Some people — but not very many — appear to be naturally protected against HIV (human immunodeficiency virus), which causes AIDS. While often exposed to the virus, they do not become infected.

Some other individuals — again, not many — who are infected (HIV positive) remain disease-free and well for a remarkably long time. This suggests that they, too, may harbor some innate protective factor(s).

These putative protective factors, which research leaders are tentatively calling "correlates of protective immunity to HIV infection," were brought to center stage at a Dec. 10 brainstorming meeting convened here by the Institute of Medicine (IOM), an arm of the National Academy of Sciences.

Three factors, participants said, spurred IOM:

• As time passes, more and more long-term resistors and survivors of HIV infection have become evident and are available for study. Internist Jay A. Levy, M.D., a pioneer AIDS researcher at the University of California, in San Francisco, said he and his colleagues now have 70 long-term survivors among the thousands of homosexual men they treat.

• Interesting data is becoming available on some dramatic instances of resistance. Particularly, a couple dozen prostitutes...
The cigarette industry's strategic ploy, over many years, of keeping open a window of doubt that smoking is dangerous in order to reassure present smokers and lure new ones.

A perfect example of this arose in the wake of Ed Rollins' confabulatory admission that the Republicans had bribed black church leaders to hold down the Democratic vote in the New Jersey gubernatorial election. The brouhaha that followed provided an opening for New York Times columnist Bob Herbert to point out that tobacco companies have for years been paying off black politicians and reaping positive publicity through sponsorship of events like the Virginia Slims women's tennis tournament (N.Y. Times, Nov. 21).

Herbert provoked an angry riposte from Virginia Slims tournament founder, tennis ace Billie Jean King (N.Y. Times, Dec. 2). She said of the sponsor: "The Philip Morris executives I know do not hide behind ignorance or anything else. They are enlightened people who understand and acknowledge the possible hazards of smoking."

The weasel word, of course, is possible. King's use of it, moreover, is sufficiently ambiguous for it not to be clear whether she means hazardous to every smoker — which it is not — or objectively hazardous to many of them. Which it certainly is.

Drugs for Violence?: We reported last April that a violence gene had been located by neuroscientist David A. Neilson, Ph.D., and his associates at the National Institute of Alcohol Abuse and Alcoholism, in Bethesda, Md. Studying imprisoned violent offenders in Finland, they found two variants of a gene that controls the rate at which the amino acid tryptophan is converted into the neurotransmitter serotonin in the body. Prisoners with a variant of the gene that produced low levels of serotonin were more violent than prisoners who had an alternative variant that yielded higher — and more calming — levels of serotonin (see story, p. 7).

This research was attacked by black activists, who objected to studies that might link violent behavior to genetic traits.

The study originally was sent to Nature, which rejected it. But it will be published this month by the American Medical Association in its Archives of General Psychiatry. We hear that the study, which has been expanded, contains some surprises — and we'll report on them next month.

We've been trying to think about the biological, social and criminal definitions of aggression, violence, etc. This is how we see it: Aggression is a psychological and physiological trait that may be expressed injuriously as violence toward oneself or others. Illegal violence is a crime.

Self-destruct Syringes: Massachusetts, as we have reported (Feb. '92), passed a law that all syringes sold there, starting this month, must self-destruct. This means the instruments could be used only once, and then would break, or lock permanently with the needle retracted.

Health workers thus would not suffer needle-stick injuries that can transmit AIDS or other diseases. The self-destruct (SD) syringes also would prevent drug abusers from sharing the instruments and infecting each other.

As the deadline for compliance approached late last year, Massachusetts officials and other interested parties met — and discovered that no manufacturer is ready and able to supply the safer syringes. An industry source said that a one year delay for enforcing the law may be needed.

Some safer injection equipment already is being put in place. The Massachusetts General Hospital, in Boston, is switching to syringes that have automatic sheathing devices — but may not be tamper-proof enough to keep addicts from reusing them.

