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CDK2 inhibitors for cancer therapy and male contraception

CDK2 inhibitors for cancer therapy and non-hormonal male contraception with high selectivity and reduced side effects.

IP Status: US Patent Pending; Application No.: 18/216,497

Applications

- Cancer therapy
- Male contraception
- Research tool

Key Benefits & Differentiators

- **Increased Selectivity:** Allosteric inhibitors target a unique site, reducing off-target effects compared to traditional ATP-site inhibitors.
- **Dual Application:** Potential for use in both cancer chemotherapy and non-hormonal male contraception.
- **Reduced Side Effects:**Higher selectivity translates to fewer side effects, enhancing patient safety and treatment efficacy.

Technology Overview

Cyclin-dependent kinase 2 (CDK2) plays a crucial role in cell cycle regulation and is implicated in cancer progression and male fertility. While ATP-site binding inhibitors of CDK2 are known, they often lack selectivity, leading to side effects. The need for more selective inhibitors has driven the search for novel binding sites and mechanisms of inhibition.

Researchers at the University of Minnesota have developed new allosteric CDK2 inhibitors that bind outside the ATP site, leading to significant structural changes that prevent CDK2's association with its cyclin partners. These inhibitors have been optimized through structure-activity relationship (SAR) studies, resulting in highly potent nanomolar inhibitors. This breakthrough offers a targeted approach for cancer chemotherapy and a novel non-hormonal method for male contraception.

Phase of Development

TRL: 3-4
The researchers are currently optimizing these inhibitors for further in vivo testing.

Desired Partnerships

This technology is now available for:

- License
- Sponsored research
- Co-development

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Technology ID
2021-219

Category
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Researchers

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