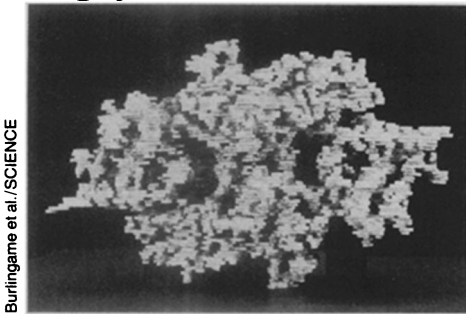


## Rugby ball at the chromosome core



Burlingame et al./SCIENCE

The shape of the protein structure around which DNA wraps in plant and animal chromosomes resembles a rugby ball, report scientists at Johns Hopkins University in Baltimore, Md., in the May 3 SCIENCE. The

shape they have just determined using X-ray crystallography differs dramatically from the previous model, proposed by British scientists in 1977. The protein structure, called the histone octamer, organizes DNA into supercoils to keep genes compact and untangled. It also may play a role in controlling which of a cell's many genes are expressed.

Hopkins scientists Rufus W. Burlingame, Evangelos N. Moudrianakis and their colleagues report the basic eight-part assemblage of histone proteins is a "prolate ellipsoid" with a tripartite organization. The central portion contains four subunits. This structure is flanked by two sets of two subunits. The scientists speculate that the DNA helix, coiled like a spring, wraps around the histone octamer and holds the three sections together. They suggest that the degree to which these DNA supercoils tighten and loosen influences which genes are active in a cell. They have identified channels in the histone octamer through which small molecules may influence the shape of the complex and the interactions between protein and DNA.

## Oxygen and multiple sclerosis

Evaluating a treatment for a disease that progresses at different speeds in different people can be extremely difficult, and such has been the case for hyperbaric oxygen in the treatment of multiple sclerosis (SN: 2/26/83, p. 142). In hyperbaric oxygen therapy, patients sit in a decompression chamber and breathe the high concentrations of oxygen at high pressure. The therapy (developed for treating "the bends") was initially proposed for multiple sclerosis because there is a growing belief that MS is an autoimmune disease in which the immune system attacks the nerve sheathes, and hyperbaric oxygen therapy is thought to suppress the immune system.

However, at the American Academy of Neurology meeting this month in Dallas, Gerald E. Slater and his colleagues at the University of Minnesota in Minneapolis reported that hyperbaric oxygen therapy did no better than a placebo. Thirty-eight MS patients were given 100 percent oxygen at two atmospheres of pressure 20 times for an hour and a half at a time; 19 patients sat in the same chamber but received no therapy.

The researchers found dramatic improvements in some patients, but when they broke the code and looked at who was receiving therapy, they found that just as many people in the placebo group as in the control group had improved. One possibility, Slater suggests, is that both groups had to make the effort to get to the hospital—they were all getting more exercise.

The therapy also got poor marks several months ago from Newcastle upon Tyne neurologists. In the Feb. 9 LANCET, they reported that in a comparison of 60 patients receiving therapy to 57 in the placebo group, they were able to find improvement only in bowel and bladder function.

But it's not the death knell for hyperbaric oxygen. Boguslav H. Fischer of New York University, who is also evaluating the therapy, says he thinks it is valuable for early cases and acute flare-ups, which Slater and his colleagues were unable to evaluate because they did not have enough patients in this group.

## Make mine milk?

University of Michigan researchers have found a higher rate of diarrhea among formula-fed babies than among babies on cow's or breast milk. But, they caution, their finding needs confirmation and explanation.

James S. Koopman, Verna Jean Turkish and Arnold S. Monto report in the May AMERICAN JOURNAL OF PUBLIC HEALTH on a comparison of 143 babies with gastrointestinal illness and 143 babies without. In analyzing the data they found that babies on formula were at six times the risk of babies on breast milk, and 2.5 times the risk of babies on cow's milk.

What the researchers did was a case-control study—the infants were paired for sex, age, geography, health history, socioeconomics, pets, family size and sibling school attendance. But case-control studies have their weaknesses, says Monto. "There are always other factors that one can't imagine—in this case, that could have caused the selection of one type of milk over another—and that factor may be responsible for the difference." Unless confirmed by further work, the study should not be the basis of public health recommendations on formula use, he says—a sentiment echoed in an accompanying editorial.

## AIDS (cont'd.)

Recent AIDS research has revealed a possible new mode of transmission, a longer lead time for the virus and a higher virus prevalence than expected in a low-AIDS-incidence area.

While AIDS transmission from mother to fetus *in utero* has been established, researchers in Sydney, Australia, report the disease may also be transferred through the breast milk of an infected mother. In the April 20 LANCET they detail a case of AIDS in an infant whose mother had received blood from a donor who was subsequently diagnosed as having AIDS. Since the mother had previously been healthy and had received the transfusion immediately after giving birth, "transmission via breast milk seems the likely route of infection," the researchers report.

The May 16 NEW ENGLAND JOURNAL OF MEDICINE (NEJM) contains a study of 25 people at high risk of having AIDS. These people were thought to be infectious because transfusion recipients who had received their blood had developed AIDS. Twelve to 52 months after donating blood, 22 of the 25 people had the AIDS virus in their blood; of those, 2 had AIDS, 5 had lymph node disease and 15 were asymptomatic. The researchers conclude that infection with the virus "may be persistent and asymptomatic for years."

In the May 9 NEJM, researchers from the Medical College of Georgia in Augusta describe a child who got AIDS five and a half years after receiving a transfusion from an asymptomatic homosexual intravenous drug abuser. The donor was later found to have antibodies to the virus; the case represents the longest latency yet reported for AIDS.

That same journal contains a survey by the Cleveland Clinic and Case Western Reserve University of homosexual men in northeastern Ohio, where the incidence of AIDS is low. They found that 23.6 percent of 320 homosexual men had antibodies to the virus, and that the presence of the antibodies was not related to multiple sexual partners, as they had expected from epidemiological studies of other areas. They were unable to explain the finding except to suggest that in low-incidence areas there may be a "core population" that spreads infection.

And finally, Flossie Wong-Staal, an AIDS researcher at the National Cancer Institute in Bethesda, Md., may have a solution for the name game—what to call the virus (SN: 4/27/85, p. 260). In the April 18 NATURE, she nominates HALV, for human AIDS/lymphotropic virus. "Since it looks enough like HTLV, and contains all three letters of LAV, it may well be the perfect solution for the two groups to meet *halv* way," she writes. But will the ARV (AIDS-related virus) proponents buy it?