The hospital estimated its additional cost at close to $1 million per year. But, it said, in a study presented to the American Federation of Clinical Research, that needle-stick injuries are costly, as well as dangerous — and the safer new equipment will earn back some of this expense.

Health Resolutions Offered for New Year

Medical science has advanced incrementally in the last year in its understanding of ways to prevent, diagnose, and treat illness. But the important things that people can do for themselves to stay healthy remain remarkably constant.

They are simple to say, but harder to do.

Here are our perennial health resolution proposals:

1. Don't smoke.
2. Drive slower; buckle up.
3. Exercise more.
4. Eat moderately; consume less fat, more fiber.
5. Drink alcohol in moderation.
7. See your doctor annually.
8. Practice safe sex.
9. Get flu shots and other vaccinations.
10. Relax and enjoy!
'Flaws' Killed Science Cops' Bellwether Case

In recent issues we described some reasons why we think the quasi-scientific and quasi-legal system that the federal government has set up to investigate and punish scientific misconduct is a mistake: It harms science and scientists, and it harms the individuals and society they serve.

One area we have not adequately delved into is the very sloppy and malicious charges that have been concocted against accused scientists by the Public Health Service's Office of Research Integrity (ORI) and its precursor agencies.

We of course are not alone in these views. A rogue government panel has judged ORI's work product, and confirmed and extended the complaints about it.

This harsh judgment came in a decision by an appeals board of the Department of Health and Human Services (HHS). The board is made up of HHS lawyers.

The case in point is that of Mikulas Popovic, M.D., a virologist in the lab of Robert Gallo, M.D., at the National Institutes of Health (NIH). Popovic, who was born and raised in Europe, was the first person to coax the AIDS virus, now called HIV (human immunodeficiency virus), to grow in a cell culture. This is the step which, made possible the blood test accused scientists by the Public Health Service's Office of Research Integrity (ORI) and its precursor agencies.

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Popovic, Gallo and their co-workers reported this work in Science on May 4, 1984. The HHS appeals board notes that the report is "regarded as a 'tour de force' of science .... a seminal work, possibly the most important paper in virology in the 20th century." It also is the report that researchers at the Pasteur Institute in Paris claim was a theft of their discoveries; and it is the report that Chicago Tribune reporter John Crewdson, Congressmen John Dingell (D-Mich.), and ORI have alleged to be evidence of misconduct against Popovic and Gallo. But ORI has acknowledged that Popovic's faults were "relatively minor."

**Appeals Filed**

Both Popovic and Gallo appealed ORI's findings to the appeals board. In November, the board found for Popovic, overruling ORI. The ORI then dropped its case against Gallo, which was based on much the same purported evidence.

The board's finding in Popovic is noteworthy for its withering analysis of ORI's case. The HHS lawyers say, with evident annoyance:

[This case has compelled us to parse a record reflecting years of investigations, thousands of pages of documents and lawyers' briefs, a hearing which lasted 12 days, and the time, attention, and disagreement of dozens of scientists, investigators, and lawyers. [This] all focused essentially on the meaning which we should give a handful of words and notation contained in one heavily edited paper written by a scientist with limited English skills, during a volatile period of scientific discovery a decade ago.]

The board continues, sarcastically, in its decision: "One might anticipate that from all this evidence, after all the sound and fury, there would be at least a residue of palpable wrongdoing. That is not the case [emphasis added]."

Rather, it ruled, "ORI was simply unable to prove by a preponderance of the evidence that Dr. Popovic is guilty of scientific misconduct — even under standards first promulgated [ex post facto] years after the paper was published."

The board asks "how it could happen that such a massive effort produced no substantial evidence of its premise?" They answer that ORI's findings contain "fundamental flaws."

The board listed five "general flaws" in ORI's case:

- Each finding of scientific misconduct was based on reading in a particular way language that was, in context, merely ambiguous.
- The opinions offered by ORI's scientific advisors at the appeals board hearing on the case were based on misunderstandings about what was involved in the research at issue and what Popovic and others had said.
- ORI's advisors drew unreasonable inferences from non-scientific evidence in the case.
- ORI and its experts did not have a clear idea of the proper legal and scientific standards to apply to Popovic's conduct.
- ORI assigned an importance to matters that was not justified when the paper is examined as a whole.

