

Targeting Talk: Saporin death: Apoptosis or Necrosis

by Dr. Douglas Lappi

Q: Do targeted toxin-treated cells die by apoptosis?

A: There are, allegedly, two ways for cells to die: by apoptosis or necrosis. According to Fiorenzo Stirpe (the discoverer of saporin), saporin-intoxicated cells die both ways, some by one, others by the other.

There is a good literature that states that cells die by apoptosis, for instance:

Bergamaschi G, Perfetti V, *et al.* (1996). Saporin, a ribosome-inactivating protein used to prepare immunotoxins, induces cell death via apoptosis. *Brit J Haemat* 93:789-794.

Saporin and apoptosis gives 25 hits in PubMed.

However, Seeger *et al.*, did not find evidence of apoptosis in an electron microscopy study with cells dying from 192-IgG-SAP and concluded they die from necrosis:

Seeger G, Hartig W, *et al.* (1997). Electron microscopic evidence for microglial phagocytotic activity and cholinergic cell death after administration of the immunotoxin 192IgG-saporin in rat *J Neurosci Res* 48:465-476.

Saporin and necrosis gives 11 hits in PubMed.

So, saporin-treated cells seem to die by both apoptosis and necrosis. The customer is always right.

Selected References for Cover Article (continued from pages 1 and 6):

- [1] Diorio D, Viau V, Meaney MJ (1993) *J Neurosci* 13:3839-3847.
- [2] Radley JJ, Arias CM, Sawchenko PE (2006) *J Neurosci* 26:12967-12976.
- [3] Aston-Jones G, Rajkowski J, Cohen J (2000) *Prog Brain Res* 126:165-182.
- [4] Sved AF, Cano G, Passerin AM, Rabin BS (2002) *Physiol Behav* 77:737-742.
- [5] Sawchenko PE, Swanson LW (1982) *Brain Res* 257:275-325.
- [6] Schiltz JC, Sawchenko PE (2007) *J Comp Neurol* 502:455-467.
- [7] Aston-Jones G, Rajkowski J *et al.* (1996) *Prog Brain Res* 107:379-402.
- [8] Ziegler DR, Cass WA, Herman JP (1999) *J Neuroendocrinol* 11:361-369.
- [9] Radley JJ, Williams BW, Sawchenko PE (2008) *J Neurosci* 28:5806-5816.
- [10] Radley JJ, Sisti HM *et al.* (2004) *Neuroscience* 125:1-6.
- [11] Radley JJ, Rocher AB *et al.* (2008) *J Comp Neurol* 507:1141-1150.
- [12] Rauch SL, Shin LM *et al.* (2003) *Neuroreport* 14:913-916.
- [13] Shin LM, Bush G *et al.* (2007) *J Trauma Stress* 20:701-712.
- [14] Southwick SM, Bremner JD *et al.* (1999) *Biol Psychiatry* 46:1192-1204.
- [15] Raskind MA, Peskind ER *et al.* (2003) *Am J Psychiatry* 160:371-373.
- [16] Choi DC, Furay AR *et al.* (2007) *J Neurosci* 27:2025-2034.
- [17] Roland BL, Sawchenko PE (1993) *J Comp Neurol* 332:123-143.

Targeting Teaser Winners

The solution to the puzzle was:

Jumbles: ENZYME
METABOLIC
ORGANELLE
MITOCHONDRIA
AFFERENT



Answer: She wanted her lab to be. . .EARTH FRIENDLY



Congratulations to the puzzle solvers from our last newsletter. Each winner receives \$100 credit towards research product purchases from Advanced Targeting Systems.

WINNERS: Wiktor Janczewski, UCLA Medical School, Neurobiology, Los Angeles CA * Jack Feldman, UCLA Medical School, Neurobiology, Los Angeles CA * Indira Jutooru, Texas A&M Univ, Toxicology, College Station TX * Seto Chice-SUNY HSC at Brooklyn, Brooklyn NY

An important note about shipping and storage temperatures.

ATS is testing all of the targeted toxins for activity and stability when stored at room temperature for one week. When products are proven to retain their performance after one week, we are able to reduce your shipping costs by eliminating dry ice or freezer packs from the container.

Enclosed with each shipment are instructions for storage and handling. Storage information is also attached on the outside of each package. Please read these instructions carefully. All targeted toxins should be stored frozen (-20°C or -80°C).

When you receive a targeted toxin, realiquot to the amounts you expect to use for experimental doses and then freeze. DO NOT DILUTE until just before administering. Repeated freezing and thawing can reduce the activity of the material.

If you have any questions, do not hesitate to contact us.