

ALBINISM AND GENETICS IN THE BIBLE

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NOAH

Ancient extra-biblical Jewish sources suggest that Noah was an albino.¹ Noah at birth had skin as white as snow, long white hair and eyes transparent to the sun. A recent finding among the Qumran Scrolls (4Qmess ar) states that Noah had red hair. If he were an albino, it would have been because one or both of his parents were dominant or recessive carriers of the gene for albinism. Alternatively, Noah might have manifested the first mutation for albinism. The Genesis text states (6:9) that *Noah was righteous in his generation*, an apt comment for one of innocent white complexion.

LABAN

Laban [Hebrew: *lavan* – white] was a brother of Rebekah, the wife of Isaac. His name, or nickname, means "white." Rashi, the 11th Century premier biblical commentator, portrays Laban as a wicked seeker after riches, passing over Isaiah's inviting conclusion that white signifies innocence and righteousness (Isa. 1:18). Rashi cannot bring himself to such a conclusion, and deals rather with Laban's avarice. But, possibly, he was called Laban for another reason. There is an additional feature supporting the diagnosis of albinism: a relevant observation concerning his elder daughter, Leah. She had some unattractive ocular feature which impelled Laban to have her married off to Jacob by trickery. Her defect is noted in Genesis 29:17 as weak or dull eyes. The Hebrew word used is *rakot* [soft or weak], and it has been suggested that she had a squint or trachoma. It is also possible that Leah had partial albinism manifest in her pale blue eyes, and photophobia – discomfort in bright sunshine – together with nystagmus, a ceaseless trembling of the eyes. Although rarely seen in otherwise normal folk, it is especially common in those with blue eyes and fair or ginger hair.²

The partial-albino tale extends to the story of the spotted and speckled sheep and goats of Laban, for which Jacob labored seven extra years in order to wed Leah's younger sister, the attractive Rachel. In this matter, two preliminary items should be clarified. He did not wait seven extra years be-

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fore the marriage took place. That came immediately on the promise that he would complete seven years of work for her.

Second, it was not seven years but seven seasons. In 1980, an American scholar commented on an Amerindian tribe which counted in seasons, summer and winter seasons, rather than years. This scholar suggested³ – and I accept his theory – that from the time of Abraham or a generation or two earlier, until the time of the Judges in Israel, years were counted in terms of seasons. This makes so much sense. For example, Sarah did not give birth to Isaac at an amazing 90 years of age but at an unremarkable 45 years, which is why the text states that *it had ceased to be with Sarah after the manner of women* (Gen. 18:11). Why mention menopausal features at 90 years? At 45 years of age, it makes sense. Moses died not at 120 years but at 60 years of age when the relevant comment is made (Deut. 34:7) *that he had not lost his vigor*, presumably sexual potency.

In the Land of Israel, there is a summer and a winter, while spring and autumn hardly feature. Indeed, the modern word for spring – "*aviv*" -- is used in the Bible to indicate a particular month rather than a season. The only time the modern word for autumn – "*stav*" -- is used in the Bible, it signifies winter: *Lo, the winter is past . . .* (SofS 2:11).

Jacob thus worked for Laban an extra seven seasons, or three-and-a-half years. That is, three or four breeding seasons for the sheep and goats due to him. What scheme did Jacob use – and he used a genetic one – in order to multiply the flocks with which he would eventually leave, together with two wives, two concubines, and numerous children?

The matter involved the supposed effect of striped rods on the offspring of sheep and goats. This is no worthless yarn. On the contrary, we will have to conclude that in some measure the monk Mendel was pipped by the shepherd Jacob who outwitted Laban.

In Genesis 30 we are told that Jacob accepted as wages all speckled and striped, that is, multichromed sheep and goats in Laban's flocks. In the Middle East to this day flocks are largely monochrome, with about 10 percent multichromed. Sheep are white with about 10 percent having brown stripes or spots. Goats are black, with about 10 percent having spots of brown or white. Having agreed to give Jacob the multichromed animals that would be born, Laban promptly removed these multichromed beasts (Gen. 30:35). That left

Jacob with only monochrome animals, from whose random unions he was contracted to receive, he hoped, multichromed animals.

Jacob was a shrewd and observant shepherd and did rather well. Possibly, because he and Esau were heterozygous twins, he had given some thought to matters of heredity and heterozygosity.⁴ He knew that crossbred animals – hybrids, heterozygotes hiding recessive genes – were more "vigorous" [the New English Bible translation of the Hebrew "*mekusharot*"], while the pure-bred homozygous ones were "weaklings" [*atufim*]. He knew that animals which manifested sexual maturity, coming on heat early in the mating season, were the *mekusharot*, the hybrid heterozygotes from whose unions there was a three in four chance of speckled young being born. It was possible to identify the majority of the multichrome flock which were heterozygotes – sexually mature early – gather them in one place so that they could mate with each other, and so produce multichromed offspring.

All the hybrid animals were kept together at the mating season within the vicinity of peeled rods, not as influencing factors, but as identifying stations. The minority of animals, the homozygous monochrome who matured sexually late, were isolated elsewhere with their females exposed to heterozygous males or to homozygous spotted males as soon as these grew to sexual maturity or as soon as such animals became available via barter arrangements.

There are a great number of variables involved, including twin births (SofS 4:2, 6:6), sickness and death of animals, as well as random Mendelian outcomes. Also, one assumes that Jacob took every opportunity to barter homozygous or even heterozygous monochrome beasts for speckled and striped ones. All going well, after three or four mating and breeding seasons, not 10 percent but perhaps half or more of the animals would serve as Jacob's wages.

NOTES

1. Louis Ginzberg, *Legends of the Bible* (New York: Simon and Schuster, 1956) p. 66; Robert Graves & Raphael Patai, *Hebrew Myths: The Book of Genesis* (London: Cassell, 1964) p. 108; A. Sorsby. "Noah - an albino," *British Medical Journal*, (1958) 1:1587-1589.
2. Schneir Levin, "Letter to the Editor," *Jewish Bible Quarterly*, 26:273 (1998).
3. M. L. Rosenzweig, "Life History Data in the Bible from Abraham to Joshua," *Judaism*, 29:353 (1980).
4. Heterozygosity is defined in Mendel's theory of heredity as a plant or animal having one or more recessive characteristics, and hence not breeding true to type.

