

Behavioral Immunity

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Loss of Heterogeneity in Humans

- humans are very similar genetically
- **Population thinking**: Crises lower population → smaller gene pool
 - ↳ greater influence on founder effects
 - ↳ at some point in history, only 20,000 humans were alive
- ↳ **Impact of disease on human evolution**
 - Until WWII, more soldiers died of disease than wounds
 - Decimation of native population: 50% of Aztecs died of smallpox, 95% of indigenous North American populations
- Why did Europeans carry diseases, but others did not?
 - A: agriculture
 - caused humans to become sedentary
 - high density living
 - domesticated cattle, sheep, goats living in the same area
 - ↳ diseases moved easily from animals to humans
 - modern society: cities, global transportation...

Behavioral Immunity

- ability for humans to detect presence of pathogens
 - example: bad odor, blemishes...
 - tuned to be oversensitive (false positives)
- functional flexibility: responses can be expensive; tradeoff in safe behavior

In other species:

- dedicated latrine spots: stool contains pathogens
- Grooming: remove parasites, build relationships
- medications: nest fumigation, plants...

Sexual reproduction as a defense against disease

- by increasing heterogeneity of offspring via sexual reproduction, population is better protected against disease
 - ↳ good genes hypothesis: showy displays on birds, etc. are an honest signal of low disease (immunocompetence)
 - human response to pathogens → polygyny

Experiments in behavioral immunity

- individuals injected w/ immunotoxin judged less desirable
- cultures w/ lower disease levels → increased sexuals, more extraverted men to new experience

(Schaller, Murray 2008)

- Xenophobia often used as rationalization for remove possible pathogens
- Parochialism: treating strangers differently
 - ↳ strangers may have different disease background: after being primed by disease, people less likely to support unfamiliar cultures (greater xenophobia) - Schaller, Park 2011
- Collectivism: group-oriented behaviors
 - higher historical disease \leftrightarrow more collectivism
 - may be more adaptive w/ pathogen presence

Disgust: a mechanism for behavioral immunity

↳ Biological disgust

- facial expression, nausea, vomiting - protect body from dangerous substances
- curled lip, wrinkled nose, lower heart rate

Hypotheses:

- elicitor of disgust correlated with disease (body products, bad food, animals, body violations)
death, injury, infection
- women more sensitive to elicitors: especially during pregnancy

↳ Cognitive disgust

- learned behavior: eg. incest
- used to enforce cultural norms, possibly based on biological reasons

↳ moral disgust

- protect society
- norm violations
- mental model ("magic thinking") - don't take chances
- disgust decreases with familiarity
 - own body odors
 - changing baby's diapers

