Context
One or more biological explanations of one or more mental health disorders.

Content
Genetic inheritance.
The diathesis-stress model.

Theoretical Knowledge
One **biological explanation** for Major Depressive Disorder (MDD) is **genetic inheritance**, where certain genes influence vulnerability to the **mental health disorder**. A key gene involved is the 5-HTT gene (also known as SLC6A4), which regulates the 5-HTT transporter, responsible for serotonin reuptake. This gene has a polymorphism, meaning it exists in different forms, including short (s) and long (l) alleles. The short allele is linked to lower serotonin availability, which may contribute to depression by making it harder for the brain to regulate mood and emotional responses.

However, having this genetic variation does not mean someone will develop MDD. The **diathesis-stress model** explains that individuals with a genetic predisposition, such as carrying the short allele, are at greater risk if they experience significant stressors, such as trauma, abuse, or prolonged hardship. This highlights the gene-environment interaction, where genetics may create a biological susceptibility, but environmental factors determine whether the disorder develops. Understanding this interaction is crucial in explaining why some people with a genetic risk develop MDD, while others do not.

Research Study
Caspi et al. (2003) – The 5-HTT Gene and Depression
Aim: To investigate whether a variation in the 5-HTT gene, as a **biological factor**, affects how people respond to stressful life events and their risk of developing the **mental health disorder**, Major Depressive Disorder (MDD).
Method: Researchers studied 847 participants from New Zealand, tracking them from birth to early adulthood. They identified which version of the 5-HTT gene each person had—either two short alleles (s/s), one short and one long (s/l), or two long alleles (l/l). Participants reported stressful life events between ages 21–26, and researchers assessed symptoms of depression.
Results: Those with at least one short allele (s/s or s/l) were more likely to develop depression after experiencing multiple stressful life events. Those with two long alleles (l/l) were less affected by stress.
Conclusion: The study supports the **biological explanation** of MDD as well as the **diathesis-stress model**, showing that **genetic inheritance** of the 5-HTT gene's polymorphism can influence how stress affects mental health. However, genes do not directly cause depression—environmental factors also play a key role.

Example
Emma's mother and grandfather both had Major Depressive Disorder (MDD). Despite a stable childhood, she developed MDD in her early 20s after losing her job, suggesting genetic inheritance and stress played a role.

Bias
Genetic explanations of MDD may be influenced by confirmation bias, prioritising genetic evidence while overlooking environmental or sociocultural factors.

Measurement
Genetic influence on MDD is measured using twin and adoption studies, as well as genetic testing, which usually use quantitative data.

Change
Research has shifted from genetic explanations to gene-environment interactions, with epigenetics showing experiences influence genetic expression.

Perspective
A biological perspective emphasises genetics, while psychological and sociocultural perspectives highlight environmental and cognitive influences on MDD.

Causality
Genes don't cause MDD but increase vulnerability. Environmental stressors interact with genetic predisposition, supporting the diathesis-stress model.

Responsibility
Researchers must be cautious of genetic data, so it is not misused to justify stigma, discrimination, or oversimplified explanations of MDD.