

in the bedroom

Biggest sex news since the Pill? A revolutionary birth-control method, proponents say, that will kill off HIV—and be undetectable by a woman's sex partner. Louise Palmer uncovers the supercontraceptive. Photographed by Irving Penn.

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nondescript industrial park outside Philadelphia is an unlikely laboratory for a revolution, especially one whose success depends on beating the billion-dollar pharmaceutical industry with a tiny, cash-strapped army of biochemists. But only a fool would doubt that Anne-Marie Corner, who runs that lab, will pull one off.

Corner has a touch of mad scientist in her, and the discipline of a business leader. Natural charm matched by steely nerves. Training in the fine art of the impossible. Knowledge of how to both stretch a buck and manipulate chemical compounds. And she believes. Believes she has found a way to rescue tens of millions of women from a death sentence, believes she has the recipe for sex without fear, believes she is creating a new world for her two young daughters.

Birth-control research has taken some important steps in the past year. Women will soon be able to buy a low-dose oral contraceptive designed to address complaints like mood swings and weight gain associated with the Pill; a flexible, transparent device called NuvaRing that, once inserted, releases a steady stream of pill-like hormones; and Ortho Evra, a flesh-colored, sweat- and waterproof patch that releases hormones into the bloodstream.

But for all the progress made, no one has come as close as Corner to developing the contraceptive equivalent of a home run.

As CEO of a biotech firm called Biosyn, Inc., Corner has spent the past decade developing an altogether novel product best described as a supercontraceptive. Called Savvy, it is designed to

prevent pregnancy, kill off HIV, and protect against a host of sexually transmitted diseases, including chlamydia, gonorrhea, and herpes. Perhaps even more important, Savvy is something a woman could use without her partner's consent or even knowledge. Today, our only protection against infection is condoms—if we can get our partners to agree to use them. And that's a big "if," when negotiating sex can be difficult, especially in the developing world, and failure to do so, fatal.

Savvy is what is called a microbicide: lubricant, spermicide, and germ-killer in one. It can be formulated as a gel, cream, film, or suppository inserted into the vagina before sex. Think of it as pleasure-plus-protection. Indeed, *microbicide* is an unfortunate name for such a sexy product: It calls to mind bleach sprayed onto a countertop rather than a simple and elegant way to solve the intractable problem of safe sex.

The dimensions of this problem are enormous: Every year, an estimated 15 million Americans are infected with STDs, some of which are linked to infertility, cervical cancer, and lifelong viral outbreaks, according to the American Social Health Association (ASHA). Last year, 5 million people globally contracted HIV. That's about 14,000 new infections a day. The result: Sex itself has been infected by fear and paranoia, contaminating both pleasure and intimacy. What woman in her 20s or 30s, after a careless moment, has not feared for her health—or life? Imagine a product that upends this phenomenon.

"Microbicides have the same potential to transform the landscape of sexuality that the Pill had," says Lori Heise, director of the Global Campaign for Microbicides, an international consortium of some 80 groups mobilizing support for this condom alternative. "In the sixties, the introduction of a dependable form of birth control reclaimed the sexual experience from the fear of pregnancy. HIV and STDs have thrown us (continued on page 352)

THE UNTOUCHABLES

Once upon a time, women's guardians considered heavy metal the best defense.

Microbicides may put the power to fight pregnancy and infection in our hands for a change. Eighteenth-century chastity belt from the Body Archive, NYC. Body makeup by Fulvia Farolfi.

Sittings Editor:
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starvation diets. "It was completely nightmarish," says Nigella. "My mother had such an unhealthy and uneasy relationship with her weight, and I just knew I didn't want to do that to my daughter. If I hear anyone say, 'Oh, my God, I hate myself, I'm so fat' in front of her, it makes me very, very cross because I think so much damage can be done."

