitment to public service, Bowles was an ideal candidate to lead the UNC system when he rose to that position in 2006. It has not been an easy tenure, particularly given the budget constraints faced over that time, but he has been a voice for growth and a reliable advocate for East Carolina University.

Those qualities also make him an excellent selection for the president's deficit panel. The bipartisan, 18-member commission has been charged with drafting suggestions for reducing a mounting annual deficit and to lower the crushing national debt.

During previous stints in Washington, Bowles led the Small Business Administration and served as chief of staff under President Bill Clinton. In that role, he successfully helped negotiate the bipartisan budget deal that set the course for a budget surplus before Clinton left office in 2001. A mix of spending cuts and higher taxes achieved that end, and might be the magic formula once again should the economic climate continue to show signs of life.

Bowles announced earlier this month his intention to leave his UNC post at the end of the year or as soon as a successor can be named. He cited his intention to serve no more than five years as reason for the decision, as well as a desire to take on new tasks.

With his immediate future now defined — and focused away from North Carolina's universities — the search for his replacement should be an expedited priority. Certainly Bowles would be welcomed to stay had he wanted to remain in that position, but his decision to answer his nation's call means that North Carolina, too, should prepare for a new direction absent his steady leadership, and do so with reasonable urgency.
Riley big part of new-look Pirates

BY NATHAN SUMMERS
The Daily Reflector

Lincoln Riley is no ordinary 26-year-old.
Although he might look his age, East Carolina football's new offensive coordinator is set to take on an experience far beyond his years. What makes Riley unique, however, isn't simply that he'll be in charge of a Division I college football offense, but that he seems undaunted by the notion.
The first man named to head coach Ruffin McNeill's ECU staff said he's already up and running when it comes to revamping the way the Pirates will attack opponents this season, and that he thinks pressure is a relative thing.
"I don't put a lot of stock into pressure," said Riley, who is literally half McNeill's age, at a media luncheon Monday introducing ECU's new football staff. "If you're prepared, it doesn't matter. Are you going to be nervous before a game? Every coach in America is going to be nervous before you go play a football game. If they say they're not then they're lying to you. The pressure is an outside

RILEY
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thing. We're not going to rely too much on outside things affecting what we do."
Perhaps the defining moment in the relationship of McNeill and Riley happened very recently, right before the two were reunited in Greenville. Although the men worked together at Texas Tech for seven total years — most of it with McNeill as the Red Raiders' defensive coordinator and Riley as a wide receivers coach — it wasn't until both were thrown out of their comfort zones that they truly became comfortable with one another.
When TTU head coach Mike Leach was terminated prior to the team's Alamo Bowl appearance last season, McNeill became a head coach for the first time and Riley became an offensive coordinator for the first time, albeit on an interim basis.
It worked, as Tech triumphed over Michigan State.
It was then that both men said they came to fully respect the other, and now that McNeill has given him the chance to make it a full-time partnership, Riley has embraced it.
"It wouldn't be as meaningful if it wasn't with him," Riley said of McNeill. "We were always pretty close while we were at Tech, and then going through the situation with the bowl game and us both being thrust into that position unexpectedly, I think that brought us a lot closer together. I think any time you go through something as emotional as that week was together, that brings you closer.
"It's a huge step up for both of us, and we both know that we both know that we're ready for that."
Riley is anything but shy when it comes to talking about his passion for winning, but his eagerness seems to be tempered with understanding that an aggressive approach is only part of the equation.
The former Tech walk-on quarterback from Muleshoe, Texas, seemed to always know coaching was his calling. After one season on TTU's scout team, Riley gave up his helmet and shoulder pads and became a student coach for three seasons under Leach. After working with the team's quarterbacks, he found his niche as the team's receivers coach, but also as one of Leach's most reliable men in the press box on game days.
When ECU spring practice begins March 22, the process of meshing the much bolder TTU-style offense with ECU's personnel will begin in earnest, and Riley said the only pressure he expects to feel is that which he and his fellow coaches place on themselves to succeed.
"Nobody wants to win as badly as we do, I promise you," Riley said. "You can find the biggest East Carolina fan out there, and I promise you I want to win more. I know they want to win really bad, and the support is wonderful, but with the hours we spend with this and the time that we invest in this, nobody wants to win worse than we do."
Contact Nathan Summers at nsummers@reflector.com or (252)329-9595.
McNeill eager to get to work

