Success for scientists in the academic job market is highly predictable

June 2 2014

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The likelihood of getting that faculty job depends mostly on the number of publications, the impact factor of the journals in which those papers are published, and the number of papers that receive more citations than would be expected based on the journal in which they were published, the researchers report. Anyone who would like to calculate his or her own score can do so at http://www.pipredictor.com.

"We'd like to start a discussion on what factors are taken into account when people are selected to become a principal investigator," says David van Dijk of the Weizmann Institute of Science. "On the one hand, these results are encouraging, because they suggest that people are promoted based on merit. On the other hand, many of the most groundbreaking papers were not published in high-impact-factor journals and did not initially receive a high number of citations. This filtering method will certainly miss some phenomenal and ahead-of-their time scientists."

Van Dijk says they were motivated by endless conversations with fellow graduate students and post docs, who were dreaming of their first paper in a prestigious journal. There was the sense that those publications were the tickets to success, so van Dijk, along with colleagues Ohad Manor and Lucas Carey, wanted to see if they could find evidence to that effect. And, indeed, they could.

The researchers generated publication record data for more than 25,000 scientists and used a machine-learning approach to generate a model of each individual's chances of moving from the first-author position, typically reserved for trainees, to the last-author position, a place most

often held by principal investigators (PIs).

"We find that whether or not a scientist becomes a PI is largely predictable by their publication record, even taking into account only the first few years of publication," the researchers report. "Our model is able to predict with relatively high accuracy who becomes a PI and is also able to predict how long this will take."

Van Dijk says the findings suggest that the current system is working. Understanding how it works might be useful for those thinking through their careers or for those on hiring committees who might like to allow factors outside of the publication record to factor in more significantly in hiring decisions.

The authors don't recommend that scientists make decisions about their futures based solely on their PI prediction scores, of course. There are surely plenty of other harder-to-quantify factors that can also play a role. And there is some hopeful news for those who are persistent, even if they haven't landed that stellar paper just yet.

"There is an element of luck in getting a paper in Nature, Cell, or Science, so it can be frustrating if you think you are a good scientist and want to succeed but that high-impact-factor paper just doesn't happen," van Dijk says. "It's encouraging that we find that doing good-quality science on a consistent basis—as evidenced by multiple first-author papers of reasonable impact factor—does seem to be rewarded in the end."

More information: Paper: *Current Biology*, van Dijk et al.: "Publication metrics and success on the academic job market."

Provided by Cell Press