Now Nigella could be described as having a cautiously comfortable attitude to her body image. "I don't mind the fact that I'm not lean and firm, and I'm probably not meant to be," she says. And she doesn't often use a scale, "because I always weigh so much anyway that I can be feeling quite good about how I'm looking, and then I get on the scale and feel fat." She does diet—usually Atkins—not to be thin, she says, but to be "at the right edge of it, so that there are some bits that go in. I don't mind making larger women everywhere feel better about themselves, but only up to a point. I think it's just as damaging when people who have weight problems say, 'I'm proud to be like this, and it's great,' because clearly it's just as much of a problem as undereating."

As for her propensity to cook with full-fat products, she describes our current all-or-nothing thinking about diet as extreme. "You might use a quarter pint of heavy cream, but you're putting it into something that is probably going to be eaten by six people. So it's not a lot of cream per person, and you're not suggesting they eat it for every meal." Besides, she says, eating fat is good for you. "I do think it makes one look better," she says, citing its benefits to the skin. "And also I don't think you feel well if you avoid it completely. I think it makes you depressed. I read an interesting book by a woman called Diana Schwarzbein, who feels that a lot of women's health problems are due to too much low-fat—because fat regulates your hormones." She was gratified recently to receive a letter from a woman at an eating-disorder clinic saying that she was using *How to Eat* to help her develop a normal attitude toward food.

Ultimately, Nigella has the best reason of all not to have a distorted craving for thinness. "Maybe this is too strong a way of putting it," she says, "but because I've known three people get ill and die of cancer, actually I equate thinness with ill health. So even though of course I mind it when I put on weight, I have a visual memory of seeing those people become skin and bone, and that gives me a slight reality check."

It's a credit to the show that *Nigella Bites* has won plaudits and praise in the States without viewers necessarily having prior

knowledge of her compelling personal history. *The New York Times* raved about her, and the Web site for the show had a remarkable 500,000 hits in the two months after its November launch, according to the Style Network. Chatting about her global presence, Nigella is a little fuzzy about when the program is on and what the viewing figures are—"I feel it's very bad to get too caught up in the reception, and I didn't expect to be taking America by storm." But she may be causing more thunder than she admits. She was recently brought over to appear on *Good Morning America*, *Letterman*, and other chat shows. "She's clearly an enthusiast, and I'm very impressed by her," says Anthony Bourdain, the outspoken American chef and author of *Kitchen Confidential*, describing a recent dinner with Lawson and Saatchi in London. "She is a strange and fabulous creature, he's mischievous and thoroughly likable, and he clearly thinks the world of her."

With her combination of talents and attributes, Lawson may do something rather extraordinary, like rewiring the American brain. Besides educating those who eat poorly about quality ingredients and simple techniques, her show helps to undo the fear of both food and flesh that our culture has instilled in us. "In the end, there's so little of life, it's silly to put so much of one's energy into hating what one is," she says. If we heed her advice—and make her recipes—we'll probably all be a lot happier. □

IN THE BEDROOM

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back to life before the Pill."

But despite microbicides' obvious appeal, the drug industry isn't interested. While plenty of science backs the concept, developing and testing these kinds of products is costly, risky, and ethically tricky. More to the point, it's a brand-new idea. If it works, it will not only transform rules in the bedroom; it will represent a revolution in medicine as well.

"It's not a treatment and it's not a vaccine, but something in between," explains the 40-year-old Corner in her lilting Welsh accent. "And it's never been done before."

Corner is sitting at her desk in her new digs, before a computer screen the size of a large poster, amid piles of moving boxes. "These are my daughters, and this is Brian Boucher's," she says, proudly pointing to a Philadelphia Flyers hockey puck encased in plastic sitting next to photos of her girls. "And these"—she waves her

arm—"are the flies that came in with the packing materials, the flies that won't die. I've sprayed them, I've swatted them, and they just won't go away."

Neither will she. Since 1990, Corner has been scaling the wall of incredulity erected by scientists and "big pharma" execs who didn't think microbicide research was promising or interesting enough for them, betting instead on the development of an AIDS vaccine.

