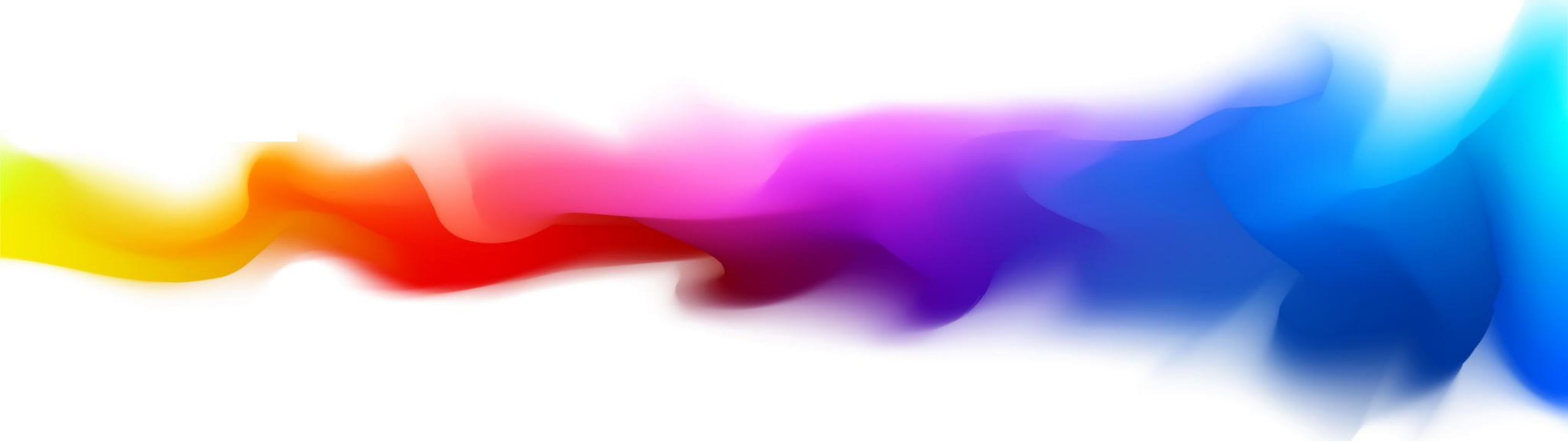