The reviewers go on to say, scathingly:

"None of the matters [ORI alleges] here has any significance to the validity of the major conclusions of the paper."

The appeals board then dissects the ORI's case point by point in great detail. They conclude:

"ORI did not prove by a preponderance of the evidence that Dr. Popovic engaged in scientific misconduct by intentionally falsifying certain methods or data reported in the ... paper, or even prove that the methods and data at issue were untrue."

Even if it could be shown that there is need for an Office of Research Integrity — and we doubt that there is — the present ORI officials' abysmal and embarrassing work product show that this office has failed. Its leaders should resign. Or they should be fired by HHS chief Donna Shalala.

**ORI: In Its Own Writ**

The Public Health Service's Office of Research Integrity (ORI) has published a long-awaited brochure that describes its work: ORI — An Introduction summarizes the agency's complex legislative and bureaucratic history, and describes how ORI functions in "protecting" research integrity. The pamphlet also tells how to file a misconduct complaint against a scientist. ORI officials' names and phone numbers are listed. For a copy of the pamphlet, write ORI/USPHS, 5515 Security Lane, Suite 700, Rockville, Md. 20852.
Times Story on a Cloning Experiment

The human cloning story has been vastly distorted.

Much of what appears to have happened has not. Much of what has been written and said is simply wrong.

What did happen?

The story was a scoop for science writer Gina Kolata, on page one of the Sunday New York Times (Oct. 24). But, in a dramatic demonstration of how a reporter’s predilections can shape the news, Kolata had closely foreshadowed her cloning report in a piece published the previous Sunday (Oct. 17). She wrote it before she learned that reproductive biologist Jerry L. Hall, M.D., at George Washington University, in Washington, D.C., had separated several two-cell human embryos into single-cell organisms (zygotes), according to Kolata’s source on the story.

In the experiment, the separated cells began to redivide, and grew into multi-cell embryos — until Hall destroyed them. This relatively simple experiment thus duplicated the events that occur naturally in the conception of identical twins. It showed that doctors may be able to increase the number of embryos available for implantation into the uterus of a woman who has sought medical help, with her mate, for infertility. This in turn would improve the couple’s chances of having their own baby.

Fears Explored

In her earlier Sunday piece, Kolata explored the vilification of doctors and science — the Frankenstein scenario — that we have discussed here (PROBE, Sept.). But where we see the scapegoating of science and reason by irrationalist and commercial interests, Kolata reached an opposite conclusion: People are fearful and angry because of the hubris and greed they discern in doctors and in the biomedical business.

Kolata quotes University of Minnesota bioethicist Arthur Caplan, Ph.D., as saying scientists still win high ratings in opinion polls. But, he continues, “it is also clear that bubbling beneath the surface are primeval fears about profiteering and science and technology run amok, and scientists whose egos know no bounds.”

Then, a week later, Kolata revisits this scary scenario in her “cloning” exclusive. It turns out, too, that it was ethicist Caplan who tipped Kolata off to Hall’s experiment (Time, Nov. 8). The news magazine notes that he supplied her with conjectures on how the method — which he sees as morally suspect — might be misused to destroy mankind’s treasured sense of human individuality, as Kolata reports in a follow-up story (Oct. 26).

In short, with Caplan’s help, Kolata fulfilled her own Cassandra-like prophecy within one week’s time.

Enterprise Is Rewarded

Kolata is one of the Times’ most enterprising science reporters. She seeks and finds odd, offbeat and often very important stories that colleagues miss — which is precisely what a good reporter should do. She also makes more mistakes than some of her Times colleagues think she ought to: “Her handling of the cloning story — which shaped all of the other explosive coverage that followed — may be one such error in judgement.

