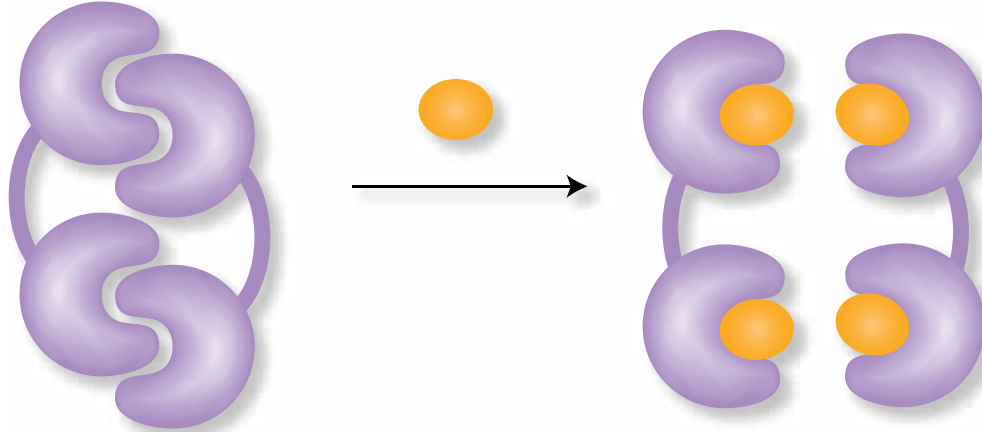


# Reverse Dimerization Citations

Clontech's **iDimerize™ Reverse Dimerization System** was previously available from ARIAD as the RPD Regulated Secretion/Aggregation Kit.

## Reverse dimerization



The Reverse Dimerization System incorporates a binding motif (purple) that causes protein aggregation and a dimerizer (yellow) which can be used to disaggregate (solubilize) the proteins. This system can be used to study intracellular transport and to induce regulated secretion.

## 2011

Bond, L. M. *et al.* (2011) *Mol. Biol. Cell.* **22**(1):54–65. [Myosin VI and its binding partner optineurin are involved in secretory vesicle fusion at the plasma membrane.](#) This study uses a unique live-cell constitutive secretion assay to establish roles for the molecular motor myosin VI and its binding partner optineurin in discrete stages of secretion.

## 2010

Raina, K., and Crews, C. M. (2010) *J. Biol. Chem.* **285**(15):11057–11060. [Chemical inducers of targeted protein degradation.](#) This minireview focuses on the recent development of a new approach to study protein function at the post-translational level: chemical induction of targeted protein degradation.

Winslow, A. R. *et al.* (2010) *J. Cell Biol.* **190**(6):1023–1037. [α-Synuclein impairs macroautophagy: implications for Parkinson's disease.](#) Alpha-synuclein overexpression impairs macroautophagy in mammalian cells and in transgenic mice via Rab1a inhibition, and Rab1a overexpression rescues the autophagy defect.

ARIAD/ARGENT Product	Clontech Product	Size	Cat. No.
RPD Regulated Secretion/Aggregation Kit	iDimerize Reverse Dimerization System	each	635066
AP21998	D/D Solubilizer	500 µl 5 x 500 µl	635054 635053

The system contains a vector set and 500 µl ligand (0.5 mM).  
The D/D solubilizer is not identical to ARIAD's AP21998, but it is functionally equivalent.

### Notice to Purchaser

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# Reverse Dimerization Citations

## 2009

Hansen, J. L. *et al.* (2009) *J. Biol. Chem.* **284**(3):1831–1839. [Lack of evidence for AT1R/B2R heterodimerization in COS-7, HEK293, and NIH3T3 cells: how common is the AT1R/B2R heterodimer?](#) Four independent research groups investigated angiotensin II type 1 receptor (AT1R) signaling in three different cell lines using multiple assays (including the ARGENT Regulated Secretion/Aggregation Kit). In contrast to previous reports, the data collectively suggest that AT1R/bradykinin B2 receptor (B2R) heterodimerization does not occur as a natural consequence of their simultaneous expression in the same cell, nor does the B2R influence AT1R signaling.

Kwok, C. *et al.* (2009) *Proc. Natl. Acad. Sci. USA* **106**(8):2853–2858. [Transforming activity of AML1-ETO is independent of CBFbeta and ETO interaction but requires formation of homo-oligomeric complexes.](#) ARGENT Regulated Secretion/Aggregation was used to study the role of AML1/RUNX1 and CBF beta fusion proteins in acute leukemia. AML1-ETO (AE)-mediated transformation of primary hematopoietic cells was found to be critically dependent on the DNA binding and homo-oligomeric properties of the fusion protein.

## 2008

Vogel, R., Mammeri, H., and Mallet, J. (2008) *Hum. Gene Ther.* **19**(2):167–178. [Lentiviral vectors mediate non-immunosuppressive rapamycin analog-induced production of secreted therapeutic factors in the brain: regulation at the level of transcription and exocytosis.](#) The ARGENT Regulated Secretion/Aggregation Kit was used to develop a system for the simultaneous control of expression and secretion of therapeutic polypeptides in mice.

