Interesting question to address with model:

When are different resistance/tolerance strategies favored?

Strategies:

* immune activation
* anorexia
* compensatory feeding
* damage repair

The relative benefit of each strategy will depend on different factors:

For immune activation, the key parameters will be the cost of immune activation (which I might be able to come up with a general analytical expression for, but it will depend on the parameter governing allocation to defense, *b*, but also on the immune system’s efficacy at converting energy into immune cells and its efficiency at killing parasites) compared to the cost of parasitism.

For anorexia, the key parameters will be the cost of spending reserve to maintain structure and how quickly the parasite can be starved of energy. Presumably anorexia will function exclusively as a resistance mechanism.

For compensatory feeding, the key parameters will be the cost of parasitism vs the ability to compensatory feed.

For damage repair, the primary cost will again be the cost of maintaining structure from reserves compared to the cost of parasitism (and the cost of immune activation).

We might also consider defense strategies that come together: for example, maybe the best strategy is a combined resistance strategy – anorexia + immune activation – when might that work? That would seem tricky to pull off, whereas a combined tolerance strategy – compensatory feeding + damage repair – might be the preferred way of coping with infection.

And what about behavior? If metabolic costs can be lowered by minimizing activity, that would basically always be a good strategy, so maybe its not that interesting.

Stony Ford expt:

Mice infected with worms; some given only chow, others given choice between chow and peanut butter; tracking total food ingestion, food choice, body composition, worm burdens,

2 wedges cleared worms (one supplemented, one chow only)

2 wedges had high worm burdens (one supplemented, one chow only)

* suggestive of a confounding factor (perhaps genetic relatedness)

But still some cool patterns, e.g., between diet and body mass