



QTL BIOSYSTEMS

Detection amplification technology for bioassays

INTRODUCTION

Announcing QTL Lightspeed β -Secretase™

The major constituent of senile plaques associated with Alzheimer's disease is the β -amyloid peptide, derived from the amyloid precursor protein (APP) by proteolytic cleavage. This cleavage occurs at the β and γ cleavage sites. Early biochemical characterization and inhibitor profiling have indicated that both β and γ cleaving enzymes (secretases) are probably aspartic proteinases, and are currently the most attractive targets for therapeutic intervention for Alzheimer's disease.

The QTL Lightspeed β -secretase assay combines high-sensitivity with high speed for screening potential inhibitors against β -secretase. The assay is based on QTL's patented "superquenching" technology (see sidebox).

The main features of this assay are:

- Excellent Sensitivity.....14fmol β -secretase in 60 min. assay
- Enhanced Speed.....171fmol β -secretase in 10 min. assay
- Ultra-low sample requirement.....10 μ l total reaction volume
- DMSO and MeOH tolerance.....10% DMSO with 70% residual enzyme activity 10% MeOH with less than 5% loss in activity

SIDE BOX

QTL Lightspeed™ Technology How it Works

The QTL technology is based on the original discovery that, for certain fluorescent polymers, it is possible to quench the fluorescence emission of individual polymers with extremely high selectivity. This "superquenching" could also be reversed, by constructing a new molecule called a "QTL" (Quencher-Tether-Ligand). The QTL molecule can bind to a receptor site on a biological agent, which restores the fluorescent emission of the associated polymer. In effect, the QTL system is a molecular light bulb with a fast yet specific 'switch' that turns it on.

The implementation to protease detection constitutes a flexible platform that allows rapid development of a library of screening assays using the QTL technology platform. The QTL polymers are coated onto a support (such as a microscopic plastic bead, or a glass micro-array). A direct assay results from proteolytic cleavage of the substrate, which is incorporated directly into the QTL molecule. A variable fluorescence signal is observed, with a brightness that varies in a quantitatively precise manner with addition of target enzyme.

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