

BIOLOGY

Julie Ann Miller reports from the meeting in Cincinnati of the Society for Neuroscience

Breaking down 'boyish' behavior

Some social behavior of young rhesus monkeys is influenced by gender. When raised in co-ed groups with their mothers, for instance, male and female youngsters show different frequencies of three social behaviors. Young males engage in more "rough and tumble" play and more frequently mount their peers and their mothers as a communication gesture. These behaviors are programmed by distinct neural systems, reports Robert Goy of the University of Wisconsin in Madison. If a female fetus receives a male hormone for 60 days in the middle of its gestation period, it displays higher levels of all three behaviors as a juvenile. If the fetus is given the hormone for only 15 days, the female monkey shows high levels of rough and tumble play, an intermediate frequency of mounting its mother and no increase in the low frequency with which females normally mount peers. This observation indicates that each social behavior has its own critical period during prenatal development, Goy says. Goy and a collaborator destroyed a small area in the brain of a juvenile male monkey. The surgery almost entirely eliminated the monkey's mounting of peers, but it did not change the frequency of rough play. Goy emphasizes that these behaviors are not inflexible responses to hormones. "The monkeys need to learn when to mount, who to mount and why to mount," he explains.

Twice-hatched chicken

Hatching is a once-in-a-lifetime experience for most birds. But University of Colorado scientists are asking chickens to hatch twice. In order to learn whether the stereotyped movement pattern seen in hatching is retained in the chick during later life, Ann Bekoff and Julie Kauer fold young chicks (up to 4 weeks old) into glass eggs. Within 2 minutes, each chick begins rotating its upper body and thrusting with its beak and legs. The muscle activity recorded from the legs of the glass-encased chicks follows the same pattern as that recorded in chicks hatching from their natural eggs.

The trigger for hatching activity in previously hatched chicks is the position of the head, Bekoff and Kauer find. When they suspend a chick in the air and bend its neck to the right or left, but not when they bend the head forward, they observe "the synchronous pattern of interlimb coordination typical of hatching." In the natural egg a chick's head is tucked to the side for several days before the chick begins to break out of its shell. So Bekoff speculates that a hormonal cue also is involved in the egg in triggering hatching's motor program.

A gradient for an eye

The rules for hooking up nerve cells in a developing animal are still the basis of a lively dispute. One possibility is that regional concentrations of molecules provide a guide for the wiring operation. Scientists at the National Institutes of Health now report evidence for a chemical gradient across the nerve cells of a retina. David Trisler, Marshall Nirenberg and colleagues produced a monoclonal antibody (SN: 12/30/78, p. 444) that binds in a smooth gradient across the chicken retina. They extrapolate, from the 35-fold gradient observed in the area they sampled, that the binding at one edge of the adult chick retina is 400 times as great as at the other. A chance discovery of a "monster" chick with three eyes, each having the gradient, demonstrated that the antibody binding distribution is not dependent on the retina's position in the head. Trisler reports that the gradient of antibody binding has been observed in chickens, turkeys, quails and ducks, but not in adult fish, frogs or young rats. The scientists are now investigating how the gradient is formed and what component is responsible for the antibody binding.

MEDICINE

Joanne Silberman reports from the meeting in Miami Beach of the American Heart Association

Hypertension in China

Many westerners believe that heart problems are associated with an occidental lifestyle, but the People's Republic of China is currently facing a rapid increase in the incidence of high blood pressure. "For a long time it's been thought that there wasn't much hypertension in China," says Wu Ying Kai, a thoracic surgeon and director of a cardiovascular center in Beijing. Figures for the past 20 years show a dramatic rise, he says.

Though hypertension in some rural areas still occurs in only two or three percent of the population, levels in big cities like Shanghai and Beijing have risen to 10 percent, a frequency similar to U.S. levels. "In general we still have a little less hypertension but if we're going on at the rate we have the last twenty years, I think we will catch up to you soon," Wu says.

To combat the problem, the Chinese began a massive screening and drug treatment program about five years ago. In one commune, cardiovascular-related mortality dropped 13 percent and stroke incidence dropped 23 percent, Wu reports.

One edge the Chinese have: they take their medications and follow medical advice. Says Thomas N. James, the outgoing American Heart Association president, "In China, it [compliance] is not as much a problem." Wu attributes the high compliance rate to the relative stability of the population.

Older is sometimes better

"Age is clearly one of the risk factors for coronary heart disease but once one reaches 90 or older it appears to be a less important factor," says Bruce F. Waller of the National Heart, Lung and Blood Institute.

Waller and William C. Roberts examined the hearts of 24 persons who died between 90 and 103 years of age and found less coronary artery narrowing than in younger persons. Even the 10 who died of cardiac-related causes had less severe coronary narrowing than did younger cardiac patients. Waller's slides show some remarkably clean, open arteries.

Apparently over-90s don't have to worry as much about coronary disease. "The problem," Waller notes, "is getting to 90."

Love and hypertension

The poetic coupling of love with the human heart is not just a literary allusion — there is an obvious relationship between intercourse and cardiovascular effects. Besides an increase in heart rate, instances of heart failure during coitus have been noted. Researchers from Middlesex, England, report that blood pressure in people suffering from hypertension increases about 50 percent during intercourse. A previous study of people with normal blood pressure showed a similar increase.

As part of an investigation of daily blood pressure variability in people with hypertension, the researchers recorded 18 instances of intercourse in 11 persons equipped with continuous blood pressure monitors.

Blood pressure in men rose 48 percent, from 155/87 to 237/138; in women the rise was 57 percent, from 144/76 to 216/127. Drug treatment showed no effect on coital blood pressure elevation in the one man on medication; a woman who suffered fainting spells and a man with massive headaches during coitus were within the same range as the other nine.

Treatment possibilities, the researchers note, range from abstinence to behavior modification and drug therapy. Doctors might consider cautioning against extra-marital coitus, the researchers noted, since a previous study showed that coitus-associated death occurs more often during extra-marital sex. Timing and conditions may also reduce the potentially dangerous rise, they say.