

lecturers intend to present the controversial theories as fallacies irreconcilable with scientific evidence. But the fact that these alternatives to evolution have been proposed for formal discussion has sparked concern among the science community.

The Times Higher study reports that there are at least 14 academics in science departments who consider themselves creationists. Some are heads of departments, seven lecture in the life sciences and seven are professors, they report.

David Read, vice-president of the Royal Society, said: "It would be undesirable for universities to have to spend a lot of precious resources teaching students that creationism and intelligent design are not based on scientific evidence. It is pretty basic stuff," the study reports.

It says there is concern from some of the country's leading scientists at the findings.

John Armour, professor of human genetics at Nottingham University, said he thought giving two lectures on alternatives to evolution was "like geologists spending time discussing the Earth being flat."

Paul Nurse, Nobel Laureate, insisted that creationism should not be discussed as science. "But this issue should be discussed in universities as it would help clarify what is and what is not science," the study says.

But in spite of this battle, Darwin memorabilia and other material are attracting growing interest. The world's largest collection of editions of Charles Darwin's works was bought last month by Britain's Natural History Museum for nearly £1 million, the most expensive acquisition in the museum's 125 year history. Antiquarians, Chris and Michele Kohler collected about 3,500 items, filling four rooms of their house, over 20 years. The collection includes almost everything Darwin published from 1829 onwards.

The museum's director said: "This acquisition makes the museum the ultimate Darwin

resource. Darwin brought about a revolution in how humans think about themselves and the natural world. Combining this collection with our existing holdings gives us an unprecedented insight into how the theory of evolution developed, and how Darwin worked."

"Darwin constantly reworked his ideas, and these continual changes can only be seen if all the books are in one place," said Chris Kohler.

And for Darwin's champions, there is another event this month. A rare, "striking" and detailed letter in which Darwin defends his theory of natural selection goes for auction. The six pages are a response to doubts about his theory expressed by the campaigning Victorian clergyman Rev. William Denton.

The letter is new to scholars and no other letter from Darwin to Denton is known to exist. "It's a lovely letter", said Gabriel Heaton, a manuscript specialist at Sotherby's. He wrote the letter on October 15th 1860, within months of the publication of *The Origin of Species*. In it, he patiently and politely defends his idea. "I am very far from being surprised at anyone not accepting my conclusions on the origin of species... I have some confidence that I am in the main right."

The letter going on sale this month, is signed by Darwin. As in *The Origin of Species*, he uses specific examples to make his point. For example, he discusses the origin of deafness in cats and why pigs in Florida are black.

Paul White, of the Darwin Correspondence project at Cambridge University library, agreed the letter was important. "It's unusual in its detail," he said.

The letter is expected to command £20,000–30,000.

With the bicentenary of Darwin's birth and the 150th anniversary of the first publication of *The Origin of Species* due in the next few years, researchers hope that these events will help provide a prop to garner public interest and support and also help stem the anti-evolutionary tide.

Q & A

Lynne Cassimeris

Lynne Cassimeris is a professor in the Department of Biological Sciences at Lehigh University in Bethlehem, Pennsylvania. She grew up near Albany in New York state, received her Ph.D. from the University of North Carolina and was a postdoc at the University of Pennsylvania. She studies mitosis and the microtubule cytoskeleton.

What turned you on to cell biology in the first place?

After college, I knew I liked biology but didn't know where I wanted to focus, so I took a job as a lab technician to gain some research experience and sort things out. I spent an afternoon in the library one day — it must have been a slow day in the lab, or maybe my boss was out of town — and read a review on membrane recycling (Steinman *et al.* 1983. *Endocytosis and the Recycling of Plasma Membrane*. *J. Cell Biol.* 96, 1–27). This paper really shocked me because it made me realize how dynamic cells are — that cells are not filled with static structures, as textbooks had led me to believe, but rather that they are these incredibly dynamic things, with components moving all over. That article led me to take a cell biology course co-taught by Conly Rieder. Conly got me interested in mitosis, and after I ran into him at a local bar, he advised me — pushed me would be more like it — to work with Ted Salmon at the University of North Carolina for my Ph.D.

