

## An interview with Ben Scheres

Ben Scheres is an expert in plant development. He has been investigating development in *Arabidopsis* at Utrecht University, The Netherlands, since 1990, where his group uses the root tip as an easily accessible supply of plant stem cells. Ben agreed to be interviewed by *Development* to talk about his interest in stem cells and the beauty of self-organisation in plants.



### When did you first realise you were going to follow a science career?

When I was 14, we visited a fancy science museum called 'Evoluon' and I bumped into a very lucid explanation of how DNA 'encoded life'. I still remember the big spiral staircase model and the impression it made on me. Even as a small kid I had often wondered how life works – and here was a model that seemed to make it possible to start to understand some of that!

### What first made you interested in stem cell research in plants?

For my PhD, I chose a research project in the field of plant-microbe interactions. At that time, breakthrough papers in fly and worm development were appearing thick and fast and I was fascinated by them. I realised, then, that we were nowhere near being able to describe the development of plants in similar detail. I looked for a plant system that had the same clear cellular relationships that we see in *C. elegans* and would present similar genetic possibilities. It was also important for the system to have the developmental flexibility that characterises plants. *Arabidopsis* roots fitted the bill and I have been hooked on them ever since.

### Interview by Kathryn Senior\*

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### What is the most striking difference between animal and plant stem cells?

First of all, plants do not set apart a germline, so all stem cells are somatic. In animals, many somatic stem cells have quite a restricted potential, but this is not the case in plants. There are far fewer restrictions and stem cells can also be easily regenerated. Induced pluripotent stem cells in animals have created quite a stir but this is no big deal in plants. Of course, this raises lots of questions and we'd like to understand much better what determines this difference.

### What research question is on your mind at the moment?

Our work in plant stem cells is looking into the regulatory networks that span many levels of organisation, from molecular complexes to tissue mechanics. It is becoming very clear that gene and protein networks in plants are intimately intertwined. Our group and others focusing on this area have used mathematical and computational modelling, as well as experimental work, to show that these feedback circuits can generate spontaneous patterning processes from stem cell groups. However, we still need to define key components, work out how circuits operating at different levels connect, and develop models that will help us to understand the self-organising aspects of pattern formation in much greater depth.

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### Where would you like to be and what would you like to be doing in 20 years time?

That's a difficult one. In my mind, goals are floating objects and are likely to change a lot over 20 years. I guess I don't care where I will be. As long as I am close enough to nature to enjoy the outdoors and still interested in understanding things.

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

I joined the team in 2001 as the successor of Keith Roberts. Keith did an incredible job getting the plant community connected to *Development*, so I was able to simply jump on the bandwagon. I wanted to be an Editor of *Development* because I believe very strongly that plant biologists have interesting insights that can help all developmental biologists. I still want to do more to achieve full integration, if only because few people seem to have the time anymore to scroll through the entire contents of a journal. I am encouraged when I see plant and animal developmental biologists engaging in animated and exciting discussions and hope that I can do my bit to facilitate more of these in the future.

### What do you enjoy about your role with the journal?

Research papers that come in often report a really interesting observation but then raise a whole load of questions. It is great to witness how many of these manuscripts mature through the review process and achieve an end product that pleases the authors, reviewers, myself and, ultimately, the *Development* readership. This maturation process, which reflects an interplay between the authors, reviewers and editor, is an excellent example of how to work synergistically.

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

The journal provides a continuous stream of high-quality developmental biology research and reports work in very diverse systems. The production quality to

cost ratio is excellent and the journal always comes across as being highly professional.

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

Many things, but mainly lots of sports. Failing to follow the advice of 'don't teach an old dog new tricks', my sons have forced me to learn snowboarding. I do manage to stay on the board to some extent, which means there is hope, but I have also become

quite addicted, which also means that there will probably be damage...

**If you left science and stem cell research, what would you most enjoy as a second career?**

I think I would become a Zen Monk.

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

Well...let's try one...most papers that I read are not about plants.