New ECU coach has young staff

BY J.P. GIGLIO
STAFF WRITER

GREENVILLE — If you add up the ages of East Carolina's three youngest assistant football coaches, you only get to 80, the same age as recently retired Florida State legend Bobby Bowden.

Whatever the Pirates lack in age, first-year head coach Ruffin McNeill expects the group to make up in familiarity with the system he's bringing from Texas Tech to ECU. McNeill's staff, finalized this month after the whirlwind process that landed him Greenville on Jan. 21, includes five assistants who worked alongside McNeill at Texas Tech. The only holdover from Skip Holtz's staff is veteran assistant Donnie Kirkpatrick, the recruiting coordinator.

Offensive coordinator Lincoln Riley (26 years old), offensive line coach Brandon Jones (26) and running backs coach Clay McGuire (28) give ECU one of the youngest staffs in the country. Add Marc Yellof (31) and Dennis Simmons (36), and the Pirates have five assistants under 40.

New defensive coordinator Brian Mitchell, 41, is a senior citizen by comparison.

Not that age is a concern for McNeill, who served as an assistant coach for 24 seasons.

"I know them, I trust them," said McNeill, 51. "I've seen them work."

Riley, McGuire, Jones, Simmons and Mitchell worked with McNeill at Texas Tech. They hope to replicate the success the Red Raiders had under coach Mike Leach, who went 84-33 in 10 seasons before being dismissed before their bowl game this past season.

McNeill, Leach's defensive coordinator the past two seasons, and Riley, who called the offensive plays in the bowl game, led Texas Tech to a 41-31 win over Michigan State in the Alamo Bowl on Jan. 2.

Riley began his coaching career as a sophomore at Texas Tech in 2003 and was McNeill's first hire at ECU. He plans to implement the "Air Raid" offense, which has ranked in the top three nationally in passing offense in each of the past five seasons.

"There are some different concepts that I like, but I'm not an idiot," Riley said. "I know we were pretty good at Tech."

The new coaching staff is eager to get to work on the field. The coaches have been able to watch the returning players lift weights and review two hours of film together per week, but they can't wait for the beginning of spring practice March 22.

"That's when I can make more of a definite decision on what we have," McNeill said. "It's sort of hard without pads on. I know we have some guys who can really run. I like the way our guys work, but I want to eye-ball 'em."

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Science center would be asset for Greenville

I am a graduate student attending East Carolina University. I just wanted to take a moment and voice my opinion on the potential of Greenville receiving a science center. I feel that this would enhance the learning and practical use of science and math for children as well as adults.

This project would bring an economical boost to Greenville now and in the future with the tourism of individuals, families and schools. Just as ECU has brought growth to Greenville and Pitt County, this would be a wonderful, welcomed addition to this fast-growing community.

JOHNNY STONE
Greenville
UNCG adds three-year option

UNC Greensboro plans to become the first public university in North Carolina to help students earn an undergraduate degree in just three years.

The university announced the initiative Monday, joining a growing number of schools across the country that have created similar programs to help students save a year of tuition. Last month, Mount Olive College, a private, liberal arts school based in Wayne County, announced a similar program.

At UNCG, as at other institutions with three-year programs, only the most motivated students need apply. Students will need at least 12 credit hours before arriving on campus, gained through Advanced Placement or other transferable credit programs. And they'll need to study year-round.

The payoff: about $8,000 saved in tuition, fees, room and board that they would have spent on that fourth year of college.
Frog reveals secret of monogamy

By Matt Walker
Editor, Earth News

The first monogamous amphibian has been discovered living in the rainforest of South America.

Genetic tests have revealed that male and females of one species of Peruvian poison frog remain utterly faithful.

