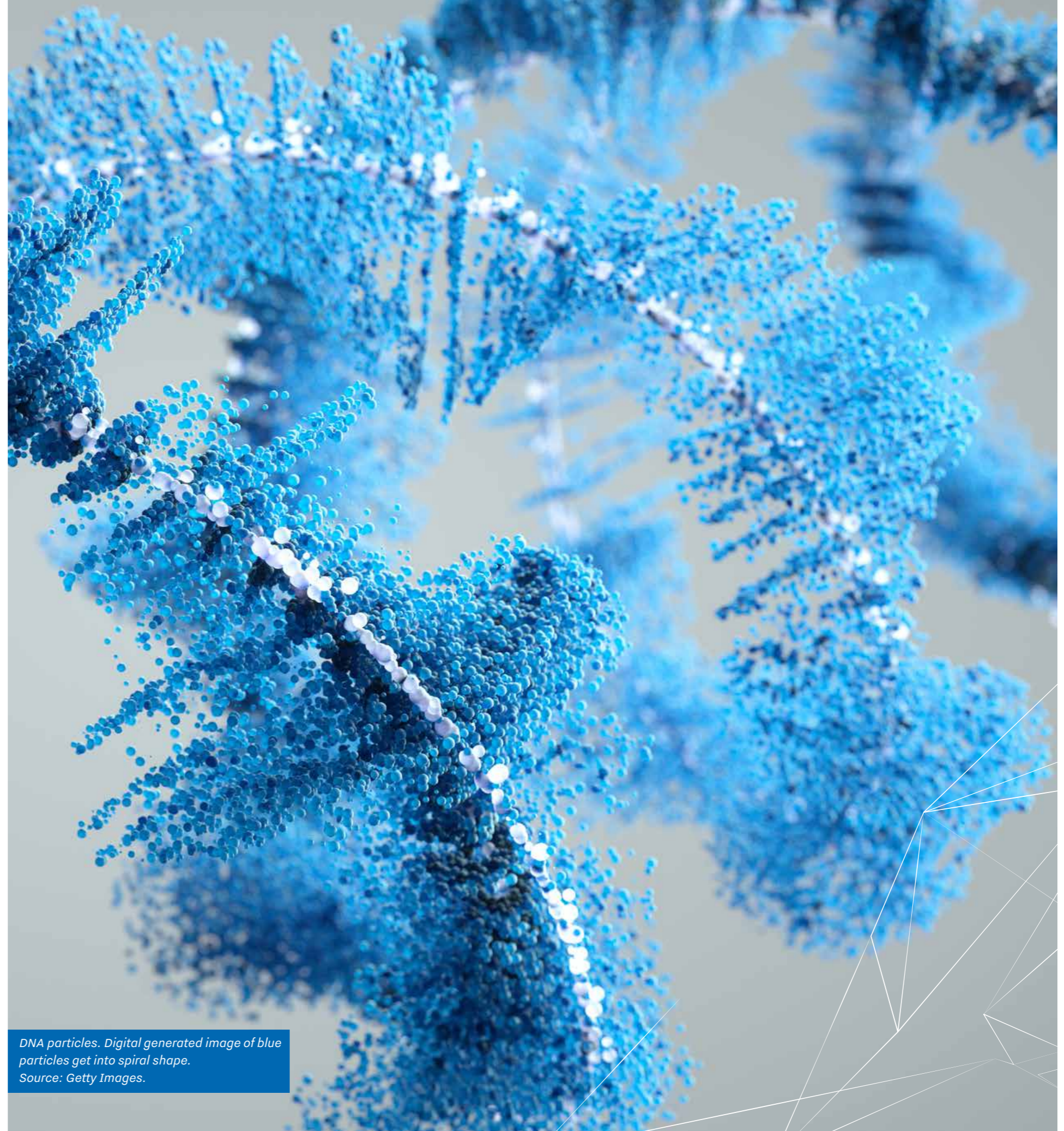


High-tech strengths make Taiwan well-positioned to be a leader in AI and healthcare

