We will maintain world-class core academic disciplines

All research and education must be underpinned by a deep understanding of the fundamentals.

We have tremendous strength in the core disciplines practised by our academic departments. This was demonstrated in the 2014 Research Excellence Framework, an assessment of the quality of research in UK higher education institutions, in which over 90 per cent of the research submitted by Imperial was judged to be world-leading or internationally excellent. This excellence is broadly found across all our disciplines, and applies equally to our research outputs, impact and environment. These strengths provide us with the underpinning capability required to work together across disciplines in order to address global challenges.

**ACTIONS IN DETAIL**

- We will continue to identify and support new emerging disciplines.
- While recognising that much of our strength in core disciplines derives from the nurturing of talent within the institution, we will be more proactive in identifying opportunities to recruit staff capable of enhancing the quality of our research and education.
- Where necessary, we will seek external advice to advance and sustain parity of excellence across all our core disciplines, a key factor for successful multidisciplinary research and education.

---

**CASE STUDY 01**

**Fundamental physics: searching for dark matter**

Dark matter is an invisible form of matter that physicists believe makes up about a quarter of the energy density of the universe. Its presence is inferred from its gravitational effects on visible matter, radiation, and the large-scale structure of the universe, but its existence has never been confirmed directly. Its composition is a mystery, leading to the intriguing possibility of hitherto undiscovered physics.

Scientists at Imperial are among those leading the search for dark matter using a variety of approaches. For example, the Large Underground Xenon experiment, located 1.5km underground in South Dakota, allows researchers to look for tiny and extremely rare flashes of light that would indicate a collision between a dark matter particle and a normal matter particle. Scientists also use the Large Hadron Collider at CERN to search for dark matter particles that might be produced in collisions within the particle accelerator. The precision measurements generated at CERN and elsewhere provide opportunities to look for the influence of dark matter, while researchers also examine cosmological data to understand the influence and properties of dark matter.

For Professor Jordan Nash, Head of the Department of Physics, the discovery of dark matter would help answer some of the most significant outstanding questions about the nature of our universe. As he notes, “Imperial researchers have real influence in and understanding of this fundamental science, thanks to our excellence across different academic disciplines and our ability to bring together teams working on these different searches.”