Small molecules for cell death inhibition and potential cancer or neurodegenerative therapeutics

Technology #cu12192

Regulated cell death, also known as apoptosis, is critical for development, proper growth, and the prevention of human disease. The deregulation of this process can give rise to conditions such as cancer and neurodegenerative disorders. Normal apoptosis pathways often fail to kill cancer cells, complicating the treatment of cancer with small molecule therapeutics. This technology identifies a special pathway, called ferroptosis, which mediates programmed cell death. Moreover, this technology also identifies small molecule inhibitors of the ferroptosis pathway. These small molecules have therapeutic potential in cancer and neurodegenerative conditions.

Ferroptosis and its inhibitors might treat cancer and other neurodegenerative conditions when current apoptotic targeting drugs fail.

Identifying non-apoptotic pathways offers potential therapeutic strategies for killing tumorigenic cells, which are resistant to most standard apoptosis pathways. Since cancer cells often contain high levels of iron, the pathway identified in this technology may be able to selectively target cancer cells, and leave healthy cells alone. Inhibitors were screened and analogs synthesized to increase the effectiveness of potential pharmaceuticals. The ferroptosis inhibitory properties have been demonstrated in cancer cells and rat brain slices.

Lead Inventor:

Brent R. Stockwell, Ph.D.

Applications:

- Programing cell death
- Preventing cell death
• Inhibition of non-standard cell death pathways
• Specific targeting of tumorigenic cancer cells
• Potential protection against neurodegenerative condition

**Advantages:**

• Distinct pathway for cell death offers distinct avenue to potentially treat disease
• Synthesis of small molecules offers ease of scalability during development
• Distinct cell death mode may provide insight into biological pathways and cell death regulation

**Patent Information:**

Patent Pending (US 20150079035)

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**Related Publications:**


**Inventors**

Brent Stockwell