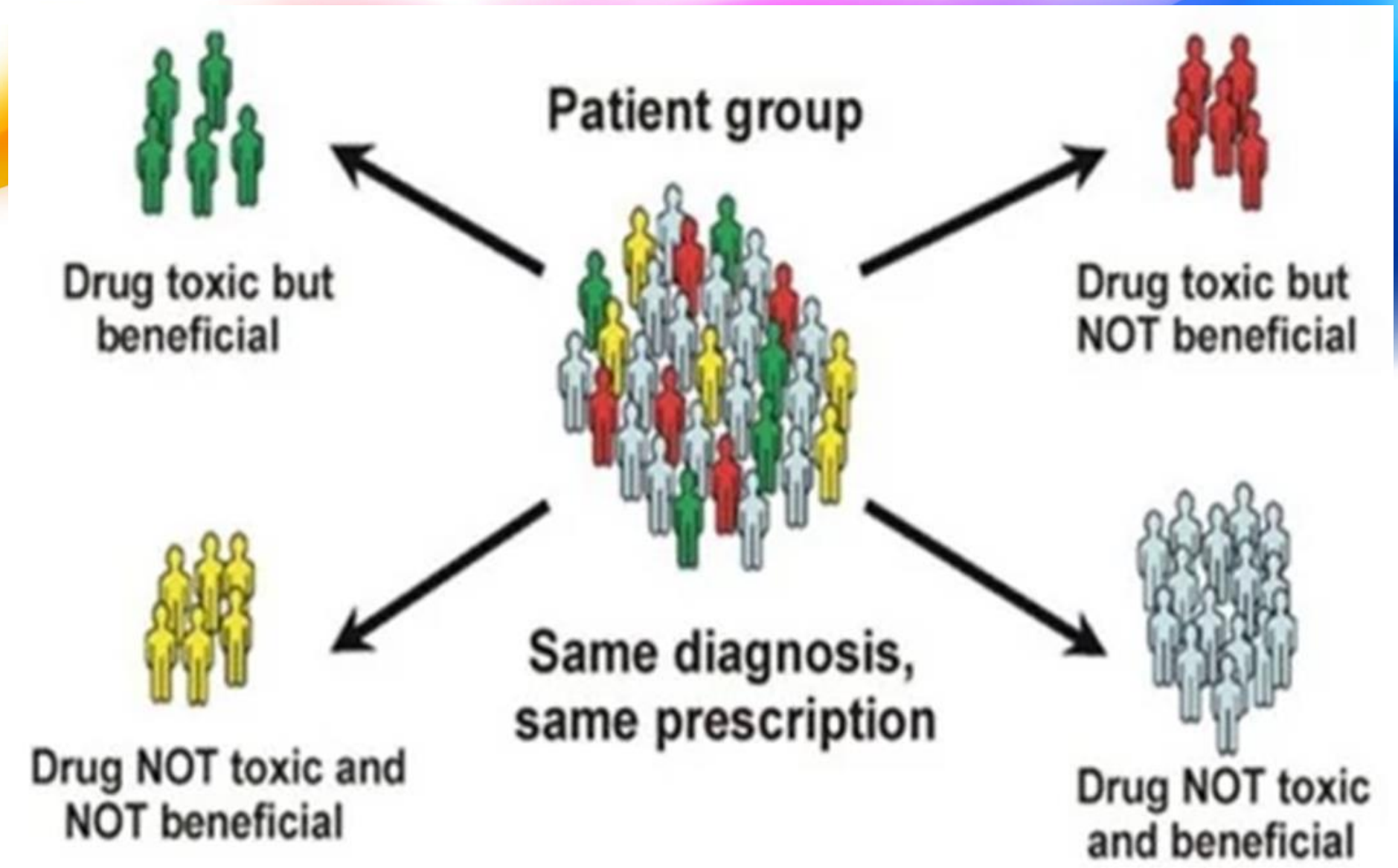
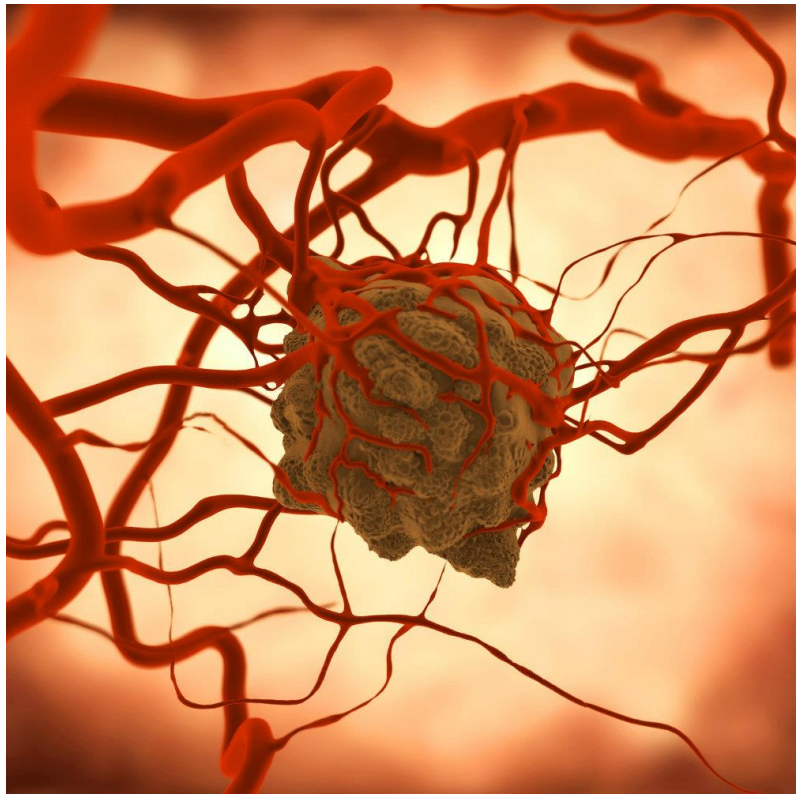
