Homework 15 : DMB

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1. $(u,v) \rightarrow (u^2 + uv + 1/4 v^2, -2vu - 2u^2 + 2u - 1/2 v^2 + v)$

proof: Mating matrix (1)

	AA	Aa	aa
AA	u^2	uv	uw
Aa	vu	v^2	vw
aa	wu	wv	w^2

(2) Find freq. of offspring in terms of mating prob.

ex. Both parents AA = u^2

AA: u^2 Aa: 0 . aa: 0

(3) Find the freqvency of u, v in next gen

(4) $(u,v) \longrightarrow$ Transformation.

2. $u = .2 \quad v = .3 \longrightarrow$

i. Rignt now 50% aa genotypes.

ii. Next gen (& all else) $(.2, .3)$

$$\longrightarrow ((.2)^2 + (.2)(.3) + 1/4 (.3)^2, -2(.2)(.3) - 2(.2)^2 + 2(.2), -1/2(.3)^2 + .3)$$

$= (0.1225, 0.355)$

so aa genotype

$\longrightarrow$ aa: .5225 or 52.25%.

iii. In ten, same as in 2. Doesn't change.

3. $\cdot 50 = V$ so, $U = 0.2$

$W = .30$

i. Right now 20% of popul. genot. = AA (het)

ii. Next gen :

$(U,V) \rightarrow ((0.2)^2 + (0.2)(0.5) + 1/4(0.5)^2,$

$-2(0.2)(0.5) - 2(0.2)^2 + 2(0.2) - 1/2(0.5)^2 + 0.5)$

$= (0.2025, 0.495)$

so, in next gen 20.25% AA genotypes

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iii. In ten gen, also 20.25% AA

4. Used Allen SIR & Orb to look at the different findings and predictions From the paper.