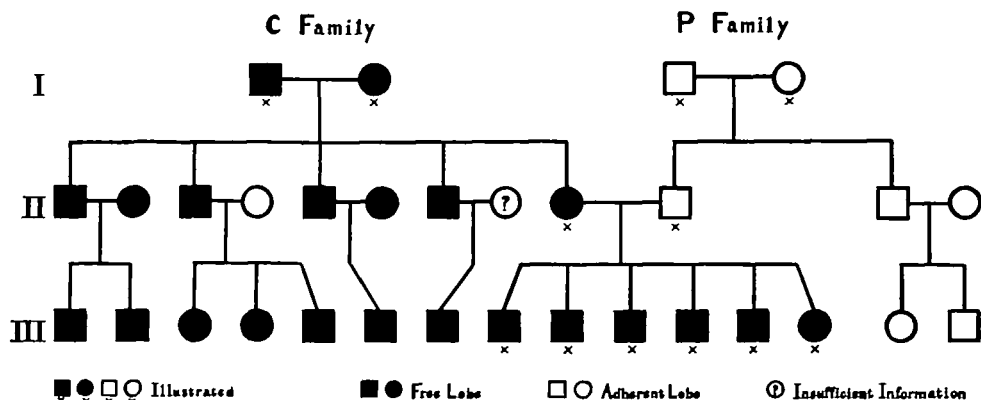


EAR LOBE INHERITANCE

An Unusual Three-Generation Photographic Pedigree-Chart

EUGENE F. POWELL and DAVID D. WHITNEY

Department of Zoology, University of Nebraska



INHERITANCE OF EAR-FORM

Figure 1

I, maternal grandparents in the C family showing free ear-lobes and paternal grandparents in the P family with adherent ear-lobes; II, all children of the C family, 4 sons and one daughter, with free ear-lobes; the two sons of the P family with adherent ear-lobes. Wives of the sons of the C family, two showing free ear-lobes, one with adherent ear-lobes and one doubtful (not observed by authors). Wife of son of the P family, not connected with the C family, with adherent ear-lobes. III, all of the thirteen grandchildren of the C family with free ear-lobes; those of P family, with no blood relation to the grandparents of the C family, showing adherent ear-lobes.

HILDEN² and others have found that free ear-lobes are inherited as dominant characters while Carrière¹ concluded from his studies that they are inherited as recessives. Having studied the inheritance of ear-lobes in three successive generations in the families C and P and having an exhibit of photographs (Frontispiece) it seems appropriate that the striking results should be put on record. This exhibit indicates that free ear-lobes are dominant characters and adherent lobes are recessives.

In the C family the maternal grandparents have the free ear-lobes and have transmitted them to their daughter. In the P family the paternal grandparents have adherent lobes and have transmitted them to their son. The free ear-lobed daughter married the son having adher-

ent lobes. These parents have six children all of whom have free ear-lobes, thus indicating that free ear-lobes are dominant characters perhaps depending on a single gene.

The mother has four brothers all having free ear-lobes while the father has one brother having adherent lobes. This probably indicates that the maternal grandparents and their daughter are homozygous for free ear-lobes and that the parental grandparents and their son are homozygous for adherent ear-lobes (Figure 1).

The six grandchildren (Frontispiece) comprising the F₁ generation from a homozygous dominant free ear-lobed mother and a father homozygous for recessive adherent ear-lobes show the dominance of free ear-lobes in a typical

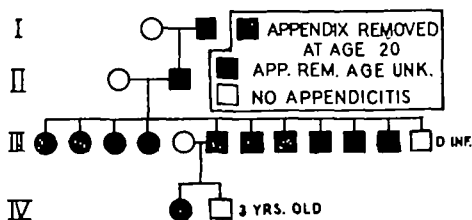
mendelian manner. Additional evidence in support of the dominance of the free ear-lobe is obtained from further study of these two families. The character of the ear lobes of all children, their mates, and all grandchildren has been determined, except in one case (indicated in Figure 1) which the authors have not personally observed. The three grandchildren by a son of the *C* family and his wife, who has adherent ear-lobes, show free ear-lobes. This case is similar to that illustrated in the Frontispiece and gives a total of nine grandchildren with free ear-lobes from two similar matings. All

thirteen of the grandchildren of the *C* family show the free ear-lobe and provide a striking illustration of its dominance. On the other hand, the two grandchildren of the *P* family, whose parents have no blood relationship to the *C* family, show the inheritance of the adherent ear-lobe as a pure recessive.

Literature Cited

1. CARRIERE, RICHARD. Über erbliche Ohrformen, insbesondere das angewachsene Ohrfläppchen. *Zeits. f. Abst. u. Vererb.* 1922.
2. HILDEN, K. Über die Form des Ohrfläppchens beim Menschen und ihre Abhängigkeit von Erblanlagen. *Hereditas*, iii, 351-357. 1922.

An Appendicitis Pedigree



FOUR GENERATIONS OF
APPENDICITIS

Figure 2

IN connection with Dr. Baker's article on the following page, the accompanying fragment of pedigree, showing four generations of appendicitis, has considerable interest. The data on which it is based was submitted by Miss M. L. Nute, of Norwood, Ohio. One of her pupils compiled the pedigree as a result of interest aroused by a "taster test" with P. T. C. paper. In this family the incidence of appendicitis is so high as strongly to suggest some genetic basis. Taken alone a single pedigree would be of very problematical significance and a careful medical check-up would be

essential before attempting to arrive at any conclusions. In connection with the two other pedigrees submitted by Dr. Baker it definitely deserves a place in the "record."

It should be borne in mind that it is very unlikely that appendicitis is inherited "as such," as is the case with blond hair, extra fingers, eyes incapable of distinguishing red and green, etc. Genetic differences in resistance to bacterial infection, a peculiar configuration of the appendix, or other factors about which we at present know nothing, probably constitute a predisposition toward the inflammation of this superfluous portion of the human anatomy. The result when expressed in a pedigree chart resembles what we get with the inheritance of a definite morphological or physiological difference, but the chain of events leading up to the "expression" of the "character" has at least one more link of crucial importance—an environmental trigger-stimulus of some kind, more crude no doubt, but fairly comparable to that operating in determining whether a given mouse in a susceptible strain will become a victim of leukemia (see *Jour. Hered.*, April, 1937).—Editor.