Immigration
Why Amnesty Makes Sense
Researchers working on the next generation of antibiotics are exploiting new knowledge about bacterial genetics

streptococcus and anthrax and hopes to eventually treat infected patients by squirt ing the enzymes in nasal-spray form weekly.

None of these agents are quite ready for the pharmacy yet, and until they are, researchers are focusing on new ways to maximize the power of drugs we do have. By studying bacterial DNA, scientists at the Naval Research Laboratory are decoding the genetic battle plans that the bugs use to develop resistance. These secrets can help doctors prescribe antibiotics more effectively by knowing which strains are most susceptible to which drugs.

As the TB scare reminded us, that's important in a world in which superbugs can quickly go global. Bacteria may be resourceful things, but science, while slow, can be smarter. It's just a matter of knowing your enemy—and packing the right weapons.

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**BEHAVIOR**

**Daddy Dearest.** Father's Day salutes the world's great dads, but it takes science to explain why some aren't so great

**BY SARAH BLAFFER HRDY, WITH MARY BATTEN**

The folks at Hallmark are going to have a very good day on June 17. That's when more than 100 million of the company's ubiquitous cards will be given to the 66 million dads across the U.S. in observation of Father's Day. Such a blizzard of paper may be short of the more than 150 million cards sold for Mother's Day, but it's still quite a tribute. What's less clear is whether dads—at least as a group—have done a good enough job to deserve the honor.

Worldwide, 10% to 40% of children grow up in households with no father at all. In the U.S., more than half of divorced fathers lose contact with their kids within a few years. By the end of 10 years, as many as two-thirds of them have drifted out of their children's lives. According to a 1994 study by the Children's Defense Fund, men are more likely to default on a child-support payment (49%) than a used-car payment (3%). Even fathers in intact families spend a lot less time focused on their kids than they think: in the U.S. fathers average less than an hour a day (up from 20 minutes a few decades ago), usually squeezed in after the workday.

Anthropologists are trying to figure out why. Homo sapiens produces the most slowly maturing young of all mammals. Among foraging humans, children need 19 years—and consume 13 million calories—before producing more food for their community than they take from it, according to research by anthropologist Hillard Kaplan. You'd think fathers would be hardwired to provide for such needy offspring, and yet there is more variation in fathering styles across human cultures than among all other species of primates combined. Many of our primate kin are far better fathers than we are (investigators at the California primate center discovered that baby titi monkeys are in the arms of their fathers for as much as 90% of daylight hours); many are far worse. But all are at least consistent within their species. Why does paternal care in our species vary so much?

One thing that draws a human male to a child of his is that, hormonally speaking, men are a lot more similar to women than many of us realize, particularly during the critical survival period approaching a child's birth and its infancy. As in some other mammalian species, human males are known to have high levels of prolacin (a hormone usually associated with lactating mothers) toward the end of a partner's pregnancy.

Canadian biologist Katherine Wynne-Edwards and psychologist Anne Storey have shown that the similarities don't stop there. New or expectant fathers holding either their baby or a doll wrapped in a blanket that recently held—and still smells of—a newborn
PRIMATE POPS

Dad of the year Baby titi monkeys spend as much as 90% of the day in Dad's arms and prefer him to Mom

Hands on Male Night monkeys carry their babies for at least four months and are their primary caregivers

Old-school Protective of their young, male gorillas are still not hands-on fathers

...experienced a rise in prolactin and cortisol (a well-known stress hormone associated with mothering) and a drop in testosterone. When the men listened to a tape of a crying newborn and were shown a videotape of a newborn struggling to nurse, the ones who reported the greatest urge to comfort the baby were the ones whose hormone levels had changed the most.

But dads have to spend time close to babies for hormones to kick in, and this hasn't always been possible. Today we take child survival for granted, but in traditional societies, 40% of offspring might die before age 5. To keep infants safe, it made sense for them to be held at all times. With Mom often caring for more than one offspring and Dad busy rustling up food, the job sometimes had to be outsourced to grandmothers, aunts and others.

Among some West African Mandinka, the help of a maternal grandmother has been linked with a halving of the under-5 mortality rate. Similar benefits were shown in Finnish farming communities in the 18th century. African parents still counsel a marriageable son, “First find yourself a good mother.” They are talking about his future mother-in-law, not his future wife.

Expectant fathers holding a doll in a blanket that smells of a newborn exhibit a rise in two hormones linked to mothering

It was this cooperative system that allowed mothers to have more babies than they could support and fathers to vary in how they cared for them. The politicized notion of the nuclear family aside, a mother and father raising children alone was typically a temporary and often less than optimal phase for our ancestors.

None of this gives modern fathers who neglect their kids an evolutionary pass. Indeed, some studies suggest that even having one full-time dad might not be enough. Among many traditional societies across South America, people subscribe to the folk wisdom that any man with whom a woman has had sex in the 10 months before giving birth makes some biological contribution to the fetus growing inside her. Even the woman’s official husband accepts this, and any possible father is welcome to assist—discretely—in providing care for the child. Research by anthropologist Steve Beckerman and his team suggests that the optimal number of fathers is two, with 80% of children in the Barí tribe of Venezuela who have two male providers surviving to 15, compared with 64% among those with only one. Few modern fathers would like such an arrangement, but they hardly need to. Given the right combination of chemistry and culture, good fathering is a varied and highly sustainable resource—one that’s just waiting to be tapped.