She and the bioethicists she phoned speculated wildly that parents might choose to grow out multiple copies of identical embryos at different times, so that one child would be older than his or her twin. Or, parents might raise clones for replacement organs if the first baby becomes injured or ill. Or, they might freeze, store, and later sell cloned embryos to strangers, based on how bright or beautiful the first-born clone turned out.

The scariest scenario, however, which was (Pardon the pun!) cloned throughout the media, is that the method might be developed to make multiple copies of particular living individuals — Dan Rathers, say, or Dan Quayles, or even Hitlers.

This is wholly farfetched. It can’t be done! And if it could, it would entail an entirely different type of cloning procedure than the one Hall performed. Thus, what he did is not a step down a slippery experimentalist slope that could lead to 100 Hitlers, as much of the coverage suggests.

The essential difference is this: What Hall did was to separate and regrow two cells that each carried potential, but as yet unexpressed and unknown traits, from each of two parents. Because of biologic limitations, he might make two or conceiv-

Send in the Clones

The cloned reproduction of bad guys already is part of the science fiction literature. Sixteen years ago, science writer David Rorvik published a book, In His Image: The Cloning of a Man (Lippincott), in which he claimed to have watched an eccentric millionaire clone himself. All of the allegedly cloned baby boy’s genes and traits were derived from this father; the woman who carried and gave birth to the child did not contribute to his genetic inheritance.

Rorvik and his publisher claimed the story was fact. In a piece in Newsday (Mar. 12, ’78), under the headline above, we challenged Rorvik point blank:

David Rorvik should put up or shut up.

We pointed out that his claim that the “cloned” son was genetically identical to the father could be proved with a blood test, using a few teaspoonsful of each of their blood. If the one was the other’s clone, their blood profiles would be identical; the possibility of this happening by chance was one in a billion.

We even found a well regarded hematologist who said he would perform the test. If Rorvik failed to come forward with the blood specimens, we said, then his cloning account could be considered a hoax.

We sent the Newsday article to Rorvik. He never responded to our challenge.
ably three or four copies of the original embryo, but certainly not dozens or hundreds.

Hall did not respond to repeated requests for comment.

'Twinning' Preferable

One colleague, reproductive biologist Jacob Mayer, Ph.D., of Hoag Fertility Services in Newport Beach, Cal., thinks that Hall's main error was in calling his procedure "cloning." The better word for it, Mayer said recently by phone, might be "twinning" — a designation that could have forestalled, or at least subdued, the subsequent uproar.

Kolata's stories do not clearly distinguish between cloning unknown embryos and cloning whole human beings. This was a critical error on her part. The rest of the media went with the 100 Hitlers or eight identical cute kids (Time) scenario, particularly in the pictures that illustrated their reports.

Some animals, lizards in particular, naturally reproduce themselves asexually in this way. But even if it could be done with humans — which again, it can't — the cloned individuals could not grow up in identical ways. Life is a river in time and in space, and where one enters determines who one becomes. A second Hitler might have ended up a house painter, or become a streetcar conductor — or the head of a bank.

The scenarios suggested for Hall's type of cloning seem similarly farfetched. Most parents, we think, seek variety, not identical cute kids. So it's hard to imagine them selling copies to others.

Loopiness Decried

Bioethicist Caplan, in a recent phone interview from Minneapolis, confirmed Time's report that he had been the source of some of Kolata's scary scenarios. But, he said, he was "more the source" of the notions about possible uses of newly conceived embryos for the twinning type of cloning than he was a source for "a lot of the loopy stuff" about raising spare parts babies or cloning Hitler.

He says the comments about Hitler were "flip" — and then were taken seriously.

"I think that's how it went," Caplan said. "It fell into a ground whereJurassic Park preceded it — and the ground was fertile" for scary scenarios.

"Why did it get to silly so fast? People don't know much about cloning and reproductive technology and genetics, and that includes the media and even the experts who comment" on it to the press. Even among bioethicists, Caplan said, there are very few who know enough to say very much about genetics.

Anti-abortionists Played a Role

Another reason for the brouhaha, he added, is that many who oppose cloning share a strong right-to-life background:

"What you do to embryos," he explained, "is a major cause for concern to a large group of people: Catholics, fundamentalists." He added:

"They are absolutists!"

