

EXCELLENCE IS NOT BUILT ON METRICS

Why is it easier in Poland to count points than to produce a Nobel laureate? According to **Prof. Jacek Kuźnicki**, a neurobiologist at the International Institute of Molecular and Cell Biology in Warsaw, a corresponding member of the Polish Academy of Sciences and former Chair of the Council of the National Science Centre, the answer cannot be reduced to funding alone. The deeper problem lies in a system that does little to support people who rise above the average.

When you hear the question, “When will Poland win a Nobel Prize?”, what is the first thought that comes to mind?

JACEK KUŹNICKI: How many evaluation points will the institution employing that future Nobel laureate receive? Will it be 250 points or 300? Or perhaps it will turn out not to be worthwhile at all, because truly outstanding individuals often create more challenges for institutions than comfort.

That may sound ironic, but it points to a deeper problem. Our research system is not designed around quality or around helping the best research groups grow, expand and attract talented people. Of course, funding is a problem, but it is only one element of a much larger picture.

If we are asking about a Polish Nobel Prize, we should first ask what conditions are necessary for Poland to produce Nobel candidates. Candidates, because the Nobel Prize itself is merely the final outcome of a very long process.

The points system was supposed to encourage publication in the best journals and improve research quality.

Points are not a good measure of scientific quality. The fact that a paper appears in a journal regarded by the ministry or by experts as prestigious tells us very little about the importance of the discovery itself.

Aaron Ciechanover, who received the Nobel Prize for discovering the role of ubiquitin, once described how the key paper behind that discovery was published in a journal that today would not particularly

impress anyone. To make matters worse, his surname was misspelled in the publication. None of that mattered. What mattered was the discovery.

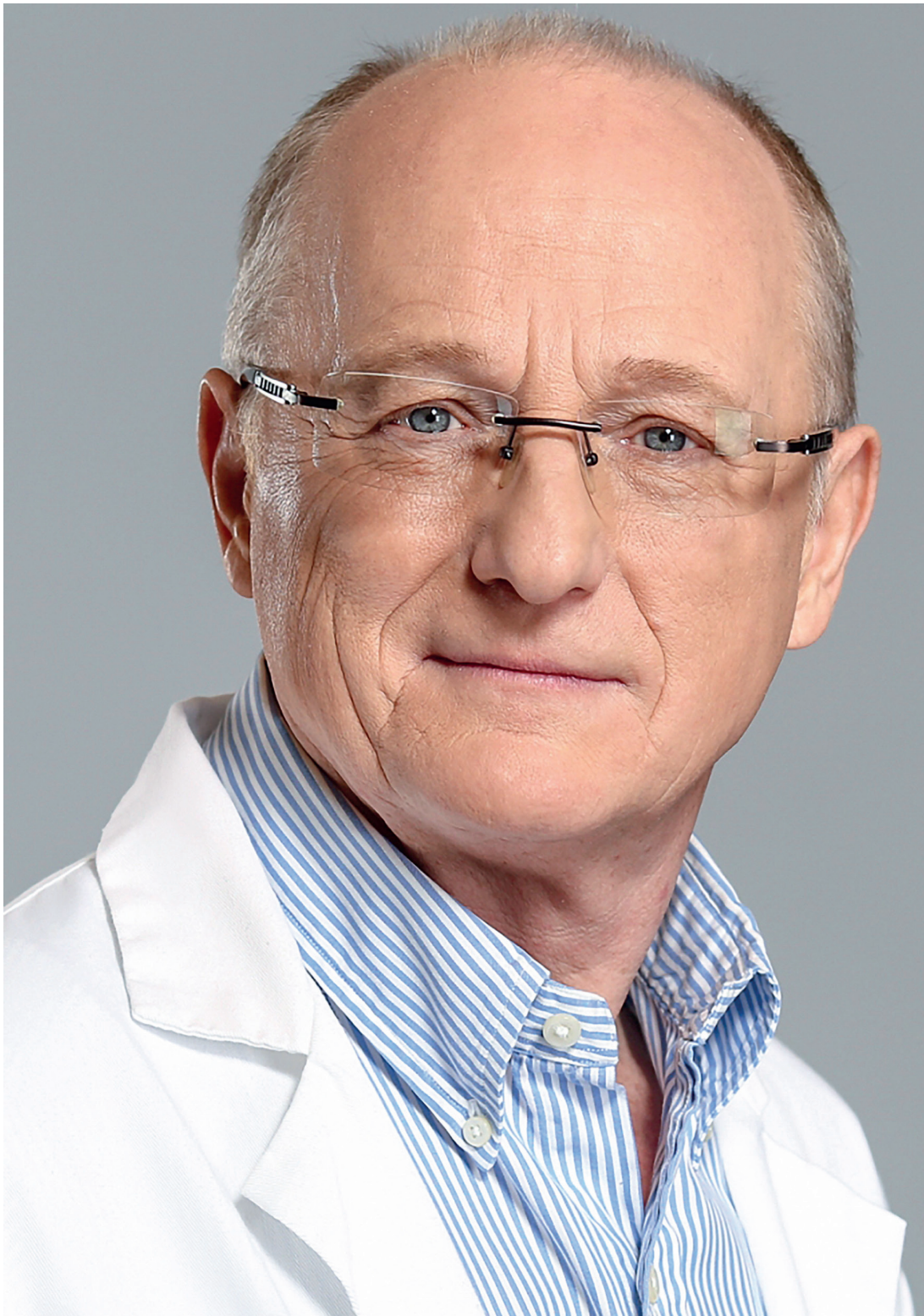
Great science is not built on points. It is built on good ideas, courage and persistence. Yet we have created a system that increasingly encourages people to think about points rather than scientific questions. More and more often, I meet researchers who talk not about what they have discovered or what problem they are trying to solve, but about having published a paper worth one hundred or two hundred points. Many of them are excellent scientists. The problem is simply that the system has taught them that this is how success should be measured.

