(Reuters) - For the fourth year running, Stanford University tops Reuters’ ranking of the World’s Most Innovative Universities, a list that identifies and ranks the educational institutions doing the most to advance science, invent new technologies and power new markets and industries. Contributing to its solid foothold at No. 1 is Stanford’s steady stream of patents and research, which are frequently cited by other academics around the world. Those citations play a key role in the ranking of the world’s most innovative universities, which was compiled in partnership with Clarivate Analytics, and is based on proprietary data and analysis of numerous indicators including patent filings and research paper citations.

Recent Stanford research highlights include several developments in the field of artificial intelligence, including the next generation of camera systems to guide self-driving cars and simulators that can predict potential drug interactions before new pharmaceuticals are ever tested on humans.

While a few UK and Asian schools have ascended, American universities continue to dominate the top of Reuters’ ranking. The Massachusetts Institute of Technology, for example, places second on the list, and Harvard University comes in third, making 2018 the fourth consecutive year that those universities have held those exact spots. The University of Pennsylvania came in fourth place for the second consecutive year, and the University of Washington is up two spots to round out the top five. The University of Texas System placed sixth. Belgium’s KU Leuven, ranked No. 7, is the highest ranked university outside the U.S., followed by Imperial College London (No. 8), the University of North Carolina Chapel Hill (No. 9) and Vanderbilt University (No. 10). Overall, eight of last year’s 10 highest-ranked universities remained in the top 10.
Other universities on Reuters’ ranking have broken out of the pack because of new, groundbreaking research. The biggest mover on this year’s list is the University of Manchester, which surged 27 places from No. 80 to No. 53, largely because of research into the supermaterial graphene. Graphene is one of the strongest materials on Earth, yet also extremely light, flexible and highly conductive; it could prove a hugely important ingredient for future innovations in electronics, energy, transportation and other industries. Physicists theorized the existence of graphene in the 1940s, but it was first produced in 2004 by two University of Manchester scientists. Ever since then the university has dominated the world’s research into the cutting-edge material. Manchester is home to the UK’s National Graphene Institute, and patents related to graphene account for about a quarter of all filings from the university over the five-year period examined for this list.

Geopolitical trends are also a factor in this year’s rankings. In Europe, uncertainty over the United Kingdom’s “Brexit” from the European Union may already be pushing research out of the country: Germany added two universities to the Global Top 100 in 2018, and Reuters’ regional ranking of Europe’s Most Innovative Universities showed German universities gaining more than any other country. In Asia, Chinese universities are increasing their presence among the top 100 thanks to a new government push for innovation, and a focus on filing more patent applications.

Overall, the United States continues to dominate the list, with 46 universities in the top 100; Germany and Japan are tied for second best performing country, with nine universities each. South Korea has eight universities on the list; China, France and the United Kingdom each have 5; Switzerland has 3; Belgium, Canada, Israel and the Netherlands have 2, and Denmark and Singapore each have 1. Considered on a regional basis, North America has 48 universities in the top 100, Europe has 27, Asia has 23, and the Middle East has 2. There are no universities in the top 100 located in Africa, South America or Oceania.

Careful observers might note a few differences between how non-U.S. institutions rank on Reuters’ regional innovation lists, Asia’s Most Innovative Universities and Europe’s Most Innovative Universities, and how they rank on the global list. An institution’s relative ranking may change from list to list, since each ranking is dependent on summarizing 10 indicators and comparing that with others in a specific population; when that population changes, individual rankings might change as well. Furthermore, the global list is restricted to institutions that filed 70 or more patents with the World Intellectual Property Organization during the five-year period examined by Thomson Reuters. The cutoff for regional lists is just 50 patents, allowing a more in-depth view of the most active institutions within a limited geographic area.

Of course, the relative ranking of any university – or whether it appears on the list at all – does not provide a complete picture of whether its researchers are doing important, innovative work. Since the ranking measures innovation on an institutional level, it may overlook particularly innovative departments or programs: a university might rank low for overall
innovation but still operate one of the world’s best medical schools, for instance. And it’s important to remember that whether a university ranks at the top or the bottom of the list, it’s still within the top 100 on the planet. All of these universities produce original research, create useful technology and stimulate the global economy.
Researchers with the Great Lakes Energy Institute at Case Western Reserve University have partnered with international technology and industrial conglomerate Johnson Controls to develop and market new technology that allows small and medium-sized businesses to reduce their company's power consumption. The tool "maps a building's DNA" by analyzing data streams including weather, insulation and utility meter data to create a "virtual energy audit." Traditional energy audits can take months to perform and cost more than $10,000, but the virtual version is completed in minutes at a tenth of the cost. The research was initially funded by a $1.3 million Department of Energy grant. In total, CWRU received more than $337 million in sponsored research funding during 2017, funding 1,364 research projects.

Created in 1967 by the federation of two older institutions stretching back to 1826, Case Institute of Technology and Western Reserve University, this private university is based in Cleveland has 16 Nobel laureates among its current and former faculty and alumni. CWRU hosts the only National Institutes of Health-funded AIDS Research Center in the Midwest. Other notable laboratories include the National Science Foundation-funded Center for Layered Polymeric Systems, which integrates polymer science with nanotechnology, optics, laser physics, membranes, biomedical engineering and other science disciplines; and the Great Lakes Energy Institute, which researches the production and harvesting of clean energy.

Data provided by Clarivate Analytics. For a detailed methodology, click here.