Background:

Cancer today remains one of the most deadly diseases in the world. In the effort to develop an effective anti-cancer drug, researchers at the University of Iowa have designed and synthesized novel anti-cancer agents that effectively kill cancer cells and potentially revolutionize future cancer treatments. These agents, OSW-1 and ZJ101, are both derived from natural products, but are not ubiquitous in nature. However, research at the University of Iowa has led to the development of alternative synthetic methods that produce high yields and provide high potential commercial value for cancer fighting drugs.

Technology:

**OSW-1**

The component, OSW-1, is naturally found in the bulbs of *Ornithogalum Saundersiae*, a perennial found in South Africa. It is widely renowned for its highly potent anti-cancer activity against cancer cells demonstrating sub-nanomolar IC_{50} values. Furthermore, its anti-cancer activities were demonstrated to be 10-100 times more effective than many well-known anti-cancer agents such as mitomycin-C, etoposide, methotrexate, adriamycin, cisplatin, camptothecin, 5-Fu, and paclitaxel. Even more impressive is OSW-1’s high therapeutic selectivity, which delineates it from other anti-cancer agents. Non-malignant cells are significantly less sensitive to OSW-1’s, with the IC_{50} values 40-150 times greater than those observed in cancer cells. In addition, OSW-1 does not show any hemolytic toxicity even at 100 µg/mL concentrations.

The Researchers at the University of Iowa have developed a synthetic strategy that successfully synthesizes the OSW-1 in ten linear operations to produce a 28% overall yield. It represents the first and most efficient method in producing this anti-cancer agent.

**ZJ101**

Currently, a proprietary agent, ZJ101 is under development and awaiting pre-clinical trial studies. The anti-cancer agent is based on marine macrolide studies and researchers at the University of Iowa are interested in anyone willing to collaborate and co-develop the technology.

**Technological Advantages:**

BROAD APPLICATION IN THE ANTI-CANCER DRUG DISCOVERY AND DEVELOPMENT: OSW-1 involves a novel mitochondria mediated mechanism and is independent of cell cycle. The compound effectively kills dormant, non-growing cancer cells at sub-nanomolar concentration range. Furthermore, promising results have been obtained in animal studies.

**Publication:**


**Patents:**

Process for preparing saponin compounds; [www.google.com/patents/US6753414](www.google.com/patents/US6753414)