"At the AIDS Conference that year, people laughed at us when we talked about the idea of a microbicide," she remembers. "It's been a long, long struggle. But there has been so much progress in the field, and we are now front and center of the biggest development in women's reproductive health with something no one even believed we needed."

Corner came to America with her husband from Wales when she was 22. She worked at the University of Pennsylvania in a biochemistry lab for a few years before deciding business school could teach her how to get products from the test tube onto the pharmacy shelf. But her unorthodox streak quickly showed itself. While her fellow MBAs headed to Wall Street in the summer after their first year, she took off for Cape Cod to windsurf and work out her future.

"We would wake up in the morning and look out the window to see if it was cloudy or sunny. If it was cloudy, we would go back to bed. If it was warm, we would ride to our boards and surf all day. I had lots of time. I wanted to figure out how to do something meaningful that makes a difference."

The AIDS crisis had been nagging at her for a long time, and it was obvious that things would only get worse. Addressing the epidemic, she decided, was her calling. She also realized she had to abandon the idea of working for a drug giant. Corner wanted to be her own boss, experiment freely in the lab, and work erratic hours. Corporate America will drive me nuts, she recalls thinking.

Corner returned to school with no money and nothing to show for her summer but a deep tan, blonde streaks in her auburn hair, large arm muscles—and a business plan. It was called Biosyn. Upon graduating, she licensed C31G, the compound she had been experimenting with at the lab, and set up shop. She was 28. Her goal was nothing short of finding a way to prevent AIDS and rewrite the rules of sex.

"I would sit in my office all day and just read because the phone never rang. One day, I was reading up on contraceptives and

came across an article on the use of spermicides as an antiviral, which was what I had been wanting to do with C31G, and the lightbulb just went off: I am not alone."

Corner took no salary during those early years, continuing to live in her student apartment with her husband. She worked late into the night and spent lots of money she didn't have on Biosyn, racking up close to \$100,000 in credit-card bills. Her first breakthrough came when she received a grant of \$1 million from the National Institutes of Health to begin testing her hunch. She was right: C31G—which works by disrupting the cell surface of a microbe (virus, bacteria, or fungus)—was effective against sperm, HIV, and other STD microorganisms. Within a few years, Corner was about to strike a deal with a well-heeled drug company—which boosted her confidence but left her devastated when it ultimately fell through.

"I just sat there and cried," she says, fiery green eyes tearing at the memory. "I actually had a salary and a baby-sitter for the first time and was looking at millions from a major pharmaceutical partner. And my heart was palpitating because I still had no money in the bank, and we were practically living hand-to-mouth.

"We made a new plan and raised more capital, but for eight years, it was every no imaginable. No because we don't need these drugs; no because we don't think they'll work; no because you don't know anything about business. . . . It was back to blind faith, but I kept going because I believed what we were doing was critically important."

Corner's staying power paid off. As the nineties wore on, hopes for an AIDS vaccine faded, the crisis deepened, and microbicide research gained momentum. NIH gave Biosyn more money, and with the money came more credibility. She built up her staff, hiring accomplished executives and scientists from the industry who knew how to design clinical trials and steer Savvy through the byzantine FDA drug-approval process. By 1998, Corner says, the world was beating a path to her door. A \$13 million infusion of venture capital and an invitation to the White House to meet with Vice President Gore followed.

Today, there are at least 35 biopharmaceutical companies, 23 nonprofits, and seven public-health groups worldwide, and 40 to 50 microbicidal candidates moving through the development pipeline, according to Polly Harrison, Ph.D., director of the Alliance for Microbicide Development.

BufferGel, made by a biotech called ReProtect, is furthest along in clinical trials. Kevin Whaley, Ph.D., research director for the company, says it will be in phase II/III of its HIV clinical trials this summer. Savvy has completed phase I/II and will likely begin phase II/III at the end of this year. Corner says it would be foolish to dismiss the competition, but she isn't too worried because she believes Savvy will prove to be most effective. "There is a bit of a tortoise-and-hare situation here," says Harrison.

