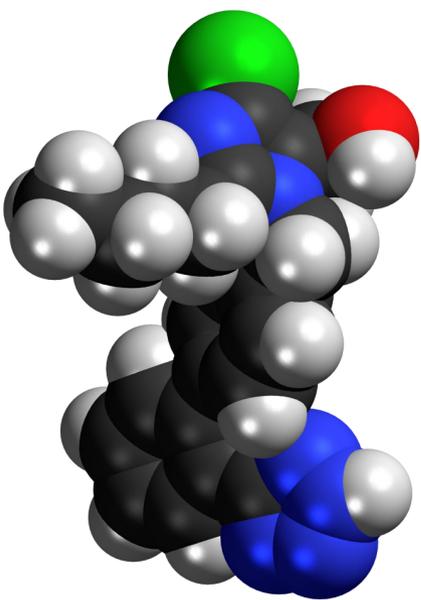
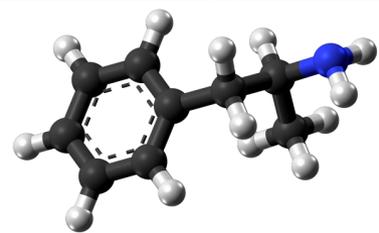
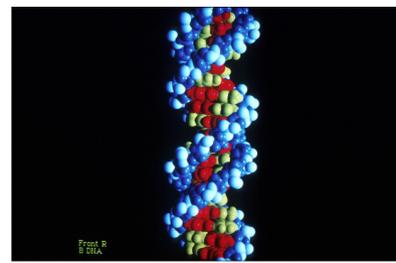
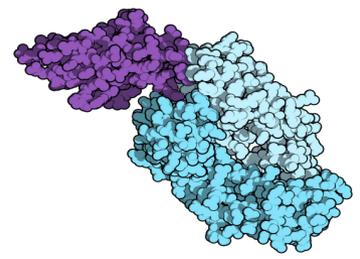


Evolution of Drug Resistance in Cancer Cells

By: Joseph J Rojas
Fundamentals of Evolution

- Often related to as one of the top five leading causes of **DEATH** worldwide in human history so far.
- Chemotherapy, Anticlonal hormone therapy, immunotherapy, radiation treatment are amongst some of the many avenues of treatment that had been established to combat the spread of cancer.
- However, as exposure to these treatments are continued over a period of time, the cancer eventually acquires a sort of tolerance to them.



- This usually happens over time as the cancer undergoes acquisition of drug tolerance with overexposure from these treatments.
- But more recently, those with family histories of certain types of cancer often have intrinsic resistance since their predecessors had been exposed to drug treatments early on therefore passing on their drug-resistant cancer genes to their



- Primary causes to how drug resistance came about are often due to high heterogeneity/complexity of the cancerous tumor cells within the driver genes.
- With single drug treatments that had more prevalent around earlier decades, it made more likely for drug tolerance to occur.
- Thanks to more current research studies in the medical field, it's more beneficial for combinational drug cocktail therapies which can affect multiple cancer driver genes at once.
- This along with alternating doses of chemotherapeutic drugs in order to delay tolerance in cancer cells has shown to be effective towards increased success towards lowering resistance.

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