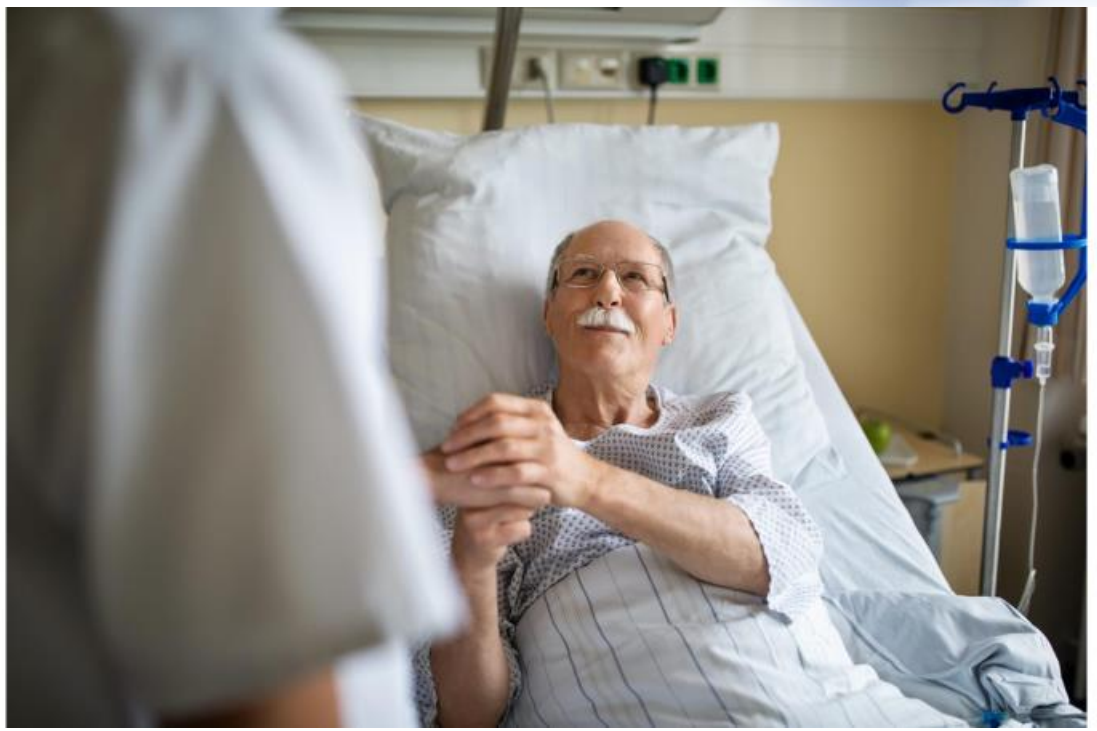