More surprising is the discovery that just one thing - the size of the pools of water in which they lay their tadpoles - prevents the frogs straying.

That constitutes the best evidence yet documented that monogamy can have a single cause, say scientists.

Details of the frog's sex life is to be published in the journal The American Naturalist.

These frogs are truly devoted to their offspring, and to each other
Dr Jason Brown Duke University

"This is the first discovery of a truly monogamous amphibian," says biologist Dr Jason Brown, then of East Carolina University in Greenville, North Carolina, who made the discovery with colleagues Dr Victor Morales and Professor Kyle Summers.

The monogamous frog species Ranitomeya imitator, known as the mimic poison frog, is already known to science.

In recent years, Dr Brown and his colleagues have extensively studied many of its habits, which were filmed by the BBC natural history documentary series Life in Cold Blood.

After mating, a female mimic poison frog lays her eggs on the surface of leaves.

The male frog then takes away the tadpoles that hatch, carrying them one by one on his back to pools of water which collect in bromeliad leaves high up in the branches of trees.

Each of half a dozen babies are put into their own tiny pool, which he then looks after.

When the tadpoles become hungry, the male calls to his female partner who arrives to lay a non-fertile egg in each pool, which the tadpole eats as food.

But while the male and female frogs appear to act in unison, new experiments have revealed the extent of their fidelity.

Many animals appear to be monogamous, with males and females forming pairs that can often last a lifetime.

But the recent explosion in genetic analyses has revealed many of these so-called monogamous
relationships to be a sham.

While many animals might stay together and breed, they will often sneak off and cheat on their partners when they get a chance.

So Dr Brown and his colleagues decided to check out the mimic poison frog more closely.

They sampled the DNA of many pairs of adult frogs, and the subsequent generations of tadpoles they produced.

Of 12 frog families, 11 had males and females that remained continually faithful to one another, together producing all their offspring. In the twelfth family, a male frog mated with two females.

"Others have found evidence of social monogamy in amphibians where parents remain paired, however they didn't look at the genetics of these couples and their offspring to confirm this," Dr Brown told the BBC.

"Or they have looked at the genetics and observed that they are actually promiscuous."

So that makes the mimic poison frog the first confirmed monogamous amphibian.

That contrasts with another closely related frog called the variable poison frog, which the mimic poison frog imitates, having a very similar colour pattern.

Genetic tests on the variable poison frog (Ranitomeya variabilis) by the researchers show it is promiscuous.

Further research by the team has also revealed why the two frogs, similar in so many ways, are sexually very different.

The variable poison frog lays its eggs in much bigger pools of water, five times as large on average than those used by the mimic poison frog.

Also, the female plays no part in their raising, leaving their care to the male frog only.

When the researchers moved tadpoles from both species into different sized pools, they found that the tadpoles grew quickly in the larger pools, which contain more nutrients, but could not survive alone in smaller ones.

That strongly suggests that variable poison frogs don't need to stick together, as their tadpoles can survive in larger pools without feeding from their mothers.

Mimic poison frogs have been forced to take a different path, however.

Their tadpoles cannot survive without the care of both their father and mother, as there is too little natural food in their smaller pools.

So the adult frogs stick together.

Overall, the researchers believe they have found convincing evidence of an evolutionary chain of causation: changing the breeding pool size forced the mimic poison frog to change its system of parental care, with males and females working together. That then culminated in social and genetic monogamy.

If the pools were bigger, the frogs wouldn't have to remain faithful, as they wouldn't be tied by their need to work together to raise their brood.

"These frogs are truly devoted to their offspring, and to each other," says Dr Brown, who is now studying at Duke University in Durham, North Carolina, US.
To Impress, Tufts Prospects Turn to YouTube

By TAMAR LEWIN

MEDFORD, Mass. — There are videos showing off card tricks, horsemanship, jump rope and stencils — and lots of rap songs, including one by a young woman who performed two weeks after oral surgery, with her mouth still rubber-banded shut.

