A CHEMISTRY LESSON FOR LOVERS

By Bob Condor, Tribune Staff Writer

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When professor Robert Friar opens his date book in front of students waiting to set up a conference time, they might spot the letter "F" somewhere on the pages. The letter stands for his wife's name, Fran, and is used to block out two evenings a week.

"The students know what the "F's" mean," says Friar, 66, who teaches biology and human sexuality at Ferris State University in Big Rapids, Mich. 'I talk about it in class, that I make time to be with my wife.'

Fran is a nurse with a busy schedule. We sit down with our date books every weekend and figure out which nights we are free together for dinner or a movie. We don't say that is our night for sex; that's understood. People need to know marriage takes work. It includes planning your romantic nights and lovemaking."

SCIENCE CLASS WAS NEVER LIKE THIS!

Friar is one of the country's experts on what could be called the biochemistry of love. He studies brain chemicals and hormones that influence how we fall in and out of love. It is a discipline that has gained scientific momentum in recent years and might help explain the state of your current relationship—or may be the lack of one.

"There are two types of love," Friar says. "One originates in the *hypothalamus* (a part of the brain also present in other animals). It is programmed into our DNA. For men, it is being attracted to women with larger breasts, wider hips and trim waists (to be precise, a waist size no more than 68% of the hips) because the men go for women with a body shape that appears more fertile. It dates back to prehistoric time."

Women are naturally attracted to men with broad shoulders, thin waists and larger muscles, Friar says, because it is a leftover function of the hypothalamus from the hunting-gathering mentality of our most ancient ancestors. Women want men who are strong and powerful.

Of course, the definitions of strong and powerful have changed. Friar said that's partly why the second type of love originates from the frontal lobe of the brain, in which humans are able to think and reason in more sophisticated patterns than any other mammal.

This type of love is what allows people to connect with others on the basis of a "nice personality," Friar says. It's also the part of the brain that attracts one to a lover who

shares common interests, such as ballet, traveling to exotic lands or making lots of money.

But the year 2000 or not, researchers are clearly developing a solid body of evidence that love is indeed as much physiology as psychology. Chemistry between lovers is not just a turn of phrase; it is a torrential release of brain chemicals and hormones. For convenient reference, just in time for Valentine's Day, here is your own periodic chart for love:

PHENYLETHYLAMINE

Scientists have found that *phenylethylamine* (PEA), is a neurotransmitter chemical in the brain that causes you to fall madly in love with someone. It is a natural form of amphetamine that floods the regions of the brain involved in sexual excitement.

Studies show that people who profess high passion for each other have equally high levels of PEA. For that reason, San Diego-based sex therapist Theresa L. Crenshaw calls PEA the "*molecule of love*."

"PEA could well be the visual component of the chemistry of love at first sight," writes Crenshaw in her 1996 book, "The Alchemy of Love and Lust: How Our Sex Hormones Influence Our Relationships". "We do not know how sight can cause this response, or how it is processed through our body and brain. We do know the response causes a circulatory surge of PEA."

Trouble is scientists concur that the effects of PEA last only for about the first three to five years into a relationship. Friar says this time frame fits nicely into the human development theory that early man stayed with his mate long enough to procreate and then protect the child during early years of life or until the child was useful to the local clan.

"MARRIAGES DON'T LAST ON PEA ALONE," FRIAR SAYS

It's also possible to work up a new batch of PEA for another person, which can explain affairs or people giving themselves a second (or third or fourth) chance at true love. Friar says the PEA levels for some people may never be as high as they were when experiencing their first love. But others—thanks mostly to heightened thinking by the frontal lobe of the brain about common interests or shared goals—can actually experience an even greater PEA level later in life than they did in the teenage or college years.

OXYTOCIN

Before doing any quick calculating about the doom of your own relationship, know that *oxytocin* is a brain peptide that can flow to the rescue of what otherwise could be a short-lived relationship. It is secreted from the pituitary gland and bathes the brain and reproductive tracts of both women and men. This chemical wash increases our sensitivity to touch and encourages grooming and cuddling in both sexes. It also reduces stress-causing hormones in the body.

Oxytocin is released every time we hold hands or snuggle up close to someone. It bonds us with the people we love most, whether a lover, child, family member or friend. Studies show *oxytocin* levels peak during orgasm and, for women, delivering a baby and breast-feeding are both actions that send *oxytocin* levels skyrocketing. A labor-inducing drug, Pitocin, is a form of *oxytocin*.

Crenshaw labels *oxytocin* as "hormonal superglue" that keeps us connected to one another long after the PEA wears out. She says touching is a key element of producing *oxytocin*, and "touch deprivation" is a sure way to deplete your supply. Consuming too much alcohol also can decrease *oxytocin* levels.

The *oxytocin* effect is more powerful in women, probably because it works in concert with estrogen (more plentiful in the female body) and is subdued by testosterone (higher in men). Research shows that men who regularly stimulate their mates' *oxytocin* levels are treated by those women with greater affection.

Friar says some researchers have found *oxytocin* levels dip below optimal amounts in men and women if a couple doesn't reach orgasm twice each week (which explains Friar's dates in his planner). What's more, one study of 3,500 individuals finished in 1999 by psychologist David Weeks showed people who have sex at least three(3) times each week appear 10 years younger than their actual age. He interviewed subjects from the U.S. and Europe.

Weeks, an American psychologist on staff at the Royal Edinburgh Hospital in Scotland, reasons that *oxytocin* and its role in affection is one reason for such youthfulness.

"It's not a case of these people having more sex because they look younger," he says. "They actually look younger because they are having more sex in loving, stable relationships."

PHEROMONES

These are chemicals in the body that send signals to others through a subliminal passageway of scent. Scientists widely accept that animals communicate and mate by smell. Another given is animals can be warned of impending danger by scent.

It has long been thought humans were less susceptible to such basic olfactory signals. A University of Chicago researcher, Martha McClintock, seems to have proved otherwise. You may know about her work that found college-age women who live together develop similar menstruation patterns.

McClintock took the concept a step further in a 1998 study published in the Scientific Journal Nature by showing the perspiration of a woman just before or after ovulating can accelerate or delay the onset of menstruation in other women by 12 to 14 days. She used underarm pads (treated with rubbing alcohol to "hide" the smell) from the ovulating women, wiping the pads under the noses of the other volunteers in the experiment. Pre-ovulation pads shortened menstrual cycles in two-thirds of the women, while post-ovulation pads lengthened the cycles to be in sync with the perspiring women.

McClintock connects the results with *human pheromones*, although they are substances we don't necessarily recognize on any conscious level (and no one seems to know how the body or nose detects them). She and others now are pursuing more research on *pheromones*; it is possible *pheromone* treatment can help with fertility treatments, while some scientists believe pheromone-based drugs might help address depression and stress.

Crenshaw says she expects future studies to show that *pheromones* can affect sex drive and appeal.

SEROTONIN

A shortage of this brain chemical is widely associated with depression. Antidepressant drugs such as Prozac are designed to increase *serotonin* levels, as can pleasant dinner conversations with your mate. In animal studies, high levels of *serotonin* encourage selectivity in mates while lower amounts are associated with less discriminating choices of mates and overly aggressive sexual behavior.

"*Serotonin* increases when you are feeling good about yourself," Friar says. "Loving someone and being loved are among the best ways to feel that way."