177. Genetical Investigation of a Family for Five Generations. I. Blood Groups and Types

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The authors have investigated the blood groups, types, finger prints, hand prints, and other anthropological and genetical characteristics of a family spanning five generations.

The families at the present time are living in Shiobara-machi, Tochigi Prefecture. The first or oldest generation consists solely of an 89 year old man. The second, third, and fourth generations consist of living couples; all are in good health. The last or fifth generation is a 2 year old baby boy.

Experimental. The authors began their investigation with the various blood groups. Particularly noted were the ABO, Rh, MN, Q, E, ST, Lewis, and Kell systems. Also, the agglutinin titers of each individual were under consideration. It was found that the first, second, and third generations were all group A. The fourth generation was A and O, and the fifth generation was group O. In the third generation of the family, there is a woman of blood group AB. However, since she is an adopted member of the family, and not an actual genetic member, she was investigated for

Blood groups, types, and serological observations in five generations

Generation	Number in figure	Name	Age	ABO blood group	MN blood type	Q blood type	E blood type	S and T blood system	Lewis system	Kell blood type	Rh-Hr blood types	Agglutina-bility	Agglutinin Classification and titer
F _I	1	Tabei TASHIRO	♂ 89	A	MN	q	E	St	Le ^a (-)	(-)	Cc:D:Ee	A...1:256	$\beta_{II} \dots 1: 16$
	2	Chika ARAI	♀ 58	A	MN	Q	e	St	Le ^a (-)	(-)	Cc:D:Ee	A...1:256	$\beta_{II} \dots 1: 8$
F _{II}	3	Genichiro TASHIRO	♂ 67	A	M	Q	E	St	Le ^a (-)	(-)	Cc:D:Ee	A...1:128	$\beta_{II} \dots 1: 8$
	4	Chiyo TASHIRO	♀ 65	A	M	q	E	St	Le ^a (-)	(-)	Cc:D:Ee	A...1:128	$\beta_{II} \dots 1: 8$
F _{III}	5	Ichiro TASHIRO	♂ 47	A	M	Q	E	St	Le ^a (-)	(-)	Cc:D:EE	A...1:128	$\beta_{II} \dots 1: 16$
	6	Toyo TASHIRO	♀ 44	A	MN	q	E	St	Le ^a (-)	(-)	Cc:D:Ee	A...1:256	$\beta_{II} \dots 1: 16$
	7	Kiku TASHIRO	♀ 42	AB	MN	Q	e	St	Le ^a (-)	(-)	Cc:D:EE	A...1:256 B...1:128	—
	8	Kiyotaka MIURA	♂ 44	A	MN	q	E	St	Le ^a (-)	(-)	Cc:D:Ee	A...1:128	$\beta_I \dots 1: 32$
F _{IV}	9	Kazuyo TASHIRO	♀ 23	O	MN	q	—	St	Le ^a (-)	(-)	Cc:D:Ee	—	$\alpha_I \dots 1: 128$ $\beta_{II} \dots 1: 64$
	10	Mitsue INOUE	♀ 21	A	M	Q	E	St	Le ^a (-)	(-)	Cc:D:Ee	A...1:256	$\beta_{II} \dots 1: 16$
	11	Ieko TASHIRO	♀ 19	O	M	q	—	St	Le ^a (-)	(-)	Cc:D:Ee	—	$\alpha_{II} \dots 1: 128$ $\beta_I \dots 1: 64$
	12	Etsuko TASHIRO	♀ 17	A	MN	Q	E	St	Le ^a (-)	(-)	Cc:D:Ee	A...1:256	$\beta_I \dots 1: 32$
	13	Taeko TASHIRO	♀ 13	A	M	q	E	St	Le ^a (-)	(-)	Cc:D:Ee	A...1:128	$\beta_{II} \dots 1: 64$
	14	Yoshihiro TASHIRO	♂ 7	A	MN	Q	e	St	Le ^a (-)	(-)	Cc:D:Ee	A...1:128	$\beta_I \dots 1: 32$
F _V	15	Eizo INOUE	♂ 28	O	MN	Q	—	St	Le ^a (-)	(-)	Cc:D:Ee	—	$\alpha_{II} \dots 1: 64$ $\beta_I \dots 1: 32$
	16	Teiji TASHIRO	♂ 18	B	MN	q	E	St	Le ^a (-)	(-)	Cc:D:Ee	B...1:128	$\alpha_{II} \dots 1: 32$
	17	Tsunao TASHIRO	♂ 12	A	MN	q	E	St	Le ^a (-)	(-)	Cc:D:Ee	A...1:256	$\beta_{II} \dots 1: 16$
	18	Hiroshi INOUE	♂ 2	O	MN	Q	—	St	Le ^a (-)	(-)	Cc:D:Ee	—	$\alpha_{II} \dots 1: 32$ $\beta_I \dots 1: 16$

purely academic reasons. All generations were found to have M or MN factors. It is possible that the first generation wife who is deceased carried the M factor.

A man of the second generation and all other members of the third, fourth, and fifth generations carry factor Q. The male of the first generation is factor q. Consequently, the deceased wife of the first generation must have been factor Q, and further, that this factor has been carried in all subsequent generations.

Furuhata has maintained that agglutinins are inherited and has attempted to demonstrate this principle with the Q, q system. Also, he has investigated the α_I , α_{II} , β_I , and β_{II} agglutinins of the ABO system. Most members of the entire family have β agglutinins in their serum which are absorbed by rabbit cells (β_{II}). However, a few members of the fourth generation have β agglutinins which are not absorbed by rabbit cells (β_I). In accordance with the above observations, we can see that the inheritance of β_{II} is dominant to the inheritance of β_I . It is also assumed that the inheritance of a low titer of agglutinin is dominant to the inheritance of high titers (reported previously by Matsunaga).