

# Reports—Current Topics—Queries

## Auxin in Lanolin: Modified Technique

The use of lanolin paste for the treatment of plant material with auxins is often a messy procedure. Also, it is difficult to ensure a quantitative application. H. W. Hansen has described a simple method of applying lanolin paste, using a disposable plastic syringe with the hyperdermic needle removed (*American Biology Teacher*, 31: 583; 1969). We have successfully used this technique in the past, but with a modification that increases the speed, cleanliness, and accuracy of the method: the lanolin paste is pushed from the syringe, not directly at the plant but into half of a gelatin capsule. These capsules are of the type now used to ensure accurate doses of various medicinal preparations. They are readily available in various sizes, from any pharmacist.

The use of these half-capsules has the following advantages: (i) large numbers of capsules can be filled in advance; (ii) the lanolin paste can be placed immediately in contact with the cut surface of the plant; (iii) the half-capsules can be handled easily, and the paste tends not to become spread generally throughout the laboratory; (iv) an accurate, quantitative amount of auxin is contained in each half-capsule; (v) as the lanolin is enclosed, the paste does not dry out so rapidly; and (vi) in experiments where repeated treatment may be required (e.g., cambial activation in stem tissue) capsules can be readily removed and replaced.

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## Simple Analogy Teaches Meiosis

For many years, at both the high school and college level, we have faced the difficulty of explaining meiosis to students. Pipe cleaners, colored clay, and drawings have been used with some success, but many students still have difficulty distinguishing between haploid and diploid, tetrad and dyad, and grasping the concept of synapsis of homologous chromosomes.

We have recently used a very simple, effective, and easily recalled analog technique to describe the meiotic process. We let the haploid number ( $n$ ) equal one "place setting" consisting of a knife, fork, and spoon. The diploid number ( $2n$ ) is represented by two "place settings." The student quickly identifies with this analog and can easily grasp the concept of homologous pairs of chromosomes in the diploid situation as two knives, two forks, or two spoons.

Synapsis and tetrad formation can be demonstrated by pairing knives together, likewise the forks and spoons. The teacher can then demonstrate the replication of the chromosomes by adding two more

knives, forks, and spoons to the already-paired sets. By placing a rubber band around the four knives, four forks, and four spoons, tetrad formation can be easily shown. After describing the two successive divisions which make up the complete meiotic process, the teacher can demonstrate that each of the four daughter haploid cells contains one "place setting." Because a "place setting" represents three *different* chromosomes, the student quickly realizes that each haploid daughter cell contains one chromosome derived from each tetrad in the original diploid cell.

A practical consideration is that maternal and paternal homologues can be readily distinguished if one uses inexpensive spray-painted metal tableware (for example, red for maternal and blue for paternal) or colored plastic picnic cutlery. In many instances, the cost of plastic picnic ware is so small that it may be feasible to provide a "meiosis kit" for each student or pair of students.

The advantage of this technique is that a "set" of familiar objects representing chromosomes can be independently followed while tracing their movements through the meiotic process. The *individuality* of the chromosomes is also made very evident by this technique—a point many students miss in the commonly used methods employed today.

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## Why Teach Health Education?

Health education is gaining more and more recognition as an integral part of today's school academic curriculum. Its importance as a vital academic subject is being recognized by many professional groups. New York State's recently established five-year program for "Critical Health Problems" demonstrates this importance.

Health education should be specifically geared to the needs, interests, and goals of the community, the schools of the community, and the students attending those schools. But we must keep in mind that the principal goal of health education is to develop, on the part of the students, desirable health knowledge, health attitudes, and health practices of the kinds that will be helpful to them during their school lives as well as in their adult lives.

Modern health education should encompass instruction not only about physical health: proper consideration must also be given to social well-being and mental health, since the last two areas are many times of major concern to our students.

We should teach about the ever-changing environment and its relationship to the student; we