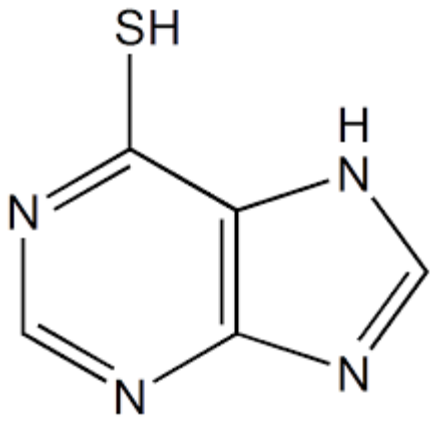
# Personalizing Chemotherapy


Patient group
Drug toxic but beneficial
Drug toxic but NOT beneficial
Same diagnosis, same prescription
Drug NOT toxic and NOT beneficial
Drug NOT toxic and beneficial

# Cancer

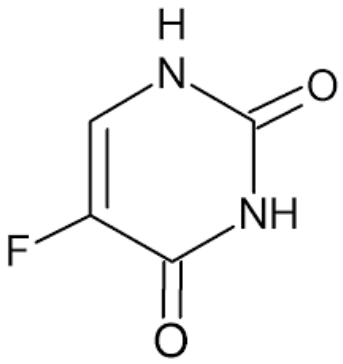







6-mercaptopurine

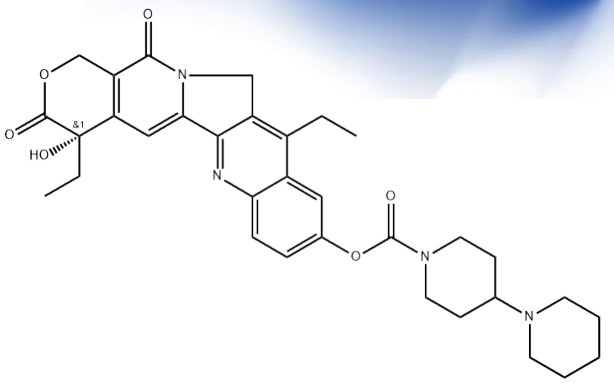
TPMT




5-fluorouracil

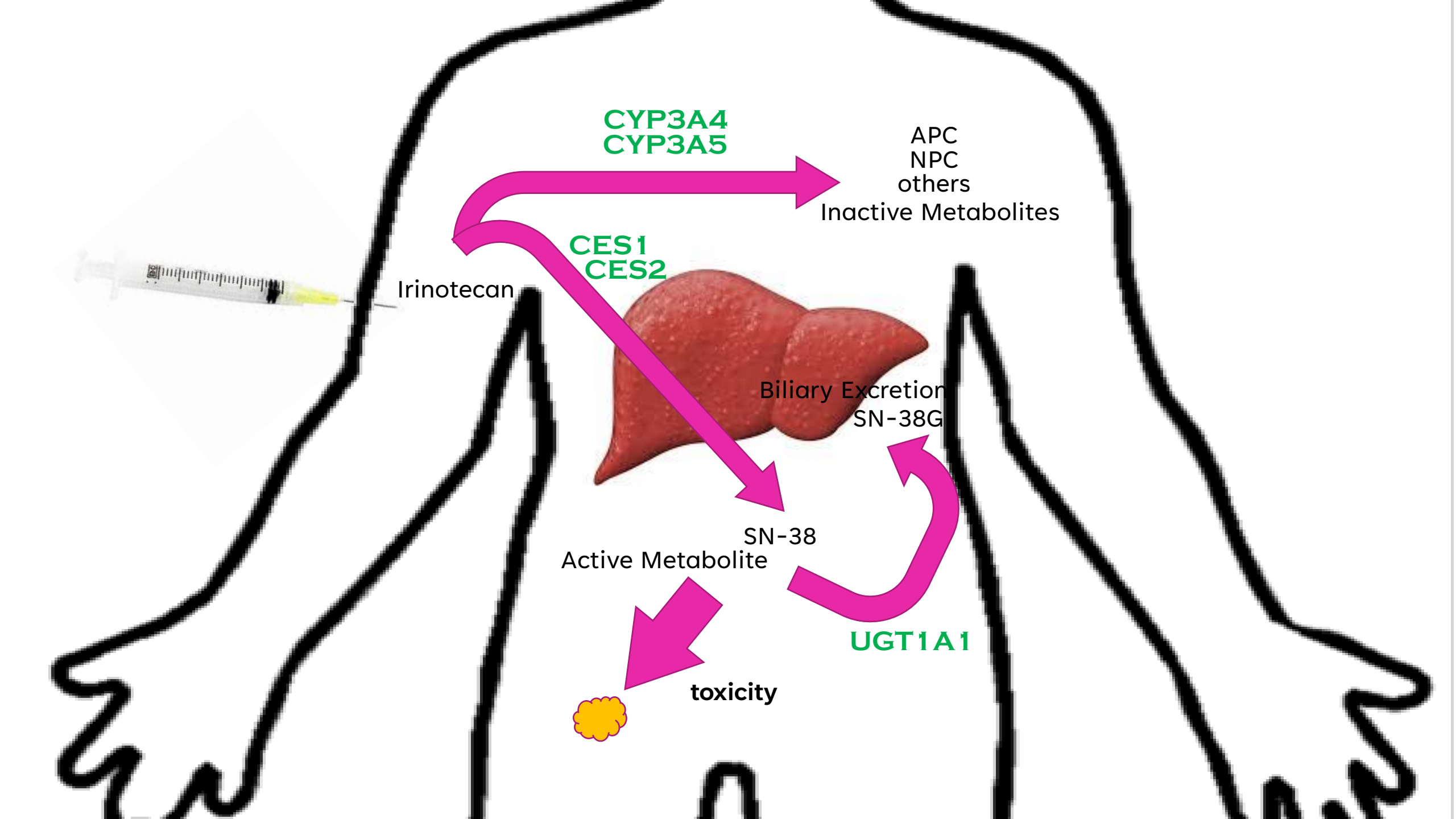
TS

DPD




irinotecan

UGT1A1


CYP3A4
CYP3A5
APC
NPC
others
Inactive Metabolites
CES1
CES2
Irinotecan
Biliary Excretion
SN-38G
SN-38
Active Metabolite
UGT1A1
toxicity

Chemotherapy List

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| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Antimetabolite - 1 | Antimetabolite - 2 | Antimetabolite - 3 | Antimetabolite - 4 | Antimetabolite - 5 | Antimetabolite - 6 | Antimetabolite - 7 | Antimetabolite - 8 | Antimetabolite - 9 | Antimetabolite - 10 | Antimetabolite - 11 |
| 2 | Drug Name | 6-Thioguanine | Cladribine | Fludarabine | Clofarabine | Mercaptopurine | Forodesine hydrochlo | Pentostatin | Nelarabine | Hydroxycarbamide | Capecitabine | Doxifluridine |
| 3 | Students working on the Compound | | | | | | | | | | | |
| 4 | | | | | | | | | | | | |
| 5 | Alternate Names | (Brand Name Tioguan | Leustat | Fludara | Evoltra | Puri-Nethol | | Nipent | | Hydrea | Xeloda | 5_FU |
| 6 | | Lanvis | LITAK | Fludarabine phosphat | | 6-mercaptopurine | | deoxycoformycin | | hydroxyurea | | |
| 7 | | | 2-chloro-2′-deoxyader | | | azathiopurine | | | | | Apo-capecitabine | |
| 8 | | | | | | | | | | | fluorouracil, 5-fluor-2' | |
| 9 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | | | | | | | | | | ribonucleotide reductase | | |
