also like, to the extent allowed for a non-profit, to hold awareness-raising meetings with federal law-makers or their staff.

Some members say that the NPA should redouble its efforts to regularly collect and analyse data on postdocs. Johnson Phillips says that the association doesn't have the funding for such endeavours, although she notes that in 2009, it conducted a pilot poll of postdocs on issues including compensation, benefits and career pathways as a follow-up to the Sigma Xi project. Other observers say that the NPA needs to increase its advocacy work. John Scatizzi, an immunology postdoc and president of the postdoc association at the Scripps Research Institute in La Jolla, California, would like to see greater progress on standardizing compensation and benefits. "They need to take more of an active role," he says.

To further improve postdoc career prospects, says Collins, the NPA should boost its visibility in the academic community. "This is a great opportunity for them to align themselves with organizations such as the Association of American Universities and the Association of Public and Land-grant Universities," says Collins. "These relationships could help them to further their agenda. A lot of what postdocs need in terms of career growth is controlled not by the NIH but by universities."

Johnson Phillips is quick to point to ongoing advocacy and educational efforts at the NPA. The association regularly publishes white papers on postdoc issues, responds to federal agencies' requests for information and makes recommendations to the agencies, NPA member institutions and other stakeholders. The NPA is developing a national certification programme to identify institutions that follow its best practices and recommendations, and will contact the US Association of Public Land-grant Universities for support and feedback. It has also developed a set of core postdoc competencies for evaluating career development.

Lisa Kozlowski, associate dean for postdoctoral affairs and recruitment at Thomas Jefferson University in Philadelphia, Pennsylvania, points out a less tangible achievement. "They've given postdocs a voice," she says, "and that's huge." ■

Karen Kaplan *is assistant Careers editor at* Nature.

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3. Biomedical Research Workforce Working Group *Draft Report* (NIH, 2012).
4. Davis, G. *Am. Scientist* **93,** (3) Supplement http://postdoc.sigmaxi.org/results/ (2005).

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TURNING POINT
David Shelly

David Shelly is a seismologist with the US Geological Survey (USGS) in Menlo Park, California. In December, he will receive the latest in a string of high-profile awards: the Macelwane Medal, presented at the American Geophysical Union conference in San Francisco, California.

D. SHELLY

You had a broad-based education at a liberal-arts college. How did that prepare you for earthquake research?
I studied maths and physics at Whitman College in Walla Walla, Washington, but knew that I wanted to do something more applied as a graduate student. I didn't have the background for a geology programme, so I studied geophysics at Stanford University in California. My broad liberal-arts background helped me to learn how to communicate ideas concisely: an important part of the scientific process.

Describe your PhD research.
I went to Tokyo to study subduction-zone tremors in 2005, as part of the East Asia and Pacific Summer Institutes funded by the US National Science Foundation and the Japan Society for the Promotion of Science. A typical earthquake is one sudden rupture of a fault, but low-frequency subduction-zone tremors are weak vibrations resulting from slow slip between tectonic-plate boundaries. They start and end gradually, yet last much longer than a normal earthquake. Such tremors are a challenge to work with: it is hard to distinguish the seismic-wave signals from the background noise.

Your work had a big impact on the field. Why?
After low-frequency events were discovered in 2002, it was unclear whether they were earthquake-like or more like volcanic tremors, with fluids moving below ground. I used a technique to identify low-frequency tremors without knowing the exact onset time of the wave phases, which overcame the signal-to-noise difficulties. My team's results suggested that low-frequency subduction-zone tremors can be generated by similar processes to, and on the same faults as, larger earthquakes (D. R. Shelly *et al. Nature* **446,** 305–307 (2007) and S. Ide *et al. Nature* **447,** 76–79; 2007). That got attention and was good for my career. I think not having preconceived ideas helped, as did being naive and willing to try untested approaches, and being one of the first people to work in the field.

How did the 2011 Japanese quake affect you?
It was shocking. I thought the early (conservative) reports of a magnitude-8.8 earthquake were a mistake. An hour later, I saw the tsunami footage and realized that this was a wake-up call about scenarios that could exist but haven't been observed for a few hundred years.

How did it affect earthquake research?
It raised the profile of earthquake forecasting in general. It was by far the best-recorded earthquake of that size ever. Having that gold mine of data is driving big parts of the field forward, and helps my group to maintain strong collaborative ties with Japan. There have been a lot of studies based on data from that event, and they will continue for decades.

In the course of your career, will scientists get closer to being able to predict earthquakes?
Some people think it is inherently impossible. I think there is a subset of earthquakes, like those triggered by a slow-slip event with tremors serving as an indicator, that can be predicted. Those that start small and cascade into a large event may be inherently unpredictable. Unfortunately, research funding remains a challenge overall.

What is it like to get so much recognition so early in your career?
It is flattering, and it is almost certainly good attention. I was shocked to get the Macelwane award; I didn't know that two colleagues at the USGS had nominated me. It is a lot to live up to. That said, it is good to have motivation for the future. I don't have any overarching research goals: I plan to keep my focus on the big picture, finding solutions to pressing problems. I also make sure I have a life outside science. Going camping and hiking helps me to avoid research burn-out. ■

INTERVIEW BY VIRGINIA GEWIN