There is also Rhaina Cohen’s video, working off the saying “You never truly know someone until you have walked a mile in her shoes,” and featuring the blue sandals from her bat mitzvah, the white sneakers she bought cheaply in Britain, and the black heels in which she “stood next to Hillary Clinton.”

It is reading season at the Tufts University admissions office, time to plow through thousands of essays and transcripts and recommendations — and this year, for the first time, short YouTube videos that students could post to supplement their application.

About 1,000 of the 15,000 applicants submitted videos. Some have gotten thousands of hits on YouTube.

Tufts, which, like the University of Chicago, is known for its quirky applications, invited the YouTube videos. Along with the required essays, Tufts has for years offered applicants an array of optional essays — “Are we alone?” is one of this year’s topics — or a chance to “create something” out of a sheet of paper. So it was not too far a stretch, this year, to add the option of posting a one-minute video that “says something about you.”

Lee Coffin, the dean of undergraduate admissions, said the idea came to him last spring as he watched a YouTube video someone had sent him. “I thought, ‘If this kid applied to Tufts, I’d admit him in a minute, without anything else,’ ” Mr. Coffin said.

For their videos, some students sat in their bedrooms and talked earnestly into the camera, while others made day-in-the-life montages, featuring buddies, burgers and lacrosse
practice. A budding D.J. sent clips from one of his raves, with a suggestion that such parties might be welcome at Tufts.

A few students created elaborate productions.

“We’ve got some who are really good with the technology,” Mr. Coffin said. “There’s a real technical savvy out there in this generation, and this lets them show off their splicing, their stop action, their animation. Some of the engineering applicants show us what they’ve made. One kid is talking, and then all of a sudden, he’s in the water, to show off his underwater camera.”

While elephants are a common theme in the videos — Jumbo the elephant is Tufts’s mascot — only Michael Klinker went so far as to build a small remote-control blue-elephant helicopter that flies merrily around his backyard.

Some of the videos have developed a YouTube following. The popular favorite is probably Amelia Downs, with more than 6,000 views for her video combining “two of my favorite things: being a nerd and dancing,” in which she performs a bar graph, a scatter plot, a pie chart, and a sine and cosine graph.

“I tried tap dancing at first, because that’s what I do most, but we only have a cheap digital camera, and the sound came out badly,” said Ms. Downs, who is from Charlotte, N.C. “My best friend filmed me, and we did each shot once or twice. I did the editing in about an hour, and the computer crashed five times while I was doing it.”

Still, Ms. Downs said she thought it was “very cool” that Tufts invited videos.

For a number of colleges, this is the year of the video, what with Yale’s 16-minute YouTube offering, “That’s Why I Chose Yale,” a spoof of “High School Musical,” and “Reading Season,” a musical by admissions counselors at the University of Delaware.

Even without prompting, admissions officials say, a growing number of students submit videos. Maria Laskaris, the dean of admissions at Dartmouth, noticed the trend last year, and said this year had brought even more videos, mostly showcasing music, theater or dance talents.

For Tufts, the videos have been a delightful way to get to know the applicants.

“At heart, this is all about a conversation between a kid and an admissions officer,” Mr. Coffin said. “You see their floppy hair and their messy bedrooms, and you get a sense of who
they are. We have a lot of information about applicants, but the videos let them share their voice.”

Videos are genuinely optional, he said, so not having one does not count against a student — and a bad video would not hurt an applicant’s admission chances “unless there was something really disgusting.”

Mr. Coffin remains committed to the traditional essay-writing requirement. “We will never abandon writing,” he said. “No matter what, it’s important to be able to express yourself elegantly in writing.”

But, he said, it is good for Tufts to show new-media savvy as well.

“Kids who are 17 and 18 are very facile with new media,” he said, “and one of the challenges for colleges right now is to stay ahead of that curve.”

To his surprise, about 60 percent of the videos are from women, and two-thirds are from financial-aid applicants, easing concern that the video option might help the already-advantaged affluent applicants.

Mr. Coffin said he never worried about YouTube privacy issues.