If Caplan shared this important explanation with Kolata, she did not share it explicitly with her readers. In her follow-up story (Oct. 26), she did, however, quote the Vatican's official newspaper, which branded Hall's experiment "a perverse choice" and a "venture into a tunnel madness."

Other critics included Jeremy Rifkin, who vehemently opposes most if not all forms of bioengineering.

Constraints Are Present

In news stories Kolata and other science reporters are constrained in their ability to point out how scientific advances have become footballs in long-standing ideological or political battles. For the most part, reporters must make do by quoting the combatants, not reporting their biases. This is why prompt analytic commentary on the op-ed page or elsewhere in the paper may be critical to public understanding of science.

Kolata could not have known when she wrote the story that it would end up in newspaperdom's prime position: above the fold on the Times' Sunday front page. But she and Caplan should have sensed, and spoken to the possibility of hysterical misunderstanding, rather than cater to it by suggesting bizarre ways the method might be misused.

Kolata never published a corrective. But the Times did finally print one, on the editorial page, almost two weeks later on November 6 (see box).

By then, however, the damage had been done: Many Americans already are convinced that cloning human embryos is witches' work — not a rational prospect for aiding childless couples.

Record Rebalanced

When a Times writer goes overboard on a story, the paper does not chastise him or her publicly in its pages, but rather publishes a corrective article, called a skinback, to rebalance the record. The balancing piece for the "cloning" story appeared as a Times editorial, "My Brother the Clone" (Nov. 6).

The editorialist pointed out that the purpose of Hall's experiment is to help infertile couples become parents by increasing the number of fertilized embryos available for implantation in the wife's uterus.

"The work is far from finished, and . . . many physicians and bioethicists think that now, not later, is the time for debate," the editorials says. "Separating the big questions from the trivial is important. But so, too, is the fact that cloning embryos may make it easier for thousands of couples to realize their dream of giving birth. To stop the research now would be to do them a cruelty, reason enough to hope the researchers . . . will continue their work."

January 1, 1994
New Paradigm Links Genes and Violence

A provocative new understanding, based on wide but preliminary data, has for the first time linked genetic factors and environmental forces in an explanation of aggression, violence, and crime.

This paradigm says that aggressiveness against one’s self or others, and the violence that can result, are mediated by the neurotransmitters serotonin and noradrenaline, and perhaps other such substances. Low serotonin and high noradrenaline levels, for example, are correlated with aggression and violence, while the opposite situation — high serotonin and low noradrenaline — often foreshadows self-satisfaction and social well-being.

Neurotransmitter levels, according to this new understanding, initially are determined by one’s genes. But — and this is the new element — severe environmental stress from poor familial or social conditions may induce, or activate, these genes so that a person becomes more aggressive, or loses self-control. And these personality changes may be permanent, unless counteracted by drugs like the serotonin booster Prozac.

Ideas Are Controversial

This paradigm may prove to be highly useful — and certainly will be much discussed in the year ahead. It also is highly provocative: It postulates a biological basis for destructive and anti-social behaviors which many scientists insist are wholly conditioned by environmental factors such as poverty, broken homes, and lack of opportunities. Critics of these ideas in the black community say they are racist (PROBE, April).

Public understanding of the new paradigm has been advanced by a carefully reported, albeit largely uncritical series of articles by Chicago Tribune science writer Ronald Kotulak; it filled five broadside pages of the paper (Dec. 12-15). Kotulak interviewed a wide range of basic and clinical researchers. He provided a journalistic synthesis of their thinking that appears in five major sections of the series "Unlocking the mind" (Dec. 12-15).

Kotulak cites the "fears" that some groups — meaning, obviously, blacks — "will be stigmatized as violence-prone." But, he stresses, "researchers emphasize that genes linked to aggression are found in all racial and ethnic groups."

