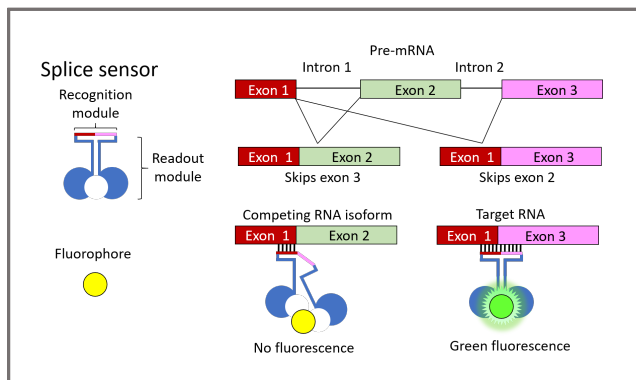


Spinach™ Splice Sensor: A Fluorescent Drug Screening Platform



Assay Features:

- Direct detection of endogenous RNAs
- Fluorescent readout in 30 minutes
- Reduce false negatives by detecting smaller change in splicing
- High target selectivity and broad dynamic range
- Up to 16 hours readout window
- Customizable for mRNA, circRNA, and intronic RNA
- HTS compatible with <15% error rate

Challenges:

Dysregulation in RNA splicing has been implicated in many diseases. Current screening methods to identify drugs that modulate RNA splicing are low-throughput, slow, laborious, complicated, and unable to directly monitor endogenous spliced mRNAs. Therefore, we developed an RNA splicing detection technology that is fast, low CV, and highly selective to accelerate the discovery efforts targeting splicing-linked diseases.

Lucerna, Inc:

Lucerna develops unique RNA-based research tools to detect intractable biomolecules for basic research, industrial, and drug discovery applications. Lucerna founders invented the proprietary fluorescent aptamer “Spinach™” technology. We are a team of experts in the fields of RNA biology and aptamer bioengineering.

Spinach™ Technology:

Spinach™ is an RNA mimic of the green fluorescent protein (GFP). It is genetically encodable with proven utility for imaging RNA in living cells and measuring cellular metabolites in HTS assay format. The Spinach™ technology platform consists of a collection of RNA aptamers that turn on otherwise non-fluorescent dyes to emit a wide range of fluorescence.

Spinach™ Splice Sensor Platform:

We introduce a customizable Spinach™-based splice sensor platform to detect endogenous RNA isoforms of interest. Developing sensors targeting individual oncogenic or neurodegenerative splice variants, we demonstrate rapid response times (<30 min), high selectivity (>10-fold), sensitivity (10 nM), and extended readout window (16h). When applied as a homogenous assay, measurements in cell lysates corroborate with RT-qPCR data. Importantly, the splice sensors can detect as low as 10% splicing changes (compared to 50% splicing changes with RT-qPCR).

Other Applications:

- Characterization of cellular mRNA isoform expressions and splicing events
- Detection of other RNA products, such as circular RNAs and intronic RNAs

IP Status:

- Patents filed in EU and US
- Patents granted in China and US

Publications:

- Science, 333(6042)
- Science, 334(6073)
- Nat Methods, 10(9)
- Nat Methods, 10(12)
- JACS, 136(4)

Commercial Offering:

- Custom sensor design services
- Kit distribution partnership
- Platform licensing

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