OPINION

Crystal ball

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Which young scientists will be the most successful in 2017? That's a question that funding agencies and university hiring and tenure panels would dearly like to answer.

A trio of researchers from Chicago has taken a stab at predicting scientific success using a combination of scientists' publications and citations, mentors, students and collaborators. They describe this 'crystal ball' in this week's *Nature*.

The researchers start with physicist Jorge Hirsch's h-index, which calculates a scientist's success based on the number of papers published, and their quality as measured by the number of citations. Einstein and Darwin, the researchers point out, had h-indices of 96 and 63, respectively.

To predict future success, the researchers gathered data on more than 38,000 biologists — including 34,800 neuroscientists —from academictree.org, which lists the scientists' mentors, students and collaborators. They then cross-referenced the data with those from **Scopus**, an online database of citations.

The researchers narrowed the pool to those who had published at least four papers with at least four citations and who had published their first paper within the last 5 to 12 years. That brought the number to about 3,000 neuroscientists.

They used machine-learning algorithms to create a formula that predicts the h-index five years in the future, and tested the algorithm by comparing the result to an individual's actual h-index five years after first publication.

The algorithmhas anR^2, or coefficient of determination, of 0.67. (R^2 is a measure used to assess how well statistical models predict the future; the higher the R^2, the better the model.) That's a

significant improvement over using an individual's present h-index to predict the h-index in five years, which has an R^2 of about 0.5.

The researchers suggest that their model works because scientists who are productive and publish a lot tend to continue to do so, and those who publish in several different journals tend to be broadly trained and contribute more broadly to the field. They also caution that the algorithm is not a replacement for more traditional peer review, but rather complements it.

Scientists anxious about the future of their careers can take heart. As the authors note:

The results offer some comfort by showing that the future is not so random. The occasional rejection of a paper may feel unjust and indiscriminate, but in the long run, such factors seem to average out, rendering *h*-index trajectories relatively predictable.

To calculate your own future h-index, visit **go.nature.com/z4rroc**.