

## A SHORT COURSE IN MEDICAL GENETICS

One semester hour plus  
clinical demonstrations

- A. What is heredity
  - 1. Twins. Nature and nurture.
  - 2. Collection and interpretation of family data. Consanguinity analysis. Pedigrees. Single factor inheritance. Dominance. Sex linkage.
  - 3. The chromosomes of man. Sex determination.
- B. Common hereditary factors
  - 4-5. Blood groups. Transfusion. Hemorrhagic disease of newborn. Forensic.
  - 6. The hemoglobins AND hereditary anemias.
- C. Rare mutants in man
  - 7. Mutation. Metabolic diseases with physiological genetics of Neurospora, etc., as background. Phenylketonuric oligophrenia; alcaptonuria; tyrosinosis.
  - 8. Metabolic diseases, etc., glycogen storage disease; galactosemic hepatomegaly; agammaglobulinemia; hemophilias. Metabolic individuality.
- D. Polygenic inheritance
  - 9. Genetic factors in infectious and constitutional disease; cancer.
  - 10. Genetic factors in mental disease.
- E. Genetic hygiene
  - 11. Aims and fallacies of eugenics; social and "Industrial" medical problems from radiation (and chemicals?).
- F. Experimental genetic studies on mammals
  - 12. Example—histocompatibility and acquired tolerance; the antibody response.
- G. Microbial genetics
  - 13. Mutation studies. Drug resistance.
  - 14. Recombination mechanisms.
  - 15. Viruses (as organisms and as genes).

Note: This is a tentative outline of feasible topics. The syllabus would depend on the judgment of the instructor.

Some of these topics may already be adequately covered in other course work. Every effort should be made to correlate this with other offerings. It will be essential to seek the cooperation of clinical specialists 1) for appropriate case demonstrations, and 2) to ensure a balanced account of such topics as mental disease, eugenics and radiation hazards. If there are pronounced differences of opinion within the medical faculty, it may be profitable to arrange for joint presentations or discussions.

Student laboratory exercises would pose many problems, but might be worked out in collaboration with other courses (clinical pathology, physiological chemistry; microbiology).

It would be helpful to have some standardization of preparation in genetics. If most premedical students will already have included a course, it would be wise to urge most of them to do so; if not, more emphasis may be needed on the blood groups.

The course is not designed to indoctrinate specialists, but to inculcate an appreciation for the role of the genetic factor in the determination of disease and of normal personal individuality. With this background, the student may be better equipped to learn from his experience in the clinical years and his practice.

Text: Possibly "Harris - Introduction to Human Biochemical Genetics"

Reference Books: Sorsby - Clinical Genetics; Neel and Shull - Human Heredity;  
Stern - Human Genetics