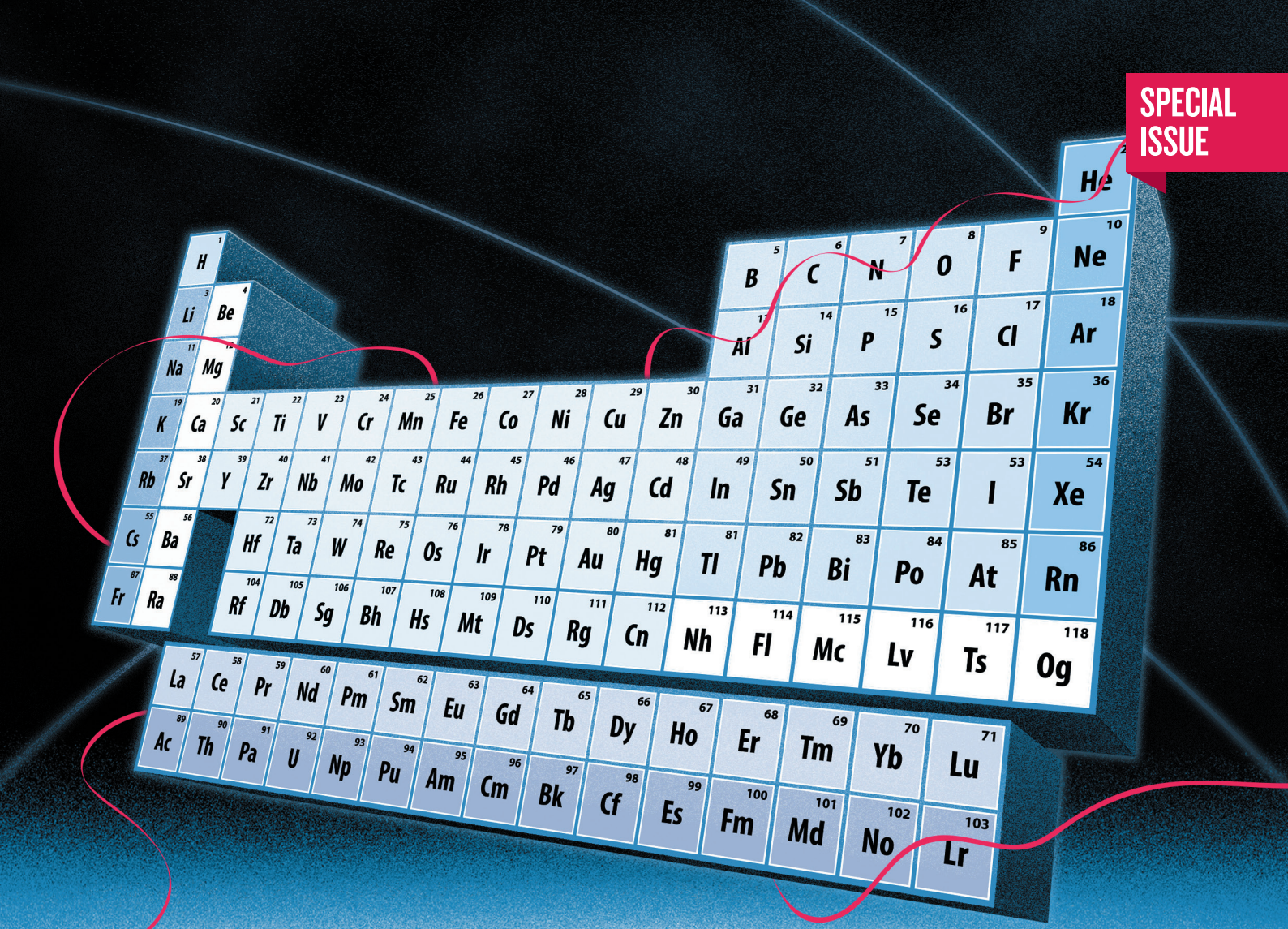


# BEYOND THE PERIODIC TABLE

**150 years after Mendeleev organized the elements by their characteristics, a special issue explores the enduring influence of this scientific masterpiece.**

When Dmitri Mendeleev published the periodic table 150 years ago, only about half as many elements were known as today. Over the ensuing decades, researchers have added new names to the chart, first by isolating elements in nature and nowadays by smashing atomic nuclei together to create artificial ones, some of which survive for just fractions of a second. In celebration of Mendeleev's achievement and the International Year of the Periodic Table, established by the United Nations, this special issue examines the past, present and future of the iconic chart.

The concepts of atoms and elements predated Mendeleev's table by centuries. A Books and Arts essay explores these ideas on page 563 and considers how they helped set the stage for Mendeleev's breakthrough. On page 564, another essay examines how the periodic table inspired a book of short stories by Primo Levi, who used the elements as a metaphor for life. And an Editorial on page 535 considers how the impact of the table reaches well beyond science and resonates with people worldwide.

Female scientists contributed to many discoveries that underpin the modern periodic table, and their stories are explored in a Comment article on page 559. A News & Views In Retrospect on page 570 describes how the 1937 discovery of technetium, the first element to be artificially produced, paved the way for research into the heaviest of elements.

The scientific foundations of the periodic table are still a source of debate. A Comment article on page 557 says that simplistic arguments based on quantum mechanics have confused the search for a fundamental organizational principle. Looking forwards, a News Feature on page 552 explores leading-edge research into the synthesis of superheavy elements beyond number 118. And a Futures story on page 670 offers a fresh perspective on undiscovered elements.

Scientists might soon reach the limits of their ability to add new elements to the periodic table. But efforts to explore the properties of elements — a quest that owes a huge debt to Mendeleev — will continue for centuries to come. ■

**THE PERIODIC TABLE**
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