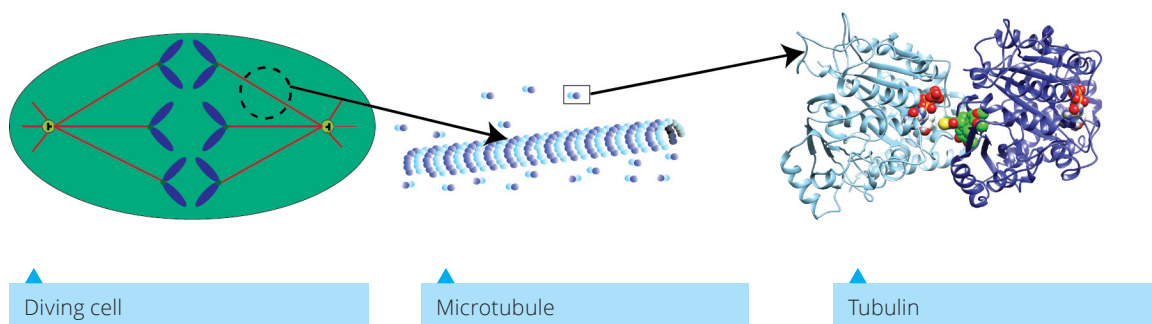


Microtubule targeted anti-tubulin agents for cancer treatment



Microtubules are filaments formed by the polymerisation of tubulin proteins. Microtubules play a crucial role in many important cellular processes such as maintaining cell shape, intracellular transport, cell motility and cell division. During cell division, genetic material is divided into two daughter cells with the help of microtubules. Cancer begins as over proliferation/uncontrolled division of cells. Cancerous cells unlike normal cells divide rapidly and therefore one of the successful strategies in cancer treatment is to target the microtubule of cancerous cells using anti-tubulin agents.

Our lab uses computational methods to understand the interaction between new potential anti-cancer compounds and protein tubulin which constitute the microtubules. Tubulin is naturally found in many isotypic forms which are mostly conserved but differ significantly in the amino-acid composition of their C-terminal region. It has been observed that various tubulin isotypes are over-expressed / aberrantly-expressed in many aggressive drug resistant cancers. In an attempt to find treatments to these kinds of cancers, we try to understand the interaction of potential anti-cancer drugs with tubulin isotypes found in drug-resistant cancers using molecular modeling, molecular docking and molecular dynamics simulations.