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More on conflict between the sexes: genetic conflict (Class discussion of the paper by Zeh and Zeh, BioEssays (2000).

Live birth (viviparity) offers the opportunity for conflict that is not possible in spawning species or egg laying species.

Specifically, the womb (or similar structure) provides an “arena” for competing interests to play out. There may be a difference, for example, of the effects of natural selection on males and females.

In the mother, selection should favor equal allocation to offspring within a brood, as they are all equally related to her. In addition, for iteroparous species (reproduce more than once), the mother may hold back resources for future broods.

How does selection act on males in polyandrous species (where females mate with more than one male)?

Males would be selected to manipulate the mother into investing more in their offspring, at the expense of the progeny sired by other males and at the expense of the mother’s future reproductive success. How could they do this?

In mice embryos, the maternal allele for IGF2 is mostly turned off. IGF2 is insulin-like growth factor 2, which stimulates cell development, increases the growth rate of embryos, and effectively garners resources from the placenta. Why should a mother imprint her IGF2 alleles to reduce transcription of this gene in her offspring?

In the same embryos, the paternal copy of the allele IGF2 is turned on. Why?

In addition, the mother expresses another gene, IGF2-r, which codes for a receptor that mops up extra growth factor. Conversely, the male copy of the same gene is not expressed.
Why?

Who wins?

Bill Cosby: the “you-had-it-last hypothesis.”

Groups:

Population structure and the exploration of local adaptive peaks in phenotypic space

Group structure and the exploration of local conception peaks in intellectual space.

Possible discussion points for the Zeh’s paper

1. Mammals develop post-zygotic isolating barriers much faster than frogs and birds. Why. What is a post-zygotic barrier; what is a pre-zygotic barrier.
2. Viviparity creates a post-fertilization arena, allowing for the possibility of reallocation of resources within the arena, which indirectly aid the spread of cytoplasmic male killers.
3. Overproduction of ova into the arena might also aid the spread of alleles for segregation distortion (selfish genetic elements).
4. Polyandry drives conflict, which might drive greater degrees of polyandry, resulting in a positive feedback situation???
5. At a molecular level, what is genomic imprinting? How does it work?