Fears Discounted

The Trib reporter says that "most of those who study violent behavior believe the implications of their findings are liberating, not threatening." He adds:

"In demonstrating that self-control and impulsiveness may be regulated by brain chemistry and genes, their research challenges the concept that violent crime is the result of an evil will; rather it places aggressive violence in the same category as depression, schizophrenia and other mental disorders."

This all sounds well and good! But the Tribune is a conservative paper in a racially divided city (and nation), and we suspect that even Kotulak’s benign construct will prompt angry reactions.

Vaccine

continued from page 1

mune system with only one or two facets of the virus, while the whole virus might stimulate — and do so more strongly — a half dozen or more immunological responses.

The alternative thus might be to vaccinate with live HIV viruses that have been attenuated, so that they cause an immunologic reaction but are too weak to cause AIDS or other serious illness. Or, to vaccinate with a whole, killed virus that has been inactivated chemically or by other means. This is a method favored by polio vaccine pioneer Jonas E. Salk, M.D., who attended the IOM meeting, along with his son, Peter Salk, M.D., who works with him at the Salk Institute for Biological Studies in La Jolla, Cal.

Whole Viruses Are Feared

The AIDS establishment has been extremely reluctant to pursue whole-virus AIDS vaccines. Reason: reasonable fear. The fear is that the organisms might revert or revive, and cause AIDS. For this reason what is more, people might not be willing to be vaccinated with them in the first place, no matter how high their risk of AIDS.

But federal officials, who fund much of the vaccine research, and must approve any vaccine before it is used, are shifting their views. The fed’s point man for AIDS research, Anthony S. Fauci, M.D., of the National Institutes of Health, said that an attenuated whole virus "may ultimately be the answer to the vaccine thing."

This brought a smile to the face of polio vaccine developer Salk. He favors a whole, killed virus, rather than a live, attenuated one. But he has been one of the few who have argued in recent years for the whole-virus approach.

FDA Shifts Views

The U.S. Food and Drug Administration (FDA) now is interested in this approach, too. The director of FDA’s Center for Biologics Evaluation and Research, the office that would assess such a preparation, warned that it will be "difficult" to translate research findings in this realm into useful products. But, said biologist Kathryn Zoon, Ph.D.:

"We’ve put that out on the table to start talking about it."
Critic Warns: Novelty in Medicine May Be Bad News

Medical news reports in the mass media ought to meet a different — higher — standard than other news.

This is the strongly argued view of a fraud-fighting psychiatrist, Stephen Barrett, M.D., of Allentown, Pa. He is editor of Nutrition Forum, a newsletter that exposes health fads, fallacies, and quackery. Speaking to science reporters at a recent American Medical Association press briefing in Philadelphia, Barrett explained that the higher standard is necessary because a mistake in a science story “may kill a reader.”

Fraud is Possible

News is novelty, Barrett said. But in medical reportage claims for novel and alternative cures are more likely than to be unsubstantiated, or even outright fraud.

“Most people with [real] breakthroughs don’t go around promoting them,” he commented.

Reporters often qualify stories about health claims by finding and briefly quoting an expert who disagrees with the main news source’s claim. Barrett rejected this “token balance” as inadequate.

Information Is Sparse

“These articles,” he said, “rarely contain enough information to let the reader make an informed decision” on the validity of the cure or other claim being made.

In Barrett’s view, a science reporter’s job is to find enough information to allow both reporter and readers to make a “crystal clear judgment” on a promoter’s claim. It’s a “cop-out” for a reporter not to do this, he said.

# # #

The kind of story Barrett wants may take weeks, or longer, to research and write. Most reporters are given only a few hours to do a news story.

Kissin’ Cousins Oft Wed; Genetic Damage Is Rare

Contrary to popular opinion, population geneticists say, marriages between second cousins — which are quite common in the Third World — do not significantly increase their offsprings’ burden of damaging and lethal genes. These findings were presented to the American Association for the Advancement of Science (AAAS) last year.

Surprisingly, too, declared geneticist Alan H. Bittles, Ph.D., of King’s College, London, inbred marriages continue to be popular, despite religious and legal prohibitions. In fact, Bittles said, at a symposium in Boston, there would be more such matches, “but there are just not enough cousins to go around.”

