

Facial beauty may lie more than skin deep

A beautiful face exerts its allure on people regardless of culture, thanks largely to an evolutionarily designed preference for certain facial features, three psychologists assert in the March 17 NATURE.

Moreover, the shape of the most fetching faces differs in important ways from the average shape of all faces in a population, contend David I. Perrett and Keith A. May, both of the University of St. Andrews in Fife, England, and Sakiko Yoshikawa of Otemon Gakuin University in Osaka, Japan. This conclusion contrasts with that of another study, which places averageness at the center of facial attractiveness (SN: 5/12/90, p.298).

"An average face shape is attractive but may not be optimally attractive," Perrett holds. "The preference for nonaverage face shapes may have created [evolutionary] selection pressures that moved the most attractive faces away from the population mean."

Perrett's group finds that men and women in Japan and Great Britain prefer the same composite faces generated from individuals already rated as highly attractive.

An initial composite came from pictures of 60 white British women between 20 and 30 years old. A computer fash-

ioned an "average" image from measures of the shape and position of 224 anatomical features on each face. A second composite represented the average of 15 of those faces given the highest attractiveness ratings by 36 male and female British adults. A third computer-derived face served as a caricature of the second image by exaggerating differences between it and the first composite.

Nearly all of a second set of 36 comparable volunteers rated the second image more attractive than the first and the caricature as more appealing than the second composite.

Perrett's team then generated the same three types of composites from the faces of 342 Japanese women age 18 or 19. In tests with 26 Japanese and 36 British men and women, the caricature again garnered the highest attractiveness ratings, followed by a composite of the 16 most attractive individuals.

Another 30 British volunteers similarly rated composites of British male faces, the scientists report. An "attractive" male composite and its caricature yielded comparably high ratings.

Highly attractive male and female composites share some common traits, Perrett says, such as larger eyes relative to face size and shorter distances from

mouth to chin and from nose to mouth.

The results coincide with research directed by Michael R. Cunningham of the University of Louisville (Ky.). Cunningham argues that truly beautiful faces display atypical features (SN: 10/12/91, p.234).

The Louisville psychologist theorizes that five categories of human facial features have evolved: childlike traits, which foster others' trust; indicators of sexual potency; signs of aging, which denote wisdom; friendliness signals, such as a large smile; and grooming features that draw others closer.

Some categories prove more accessible to individual manipulation than others, Cunningham asserts.

The average of all facial features in a population provides the fundamental building block of facial beauty, counters Judith H. Langlois of the University of Texas at Austin. Humans may have evolved to view an extremely "average" face as closer to a prototype, or best example, of attractiveness, adds Lori A. Roggman of Utah State University in Logan. They reject the division of facial attractiveness into separate categories.

Whatever the case, "the assumption that beauty is an arbitrary cultural convention may simply not be true," writes Nancy L. Etcoff, a neuropsychologist at Harvard Medical School in Boston in a comment accompanying the new report.

—B. Bower

Two teams find second colon cancer gene

Two reports show how the quest for the gene for an inherited disorder can lead to a multilab gene hunt yielding several defective pieces of DNA.

Last December, geneticists pinpointed a gene on chromosome 2 as the cause of hereditary nonpolyposis colorectal cancer, which affects up to 1 in 200 people in the United States (SN: 12/11/93, p.388). Now, geneticists realize that a second defect, this one on chromosome 3, accounts for about 25 percent of these cancer cases, says Kenneth W. Kinzler of the Johns Hopkins Oncology Center in Baltimore.

Based on studies of DNA repair in microbes, researchers knew that both genes code for proteins that correct mistakes in new DNA. "[They work] like a spell-checker," explains R. Michael Liskay, a geneticist at the Oregon Health Sciences University in Portland. Misspelled DNA leads to mutations that can affect how well the proteins encoded by that DNA function.

To search for genetic perpetrators of colorectal cancer, Kinzler, Bert Vogelstein, and Nickolas Papadopoulos of Johns Hopkins and their colleagues looked for matches between human genes and the yeast or bacterial genes involved in this kind of DNA repair.

They found three such genes, one each on chromosomes 3, 2, and 7. They focused first on the gene on chromosome 3 because of evidence linking it to some families with this type of cancer. In 9 of 10 families evaluated, the researchers located this gene and showed it leads to a truncated repair protein, they report in the March 18 SCIENCE.

Liskay and others had demonstrated that yeast and bacteria require this protein and at least two others to correct genetic mistakes. In particular, these proteins fix errors in which pairs or triplets of DNA building blocks repeat more times than they should.

Because people with colorectal cancer tend to have repeats, Liskay surmised that they would have a defective counterpart of yeast's repair genes. In the cancer-ridden family, one DNA building block substitutes for another in that gene, Liskay and his colleagues report in the March 17 NATURE. Their gene is the same as Kinzler's.

Both teams expect to find other defective genes that lead to colorectal cancer. "It's a very common disease, but it's genetically heterogeneous," says Liskay. That heterogeneity could complicate the development of diagnostic tests.

—E. Pennisi

This fat may fight cancer several ways

A provocative new animal study suggests that early consumption of a fat contained in many animal products may offer some protection against breast cancer. Related research indicates that high amounts of this fat may also help fight a wasting disease that compromises the survival of many sick individuals, including cancer patients.

Known as conjugated linoleic acid (CLA), this unusual fat is a structurally altered form of the essential polyunsaturated fat, linoleic acid. In the March 1 CANCER RESEARCH, biochemist Clement Ip of the Roswell Park Cancer Institute in Buffalo, N.Y., and his colleagues report that diets enriched with CLA reduced a female rat's susceptibility to two breast carcinogens.

In one case, CLA administered just during the 5 weeks when a rat's mammary tissue was maturing offered strong protection against the development of tumors later, when the researchers exposed the animal to one of two potent chemical carcinogens. Animals whose diets contained 1 percent CLA by weight — the equivalent of about 30 times the amount eaten by the average 155-pound human — developed just two-thirds as many mammary cancers as rats given no CLA.