

Carborane-Based Histone Deacetylase (HDAC) Inhibitors

Tech ID: 30179 / UC Case 2019-336-0

SUMMARY

UCLA researchers from the Department of Chemistry & Biochemistry have developed a new class of Histone Deacetylase (HDAC) inhibitors that can be tuned for isoform specificity and other properties.

BACKGROUND

Histone Deacetylase (HDAC) is a ubiquitous enzyme that is involved in epigenetic transcription regulation. As a result, HDAC inhibitors have been proposed as a therapeutic for a variety of conditions including inflammatory disorders, cancers, and neurodegenerative diseases. Despite their ubiquity, there are a large number of different isoforms of HDACs that are dependent on tissue type or organ location. Previous HDAC inhibitors lacked a robust means to selectively target specific isoforms, and therefore had limited ability to be tissue-specific, especially in the brain.

INNOVATION

UCLA researchers have developed a new class of carborane-based HDAC inhibitors that can be modified with custom functional groups for tunable isoform specificity. Different diseases are thought to involve unique HDAC isoforms and could be treated by selectively tuning the expression of these compounds, as opposed to being limited to only a crude knock out. This ability to tune isoform specificity also has potential as a research tool for investigating the complex quantitative expressions of HDAC classes. In addition, this new family of carborane-based HDAC inhibitors has demonstrated vastly improved blood-brain-barrier penetration over previous HDAC inhibitors.

APPLICATIONS

- ▶ Neurodegenerative diseases – Alzheimer’s, glioblastomas, Huntington’s
- ▶ Cancer therapies
- ▶ Psychiatric disorders and drug addiction
- ▶ Histone profiling research tool

ADVANTAGES

- ▶ Tunable isoform specificity
- ▶ Improved blood-brain barrier penetration

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Published Application	20220089616	03/24/2022	2019-336

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ [Photophysically Innocent Boron Cluster Ligand Scaffolds For Organic Light Emitting Diode Materials](#)

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INVENTORS

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OTHER INFORMATION

KEYWORDS

Histone Deacetylase inhibitor, HDAC, carborane, Alzheimer’s disease, Huntington’s disease, glioblastoma, neurodegenerative, neuroscience, profiling, epigenetics, histone, transcription

CATEGORIZED AS

- ▶ **Medical**
 - ▶ Disease: Cancer
 - ▶ Disease: Central Nervous System
 - ▶ Research Tools
 - ▶ Therapeutics
- ▶ **Research Tools**
 - ▶ Other

RELATED CASES

2019-336-0

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