

# A Method to Regulate Protein Function in Living Cells Using Small Molecules

## Applications

- **Drug discovery**
  - validate targets by assessing effects of controlled, transient destabilization of protein
  - study side effects of pharmacologic agent
- **Transgenic animals**
- **Research Kits** - to study:
  - effects of protein knock-outs (either partial or complete knock-out)
  - role of protein during discrete physiological or developmental event
- **Stem Cell Therapy** - control activity of a fusion protein to:
  - differentiate progenitor cells
  - reverse differentiation of somatic cells

## Advantages

- **Specific** - stabilizing ligand binds fusion protein and does not affect other cell functions
- **Fast** - upon withdrawal of the stabilizing ligand, proteins are totally degraded in 2-4 hours.
- **Tunable**- action of ligand is dose-dependent, enabling studies of proteins whose function depends on its intracellular concentration
- **Reversible**
- **Versatile** - system has been demonstrated with 18 different proteins, including:

- cytosolic
- nuclear
- membrane-bound (both single-pass and GPCRs)

## Publications

- Banaszynski LA, Chen LC, Maynard-Smith LA, Ooi AG, Wandless TJ. [A rapid, reversible, and tunable method to regulate protein function in living cells using synthetic small molecules.](#) Cell. 2006 Sept. 8;126(5):995-1004.

## Patents

- Published Application: [0-](#)
- Published Application: [20090215169](#)
- Published Application: [20120178168](#)
- Issued: [8,173,792 \(USA\)](#)
- Issued: [9,487,787 \(USA\)](#)

## Innovators

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