Turning ‘hits’ into drug candidates

Using years of knowledge of organic chemistry, medicinal chemists are able to experiment with the chemical structures of the ‘hits’. Medicinal chemists will make subtle alterations to the makeup of the structure, always refining to ensure the best engagement and activity with the target. This is known as lead optimization.

Moving closer to clinical trials

Refining and optimizing a chemical structure can take several years until a drug candidate is selected. This molecule will have exceptional activity against a said target and will have been designed not to interact with any other ‘off targets’ within the body.

To determine potential side-effects of a drug, it is brought through pre-clinical development. These tests help determine what a drug does to the body, as well as what the body does to a drug. If these tests look good, a drug candidate will move into clinical trials, which will be tested in human beings, and will be one step closer to becoming an approved product.

Even after this extensive drug discovery process, only 13.8 percent of drugs that enter Phase 1 trials will end up as approved therapies, and the research and development efforts for new safe and efficacious therapeutic options will continue on.