## 2007

Song, G. J., Jones, B. W., and Hinkle, P. M. (2007) *Proc. Natl. Acad. Sci. USA* **104**(46):18303–18308. [Dimerization of the thyrotropin-releasing hormone receptor potentiates hormone-dependent receptor phosphorylation.](#) Regulated receptor dimerization increases thyrotropin-releasing hormone induced receptor endocytosis.

## 2006

Kwok, C. *et al.* (2006) *Cancer Cell* **9**(2):95–108. [Forced homo-oligomerization of RARalpha leads to transformation of primary hematopoietic cells.](#) Dimerization is required for the transforming activity of RAR alpha, and addition of the AP21998 ligand was shown to reverse dimerization and inhibit transformation.

Sawyer, G. W., Ehlert, F. J., and Hart, J. P. (2006) *J. Pharmacol. Toxicol. Methods* **53**(3):219–233. [Determination of the rate of muscarinic M1 receptor plasma membrane delivery using a regulated secretion/aggregation system.](#) The ARGENT Regulated Secretion/Aggregation Kit and AP21998 were used to control the delivery rate of the human muscarinic M1 receptor to the plasma membrane.

# Reverse Dimerization Citations

## 2005

Brenzel, S., and Mootz, H. D. (2005) *J. Am. Chem. Soc.* **127**(12):4176–4177. [Design of an intein that can be inhibited with a small molecule ligand](#). The ARGENT Regulated Secretion/Aggregation Kit was used to create an intein that can be inactivated by the monomeric ligand AP21998.

DeRocher, A. *et al.* (2005) *J. Cell Sci.* **118**(Pt. 3):565–574. [Dissection of brefeldin A-sensitive and -insensitive steps in apicoplast protein targeting](#). The ARGENT Regulated Secretion/Aggregation Kit was used to study protein trafficking in the pathogen *Toxoplasma gondii*.

Song, G. J. and Hinkle, P. M. (2005) *Mol. Endocrinol.* **19**(11):2859–2870. [Regulated dimerization of the thyrotropin-releasing hormone receptor affects receptor trafficking but not signaling](#). A variant FK506 binding protein (FKBP) domain was fused to the receptor C terminus of the TRH receptor. AP20187 caused dimerization in a time- and concentration-dependent manner, acting within 1 min.

## 2004

Hansen, J. L. *et al.* (2004) *J. Biol. Chem.* **279**(23):24108–24115. [Oligomerization of wild type and nonfunctional mutant angiotensin II type I receptors inhibits galphaq protein signaling but not ERK activation](#). The ARGENT Regulated Secretion/Aggregation Kit was used to demonstrate that oligomerization of the 7 transmembrane angiotensin II type 1 receptor plays an important role in the activation of downstream signaling pathways.

## 2003

Rosén, H. *et al.* (2003) *J. Leukoc. Biol.* **74**(5):800–809. [Artificially controlled aggregation of proteins and targeting in hematopoietic cells](#). This study used the ARGENT Regulated Secretion/Aggregation Kit and the ARGENT Regulated Homodimerization Kit/ AP20187 to study the localization of fusion protein aggregates in hematopoietic cells and to determine that aggregation was not sufficient to induce protein sorting into lysosomes.

## 2000

Rivera, V. M. *et al.* (2000) *Science* **287**(5454):826–830. [Regulation of protein secretion through controlled aggregation in the endoplasmic reticulum](#). One of the original papers describing the ARGENT Regulated Secretion/Aggregation Kit. The paper demonstrates rapid and transient secretion of growth hormone and insulin *in vitro* and *in vivo*, with regulated insulin secretion resulting in a transient correction of serum glucose concentrations in a mouse model of hyperglycemia.

Rollins, C.T. *et al.* (2000) *Proc. Natl. Acad. Sci. USA* **97**(13):7096–7101. [A ligand-reversible dimerization system for controlling protein-protein interactions](#). One of the original papers describing the biochemical basis for the ARGENT Regulated Secretion/Aggregation Kit, and its uses to control fusion protein aggregation, activity, and secretion.

Volchuk, A., *et al.* (2000) *Cell* **102**(3):335–48. [Megavesicles implicated in the rapid transport of intracisternal aggregates across the Golgi stack](#). This study used the ARGENT Regulated Secretion/Aggregation Kit to control protein aggregation and reveal the existence of megavesicles that can transport large protein aggregates through the Golgi.

Wandless, T. J. (2000) *Proc. Natl. Acad. Sci. USA* **97**(13):6921–6923. [A confederacy of bunches: fundamentals and applications of a self-associating protein](#). A minireview of the Rivera *et al.* and Rollins *et al.* papers describing ARIAD's PRD Regulated Secretion/Aggregation Kit.