Behavior

The shape of evolution

Thin may be in for many women, but when men appraise a woman's figure, the guiding principle may be "waist not, want not." Men consider a relatively thin waist set against full hips to be a cardinal sign of female attractiveness, regardless of changing cultural conventions about bust size, body weight, or other physical features, contends Devendra Singh, a psychologist at the University of Texas at Austin.

Several million years of evolution may have primed men to perk up at the sight of a curvaceous waist because this aspect of female shape serves as a cue to fertility and health, Singh holds. For instance, evidence now suggests that women whose waists are significantly narrower than their hips (a low waist-to-hip ratio) get pregnant more easily and tend to give birth to their first child at a younger age than women whose waists are closer in size to their hips (a high waist-to-hip ratio).

As with other evolved mental rules-of-thumb that may influence behavior (SN: 10/12/91, p.232), the male preference for slender female waists operates unconsciously within a larger cultural context, the Texas psychologist asserts. Thus, men rate a female "hourglass figure" as sexy or attractive rather than extolling its implications about fertility.

Both Miss America winners and Playboy centerfolds have displayed virtually the same low waist-to-hip ratio for decades, Singh reports in the August JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY. Data for the beauty contestants extended from 1923 to 1987; centerfold measurements existed for 1955 to 1965 and 1976 to 1990. Narrow waists as markers of female attractiveness also appear in Stone Age figurines, early Greek paintings, and fashions emphasizing corsets, bustles, and girdles, Singh argues. Even Twiggy, the 1960s model renowned for her slenderness, had a low waist-to-hip ratio that nearly matched those of the Miss Americas and centerfolds.

Singh also reports that 106 college-age men rated women with a low waist-to-hip ratio as more attractive, healthier, and better able to bear children than women with a high waist-to-hip ratio. Volunteers ranked drawings of four normal-weight (120 pounds) women, four overweight (150 pounds) women, and four underweight (90 pounds) women, all 5 feet 5 inches tall. In each group, waist-to-hip ratios ranged from low to high. Other facial and bodily features stayed the same.

Men most often chose normal-weight figures with narrow hips as most attractive and gave higher overall attraction ratings to normal-weight figures. Men apparently do not equate a thin figure with beauty, Singh contends.

Similar responses to the 12 female figures emerged among 89 men ranging in age from 24 to 85.

These findings must be extended to other cultures, Singh says. She theorizes that a woman's waist-to-hip ratio affects a man's decision to initiate contact with her. Other factors, such as facial attractiveness and compatibility, then come into play.

Exercise helps body, not mind

Regular exercise and physical fitness do not boost one's mood or otherwise pump up the psyche, psychologists assert in the July/August PSYCHOSOMATIC MEDICINE.

No differences in depression, self-esteem, or other psychological measures appeared in 62 sedentary, mentally healthy men who entered an eight-month physical training program, a four-month training program, or a no-exercise control program, reports a research team led by Eco J.C. de Geus of the Free University of Amsterdam in the Netherlands.

However, exercisers showed substantial reductions in overall heart rate and blood pressure, which may buffer the impact of daily strain and stress on physical health, the researchers maintain. Exercise may also prove psychologically helpful to depressed or anxious people, they add (SN: 8/2/86, p.75).

Biology

New estrogen receptor found in brains

Two years ago, graduate student Larry J. Young wouldn't have guessed that his investigation into the sex lives of lizards would lead him to an important region of the rat's brain.

Young and his colleagues at the University of Texas at Austin wanted to understand the role of the hormone estrogen in the sexual behavior of an all-female species of whiptail lizards, *Cnemidophorus uniparens* (SN: 5/30/87, p.348), and in a related, ancestral species. To do that, he planned to map the distribution of the molecular docking sites, or receptors, for estrogen in lizard tissue.

However, when he tried to develop genetic probes to help him pinpoint these receptors, he wound up with some baffling sequences of nucleotides, the chemical building blocks whose order specifies a protein. Genes typically contain meaningful regions, called exons, with noncoding sequences of nucleotides shoved in between the exons. Messenger RNA molecules, which transfer a gene's information to protein-building machinery, form by matching their nucleotides to the sequences in exons, ignoring the noncoding sections.

The beginning and end of some of the messenger RNA sequences that Young observed matched perfectly the beginning and end of RNA for the human estrogen receptor. But this lizard RNA was missing something in the middle. After much head-scratching, Young figured out that as the lizard RNA formed, it ignored or somehow deleted the information from the fourth exon. Instead it consisted of exons 1 to 3, followed by exon 5.

As a result, says Young, this RNA leads to a newly identified estrogen receptor – one that exists primarily in the brain.

Knowing that many biomedical researchers wouldn't care much about a new lizard receptor, David Crews, Young's advisor, decided they should find out whether this form of the receptor exists in rats as well. "It would imply evolutionary conservation of this form, which [would] cause us to think that this form would be important," says James K. Skipper, a molecular cell biologist at the University of Texas, who conducted the rat study.

Skipper expected to find the receptor in rat uterine tissue, but instead it represents up to 60 percent of the estrogen receptors found in rat brain tissue, the Texas group reports in the Aug. 1 PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES. This is the first discovery of a variant of an estrogen receptor in normal tissue, says Skipper.

Other variations of the estrogen receptor exist in cancerous breast tissue, says Bert W. O'Malley of Baylor College of Medicine in Houston. He has found the new variant in rat tumors. "In the area of breast cancer research, it's considered a hot new lead that could have some relevance to the development or progression of tumors," he adds.

The part missing in this RNA specifies a section of the receptor that helps it bind to estrogen. So the researchers don't know whether estrogen can still attach, says Crews.

"Our next step is to do the functional studies and determine whether [the receptor] will bind to DNA," says Skipper.

Ordinarily, when estrogen binds to its receptor, the complex then turns on certain genes. The missing section helps the normal receptor molecule flex, possibly so that the complex can squeeze through the nuclear membrane.

Since this new receptor can't flex, Crews speculates that it may instead work outside the nucleus, in the cell proper. If so, the existence of this receptor may help explain some very rapid reactions the body can have to hormonal changes. These reactions, such as hot flashes or sexual behaviors, occur too quickly to have resulted from the activation of genes. But they could possibly happen if this receptor sets off some faster change in the cell, he adds.