People & Ideas

Anthony Hyman: From unlikely scientist to Royal Society Fellow

Hyman tinkers with cellular machines in his Dresden workshop

G rowing up in rural Devon, England, Tony Hyman's first obsession was collecting old sheep bones from the moors. Next came an obsession with bicycles and cars. Eventually, an obsession with biology developed, and this one stuck.

Hyman has spent his career studying the mechanics of microtubules. He has investigated how these components of the cytoskeleton control cell division, spindle

"I've always been fascinated by machines. So as a biology undergraduate, I got totally fascinated by cellular machines." position, and polarity (1–3) and has also described how microtubules are built-up into cellular structures and how they're taken down (4, 5).

The majority of Hyman's work has focused on cell division in the nematode *C. ele*-

gans, but he has also worked with yeast, frog, and more recently, human cells (6). Determining the extent to which micro-tubule mechanisms are conserved between humans and these other species is a key issue for the future, he reckons.

Hyman has been the director of the Max Planck Institute of Molecular Cell Biology and Genetics in Dresden, Germany, since 1999. In 2007, he was awarded Fellowship of the Royal Society. Despite having such an enviably successful career to date, he confessed in a recent interview that he sometimes considers a job as a bicycle mechanic.

AN UNCERTAIN START...

Did you always want to be a scientist? When I was growing up, I had a career plan to become a bicycle mechanic. Then, when I went to secondary school, I got interested in biology, and when I started studying for my A levels, my plan was to be a doctor.

In those days, you had to get three A grades at A level to be a doctor. But my

grades were not good enough. Since I didn't do well enough to get to university, I decided to work in a lab as a technician.

Where was that?

University College London, with Terry Preston. He was working on protozoa.

At that time, I think I was still considering becoming a bicycle mechanic. I was going to open a bicycle shop with a friend of mine, Raph Mizraki, who in fact went on to become a well-known jazz bass guitarist. But, working in the lab, I started to get interested in biology again. Terry said, "Why don't you come to the university here?" In those days, there wasn't that much bureaucracy involved. They were on the lookout for people who were interested in science, and I clearly was. The terrible thing now, I think, is the way everything's become so grade orientated. I'm not 100% certain that's the best way to select scientists.

If you were going through the system now, you'd be overlooked, perhaps?

I'm sure I would, yes. Nowadays, I wouldn't have gotten in anywhere. I might have ended up as a bike mechanic. But it wouldn't have been a bad business. I'd probably have been just as happy.

After graduating from UCL, you did your Ph.D. with John White in Cambridge. What made you choose his laboratory?

I've always been fascinated by machines. You know, like bicycles and so on. When I was a child, I used to take apart my father's car. He'd go to take the car for a drive on a weekend and discover I'd dismantled the engine.

So as a biology undergraduate, I got totally fascinated by cellular machines. When I went to the Laboratory of Molecular Biology (in Cambridge) to look for a Ph.D. project, John was the only supervisor interested in cellular structures and how they worked. Everybody else was interested in DNA.



Anthony Hyman

...TO LIFE AT THE TOP

You've moved back and forth between the US and UK a lot in your career. Now you're settled in Germany. How do you think science compares across the countries?

I feel that the UK does the best job of giving young people independence as early as possible. I think that's absolutely the way to go in science.

I had my first group when I was 29. That was fairly standard in England. You finish your Ph.D. when you're 25, then your postdoc at 29, 30.

The US is also committed to making people independent, but it happens very late. They have very long Ph.D.s, long postdocs, so people are a lot older by the time they start a lab.

On the other hand, the US (normally) has fantastic funding, so people get funded to do what they want.

You also have a great sense of excitement about science in America and plenty of enthusiasm and encouragement.

And in Germany?

The great thing about Germany is that there's a commitment to doing things properly. The conversations in Germany tend to revolve around what is the right way to do the job.