So would getting rid of this obsession with points be the first step?

It would not solve every problem, but it would remove one of the most important ones. Today, the entire system is focused on collecting points rather than discovering things that are waiting to be discovered. In my view, we should move away from point-based evaluation and return to expert assessment.

Such a system is not perfect either. Experts can make mistakes and they have their own preferences. Nevertheless, no better method for assessing scientific quality has been invented.

What matters, however, is that these should not be local experts. In a country where the scientific community is relatively small, conflicts of interest are unavoidable. We need international review panels that visit institutions, evaluate their work and recommend directions for development.



Prof. Jacek Kuźnicki

A biologist and biochemist, researcher, and science organizer, he is a professor at the International Institute of Molecular and Cell Biology and a full member of the Polish Academy of Sciences. His research focuses on molecular neurobiology and mechanisms regulating cellular processes, including those related to brain function and neurodegenerative diseases. He is actively involved in advancing Polish science and fostering international collaboration.

Portugal provides a good example. For many years it has relied on exactly this kind of system. One can also look at the number of grants awarded by the European Research Council. That is not a perfect indicator either, but it does provide some sense of where a country's science stands in international competition.

Portugal performs better than Poland by that measure, even though fifteen years ago few people would have expected that. In Poland, various evaluation bodies formally exist, but even good recommendations rarely have much influence on reality. In the end, what matters most is obtaining enough points and performing well in the evaluation exercise.

Nobody becomes a scientist because they want to spend their career counting points.

Of course not. Most young people enter science because they are passionate. They want to solve problems, understand the world and contribute to the growth of knowledge.

Very quickly, however, they encounter reality. During the recent protests by the scientific community, many young researchers said openly that they had entered science full of enthusiasm and later lost it. The reasons vary: low salaries, inadequate doctoral stipends and the need to take on additional jobs.

When I was a doctoral student, which was a very long time ago, I had to sign a declaration stating that I would not undertake any additional professional work. For many doctoral students today, that would be unimaginable.

Holding multiple jobs has become one of the chronic problems of Polish science. If someone has to divide their energy among several workplaces, it becomes much harder to pursue ambitious and risky research. Yet it is precisely that kind of research that leads to major breakthroughs.

Is Polish science making good use of its most talented researchers?

Modern science is fundamentally a collective endeavour. In literature or the arts, a single individual can create a work that changes the way generations think. In molecular biology, chemistry or physics, the situation is different.

We need laboratories, specialised equipment, experts in different research methods, bioinformaticians and data analysts. We need people capable of performing analyses that are impossible within a single laboratory. That is why large teams and environments where people inspire one another are so important.

This leads to a question that goes beyond science itself. Do we, in Poland, actually like people who stand out? Do we support those who move ahead? Or do we try to pull them back?

My impression is that we too often choose the latter. If we want Nobel candidates, we must learn to

support people with exceptional talent, exceptional ideas and exceptional determination. We need to push them forward rather than pull them down.

You built the International Institute of Molecular and Cell Biology virtually from scratch. Does that show that it is possible to create institutions in Poland that operate according to the best international standards?

Yes, but we deliberately started from zero. Together with Maciej Nałęcz, I came to the conclusion that reforming existing institutions would be very difficult. It seemed much easier to create a new organisation built on different principles from the outset.

We had both spent time abroad and knew how leading research institutes in Europe and the United States operated. We wanted to create a place governed by similar rules. The basic principle was straightforward: recruit talented people, give them good working conditions and substantial independence, including young researchers. At the same time, expect results, although not immediately, because science requires patience. Some groups succeeded. Others failed to meet expectations. Occasionally, groups had to be closed down. That is a normal part of how a research institution functions.

