Lecture9: Selfish Gene and Sex Selection

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1. Lessons, Questions and Answers

Lesson 1:

Nowadays, we can see human beings and many other creatures breed via sexual reproduciton. We would ask, why is it via sexual reproduction? It's obvious that asexual reproduction can be executed in a quick and simple way. However, creatures with asexual reproduction barely have any genetic diversity. The only derivation of genetic diversity creatures must be mutation by mutagen by accident. In contrast, creatures with sexual reproduction are more prone to ongoing changes of environment by virtue of its high genetic diversity. The genetic diversity of creatures with sexual reproduction is not only, to some extent, derived from mutation but mainly caused by the exchange of genetic information while carrying out sexual reproduction. Hence, we can say that with sexual reproduction, evolution of species has been effectively propelled, leading to the predominant status of those creatures today. As for creatures with asexual reproduction, on account of no chance to aggregate mutant genes in respective individuals which is suitable to environment into one offspring, barely do their offspring survive under successive changes in environment. But nothing is always a bed of roses, it is one obvious downside of those with sexual reproduction that though good genes are inherited, bad genes are inherited, likewise. While it's still not a pivotal factor for the competition between these two kinds of creatures.

Lesson 2:

In human's cells, there's X chromosome inactivation center(XIC) controlling expression of the X inactivate specific transcript(XIST), a non-coding 17kb RNA molecule, through coating the entire X chromosome. However, on the opposite

strand of XIST, Tsix exists and can be expressed to inhibit XIST. Besides, XACT, a long non-coding transcript, coats the active X chromosome and is thought to activate X chromosome. With these complicated regulation, every cell in human body at every stage of life, respectively, activates and inactivates different genes on X chromosome.

Question and Answer:

Because I couldn't realize what is selfish gene in this lecture, I later read the book "*The Selfish Gene*" instead of asking any question.

2. Reflection on *Curse and Blessing of the Ghetto* (Jared Diamond, 1991)

Exactly, nothing amaze me in this article. What I saw in this article is only shrewd application and explanation of concepts learned in senior high school, such as founder effect and genetic drift. However, I thought there are some noteworthy values appearing in this article, especially its coherent reasoning for all the possibility of its question and its inclusion of historical factors while discussing. Besides, I think there are not only Tay-Sachs disease and sickle-cell disease able to be explained by this way, but Ellis-van Creveld syndrome frequently appearing in the Amish also apt to be illustrated this way.

3. Reflection on *The Selfish Gene* (Richard Dawkins, 1989)

There are some highlights strongly implied in this book:

(1) We are all gene machines.

(2) The altruistic behavior results from the selfish gene.

(3) 'Welfare' is defined as 'chances of survival', even if the effect on actual life and death prospects is so small as to seem negligible.

I haven't finish this book, so I just can find these notions.