Also, the Max Planck Society, of which I'm part, is a fantastic organization. There's lots of money. Well, not lots, I should never

Text and Interview by Ruth Williams ruth.williams@rockefeller.edu

say that! But there's enough money, and there's no bureaucracy involved in getting it. They provide money without your having to write grants all the time. So it lets you do longer-term projects.

The big problem with the American system is this constant short-term funding; it makes it more difficult to take on ambitious projects because you're always worried about the next funding source. That's tough in England, too.

You are now director of the Max Planck Institute in Dresden. Which was the bigger leap for you: going from postdoc to lab leader or from lab leader to director?

It's difficult to say. They're both pretty big. I think going from postdoc to group leader is an enormous challenge, because suddenly, instead of being able to focus on one thing, your own research, you have to focus on everybody else's too, as well as other things. You get what's called PI disease, where you suddenly go from being a great experimentalist to not being able to get even the simplest experiment to work. That's a big shock!

But the group leader to director step was also an enormous challenge. I remember feeling like a frightened rabbit when people came to my office at that time, trying to keep everything together.

Lots of multitasking?

Yes! You're involved in the tactical, day-today issues, the experiments. You have to run your own lab. But you also have the strate-



Hyman still finds time for his other passion.

Hyman studies microtubule organization and dynamics.

run an institute. You have to think about the science that the institute should do, and to plan for the enormous amount of technical equipment that's needed. We had to build the institute, de-

gic issues of how to

sign the labs. It's all a lot of fun, but each one of those things takes a different aspect of your brain. It's very tiring.

How do you juggle it all?

Microtubules

Centrioles

I don't know. Probably poorly. [*Laughs*.] I just think about things as they come along. I don't have my day structured, I like everything to be loose. That's one of the things I always aim for in management style. Avoiding meetings is one of the key things! But I don't mean scientific meetings!

I keep my office door open so that people can come and talk to me anytime they want. If I don't want to be disturbed, I go home.

The other key thing is extremely fast decision making. With most decisions, it doesn't help to think about them. If you go with your instinct, you're going to be right most of the time.

KEEPING A HAND IN

Do you feel you're being taken further and further away from the nitty-gritty of science?

My father, who had a career in industry, gave me a piece of advice. He told me that things tend to fail on this level if the senior managers don't take any interest in the technical details of the places they're running. That's one thing I try to keep a

focus on always.

I don't know what my students would say, but I do try to still think about the nitty-gritty.

What's your lab working on at the moment?

We are continuing our work on asymmetric cell division in the *C. elegans* embryo. I see the next challenge as being to determine how applicable that is to different systems. It's a particularly exciting time for cell division right now because there's all the yeast genetics, and there's the *Drosophila* genome-wide screens, the *C. elegans* genome-wide screens, and now HeLa cell genome-wide screens. It's probably the first system where we're going to have

genome-wide screens in four different organisms. We'll be able to discover a lot about mitosis and how it's varied.

One other thing we're really excited about right now is looking at the localization of mitotic proteins and using the localization to "I guess now I can no longer be considered an enfant terrible."

try to predict function. For this, we're working together with our neighbor here, Frank Buchholz. So far, we've tagged about 500 different proteins with GFP in HeLa cells.

This year, you became a Fellow of the Royal Society. Congratulations. Tell me what that means to you.

It was very nice, very nice. I guess now I can no longer be considered an enfant terrible. Now, I'm clearly part of the establishment. That's the only change it's made.

So you don't have any regrets about not becoming a bicycle mechanic?

No. Occasionally, when I go into a bike shop and watch them, sitting there, relaxing with their bicycles, and I think of all the stress I've had in the day, I do think what a nice job it would have been.

But the problem is that, even if I had become a bicycle mechanic, would I have stayed one? Of course not. I would've gone on to run a bicycle shop, and then to try and have fleets of bicycle shops. That's what happens. I'd be no different in any career. JCB

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