He estimated that a fifth of the world’s population are the result of first or second cousin matings. These pairings have several socioeconomic advantages, Bittles explained:

They are easy to arrange, and usually no dowry is required. Cousins also tend to marry each other at an early age. This means that if one of their babies dies in childbirth, there is ample time to conceive and deliver replacements — an important consideration in societies where healthy, productive offspring are considered a source of wealth and security.

Marriages between first cousins do have a higher rate of perinatal mortality, due to the inbreeding and the expression of deleterious familial genes, Bittles and other geneticists said. The death rate in these children is about five percent higher than in outbred marriage.

Resistance ...

continued from page 1

in Kenya — where most women who ply their trade already are HIV positive — have had dozens or more unprotected sexual exposures to infected men. But they remain uninfected.

- Disappointing findings in existing experimental drug and vaccine development programs have discouraged the AIDS research establishment — the “family” one speaker called them — and they are grasping for new directions. “The hope is that something” accounts for the rare cases of resistance to HIV, declared San Francisco public health official Susan Buchbinder, M.D., “and that we can find some way to use this [factor] to increase long-term survivals.”

This hope, which attracted more than 100 experts to the meeting, also could be a long shot. Harvard immunologist Norman Letvin, M.D., remarked, wryly:

“To say the least, this is a highly controversial area!”

The clearest and most tantalizing data is on the African “sex workers,” as they now are correctly called. Infectious disease specialist J. Neil Simonsen, M.D., from the University of Manitoba, in Winnipeg, said that in Nairobi, Kenya, more than 85% of these women are HIV positive. So are at least 18% of their clients.

Each woman entertains, on average, four men a day. This works out, statistically, to about 32 infectious clients per year; each exposure carries a 1.5% risk of infection. As the result, about 40% of these prostitutes — who have been followed carefully since 1985 — become HIV infected each year.

But a handful of them have not, even after several years. Their bodies harbor no virus, and make no antibody against it; their CD4 white blood cell count, the standard marker for HIV infection and AIDS, remains normal. Yet when their blood specimens are cultured with HIV, they are “highly infectable,” Simonsen said.

“I’m fascinated, Neil, by your uninfected women!” Levy, of San Francisco, declared.

Simonsen went on to say, in answer to questions, that absolutely no differences could be found between the infected and uninfected sex workers, by repeated vaginal examination or by any other means. All practiced vaginal intercourse, but shunned oral and anal sex, he said. There were no differences between the two groups in the numbers of clients, use of condoms, the
Resistance . . .

continued from page 7

number of pregnancies, nor in the incidence of genital sores or other sexually transmitted diseases.

But one innate trait does seem to play a role: invisible immunologic differences in the proteins on the surfaces of white blood cells that are called human leukocyte antigens (HLA). There are a wide variety of HLA types, as there are red blood cell types such as A, B, and Rh.

Women who possess some of the rarer of the HLA antigens, such as A69, have a significantly lower risk of becoming infected by HIV, Simonsen said. The reason, he indicated, is not yet clear.

He added that, in his view, the women's lack of infection was not due to chance alone. Other speakers suggested, however, that "protected" individuals — whether female prostitutes, male homosexuals, or others — are a statistical artifact: They simply are the far right end of a bell-shaped time curve for an infection that is both difficult to catch and slow to develop into full-blown AIDS.

They nevertheless may provide important clues.

"Let's look at the right end of the bell-shaped curve!" Levy said.

Even given this new research direction, the researchers assembled by IOM face this still daunting challenge: The factors that might protect people from HIV infection, or slow its progression to AIDS, are as yet out of reach, since the opposite factors — the ones that cause the disease to progress from exposure, to infection, to AIDS — still are not known. Said Nobelist molecular biologist David Baltimore, Ph.D., of Rockefeller University:

"There is a lack of understanding of what is casual in any aspect of [the disease's] progression, at any point in time!"

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