

#SCIENTRENDING

On Twitter but not tweeting

A common strategy on Twitter is lurking: reading tweets but not posting them. For many users, Twitter becomes their main way to learn about relevant papers, conferences and news. To build that information feed, users need to choose which streams to follow and what hashtags to monitor, such as #lifeafterPhD. Many follow relevant departments in grant agencies; @NIHfunding has 24,000 followers, for example.

Many journals and journal editors tweet their tables of contents and retweet relevant comments. Beginners on Twitter can also find accounts to follow through retweeted posts and by looking through followers of other users. Lists of recommended people to follow abound as well. Programmes such as TweetDeck or Hootsuite can sort Twitter streams by username and hashtag.

And Twitter is boosting the scope of conferences, too, helping people who cannot attend to follow what is going on. At the Annual Geophysical Union meeting in San Francisco, California, last December, attendees numbered about 24,000, yet more than 28,000 people posted almost 57,000 tweets and retweets with the hashtag #agu14 — double the previous year. Specific sessions within conferences often have their own hashtags, catering to researchers' specific interests.

High levels of Twitter activity can be intimidating, so the best approach is to read tweets selectively. Lisa Balbes, a career-development consultant in Kirkwood, Missouri, advises Twitter users not to even try to check every post. She thinks of Twitter as an additional source of information and networking. "I skim the headlines when I have a couple minutes," she says. **M.B.**

person [in an under-represented group] but through social media, you are in a space where you can have the all-important STEM vent session," he says.

Science exchanges on Twitter are generally convivial, but there is no doubt that Twitter can get ugly. In November, the leader of the Rosetta Mission that landed a probe on a comet wore a shirt printed with scantily clad women. A science writer who tweeted that the attire made astronomy less welcoming to women received multiple tweets telling her to kill herself.

NO PERSONAL POSTS

Although horrible tweets and abusive 'trolls' exist, they are not a significant part of most scientists' experience on Twitter, says Chris Gunter, a researcher and science communicator at Marcus Autism Center and Emory University in Atlanta, Georgia. Those who fear Twitter may not realize how much they can control their experience. "You can unfollow or mute people," she says, "and you can take a break for a while." As a precaution, she avoids inflammatory or overly personal posts, such as using family members' names. For conversations that require nuance, users should switch to other types of communication, she says. It is common for interactions that begin on Twitter to move over to e-mail, for example.

Although conventions on social media are still emerging, the basic rules of networking still apply, says Lisa Balbes, a career-development counsellor in Kirkwood, Missouri. "It's a weird, messy landscape right now," she

says. "It comes down to building a relationship with other people through whatever tools they are using." Relationships require more than a single click. Twitter users should not assume, for example, that being mutual followers with another user means that the person has taken an interest in helping them.

An online reputation for being thoughtful, enterprising and helpful can be as valuable as a long list of publications, says career consultant Peter Fiske, head of PAX Water Technologies in Richmond, California. Scientific conference organizers and observers often follow a meeting's tweetstream to learn what generated excitement, and to find rising stars. Informed tweets can help to draw their attention, says Gunter. For the past several years, she has chaired committees that select speakers and moderators for the American Society of Human Genetics in Bethesda, Maryland. "The tweets alone can't suggest a good speaker," she says, "but tweeting coherently about the topic is always a good sign."

Twitter's greatest advantage may be its flexibility in terms of the time spent and level of commitment. "You can dip your toes in — you don't have to be a crazy twittermaniac," says Titus Brown, a bioinformatician at the University of California, Davis. "In the past few years, I've seen it grow considerably in professional usefulness. It will continue to evolve," he predicts. "Find a way to use it in a way that makes sense with your personality and time constraints — and it will be useful for you." ■

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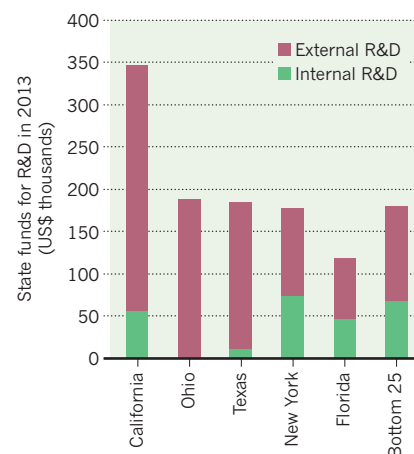
GOVERNMENT FUNDING

State contributions

Individual states funnelled US\$1.8 billion into research labs and studies in 2013, with one-quarter of that devoted to basic research, finds a survey by the National Science Foundation in Arlington, Virginia. Although federal funding for research and development (R&D) dwarfs state investments, state expenditures can help to tailor workforces to regional needs, says James Hearn, associate director of the Institute of Higher Education at the University of Georgia in Athens. Five states together accounted for almost three-fifths of the investments (see 'Top R&D spenders'). External R&D — mainly that at academic institutions — tended to receive more than the internal R&D conducted by state agencies.

TOP R&D SPENDERS

California is top, but even Ohio, Texas and New York spent as much as the bottom 25 states combined.



IMMIGRATION

Scientists gain access

Proposed federal legislation would exempt scientists from some US immigration quotas. Similar legislation introduced by the Senate in 2013 failed to make it through the House of Representatives. However, Atessa Chehrizi, an immigration attorney in San Francisco, California, says that foreign researchers would gain many more opportunities to work in the United States if even targeted provisions of the bill pass, such as a proposal to allow graduate students who arrive on non-immigrant visas to seek permanent resident status. Restrictive employment quotas and visas for scientists and other highly trained workers have come under attack in the past decade. More than a dozen higher-education associations are urging Congress to pass the bill.