Activity

In the beginning, life looked rosy for thalidomide. Advertised under the names "Distaval" and "Thalomid", this drug came about when a failed anti-allergy drug proved to be somewhat of a wonder cure for people suffering from anxiety disorders. These included morning sickness, which in the swinging 60's was seen to be a result of stress. Unknowing, thousands of mothers were taking thalidomide pills to combat their morning sickness and dizziness, blissfully unaware of what was going on with their poor foetuses. The shock came when the children were born with normal head and trunk but with shortened or no limbs. After the foetal damage, thalidomide soon went out of vogue. It was put on the shelf for years after the dangers became apparent, and it was only when a doctor in Israel was searching for a cure to the horrible disease leprosy that thalidomide was considered. Thalidomide was then found to be something of an immune system regulator, and was used to treat certain immune system diseases. One of the success stories was that of Sarah Craven, who suffered from Behcet's disease. Sarah Craven was lucky to have been given thalidomide, as within three weeks, the ulceration caused by her Behcet's disease cleared up completely on both her tongue and genitals. She soon became healthy enough to have a child, and staved off thalidomide for the first five months of pregnancy so as not to damage to unformed fetus. Sadly, her Behcet's symptoms soon came back, and by the sixth month of her pregnancy, she had to take the drug again. Nothing happened to Sarah Craven's child at all, and she now has a healthy son named Jake. After being used to treat leprosy and Behcet's disease, the life of thalidomide suddenly got a lot more interesting. While treating cancer sufferers, it was found that thalidomide could help to kill solid tumors within the body by preventing angiogenesis. After all of the positive attributes of thalidomide came to light, many companies tried to make the drug safer. Celgene have manufactured "Revomid". This drug was created by altering the make up of thalidomide, producing a pill that is far safer to use, and also more effective.

1 Use OMIM or Open Targets to investigate about Leprosy and Behcet's disease:

- Summarize what is leprosy disease. _____

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- Summarize what is Behcet's disease. _____

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2 Use Open Targets to investigate about Thalidomide and answer the following questions:

- Which are the targets of Thalidomide? *(tip: query for "thalidomide" and find "Human targets" under the section "Mechanisms of Action")* _____

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- In which kind of diseases has Thalidomide shown to be effective? *(tip: query for "thalidomide" and find "Indication" under the section "Indications")* _____

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3 Use the Open Targets and HumanMine to investigate about the targets you identified in the previous question *(tip: create a list with all the identified targets)*:

- To which key therapeutic areas do these targets belong? _____

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- Which other drugs target the same genes (list just a few)? _____

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- Do these genes interact physically? Do they interact genetically? _____

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- Are all these genes located in the same chromosome? _____

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- Are there Gene Ontology terms enriched in this list of target genes? _____

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- Are there pathways are enriched in this list of target genes? _____

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4 Finally, focus on the gene CUL4A and use HumanMine to investigate about this gene:

- Is the gene differentially expressed under any condition? _____

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- Do fruitflies have this gene in their genomes? What is its name? _____

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