

Arabic roots of modern medicine

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Vaccination fears that creep through societies like malevolent susurrations send chills through scientists' hearts. Calming these concerns is challenging health-care experts almost as much as the discovery of new vaccines. Yet these fears echo insistently through each generation; the original blare of concern, at least in the UK, seems to date back to the 18th century, when smallpox ravaged the country.

Desperate to stem the epidemic, Fellows at the Royal Society in London turned to the Arabic world for help. Manuscripts and images uncovered in the society's archives, and now on display at its *Arabick Roots* exhibition, show how, at the time, inoculation was as prosaic for those in the Islamic world as it was petrifying for the English. In Palestine, for instance, smallpox vaccination was routine. The technique was rough and ready and involved popping open a virus-rich pustule and using a thorn dipped in the pustule's ooze to puncture the skin. It was the widespread almost ritualistic practice of inoculation in relatively uneducated populations, such as nomadic tribes in north Africa, that gave rise to some of the "ridiculous" objections to smallpox vaccination in England, says Rim Turkmani, Dorothy Hodgkin Research Fellow of the Royal Society, who curated the exhibition. The idea that a technique used by "ignorant people in ignorant societies" could work in England seemed ludicrous to detractors.

By the time Edward Jenner made his name in 1796 by devising a smallpox vaccine based on cowpox, however, a series of exchanges between scholars in the western and Arabic world had begun to establish the utility of vaccination against the disease. For London physicians, a major source of reassurance came from Cassem Aga, the Ambassador of Tripoli, and one of three Arabic scholars elected as Fellows of the Royal Society in this period. Aga provided detailed records of both the practice and the safety of inoculation in Tripoli, Tunis, and Algiers.

When Turkmani began delving into the Royal Society's archive of Arabic and Persian manuscripts in 2007, she uncovered other strands of evidence of the enormous western interest in Arabic science. During the golden age of Islamic science between the 7th and 15th centuries, Arabic scientists made fundamental discoveries from medicine to astronomy that informed or anticipated those in the west later on. In the 9th century, Andalusian inventor Ibn Firnas created glass lenses that he used for magnification and to improve vision. Ibn Sina (Avicenna) was a 10th-century polymath, a quintessential Renaissance man, whose medical texts were some of the earliest descriptions of an empirical approach to medicine and whose astrophysical research contemplated multiple forms of energy. In the 13th century, Ibn al-Nafis expounded influential medical theories, which included anticipating anatomist William Harvey, by detailing the blood's pulmonary route from the right to the left side of the heart.

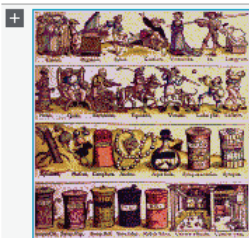
Video (1):



Webvideos

Arabick Roots shows how thinkers from the Arabic and Muslim world helped to pave the way for Edward Jenner's great breakthrough and other key advance
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The Maintenance of Health, Ibn Butlan (11th century)

Such was the hunger for this knowledge that several notable English scientists—including chemist Robert Boyle and astronomer Edmond Halley—learnt Arabic in order to be able to understand key texts. Halley's research that kick-started our understanding of the secular acceleration of the moon began with Al-Battani's observations of lunar eclipses in modern Syria.

Flourishing trade links between England and the Ottoman Empire further facilitated this flow of knowledge. Merchants, diplomats, and clergy travelling to countries like Syria and Morocco became fascinated by local traditions of using herbs to treat illness, and along with shipments of luscious silk fabrics, they would send back medicinal plants and thousands of manuscripts. Evocative examples of these are on display in *Arabick Roots*, in which decorative earthenware and jars used in ancient apothecaries are shown alongside rare manuscripts and scientific instruments. The exhibition sits comfortably within the Royal Society's own ancient-meets-modern atmosphere. Next week the Royal Society's broad vision will come into its own at the society's annual *Summer Science Exhibition* that cherry-picks recent scientific advances—among this year's exhibits are new techniques in trauma surgery, a three-dimensional map to guide surgeons through an arterial map ("satnav for surgeons"), and interactive bionic vision for visual impairment. Even while looking to the future, however, the Royal Society is keeping one eye on the past, and entrance to *Arabick Roots* is part of the Summer Science events.

The Royal Society's involvement in efforts to revive the Arabic world's glory days of science go beyond this exhibition. In the past decade, Middle Eastern countries like Egypt, Qatar, and Saudi Arabia have been pumping billions of dollars into revamping their science and technology capacity. The Royal Society's Atlas of Islamic-World Science and Innovation is currently mapping these countries' scientific capacity to identify how to reverse the centuries-long decline of science in the region. The reports will seek to offer ideas and solutions for improving infrastructure, encouraging an enthusiasm in science, and stimulating innovative scientific thinking. These roadmaps should offer some clues to how the Islamic world's glorious scientific history can repeat itself.