| 13 | | 6-thioguanine | adenosine analog | a purine analog | a purine analog | a purine analog | blocks purine synthesi | purine analog | a purine nucleoside ar | inhibits ribonucleotide | 5-FU | 5_FU |
| 14 | Mechanism of action | a guanine analog, an antimetabolite that interferes with DNA and RNA synthesis | a synthetic adenosine analogue that is activated in cells when it is phosphorylated by | fludarabine is converted to the active compound, 2-fluoro-ara-ATP, which inhibits DNA | a purine nucleoside antimetabolite; inhibits DNA synthesis by decreasing cellular | It is a pro-drug that is converted intracellullarly. Mercaptopurine is first converted to | a Purine nucleoside phosphorylase (PNP) inhibitor that, when inhibited, means that | It is classified as a purine analog, which is a type of antimetabolite. It mimics the | a synthesized guanosine nucleoside prodrug of ara-G (9-ß-D-arabinofuran | decreases the production of deoxyribonucleotides via inhibition of the enzyme | nucleotide analog (not yet 5 FU) Thought to be converted to 5FU mainly in the tumor | The mechanism of action of fluorouracil (5-FU) and the oral fluoropyrimidines and the importance |
| 15 | Primary Tumor Type | acute myeloid leukaer | hairy cell leukemia | chronic lymphocytic le | acute lymphoblastic le | acute myeloid leukaer | | hairy cell leukaemia | | chronic myeloid leuka | treats many types of c | |
| 16 | | acute lymphoblastic le | chronic lymphocytic le | acute myeloid leukaer | | acute lymphoblastic le | | | | | | |
| 17 | | chronic myeloid leuka | | | | chronic myeloid leuka | | | | | | |
| 18 | | | | | | | | | | | | |