For many years, our institute had no permanent scientific positions. One can debate today whether that was the ideal solution, but in the late 1990s it made sense. The aim was to maintain momentum and avoid a situation in which stability gradually led to a loss of motivation.

In the natural sciences, infrastructure is almost as important as people. How does Poland compare in that respect?

Paradoxically, the situation is not too bad. In recent years, a great deal of modern equipment has been purchased. The problem is that this often happened without proper coordination. There were cases where two neighbouring institutions bought identical and very expensive instruments. Later, one machine would sit largely unused because there was not enough money even for reagents, while researchers relied on the other one. That demonstrates that purchasing equipment by itself does not solve the problem.

Equipment does not make discoveries. People do. Researchers need ideas. They need to know how to use a particular technology, analyse the resulting data and draw meaningful conclusions.

Our institute has also acquired many advanced instruments in recent years. We are still training specialists who will be able to exploit their full potential. I am convinced that we will not be able to use all the capabilities of this equipment ourselves, which is why we are developing specialised service laboratories that can be used by researchers from other institutions.

That is how a modern research system should work. The biggest problem today is not a lack of equipment. It is a lack of people capable of operating that equipment and interpreting the results.

Prof. Michał Tomza has argued that outstanding science is inherently risky. It is difficult, however, to expect people to take risks when they do not know whether they will be able to support themselves a few months from now.

Atmosphere matters just as much. Young researchers very quickly notice whether an institution supports ambitious scientists or treats them as a problem. Unfortunately, those who try to push their field forward often become what are commonly called troublemakers. Additional procedures have to be created for them. New reporting requirements appear. Non-standard solutions become necessary. Administrative staff are not always pleased about that. Sometimes institutional leaders are not pleased either. I have heard from ERC grant recipients that their success was not always greeted enthusiastically by their institutions. That should give us pause.

This is why I do not think we should begin with the question of a Nobel Prize. We should begin by asking what kind of education we need, how we can raise young people who are curious about the world, how we can teach them to understand science and its limitations, and how we can create universities that genuinely support their most talented people.

And yet Poland has produced a number of these troublemakers.

Of course. Polish astronomy is very strong. We have outstanding chemists, physicists and molecular biologists. There is no shortage of people operating at a world-class level. The question is whether we have created conditions that allow them to realise their full potential.

When I was involved with the National Science Centre, I argued that the best researchers should have opportunities to build larger groups and draw on a broader range of funding sources. I was unsuccessful. The prevailing view was that resources should be distributed more evenly.

Yet if someone has excellent ideas and has demonstrated their effectiveness, that person should be able to hire not two postdoctoral researchers but ten. This is where new ideas emerge. These are the environments in which young researchers come to a professor and say, "I have an idea that nobody has noticed before." That is how science advances.

Which fields should Poland prioritise most strongly?

I do not think I can answer that question. Talent appears everywhere. If we decided today to support

only a handful of selected disciplines, we could easily miss transformative discoveries in other areas. The history of science repeatedly demonstrates how difficult it is to predict the future.

Ten years ago, very few people anticipated the pace at which artificial intelligence would develop. Yet Poland has excellent computer scientists, many of whom have built their careers abroad. And that is another challenge. The most talented people often find more favourable conditions outside Poland.

Is that why Poland has never produced a Nobel Prize in the natural sciences for work carried out in Poland?

We have Nobel laureates connected with Poland. We have outstanding scientists. But those who achieve the greatest success often develop their careers abroad.

If we want to change that, we must start with fundamentals: education, the quality of universities, the quality of research institutes and the creation of an environment that attracts talent rather than pushing it away. Nobel laureates cannot be created by ministerial decree.

Is pursuing a Nobel Prize even a worthwhile goal?

What is worth pursuing is a system in which potential Nobel candidates can conduct their research in Poland. The Nobel Prize itself is secondary. It depends on many factors: the quality of the research, certainly, but also luck, visibility, international networks and sometimes historical timing.

We should also remember that science conducted in Poland is not always perceived in the most favourable light. Concerns about research ethics, publication pressure and practices focused more on producing papers than solving scientific problems affect the credibility of the entire system.

There is another aspect as well. Some countries actively support their scientists internationally. They build networks of support around them that later help when nominations for major awards are considered. Are we equally good at doing that? I am not sure.

I would very much like to live long enough to see a Nobel Prize in the natural sciences awarded for research conducted in Poland. But I am also a realist.

There is a saying that the person most likely to win a Nobel Prize is someone working in a Nobel laureate's laboratory. It sounds brutal, but it reflects an important truth. Such places attract the best people, the best ideas and the greatest attention from the scientific world.

Perhaps, instead of asking when Poland will win a Nobel Prize, we should ask when Poland will create the conditions that allow laboratories of that calibre to emerge. ■