

The most important Dynamics for our long-term future is "

# Biosecurity and pandemic preparedness

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From my research biggest risks to humanity comes from engineered pandemics — think COVID, but designed to be far worse. COVID-19 has made us all familiar with how devastating a pandemic can be, but despite how damaging COVID-19 has been, there is a possibility that a future pandemic could be far worse.

**Preparing** for future pandemics, especially those that pose a risk to humanity's survival or long-term potential, is one of the best ways we have to safeguard the long-term future ,because As of November 2021, COVID-19 has killed over five million people and destroyed tens of trillions of dollars of economic value.

**Biosecurity** is a set of methods designed to protect populations against harmful biological or biochemical substances. biosecurity that reduces *global catastrophic biological risks* . This could refer to a wide range of biological risks, but this page is specifically focused on biosecurity that reduces *global catastrophic biological risks* (GCBRs).

Making Biosecurity a priority we could make significant difference .

# Scale of Biosecurity

There are a number of different types of GCBRs. At the broadest level, we distinguish between two types of pandemics: one is posed by *naturally occurring* pathogens; the other is posed by *human-engineered* pathogens. Engineered pathogens can be further distinguished as being either *accidentally* or *intentionally* released.

The likelihood and potential for harm of these different kinds of pathogens vary, so we analysed the pandemics they may respectively cause below.

## Natural pathogens

The deadliest event in recorded history was likely a natural pandemic: the bubonic plague ravaged Europe and parts of Asia and Africa between 1346 and 1353, killing an estimated 38 million people — roughly 10% of humans alive at the time.[2]

Natural pandemics pose a small but significant risk of killing a sizable fraction of the world's population, but a much smaller — a hundred times as small — risk of killing everyone alive.

According to recent survey participants at a 2008 conference about global catastrophic risks, the median respondent estimated that by 2100, a natural pandemic had a 60% chance of killing at least one million people, a 5% chance of killing at least one billion people, and a 0.05% chance of causing human extinction.

This assessment is broadly in line with what independent lines of evidence suggest: that extinction from a natural pandemic is possible, but very unlikely for a couple of reasons.

First, infectious diseases account for only a small fraction of extinctions in non-human animal species:[4] In mammals, there is only one confirmed case of a species going extinct due to a natural pathogen.

Second, if the risk of human extinction from infectious disease is roughly constant over time, the risk of extinction per century must be very low, as humans have been exposed to such risk for 300,000 years, and have not yet gone extinct. A probability of extinction higher than 0.05% per century implies a less than one-in-four chance that our species would have made it as far as we have.

But the above argument doesn't take into account that some aspects of modern living conditions are quite different from those prevailing over most of human history. Some parts of modern living put us at greater risk, but others decrease it:

- Modern living conditions that *increase* risk include: Greater human population density, much larger domestic animal reservoirs, anthropogenic climate change (which increases the likelihood of zoonotic disease), and global interconnectedness and interdependence (which may lead to greater civilisational fragility).
- Modern living conditions that *decrease* risk include: Vastly

improved hygiene and sanitation; the potential for effective diagnosis, treatment, and vaccination; an understanding of the mechanisms of disease development and transmission; and greater population dispersion, including exceptionally isolated groups like Antarctic scientific researchers and nuclear submarine crews.

Taking all this into consideration, it's unclear whether our cumulative risk has increased or decreased. However, even if the risk has in fact increased, it likely hasn't done so to a degree that would put the above assessment in doubt. Therefore, while we still face considerable uncertainties surrounding the estimation of GCBRs from natural pathogens, our conclusion that risk is relatively low is reasonably robust.

## Engineered Pathogens

Several researchers within the effective altruism community believe engineered pathogens pose a more serious risk to our biosecurity than natural pathogens . this is classified into intentional release and accidental release.

### intentional release

Intentional releases are intended to cause deliberate harm to the environment .

# Accidental release

unanticipated emission of a regulated substance or other extremely hazardous substance into the ambient air from a stationary source.