It was a perfect time to join Ted's lab. Ted was just back from a sabbatical with Dick McIntosh, where they had developed methods for photobleaching fluorescent tubulin and demonstrated the rapid turnover of spindle microtubules. Within my first year of graduate school, Tim Mitchison and Marc Kirschner's paper describing microtubule dynamic instability came out (*Nature*. 1984. 312, 237–42), as did Ron Vale's purification of the

first kinesin motor (Cell. 1985. 42, 39–50). It was like a new frontier was suddenly open in the mitosis field and Ted's lab had the microscopes and lasers to let us answer questions that no one would have imagined even a few years before. But the best thing about working with Ted was that he always challenged me to do things that I thought impossible at first glance. He didn't push, he would just suggest an idea and let me run with it — after I figured out that it wasn't impossible after all.

For my post-doc, I moved to Sally Zigmond's lab at the University of Pennsylvania to study cell locomotion and the actin cytoskeleton. Being in Sally's lab allowed me to interact with a group we called the Penn Ladies Actin Club (Sally Zigmond, Annamarie Weber, Vivianne Nachmias and Jean Sanger). The actin field had a long history of identifying proteins that regulate actin assembly and defining their mechanism of action. Although I didn't stay in the actin field, I was much better prepared to study microtubule binding proteins because of my experiences at Penn.

What is the best advice you've been given? Conly Rieder's advice, that I should work with Ted Salmon is the most significant in that it defined my career path. Ted Salmon once told me that "the grass isn't greener, it's just different" when I was considering the merits of a position in a medical school (with little teaching) or one in a biology department (with teaching undergraduates). He is right, there isn't one position that's better than any other, each has its own sets of responsibilities, expectations and rewards.

Others have given me great advice, but I think the most important thing for someone starting out is to find the right mentor. Ted Salmon and Sally Zigmond were fabulous mentors and taught me so much by the examples they set. Each is kind, generous and supportive, yet very critical and with high expectations for the work that comes out of

their labs. I try to be that sort of mentor to my own students, but you'd have to ask them if I succeed.

What has been your biggest mistake? I have a quote from a Margaret Atwood novel pasted to my refrigerator: "Good judgement comes from experience. Experience comes from bad judgement." I don't know which mistake is my biggest, but my judgement gets better all the time.

Do you have a scientific hero? Darwin is quickly becoming my scientific hero because he synthesized so many observations into one coherent theory of evolution by natural selection. His theory is beautifully logical and explains so much of what we see in biology.

Speaking of evolution, your colleague Michael Behe is one of the leading proponents of 'intelligent design': care to comment on what it's like to be in a biology department that includes an 'ID' proponent? An article in the student newspaper falsely accused me of taunting Mike with chants of "Darwin's your daddy", so I guess that's another reason why Darwin is my science hero — he's my daddy too.

On a more serious note, Mike Behe's book *Darwin's Black Box* was published about 10 years ago — just after he joined our department from Chemistry — so we've been exposed to 'ID' for some time now. Before his book was published, Mike asked me to read a couple chapters to check his scientific accuracy. I was surprised that he had these non-scientific ideas about irreducible complexity and I thought that no one would ever buy this book or take it seriously. Clearly I am out of touch with the views of many Americans! From this experience I've learned how important it is for scientists to communicate with the general public and to not assume that they understand what it means to be a scientist. Mike has a gift for speaking to the public in terms that they find compelling. I'm

trying to learn to do this at least as well as he does.

Mike's ideas led all of us to think more about evolution and how important it is to our own fields and to biology education. Before Mike's book, evolution was something that many of us took for granted and didn't consider all that much. In the years since his book was published, I've hosted seminar speakers studying horizontal gene transfer in bacteria and the evolution of altruism within groups. Lately I've been thinking about how mitosis might have evolved. So, I have to credit Mike with inspiring me to think about evolution much more than I had before.

Having a major 'ID' proponent in our department has been much more challenging over the past year because of the publicity surrounding the US Federal Trial in Dover, Pennsylvania. The press coverage has quieted down now and I don't run into reporters or camera crews when trying to go from my office to my lab. As a department, we've taken a public stance against teaching 'intelligent design' in science classes (www.lehigh.edu/~inbios/news/evolution.htm), while defending Mike's academic freedom to express his own ideas. It's a lot easier to support someone's right to free speech when you agree with them. Most of us hope that the controversy in the US will die down, but history suggests that some form of creationism will return again. When it does come back, as 'ID' or something else, we're now much better at speaking to the press and the general public about this topic. Some of us have spent considerable time and energy devoted to understanding the general public's response to 'ID' and how best to discuss the topic without threatening anyone's religious faith. So, it's a challenge to have an 'ID' proponent down the hall, but his ideas have made us better scientists and more conscientious citizens.