Bibliography

Diabetes in the Mouse Due to Two Mutant Genes — a Bibliography

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Summary. A bibliography is presented of work involving the two diabetes-producing autosomal recessive mutations in the mouse, *db* and *db^{2J}*.

Key words: Diabetes mellitus, *db*, *db^{2J}*, mutant genes, inbred mice.

The mutation diabetes (*db*) occurred in the C57BL/Ks inbred mouse strain at the Jackson Laboratory [1], and is inherited as a unit autosomal recessive with full penetrance. It is characterized in the homozygote by a metabolic disturbance resembling diabetes mellitus in man. Abnormal deposition of fat at 3 to 4 weeks of age is followed by hyperglycemia, polyuria, and glycosuria. The condition appears to develop biphasically. In the early stage there are marked increases in the plasma insulin level, the rates of lipogenesis, gluconeogenesis and glucose oxidation, and there is a reduction of B-cell granules in the islets of Langerhans with other changes suggestive of a compensating adaptation to increase insulin demand. The late stage is characterized by a near normal level of circulating insulin and a marked decrease in glucose utilization, but with a high rate of gluconeogenesis maintained. These findings suggest a defect in the peripheral utilization of insulin rather than in the synthesis and release of insulin [2].

A new mutant resembling both *db* and obese (*ob*) was discovered in 1966, also at the Jackson Laboratory. By a series of appropriate crosses, the new mutant was shown to be an allele of *db* and was named diabetes-2J (*db^{2J}*). Effects of the two alleles are similar, but *db^{2J}* produces a milder pathological picture, at least on some genetic backgrounds [47]. Another mutant, named *db^{3J}*, arose in the 129/J strain at the Jackson Laboratory.

In 1959, Falconer at Edinburgh announced the mutation adipose (*ad*) [81–84]. In 1972, *ad* was shown to be allelic with *db*, and the designation was changed to *db^{ad}*.

It is believed that the following is a reasonably complete listing of periodical articles on these muta-

tions. Literature was searched to March 1975. Arrangement is chronological and alphabetical within years. The author would like to be informed of omissions.

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*Key: a — the mutation *db*
b — the mutation *db^{2J}*
c — the mutation *db^{ad}*
d — comparative study of *db* and *db^{2J}*
e — literature review
gen — emphasis on genetics
met — emphasis on metabolism or pathology

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