"Anne-Marie is already way ahead of most people in thinking about these products," agrees Henry Gabelnick, Ph.D., director of CONRAD, an organization funded by public and private money to advance women's reproductive health. "She's a really clear, decisive thinker. She's got a plan and knows where her company is going. I don't worry about her."

Steps away from Corner's office, behind a heavy white door with signs prohibiting food, smoke, and drink, is Biosyn's spanking-new labs. The counters are lined with hundreds of tiny tubes and beakers filled with colored liquids and gels—sky-blue, amber, pale yellow, magenta—that serve as Savvy's testing ground. There are always lots of questions. Is the gel too thin? Too thick? Does the drug hold up under heat? Cold? Is the drug released evenly from the gel? Does it run out of the vagina? Does it burn or irritate?

"We cast a wide net and make everything we can think of," says Biosyn research director Joseph Romano, Ph.D. "Have you seen it yet?" he asks, squeezing Savvy, a clear gel, out of a small white plastic tube. "It has to work right, smell right, feel right, and have the right color."

C31G is so tiny it can't even be seen with an electron microscope. It attacks a virus such as HIV by disrupting its outer envelope so it cannot latch on to healthy cells or reproduce. Corner just won worldwide exclusive rights to another compound that sits and waits for the HIV cell, paralyzes the virus, and stops it from replicating itself. Soon her scientists will be cloning genes and splicing proteins to create new microbicide options with this and other compounds. For now, though, Savvy is at the forefront.

C31G has already proved its effectiveness as a contraceptive and antiviral in vitro, and in animal testing. Small samples of Savvy tested in women for safe-

ty also were successful. The next and final step comes next year: a large-scale clinical trial in which thousands of African, and possibly Asian, women at risk of contracting AIDS and other STDs will be tracked as they try out Savvy. The health and lives of these women will be the measure of whether or not it delivers on its promise.

"These clinical trials will be bigger, costlier, and more complex than most because the concept is so new," points out Harrison. "This is something you really need for public health. We have no reason to believe it can't happen, but the fact that you have been putting nickels and dimes and blood, sweat, and tears, instead of big money, into the effort means we are limping along and stumbling around."

A recent Tufts University study shows that the cost of developing a brand-new drug has skyrocketed from \$231 million a decade ago to \$802 million today. "Drug development is a fickle business," says Barbara Brummer, Ph.D., worldwide vice president of Women's Health for Johnson & Johnson, who has donated her time to the Global Microbicide Project. "The big companies have steered away from microbicides, primarily because the payout isn't there and the market isn't big enough."

A survey of 36 major pharmaceuticals by Alan Stone, Ph.D., chairman of the International Working Group on Microbicides, confirms Brummer's point.

"Millions of lives are at stake, but we haven't yet been able to find a big pharmaceutical to take a serious interest in this product because of concerns about profit margins and potential litigation," he says. "All the safety studies look good, though, and we feel very optimistic. The industry is watching closely."

Corner is betting big pharma is wrong about small profits. Her research estimates a market of roughly \$1 billion in the United States and \$2 billion abroad. According to Bethany Young Holt, Ph.D., an epidemiologist at the University of California at Berkeley who has interviewed hundreds of women about microbicides, the domestic market could be even larger. "Once women understand what a microbicide is, they want one," she says.

No one really enjoys condoms. Everyone wants more choices. Condoms interrupt pleasure, acting as a physical barrier to intimacy. (continued on page 354)

in this issue

Women, no matter how young or old, rich or poor, often have a hard time getting men to use condoms, especially at each and every act of intercourse. "Women don't have a tool to protect themselves," Heise says. "We don't really think about what we're asking when we ask women to negotiate condom use."