Chemotherapy List

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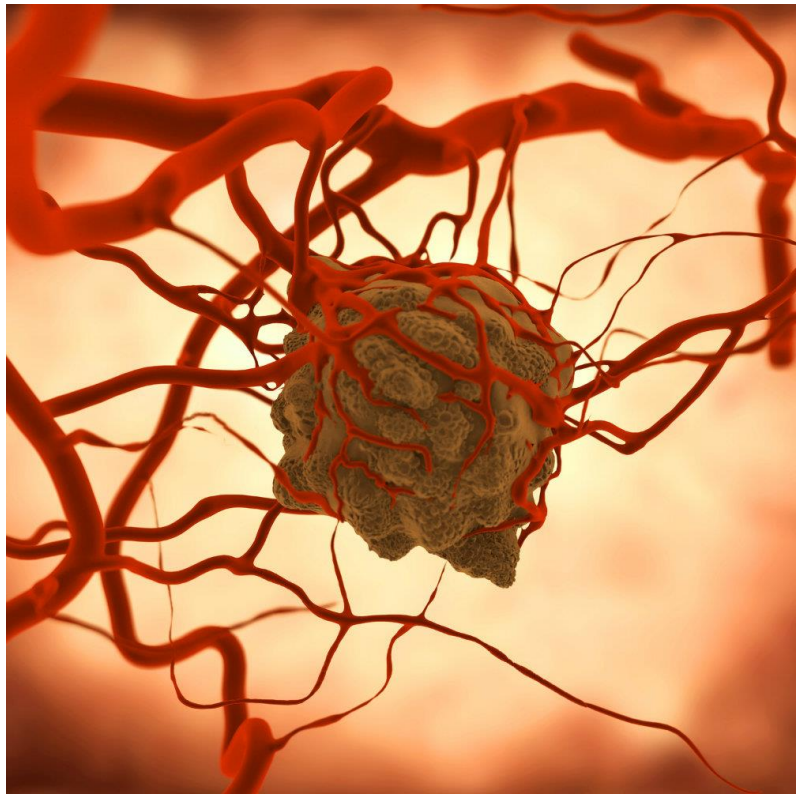
A6