“These kids blog, they tweet, they don’t seem to worry much about privacy,” he said. “Maybe I was naïve, but it didn’t occur to me that these videos would be so public, and so followed.”

While the application allowed students to put their video on any easily accessible Web site, he said almost everybody used YouTube.

Having seen the popularity of the videos — and heard from current Tufts students who want their favorite applicants admitted — Mr. Coffin now plans to put the best ones into a “Tufts Idol” contest once admissions season is over.

“So much of what we do in admissions is opaque, and that contributes to all the frenzy,” he said. “This is something that’s completely transparent.”
Fleeting Youth, Fading Creativity

The Wall Street Journal

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Fleeting Youth, Fading Creativity

The decline of successful young scientists could hurt innovation; tracking peak performance

By JONAH LEHRER

When James Watson was 24 years old, he spent more time thinking about women than work, according to his memoir "Genes, Girls and Gamow." His hair was unkempt and his letters home were full of references to "wine-soaked lunches." But when Mr. Watson wasn’t chasing after girls, he was hard at work in his Cambridge lab, trying to puzzle out the structure of DNA. In 1953, when Mr. Watson was only 25, he co-wrote one of the most important scientific papers of all time.

Scientific revolutions are often led by the youngest scientists. Isaac Newton was 23 when he began inventing calculus; Albert Einstein published several of his most important papers at the tender age of 26; Werner Heisenberg pioneered quantum mechanics in his mid-20s. At the time, these men were all inexperienced and immature, and yet they managed to transform their fields.

Youth and creativity have long been interwoven; as Samuel Johnson once said, "Youth is the time of enterprise and hope." Unburdened by old habits and prejudices, a mind in fresh bloom is poised to see the world anew and come up with fresh innovations—solutions to problems that have sometimes eluded others for ages.

Such innovation could be at risk in modern science, as the number of successful young scientists dramatically shrinks.

In 1980, the largest share of grants from the National Institutes of Health (NIH) went to scientists in their late 30s. By 2006 the curve had been shifted sharply to the right, with the highest proportion of grants going to scientists in their late 40s. This shift came largely at the expense of America’s youngest scientists. In 1980, researchers between the ages of 31 and 33 received nearly 10% of all grants; by 2006 they accounted for approximately 1%. And the trend shows no signs of abating: In 2007, the most recent year available, there were more grants to 70-year-old researchers than there were to researchers under the age of 30.

"This is definitely an issue we’re concerned with," says Francis Collins, the 59-year-old director of the NIH. "One thing I’ve learned from being in science is that the researchers in the early stages of their careers tend to be the ones with the fire in the belly. They’re not afraid of tackling the really hard problems." In recent years, the NIH has responded to this concern by increasing the percentage of its grants going to new investigators, or scientists applying for their first grant, from 25% to 30%.

According to the NIH, much of the shift reflects the aging of the baby boomer generation, which has increased the number of older faculty at major medical schools. Some critics, however, argue that the funding changes also reflect the conservatism of the NIH, as the agency increasingly favors less risky research. Mr. Collins says such criticism is mostly unwarranted.
The age distribution of NIH grants has significant implications for American science. It has become much harder for young scientists to establish their own labs. According to the latest survey from the National Science Foundation, only 26% of scientists hold a tenure-track academic position within six years of receiving their Ph.D.

The aging of science might also alter the productivity of the nation's labs. In recent years, psychologists have begun studying the relationship between age and creativity, trying to understand how increasing experience affects the way we think.

One theory suggests that creative output obeys a predictable pattern over time, which is best represented by an "inverted U curve." The shape of the curve captures the steep rise and slow fall of individual creativity, with performance peaking after a few years of work before it starts to decline in middle age. By the time scientists are eminent and well-funded—this tends to happen in the final years of their careers—they are probably long past their creative prime.

The inverted U curve was first documented by Adolphe Quetelet, a 19th-century French mathematician and sociologist. Mr. Quetelet's study was simple: He plotted the number of plays produced by French and English playwrights over the course of their life spans. He soon discovered that creativity had a sweet spot, which seemed to always occur between the ages of 25 and 50. (The data neatly confirmed Mr. Quetelet's own life story, as he was 39 when his magnum opus was published.)

