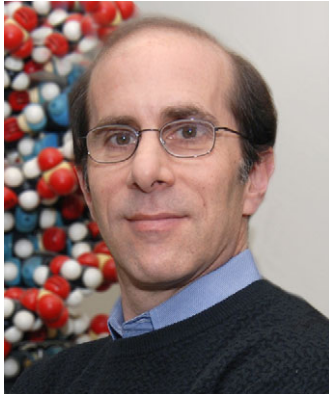


## An interview with Ken Zaret

Ken Zaret is Joseph Leidy Professor in the Department of Cell and Developmental Biology, the Associate Director of the Institute for Regenerative Medicine, and the Co-Director of the Epigenetics Program at the University of Pennsylvania School of Medicine. He agreed to be interviewed by *Development* and talks about his life as a scientist.



### What originally set you on the road towards a career in science?

As a teenager, I loved puzzles of all kinds, and doing science is about solving puzzles. I have also always enjoyed being out of doors. Hiking is one of my favorites, and I originally wanted to be a naturalist; traveling the world and studying different forms of life was really appealing. In high school, I received a fellowship from the National Science Foundation to do research at a medical school in Philadelphia, which exposed me to laboratory science. Then, in college, I had several inspiring biology professors. When I took biochemistry, it all came together and I knew I wanted to do research.

### How has your career progressed and what has influenced your decisions about institutions and locations?

When I was 30, I started my own lab at Brown University, which attracts great students, has a highly collegial faculty and, being located near Boston, is part of a larger scientific community. I benefited from the stimulating environment – and I learned developmental biology. After about 13 years, I was recruited to the Basic Science Division at the Fox Chase Cancer Center in Philadelphia. This was a good move for me, as I enjoyed the focus of being at a research institute instead of a university but, after 10

### Interview by Kathryn Senior\*

Freelance Science and Medical Writer

\*Author for correspondence  
[kath@kathrynsenior.co.uk](mailto:kath@kathrynsenior.co.uk)

years, Fox Chase began to pursue mainly translational research and I felt it was right for me to move back to academia. I have been at the University of Pennsylvania since then and I greatly enjoy the diverse and active research life that it offers; working there is highly stimulating.

### What encouraged you to look at the way the pancreas and liver develop in mammals?

I have always been interested in cell type choices in development because they must reflect the action of dramatic gene regulatory mechanisms, which would be fun to understand. The models I grew up with were lysis versus lysogeny of bacteriophage lambda, bacterial sporulation and yeast mating type switching, each of which has a distinct underlying regulatory mechanism. I figured that vertebrates would have a lot more in store. So I shifted my focus to understanding how the endoderm makes the choice to activate the genetic program to develop into liver or into pancreas in mice. In part, the selection of the experimental model was based on the large size of the liver, allowing us to identify tissue-specific regulatory factors and then later determine their developmental function.

### What is the most frustrating challenge that you are currently facing in your research?

I can think of two challenges. When I was a young scientist, molecular techniques were performed manually and required an understanding of how things worked, as well as skills in troubleshooting and inventing new methods. The challenge for today is that much of our science has become driven by kits and automation. Although it is amazing to see how much information we can now wrangle from a small population of embryo cells using these techniques, I fear that we are raising a generation of scientists who won't sufficiently know the underlying principles of what they are doing to be as inventive, and perhaps as critical, as we had to be in the past. The second challenge is to

properly integrate genomic thinking and the requisite mathematical analysis into daily life as a developmental biologist and experimentalist. To help solve that, we have recruited a bioinformatics specialist to work in our group, instead of relying on a bioinformatics facility located elsewhere.

### The challenge is to properly integrate genomic thinking and the requisite mathematical analysis into daily life as a developmental biologist and experimentalist

### You have three current roles, including being Associate Director of the Institute for Regenerative Medicine; how do you balance your time between your different roles?

Get less sleep and try to get work done while traveling. I also could not do it without good support staff.

### What would you like to achieve in the next decade?

A much better understanding of how multipotent progenitor cells become programmed to activate certain genetic programs while being restricted from others. To discover the extracellular signals that induce pancreatic beta cells from endocrine progenitors. To be able to examine the chromatin state at specific genes in a single cell. To gain a more complete, dynamic view of early endoderm development and differentiation. To take it easy, once in a while.

### Do you enjoy teaching as much as your research work, and how do you mentor young scientists in your group?

Teaching, to me, includes working with graduate students in seminar courses, mentoring new members of our group, public speaking, as well as giving straight

lectures in the classroom. Regarding the latter, this past year I helped initiate a course for undergraduate, non-science majors entitled ‘Stem Cells, Science and Society’. It was refreshing to help students from outside the world of science begin to appreciate the wonders of what we do. With people in my lab, I like to give them an outline of several projects, lots of reading, and then work with their ideas to shape a research program. I believe it’s much more productive to get the students or post-docs to initiate ideas, with your guidance, than to hand them a list of things to do.

### **I believe it’s much more productive to get the students or post-docs to initiate ideas, with your guidance, than to hand them a list of things to do**

#### **When did you become an Editor at *Development* and what do you hope to achieve?**

I became an Editor of *Development* about five years ago. Having been an Editor of *Molecular and Cellular Biology* in the 1990s and, owing to the work load, swearing never to do it again, I am not entirely sure how history repeated itself! Jim Smith, whom I respect highly, had become Editor-in-Chief of *Development* and asked me to join him. I had read many influential papers in *Development* and we published several papers there that meant a

lot to my lab. My hope, in joining, was to try to maintain quality and increase the number of papers on the role of epigenetics, chromatin regulation, and genomic approaches in *Development* – and that still remains my goal today.

#### **How would you like to see *Development* increase its influence in the future?**

*Development* is the best journal in the field to be run by practicing scientists. This sets it apart from other excellent high-profile journals and hopefully allows us to make editorial decisions based more on creativity, quality and importance to a field rather than what can be perceived as ‘hot’ today. On the other hand, we do need to be alert to new trends, approaches and ideas in the field that will define the future of developmental biology. We might need to do a better job of informing people that there is still much to learn, and help the field identify and enhance new areas of developmental biology.

#### **What do you feel is the main benefit of the journal in this field of science?**

It provides a venue for top-notch basic developmental, stem cell and regenerative biology. It’s true that there are other venues, but the field knows that a *Development* paper usually means something; the bar is set consistently high. Authors can interact with working scientists as Editors, providing a different outlook on how a study is perceived. The support staff are constantly working to maintain a superior

appearance and quality to the published images, which is crucial in our field. Jane Alfred and her colleagues are setting up different web-based environments that will allow *Development* to provide new kinds of content relevant to developmental biology. I believe that we will see many enhancements to the journal, as the concept of a journal expands into the virtual world.

#### **What do you do to take a break from science?**

Hang out with my wife and kids (ages 13 and 15), hike, walk the dog, play tennis, read, do photography, or windsurf. I enjoy the break, and yet often I have had useful ideas about science while doing other activities.

#### **If you were stranded on a desert island for a year, what three things would you take and would this be a good experience or a nightmare?**

My family, my previous dog Roscoe, and a case of single malt would be great.

#### **What would people be most surprised to learn about you?**

At one point I quit university, traveled, moved to the mountains in New England and secured a job as a welder for a year. I knew nothing about it beforehand but soon learned how to make all kinds of large objects out of metal. However, I missed my friends and went back to school and started applying myself again in the sciences. I highly recommend such time off to many students.