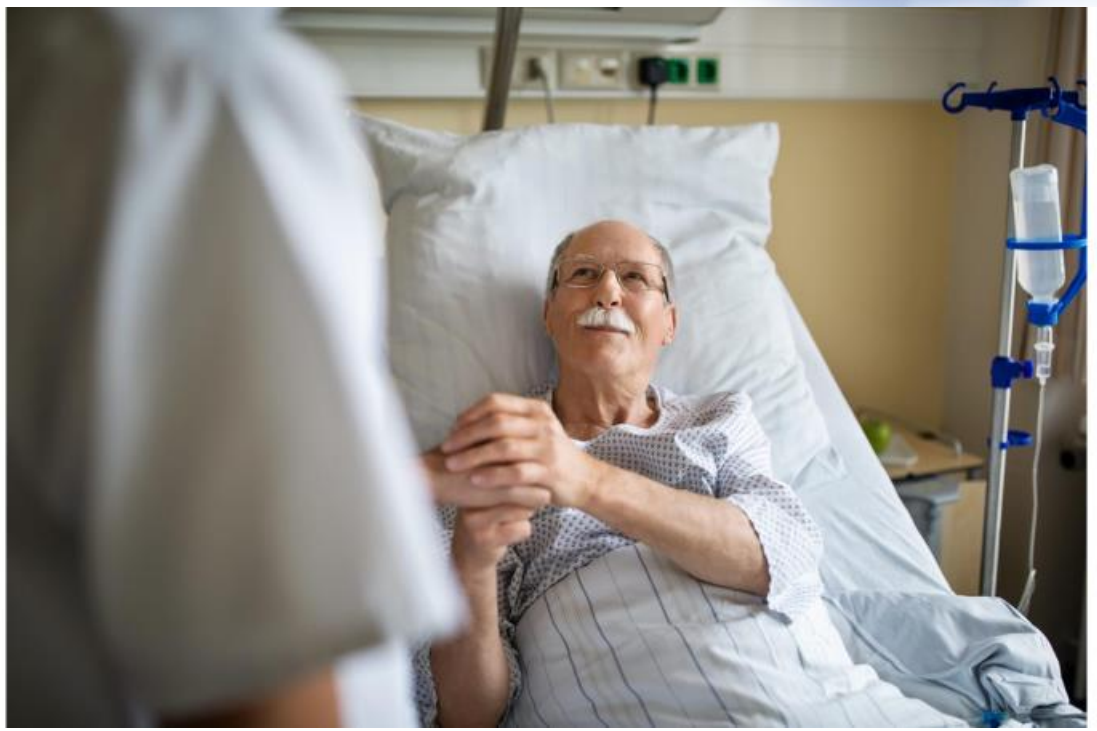
| | A | BK | BL | BM | BV | BW | BX | BY | BZ | CA | CB | CC | CD | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Arom - 1 | Arom - 2 | Arom - 3 | TKI - BCR-ABL - 1 | TKI - BCR-ABL - 2 | TKI - BCR-ABL - 3 | TKI - BCR-ABL - 4 | TKI - BCR-ABL - 5 | ATP analog MAPK - 1 | ATP analog MAP | ATP analog MAP | ATP analog MAP | ATP an |
| 2 | Drug Name | Anastrozole | Aromasin | Letrozole | Dasatinib | Ponatinib hydroc | Bosutinib hydrate | Nilotinib | Imatinib mysylate | Dabrafenib mesylate | Binimetinib | Trametinib | Encorafenib | Vemur |
| 3 | Students working on the Compound | Sydney Achee | Sydney Achee | Sydney Achee | Richard Huynh | Richard Huynh | Richard Huynh | Richard Huynh | Richard Huynh | Brooke Escoe | Brooke Escoe | Brooke Escoe | Brooke Escoe | Brooke |
| 4 | | | | | | | | | | | | | | |
| 5 | Alternate Names | Arimidex® | Exemestane | Femara® | Sprycel® | Iclusig® | Bosulif® | Nilotinib hydrochlorid | Glivec® | | | Trametinib dime | BRAFTOVI | |
| 6 | | | | | | | | Tasigna® | | | | Mekinist | | |
| 7 | | | | | | AP245341 | | | | | | | | |
| 8 | | | | | | 3-(imidazo[1,2-b | | | | | | | | |
| 9 | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | |
| 13 | | Aromatase inhibitor | Aromatase inhibitor | Aromatase inhibitor | TKI - BCR-ABL | TKI BCR-ABL | ATP analog; BCR-ABL | ATP analog BCR-ABL | TKI BCR-ABL | ATP analog MAPK | ATP analog, MEK | ATP analog | RAF kinase inhib | V600E |
| 14 | Mechanism of action | Aromatase inhibitor | Aromatase inhibitor | Aromatase inhibitor | ATP-mimic | is especially useful in the treatment of resistant CML because it | ATP analog; inhibits the BCR-ABL kinase that promotes CML; it is also an inhibitor of Src-family kinases | Nilotinib fits into the ATP-binding site of the BCR-ABL protein with higher affinity than imatinib | is a protein-tyrosine kinase inhibitor that inhibits the bcr-abl tyrosine kinase. | a reversible ATP-competitive kinase inhibitor and targets the MAPK pathway | noncompetitive with ATP, binds to and inhibits the activity of MEK1/2 | is a highly selective reversible allosteric inhibitor of | acts as an ATP-competitive inhibitor RAF kinase | involve selecti inhibit the mu BRAF |
| 15 | Primary Tumor Type | estrogen-responsive b | breast cancer, mostly | | specific for BCR- | | | | | metastatic melanoma | unresectable me | Anaplastic Thyro | unresectable me | metast |
| 16 | | | | | works on KIT dep | | | | | | | | | |
| 17 | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | |

