



# METROPOLIS OF MINDS

Science is an urban enterprise. In 2016, some 60% of the share of authorship in the Nature Index came from 100 cities. The top 10 metropolises accounted for 17% of the total research output, which is 17 times their global population weight. With two-thirds of the world's population projected to live in urban areas by 2050, cities will become even more distinctly the domain of knowledge and innovation.

This supplement explores the high-quality research in the natural sciences being produced by 10 cities, chosen for their strong scientific credentials, metropolitan flair and global connections.

While they have many common features, each metropolis also has unique strengths. Research institutions in London have been at the forefront of learning for almost two centuries, which puts them in a strong position to resist any Brexit-related disruptions (S164). On the other side of the Atlantic, New York is in the early stages of refashioning itself into a biotech hub, but it might need more than a strong life sciences base and deep pockets (S168).

Cities don't exist in isolation. They form regional and global networks that facilitate the movement of money, people and ideas. The line between collaboration and competition is often

fine. Daejeon, for example, has become a focus for basic science in South Korea: 19% of its GDP is spent on research and development, compared to Seoul's 3%, and 2% of Daejeon's population are researchers, double the share in Seoul (S176). Daejeon's output has held firm despite a drop of almost 20% over the past five years in Seoul, coinciding with a national decline. Other city pairs face a similar tug-of-war: Barcelona and Madrid, Shenzhen and Guangzhou, Shanghai and Beijing.

Ease of movement between urban centres makes cities vulnerable to their rivals, but it is also their greatest asset. This competitive edge, however, is under threat from populist campaigns that seek to block the free-flow of people and curtail investment in science, argues Richard Florida on page S172. When the barricades go up, it won't take long for scientists to move on to the next big metropolis.

The research performance of a city is always in flux, and the combination of factors that make a successful science city is not firmly characterized. Better definition through research and analysis will provide cities stronger defence against ill-informed attack.

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