

Prize-winning spinoffs



Early-stage researchers win Spinoff Prize with a clinical bioadhesive.

A surgical duct tape for the heart is this year's winner of the third yearly [Nature Awards Spinoff Prize](#), sponsored by Merck. This prize is given to an early-stage (less than 5 years old) university spinoff company from anywhere in the world, helping academic entrepreneurs to secure future investment by giving them a financial footing in the startup world and a platform to showcase their work. This year, there were 76 applications from 25 different countries and 62 different institutions, ranging all through the life and physical sciences, including digital technologies. A judging panel assessed all submitted applications, and shortlisted candidates were listed online earlier this year. This past week, five finalists took part in a [virtual slam event](#) where they discussed the science behind their products and the potential technological impact of their company, as well as answering questions from a panel of judges, in order to win the prize of €30,000 (\$32,900).

The five finalists this year covered a variety of biotechnologies. Two quantum computing companies, [Alpine Quantum Technologies](#) (AQT) and [Parity Quantum Computing](#), made the shortlist of finalists; both are based in Austria. Quantum computers can, in theory, calculate faster than digital computers, but they face limitations in scalability and are sensitive to interference. ParityQC is developing a scalable quantum computer architecture, an optimized blueprint system that they call [parity transformation](#). AQT also is aiming to bring quantum computing to more applications by designing computers and hardware based on trapped ion technologies.

A third finalist, [Jupiter Ionics](#), has the goal of enabling net-zero nitrogen to avoid the use of synthetic nitrogen fertilizer for crops and the subsequent release of carbon dioxide that is produced during synthetic ammonia production. Their approach combines nitrogen and water in a single step using an electrochemical current to make ammonia. The flexibility of their system and the stable input costs make this approach appealing, although the technology is still in early stages that would require scaling up.

A spinoff from Sorbonne University in Paris, [Resolve Stroke](#), was also a finalist. The company is developing a portable, fast ultrasound medical imaging technology that can image microvessels in 3D in bedside clinical settings. According to their presentation in the slam event, a large percentage of stroke patients today receive treatment too late, and transporting patients to MRI or CT scan machines also entails risk. A bedside imaging device that can be used for diagnosis could lead to a significant reduction in stroke death or disability. The imaging technology has the potential to be expanded to image [the brain and other organs](#).

The [winner](#) of the Spinoff Prize for 2023, [SanaHeal](#), gave an excellent presentation of their bioadhesive platform, which can seal wet or bleeding injuries as if with duct tape. SanaHeal is a spinoff company from MIT started by materials scientists Hyunwoo Yuk, Xuanhe Zhao and Christoph Nabzdyk. The material, which was inspired by properties of spider webs and barnacles, has many improvements over traditional surgical techniques such as sutures and other bleeding-control solutions. It is a blend of polymers and chemical compounds that attaches quickly to an organ and shrinks inwards, promoting healing while also sealing the wound. It can also be used as a paste when ground and combined with mineral oil, forming an impermeable seal when applied to a wound. It functions well on a variety of organs in [pigs, mice and rats](#).

SanaHeal's next step is to scale up production of their surgical adhesive for commercialization. There are the regulatory paths that must be followed to bring the product to the market and to the physicians who will use it. The company will also be looking into how the adhesive performs in the long term within the body.

Of course, the monetary prize is helpful for these early stage companies, but more significant is the promotion and visibility that winning these prizes bring. The Spinoff Prize is one of only a handful of competitions focused on young academic spinouts from all over the world, but many other prizes and programs exist for early life science ventures. For example, the [NYU Entrepreneurs Challenge](#) is open to New York area startups, with a \$75,000 prize in seed funding and additional mentorship and workshops provided to winners. There are start-up slams, such as those by [Biofit](#) in

Europe, that are mainly focused on providing mentorship from leaders in the field and recognition through media coverage. While many monetary prizes are small, there are some challenges that offer more, such as 2048 Ventures' [biotech competition](#) (\$200,000 in 2023). Hello Tomorrow sponsors a [global challenge](#) for deep tech companies up to series A funding, with a €100,000 (\$110,000) top prize and smaller second and third prizes.

The competitions highlighted here are specifically designed to promote early-stage companies being developed by academics, although, like the Nature prize, they consider companies at different stages of maturity. For example, some companies may apply if they already have venture capital backing or series A funding. Regardless of how far they are in their funding journey, each company comes to the judging with many hurdles remaining to get their product or idea into the market, and not every one will be successful.

We can look back at the [20 past finalists](#) from the Nature Spinoff Prize over the last three years and see that all of them are still pursuing their goals, suggesting that the publicity and funding from these prizes can lead to positive results. When *Nature Biotechnology* covered [academic startups](#) in 2020, they found that companies that were started at universities in key US biotech clusters (San Diego, San Francisco, Boston) experienced success twice as much as companies started outside of clusters, likely as a result of the access of these clusters to scientific and financial resources. One thing that prizes can do is provide funding and mentoring to emerging companies that are not based in biotech hubs, providing some support that may be missing.

While the number of applicants to the Spinoff Prize in 2023 was less than in previous years, the quality of the applications was higher, as measured by the average score from the judges. The 2024 competition will open in September for applications, and Nature is interested to hear suggestions from possible participants. What would make the Spinoff prize next year more attractive to enter? What would make it easier for potential partners or funders to gain insight into these emerging technologies? We look forward to what next year's batch will bring.

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