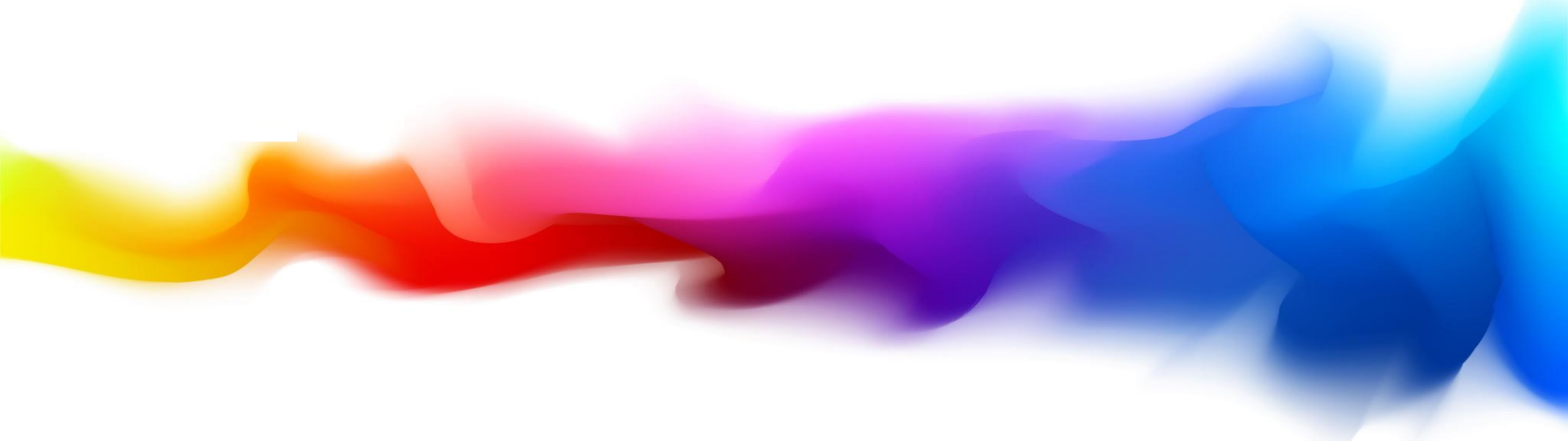
PM →

| Enzyme | Thiotepa | Busulfan | Treosulfan |
|---|---|---|---|
| CYP2B6 | X | | |
| CYP3A4/5 | X | | |
| GSTP1 | X | | |
| ABCB1 | | X | |
| ABCC1 | | X | X |

# Cancer







# Personalizing Chemotherapy