Enabling technology for epigenetic drug development

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Technology description

Invention novelty: This invention describes an improved histone reporter system that enables epigenetic therapeutic development in cell-based assays and potential therapeutic monitoring in animal models.
Value Proposition
It is now widely appreciated that most human diseases are contributed by interplay of genetic and epigenetic factors. Understanding how to manipulate epigenetic activities in cells can directly lead to new drug targets for therapeutic intervention. This is supported by initial successes in four FDA-approved epigenetic therapies, and more than thirty epigenetic drugs that are under development that mainly focus on the treatment of cancer, neurodegenerative and cardiovascular diseases.
Growth within the epigenetics sector is predicted to be explosive in the coming 5-10 years. This invention describes a significant advance over previous technologies in aiding therapeutic development in the epigenetics sector.
Technical Details
This technology is a genetically encoded histone reporter allele system for in vitro and in vivo epigenetic therapeutic development. Specifically, this system is a genetically encoded histone reporter allele system that can theoretically be used to monitor activity of any histone maintenance machinery component in live cells. Previous technologies that report on epigenetic activity in cells is based on Förster resonance energy transfer (FRET). However, FRET-based assays require a complex technological setup. Furthermore, FRET-based reporter systems are much more difficult to introduce into transgenic mouse models for in vivo monitoring of epigenetic activity. Importantly, this genetically encoded histone reporter system circumvents the need for FRET and allows easy incorporation into fluorescent platforms for screening and cell sorting, thereby increasing the ease and throughput for future applications.
Looking for Partners: To commercialize this invention as cellular assays for drug screening or transgenic mouse models for epigenetic therapeutic development

Advantages

- applicable for high throughput screening of drug targets for wide range of epigenetic activities
- has the potential to allow therapeutic monitoring of epigenetic activities in animal models
- does not require a complex technological setup as required by previous technologies

- easily adaptable to any well-characterized enzymes in the epigenetic pathway

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