Dean Simonton, a psychologist at the University of California, Davis, has spent the last several decades expanding on Mr. Quetelet's approach, sifting through vast amounts of historical data in search of underlying patterns. For instance, Mr. Simonton has shown that physicists tend to make their first important discovery in their late 20s, which is why it's a common joke within the field that if a physicist hasn't done Nobel-worthy work before getting married, then he or she might as well quit. According to Mr. Simonton, the only field that peaks before physics is poetry.

Why are young physicists and poets more creative? Mr. Simonton argues that they benefit, at least in part, from their willingness to embrace novelty and surprise. Because they haven't become "enculturated," or weighted down with too much conventional wisdom, they're more willing to rebel against the status quo. After a few years in the academy, however, "creators start to repeat themselves, so that it becomes more of the same-old, same-old," Mr. Simonton says.

This research has led some thinkers—such as the Stanford economist Paul Romer, who studies the role of new ideas in generating economic growth—to worry about the long-term implications of funding older scientists. "If we're not careful, we could let our institutions...slowly morph over time so that old guys control more and more of what's going on," Mr. Romer says in an interview in the book "From Poverty to Prosperity." "And the young people have a harder and harder time doing something really different, and that would be bad for these processes of growth and change."

But Mr. Simonton and others point out that increasing innovation is not simply a matter of funding the youngest researchers. While physics, math and poetry have always been dominated by their most inexperienced practitioners, other disciplines seem to benefit from middle age. Mr. Simonton suggests that people working in fields such as biology, history, novel-writing and philosophy might not peak until their late 40s.

Interestingly, these differences in peak age appear to be cultural universals, with poets peaking before novelists in every major literary tradition, according to his research.

What accounts for these variations? Mr. Simonton suggests that they're caused by intrinsic features of the disciplines. Those fields with a logically consistent set of principles, such as physics and chess, tend to encourage youthful productivity, since it's relatively easy to acquire the necessary expertise. (The No. 1 ranked chess player in the world today, Magnus Carlsen, is 19 years old.) Because the essential facts can be quickly learned, and it usually doesn't take that long to write a lyric poem, the precocious student is free to begin innovating at an early age.
In contrast, fields that are loosely defined and full of ambiguous concepts, such as biology and history, lead to later peak productive ages. After all, before a researcher can invent a useful new idea, he or she must first learn an intimidating assortment of details.

The decline in creativity is far from inevitable, and many individuals have increased their creativity late in life by pursuing new intellectual challenges. The novelist Thomas Hardy became a full-time poet in his late 50s and wrote his greatest poem at the age of 61. The mathematician Paul Erdos was famous for hop-scotch ing around his discipline, and his productivity never flagged: He ended up co-writing nearly 1,500 scientific papers, making him one of the most prolific mathematicians of all time. Of course, quantity isn't the only measure of creativity—and some argue that the more mature (in art, for example) do their best work later in their careers because they have greater wisdom and experience. The fall of the creative curve can be postponed.

Another possible factor in the decline of successful young scientists is the institutions and funding mechanisms that discourage the sort of risky research that produces major innovations. Tyler Cowen, an economist at George Mason University who has studied the funding bodies that support the arts, such as the National Endowment for the Arts, notes that these institutions frequently become more risk-averse over time. "They become more beholden to special interests and fall under greater political scrutiny," he says. The end result is an increasing unwillingness to support projects that might fail. Mr. Cowen notes, for instance, that the NEA has gone from directly funding "whomever they wanted, with very little scrutiny"—this led to many success and scandals, such as the furor over Robert Mapplethorpe—to a recent focus on Shakespeare, classic jazz and the teaching of poetry in high school. While such programs are laudable, they're also unlikely to produce major cultural innovations.