Public-health officials say the bottom line is that women often don't practice safe sex, because they either can't or don't know they should. The proof is in the numbers: AIDS cases among American women tripled between 1985 and 1999. An estimated one in five Americans has genital herpes, an estimated 5.5 million contract HPV every year, and chlamydia is rampant among high-school and college-age females.

"The problem is getting people to realize they are at risk," says Whaley. "All of us underestimate how easy it is to contract a lifelong infection like herpes."

As desperate as Corner is to get Savvy to market, she is a few years away from realizing her vision. She and her cohorts need a massive infusion of federal dollars to fund their large-scale clinical trials. Zeda Rosenberg, Sc.D., scientific director of the HIV Prevention Trials Network, estimates the total cost of testing microbicides will be between \$250 million and \$500 million. "People have sticker shock because microbicides have been such a stepchild for so long it's like we don't deserve it. But there is no reason this field shouldn't be pushed as hard as vaccines for the prevention of HIV," she says.

Last year, only 2 percent of the total NIH HIV/AIDS research budget went to microbicide research. Women's groups are leading a lobbying effort in Congress to boost that figure, but these advocates aren't bursting with optimism. Nothing, they say, is going to happen until women get mad.

"It's not right that we don't have a method we can control," says Young Holt. "We need to write to our representatives, do whatever it takes to get others enraged. Not having a microbicide is killing us."

Corner is counting: 15,000 new HIV infections each day around the globe, 15 million new cases of STDs a year in the U.S. alone. Times three. Or four. Or five years. But she's not discouraged. Not yet. "It will take a long time, but by hook or by crook, goddamn it, there will be a microbicide drug, and if I have anything to do with it, it will be one of mine." □



Page 39 (cover look): Nude silk-jersey dress with crisscross back, Narciso Rodriguez, \$1,505. Bergdorf Goodman. Manicure, Gina Viviano for Artists by Timothy Priano. **Up front 122:** Shirt, Van Heusen, \$34. Macy's East. Cotton bikini, Hanro of Switzerland, \$25. Chaiken with Child stretch-denim pants, \$198. Veronique Boutique, NYC. **Vogue view 175:** Christian Dior Haute Couture embroidered pink-and-green hand-painted silk-taffeta dress with hand-painted suede. Embroidered by Christian Dior Atelier. **POV 251:**



Nude silk-jersey dress with crisscross back, Narciso Rodriguez, \$1,505. Bergdorf Goodman.

BODY BEAUTIFUL

253: Cotton tank dress, Fendi, \$550. Fendi Boutique, NYC, Aspen, Houston, Beverly Hills, Costa Mesa CA. **255:** Calvin Klein cotton sweater (\$470) and stretch-cotton short-shorts (\$310). Calvin Klein stores. **256:** Silk-tulle dress with glass beading, Christian Dior, \$7,120. Dior boutiques. **260:** Silk-jersey long dress, Giorgio Armani, \$2,750. Giorgio Armani Boutique, NYC; Saks Fifth Avenue. In this story: manicure, Gina Viviano for Artists by Timothy Priano.

THE BODY ECLECTIC

262: Silk layered dress with Lurex fishnet over garden-print muslin, \$4,370. Also at Louis Vuitton Boutique, SoHo NYC, Bal Harbour FL, Dallas, San Francisco, Costa Mesa CA. Earrings, Gabriela de la Vega. **263:** Lambskin jacket. Rayon-jersey top and skirt. All also at Linda Dresner, Birmingham MI. M+J Savitt earrings. Helmut Lang shoes. **264:** Canvas heavy suede trench, \$2,370. Canvas light suede skirt, \$1,400. Bag, Sergio Rossi. Watch at Gucci boutiques. Shoes, Tom Ford for Gucci. **265:** Viscose top. Cotton skirt. **266:** Matte-jersey gown with paillettes, \$3,995. Karim earrings. Bracelet at Cartier boutiques. Shoes, Manolo Blahnik.