Fisher – In Fisher’s original presentation, he was thinking of female preference for male traits that were favored by natural selection. This leads to the “run away” process but it also yields a wee problem.

Kirkpatrick’s model

Kirkpatrick showed that female preference could favor even if the Qs preferred male traits that were selected against under natural selection. This is more along the lines that Darwin was thinking.

Lande’s model – A QG model

Felix Beder’s study of genetic correlation between orange spots and Q choice
If the red lines (the covariance between male character and female choice) are steeper than the blue lines, then both preference and the equilibrium are lower.

Equilibrium from line of evolution.

Average & Preference

Average of Trait

Effect of selection = \( \frac{1}{E} \) + 1

Fisher / Lander Model (from A canodon)
Sexual Selection (cont.)

→ Intersexual selection

So far we have shown that ♀ preference for a ♂ trait can result in the spread of the ♂ trait (even if it reduces the viability of the ♀).

The question now is:

Why do ♀s have preferences?
(or, equally, why do ♂s sometimes show preferences?)

Possible answers (not mutually exclusive)

1. "whims" or sensory exploitation.
   ASSUMED IN KIRKPATRICK'S MODEL

2. ♂♂ provide resources (e.g., nuptial gifts) and/or paternal care

3. Males are selected for their good genes
   A. Incest avoidance
   B. Genetically-based advantages to offspring
   C. Favorable combinations of genes with maternal genes
But, there is a problem with the good genes model. The problem is that:

- SS & NS for good genes reduces VA for the fruit. At some point, there is no point in & choice.

One possible solution to this problem is that the favored combination of genes changes over time.

The presently favored combination results in better condition.

Males are chosen based on their condition - resulting in choice for presently better combinations of genes.

Condition is a reliable indicator of good genes in the male (or female).
Another possible solution is similar favored combinations of genes change over time.

But mates are chosen directly for the combination of genes (not on condition) that will interact in the offspring.

Opposites attract?

Evidence for choice:

1. Mice & MHC

2. Humans & MHC

The T-shirt study

3. Fish & the MHC
METHODS

1. δ & η STUDENT typed for MHC

2. δ wore STANDARD T-SHIRT
   FOR TWO NIGHTS (NO SHOWER)
   NO WINE, ETC.

3. WOMEN were GIVEN T-SHIRTS to
   "Sample" in a "Wederkind" Box

4. WOMEN asked to RATE ODORS
   of SIX Shirts: 3 similar for MHC
   3 dissimilar

5. Score was given for PLEASANTNESS
   AROMA & INTENSITY

RESULTS

odors of dissimilar δ were preferred
by women and there were more likely
to remind them of a boyfriend

unless
They (the women) were taking oral
contraceptives