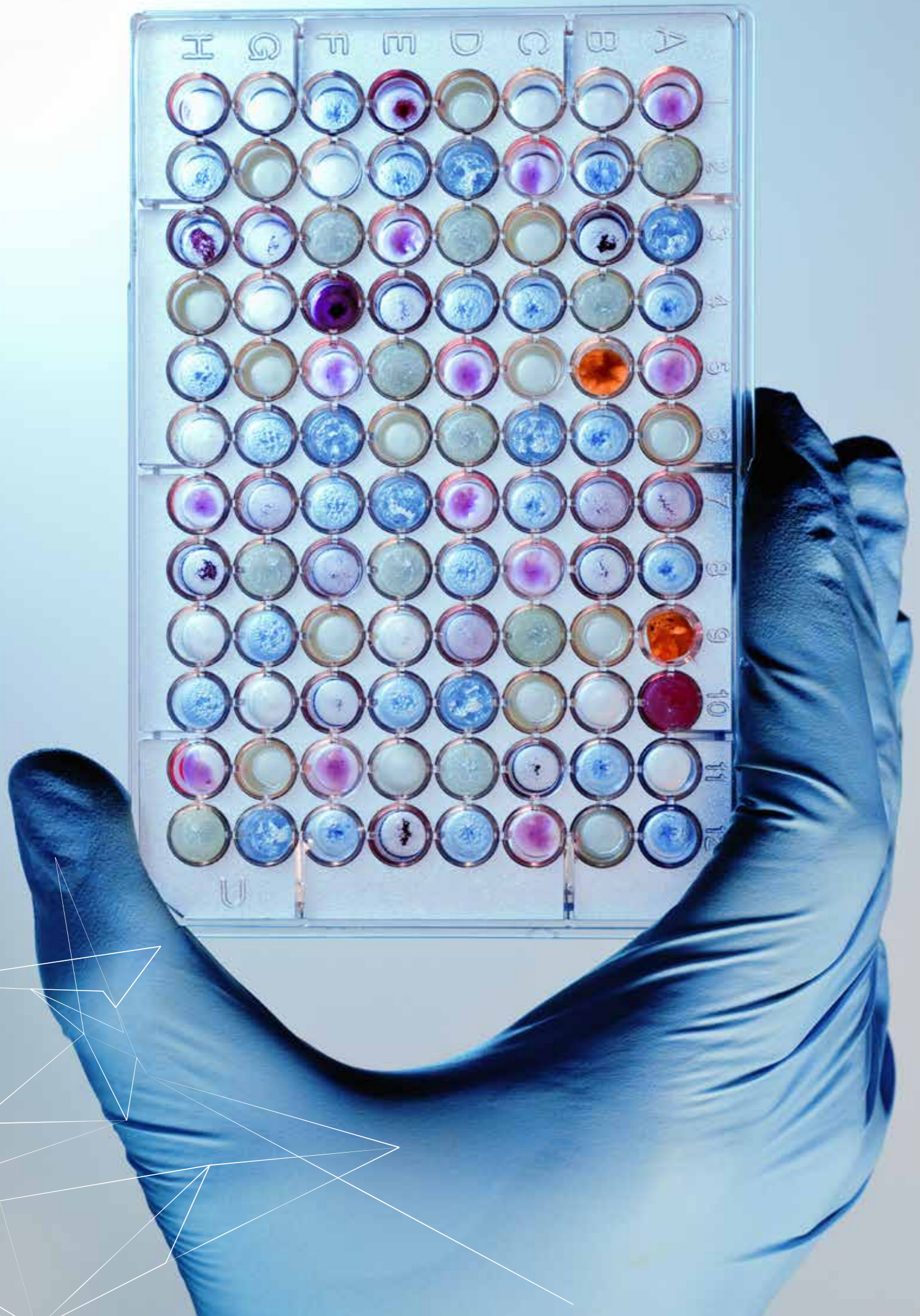
Taiwan has various strengths when it comes to exploiting AI. First, it is already a world leader in the areas of semiconductors, ICT and manufacturing, which together form an excellent foundation for AI.

Secondly, the Taiwan government is not only actively supporting AI developments, via ambitious policies such as the AI Action Plan and AI Strategy. Its key policy objectives also include the publication of open data, encouraging AI startups, attracting multi-nationals and AI R&D centers to Taiwan, cultivating talent, and stimulating research.

Thirdly, industry in Taiwan is willing to invest in AI and believes in technological solutions. And last but not least, because Taiwan is a relatively small country it's easy to implement new policies and response times are fast.



*DNA particles. Digital generated image of blue particles get into spiral shape.
Source: Getty Images.*



Taiwan has a national database with 25 years' comprehensive medical data

Health initiatives

Taiwan is renowned for its high quality of medical care and medical expertise in general, and the Ministry of Science & Technology (MoST) has established two key institutes to drive AI-related healthcare innovation:

- MoST AI Biomedical Research Center (AIBMRC): focused on AI for biomedical research in Smart Medicine, Smart Healthcare, Smart Biotechnology and Ethics & Humanities.
- MoST All Vista Healthcare Center (MAHC): eleven research teams categorized under Medical Imaging, Mental Health, Decision Support, AL-ELSI and Precision Drug Use.

The Taiwan AI Lab, a non-profit private research organization, has healthcare among its main research areas, with topics including Precision Medicine, Medical Imaging and Genomics. They collaborate closely with hospitals, which means research can often be immediately tested and applied.

Databases

An important asset is the National Health Insurance (NHI) database, which has accumulated comprehensive medical data (patient records, drug information, medical images and laboratory test results) since 1995, with access to anonymized healthcare data available on application since 2016.

Biobanks are another important tool for translating health data and biomedical research into practice, and developing a better understanding of precision medicine. Taiwan is therefore integrating various AI and local genome databases, and in 2019 established a national

platform that integrates data from 33 biobanks, including data from 460,000 volunteers and 4.5 million biospecimens.

COVID-19

- AI is being widely used in Taiwan to combat COVID-19, with several applications developed, including:
- Social distancing APP: to reduce spread of the disease while protecting personal privacy.
 - Health Report APP (electronic fence system): easy monitoring and reporting during home quarantine.
 - AI SARS-CoV-2 Classifier: real-time SARS-CoV-2 screening of hospital chest x-ray images via NHI service that triggers alert if high-confident cases are identified.
 - AI transmission tracing system: exploring transmissions through genetic tracing with phylogenetic trees.
 - Varian2literature: gene mutation and COVID-19-related literature search engine.
 - Coronavirus Drug Screening: drug discovery using computational protein-ligand docking simulations.
 - Realtime mask map and rationing system.
 - AI-assisted development of fast screening reagents and antibody drugs.
 - AI-assisted interpretation of x-ray imaging, reducing diagnostic time from 2½ hours to 30 minutes.
 - AI detection if a person is wearing a mask properly.

This diversity of applications demonstrates how Taiwan embraces the potential of AI in healthcare and the speed with which it applies it.

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