In recent years, a number of organizations in the scientific community have tried to fill this void. In 2006, the Howard Hughes Medical Institute opened Janelia Farm, a scientific research campus near Ashburn, Va. The ambitious goal, as outlined in its mission statement, is to "offer creative scientists freedom from constraints that limit their ability to do groundbreaking research." It fully funds all of its 250 resident scientists, which means that they don't have to apply for outside grants. Furthermore, the Farm explicitly targets scientists "at an early career stage," modeling itself after other successful research institutions, such as Bell Labs, which benefited from the exuberant creativity of inexperienced researchers.

It's not just non-profits that are borrowing elements from the Bell Labs playbook. 3M seeks out young researchers, fresh out of graduate school, for its prestigious Corporate Research Laboratory in St. Paul, Minn. The scientists don't stay long. Larry Wendling, the vice president in charge of the lab, says his goal is to have 70% turnover every five years, with the older scientists migrating to other research positions in the company. "We encourage people to move because it keeps them excited," Mr. Wendling says. "It's a way of making sure they're always getting new challenges."

The Grand Challenges Explorations Program, established a few years ago by the Gates Foundation, dispenses grants in the field of global health. The goal of the program is to encourage more unorthodox research. Instead of asking applicants to fill out a lengthy application or show reams of preliminary data, the Gates Foundation only asks for a two-page description of the creative concept. These proposals are then sent to a variety of reviewers, each of whom is instructed to pick a single project to fund. Those projects are then given $100,000.

The end result, says Andrew Serazin, program officer at the Gates Foundation, is that many risky projects have been given a chance to succeed. In the most recent round of applications the funding rate of post-docs and grad students—scientists at the start of their careers—was three times higher than that of their established professors. "One of the tragedies of science is that many of the most talented people with the best ideas don't have access to capital," Mr. Serazin says. "We're trying to fix that."

—Jonah Lehrer is the author of "How We Decide" and "Proust Was a Neuroscientist."
The False Security of Prepaying Tuition

Participants in Early Payment Plans Learn Their College Bills Aren’t Always Covered; States Scramble to Shore Up Funds

By JANE J. KIM

Patti Lambert wanted to pay the college tuition for her eight grandchildren. So for the past 16 years, the real-estate agent signed onto the state of Alabama’s prepaid tuition program. She invested more than $100,000—a daunting amount but a good deal because the prepaid plan promises to cover tuition no matter how much it increases.

Or so she thought. Facing a severe funding shortfall, Alabama is trying to renege on its promise to foot the whole bill. Instead, the state wants to pay the average tuition rate, potentially forcing schools and families to make up any difference.

"There’s nothing more shocking than having something that you thought was so protected just pulled out from under you," said Ms. Lambert of Decatur, Ala. She may not get that money back if the plan runs out of funds in 2015, as one study predicted. But even if she recovers her principal and 1% interest, she could be out thousands of dollars if tuitions continue to rise. Alabama’s Treasury officials declined to comment, citing pending litigation against the state’s prepaid plan.

"Everything about the way the plan was promoted implied that it was backed by the state," Ms. Lambert said.

Across the nation, college prepaid plans are operating in the red, putting their promises to investors like Ms. Lambert in jeopardy. For now, the states still are paying tuition as they agreed. But the fine print in some state contracts gives them some wiggle room to pay out less than the promised amounts.

"There’s an aura of guarantee around many of these programs," said Tim Ranzetta of Student Lending Analytics. "But when you dig into it, it’s often a lot less than you’d expect."

Prepaid plans—a type of 529 plan where qualified educational distributions are tax free—allow families to make an up-front payment in exchange for future tuition contracts or credits. They can prepay either the full tuition bill or a portion of it, in one lump sum or over time.

In general, the tuition guarantee applies to state schools in the state where it is offered, though you can use the money to pay for out-of-state or private schools, though the amount is likely to fall short of the full cost of tuition. If a beneficiary elects not to attend a college covered by the plan, the investor can get his principal back, usually with interest. If he receives more than his contributions, the excess is subject to tax and penalties unless, within 60 days, he rolls it over to another 529 plan.

