

Institutes of Health's Human Microbiome Project, which is decoding the genes of microbes from every major human surface or orifice, is not analysing breast milk.) One theory suggests that the bacteria in breast milk work as a kind of gut vaccine.

The stuff is so beneficial that companies that produce substitute breast milk are racing to replicate its ingredients, with little success so far. But Williams's investigation suggests that there may be good reasons to hope that they succeed: breast-milk toxins can include "the mercury in last week's sushi, the benzene from your gas station, ... the chromium from your nearby smoke stack". Moreover, even a tiny dose of these contaminants can be harmful to babies, and such toxins have been implicated in low intelligence and cancer.

Williams reports that flame retardants, found in sofas, nursing pillows and infant car seats, can impede brain growth and affect thyroid hormones. When Williams's milk is tested for polybrominated diphenyl ethers (PBDEs), she learns that her levels are slightly above average for US women — and notes that mothers offload about 30% of their PBDE burden onto their babies if they nurse for a year. Williams breast-fed her two children for 18 months each.

It is not just infant development that may be affected: the author describes how hormone-disrupting phthalates and bisphenol A (BPA) may be advancing puberty in girls by prematurely switching on oestrogen receptors in breast tissues. Williams looks at possible reasons behind the rise in breast cancer — globally, the leading cause of cancer-related death in women, with 1 million diagnosed each year — including better detection, hormone-replacement therapy and exposure to untested chemicals.

In one alarming account, she reports on an epidemic of male breast cancer among US marines at Camp Lejeune in North Carolina. Over three decades, starting in the 1950s, fuel tanks leaked more than 3.8 million litres of petrol into the base's groundwater. One well, which supplied drinking water to 8,000 people, contained 76 times the legal limit of benzene, a known human carcinogen.

As Williams points out, breast milk boosted brain size in our ancestors, but those brains have helped us to change the environment — which, in turn, is channeling to infant brains toxins that may impede their development. There is hope for the future, however: in 2004, the United Nations implemented the Stockholm Convention on Persistent Organic Pollutants, in which 177 countries have agreed to ban or restrict such chemicals, including some PBDEs. The United States has yet to ratify the treaty. ■

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Books in brief



Run, Swim, Throw, Cheat: The Science Behind Drugs in Sport

Chris Cooper OXFORD UNIV. PRESS 288 pp. £16.99 (2012)

Whether sprinting, swimming, lifting or leaping, elite athletes in action are phenomenal — and, as biochemist and sports scientist Chris Cooper shows in this pacy account, some are also assisted by performance-enhancing drugs. To understand a problem that is unlikely to disappear from sport completely, Cooper lays out research on the substances in question, how they work, which are illegal and the methods for detecting them. He explores a number of contexts, ranging from sexual dimorphism and the need for oxygen and key nutrients to gene doping and the science behind the tests.



Digital Vertigo: How Today's Online Social Revolution Is Dividing, Diminishing, and Disorienting Us

Andrew Keen ST MARTIN'S 256 pp. \$25.99 (2012)

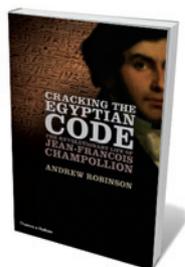
In a world gripped by digital utopianism, Silicon Valley insider Andrew Keen is an uber-sceptic. Those in online communities are, says Keen, besotted with a corpse, much like James Stewart's character in Alfred Hitchcock's 1958 film *Vertigo*. Rather than offering a vast, benign e-neighbourhood, he argues, forms of social media breach privacy, encourage narcissism and promote commodification of personality. Aloneness, he says, is a necessary antidote to the hypervisibility of the social-media in "Web 3.0" — and a basic human right.



The Fate of the Species: Why the Human Race May Cause Its Own Extinction and How We Can Stop It

Fred Gutell BLOOMSBURY 224 pp. \$25 (2012)

Scientific American's executive editor, Fred Gutell, pulls no punches in this succinct round-up of the global trends that threaten humanity. He considers, in turn and backed by intriguing research, the rise of superviruses, rapid species extinctions, climate change, the disruption of ecosystems, synthetic biology and bioweaponry, and our over-dependence on machines. Ultimately, argues Gutell, the solutions lie in the very technology that propelled us into the current chaos — along with plain human adaptability.



Cracking the Egyptian Code: The Revolutionary Life of Jean-François Champollion

Andrew Robinson THAMES & HUDSON 272 pp. £19.95 (2012)

In the first English-language biography of nineteenth-century "father of Egyptology" Jean-François Champollion, Andrew Robinson offers a vivid portrait of a prodigy, and richly contextualizes Champollion's work decoding the hieroglyphs on the Rosetta Stone. The book takes in Egyptomania from ancient Greece to eighteenth-century Britain, Champollion's rapid rise to professorhood, his rivalry with English polymath Thomas Young, years of preliminary work and travels in Egypt, and the advances that followed him — all beautifully illustrated.



Silent Spring Revisited

Conor Mark Jameson BLOOMSBURY 288 pp. £16.95 (2012)

Natural-history writer Conor Jameson uses Rachel Carson's 1962 work *Silent Spring* as a focus for reflection on conservation and environmentalism in the decades since then. He begins with tens of thousands of UK birds dying in the 1960s, felled by pesticides, and moves through oil spills, the work of the UK Royal Society for the Protection of Birds and the steady decline in avian species. The 'silencing of spring', Jameson notes, continues — but reintroduction programmes, given the right support, are beacons in the gloom.