Investors had flocked to prepaid plans in recent years as they witnessed skyrocketing tuition and huge market
losses on their monthly statements for more-popular 529 college savings plans, which often invest in mutual funds.

**Tuition Assurance**

Prepaid college plans have different levels of guarantees.

- **Full Faith and Credit:** States promise to cover any shortfalls if the fund cannot meet its obligations.
- **Legislative Appropriation:** States legislatures are required to consider an appropriation to cover shortfalls.
- **Fund Assets:** Some plans are backed solely by the assets in the plan.

**Other:** Some plans rely on schools to make up shortfalls or use other reserves, such as unclaimed property funds.

Independent 529 Plan: Kentucky, Massachusetts, Texas Tuition Promise Fund, West Virginia

Note: Plans in Alabama, Kentucky, Ohio, South Carolina, Texas and West Virginia are currently closed to new enrollments. Colorado's plan is being wound down.

Source: WSJ research

But market losses also hammered prepaid plans—just less visibly than conventional 529 savings plans. Prepaid plans hold roughly $15 billion in assets, and their investments are still recovering from recent stock-market declines. At the same time, schools are jacking up tuition to cover state budget shortfalls. That is forcing states to raise prices and impose fees—a move that makes it more expensive for new families to join and threatens to damp future cash flows into the plans, making them less solvent.

Some states now are asking for a bailout. In Alabama, lawmakers are considering legislation that, among other things, would inject at least $236 million into the prepaid program. In South Carolina—whose plan is estimated to run out of money by 2017—the General Assembly is considering funding options to keep it going, such as making a lump-sum payment of $69 million this year. Included in Tennessee's proposed state budget is a request for a $15 million infusion into the prepaid plan, while West Virginia recently received $8 million from the state's unclaimed-property fund to shore up its program.

For the prepaid plans, it's déjà vu. After the dot-com bubble burst earlier this decade, a number of states—including West Virginia, Ohio, Kentucky, and Texas—barred new participants when poor market returns, paired with sharp tuition increases, bled reserves faster than expected. That allowed them to keep their tuition promises to existing participants.

But with state funding for higher education waning, more state legislatures are giving universities the authority to increase their own tuition above what is set each year by lawmakers. "The result of tuition deregulation is sometimes a spike in tuition rates" which often results in higher prices for families, said Joe Hurley of Savingforcollege.com.

After Florida passed a law in 2007 that allowed the state's research universities to charge a "differential" tuition on top of state's base tuition, prices more than quadrupled for one of its plans aimed at covering that difference. Washington expects prices for its prepaid plan to increase by at least 14% this fall—in step with tuition increases. Michigan raised contract prices 15% for the current enrollment period.

Faced with the prospect of hefty tuition increases, Nevada, which is waiting for a state-legislature committee to approve a $5 million loan to bolster its prepaid plan, raised rates about 10% this year, up from 6% and 7% increases in prior years. So families buying a four-year university plan now have to pay $20,250 for a newborn if they are making a lump-sum payment, up from $18,350 last year.

But as more states raise prices, some parents and advisers are backing off the plans. Fred Amrein, a Wynnewood, Pa., adviser, used to be a fan of Pennsylvania's Guaranteed Savings Plan. But after the state raised fees last fall, he stopped using it as an option for some of his clients. "Those changes were pretty expensive," he said. The state tacked on some up-front premiums up to 8% and also changed its annual account-maintenance fee to 0.49% of assets from a flat $25 fee.
Investors need to read the fine print. Five state plans are backed by the full faith and credit of the state. Other states, including Illinois and Maryland, are required by law to consider helping out the funds if there is a potential shortfall. States including Alabama, Michigan, Nevada, Pennsylvania, and Tennessee are backed by the funds' assets, meaning investors can lose money if the funds run dry and states don't rescue them.

If that is the case, Ms. Lambert, at 64 years old, frets that she doesn't have enough working years ahead of her to make up any tuition shortfall for her grandchildren. "I bought tuition so my grandchildren would not be crippled with a bunch of student loans," she said. "That was my nana legacy."

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