

**Biophysical Society 61<sup>st</sup> Meeting, Feb. 11-15, 2017,  
New Orleans, Louisiana**

**New Understandings of Cell Death Show  
Promise for Preventing Alzheimer's**

*New research on peptides important to understanding  
Alzheimer's disease and their effects on cell toxicity could lead to  
treatments for preventing or delaying neurodegenerative diseases*

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EMBARGOED for release until 2:45 p.m. Eastern Time on Tuesday,  
February 14, 2017  
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For More Information:  
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WASHINGTON, D.C., February 14, 2017 -- Alzheimer's disease is a progressive neurodegenerative disorder that leads to dementia via advanced neuronal dysfunction and death. A person with Alzheimer's disease suffers loss of control over thought, memory and language abilities. Additionally, the disease takes an emotional, social and economic toll on family members of individuals living with the disease. Alzheimer's disease is also a burden for health care system in the U.S., with as many as 5 million Americans living with the disease in 2013, according to the U.S. Centers for Disease Control and Prevention, and that number is expected to continue rising.

Currently, the predominant theory behind Alzheimer's disease is the "amyloid hypothesis," which states that abnormally increased levels of amyloid beta (A $\beta$ ) peptides outside of brain cells produce a variety of low molecular weight A $\beta$  aggregates that are toxic to the nervous system. These A $\beta$  aggregates interact directly with target cells and lead to cell death.

During the Biophysical Society's 61<sup>st</sup> Annual Meeting, being held Feb. 11-15, 2017, in New Orleans, Louisiana, Antonio De Maio, a professor of surgery and neuroscience at the University of



California, San Diego (UCSD), will present his work hunting for the specific mechanisms behind A $\beta$ -induced toxicity to cells, or cytotoxicity.

Cells exposed to stressful conditions respond by expressing heat shock proteins (hsps), whose job is to preserve cell viability. Hsp70, in particular, is a molecular chaperone that plays a major role in protein folding and the solubilization of misfolded, aggregated polypeptide proteins inside cells.

The researchers were interested in Hsp70 because, according to De Maio, it has also been found outside of cells, potentially coexisting with A $\beta$  peptides.

His team observed that Hsp70 did, in fact, reduce oligomerization of A $\beta$  peptides.

Significantly, the researchers further inferred that the reduced oligomerization of A $\beta$ , where individual monomer molecules join to form a longer oligomer, might result in lower cellular toxicity, perhaps by blocking the assembly of A $\beta$  ion channels. And in fact this is what they found, demonstrating a substantial reduction -- approximately 70 percent -- of A $\beta$  peptide's toxicity upon co-exposure to Hsp70.

"Based upon these observations, we predicted that inducing the extracellular release of Hsp70 might have a beneficial effect on Alzheimer's disease," said De Maio. "But it should be taken into consideration that we don't know any potential long-term side effects of extracellular Hsp70 for human health."

While extremely promising at this stage, "more investigations of the interface between Hsp70 and A $\beta$  peptides are necessary for any further developments," De Maio said.

2184-Pos/B504 – "Modulation of amyloid peptide oligomerization and toxicity by extracellular hsp70" is authored by Antonio De Maio, Isabel Rivera, David M. Cauvi and Nelson Arispe. It will be presented at 1:45-3:45 p.m. Central Time on Tuesday, Feb. 14, 2017 in Hall B-2 & C of the Ernest N. Morial Convention Center.

ABSTRACT: <http://www.abstractsonline.com/pp8/#!/4279/presentation/1266>

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MORE MEETING INFORMATION  
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## ABOUT THE MEETING

Each year, the Biophysical Society Annual Meeting brings together more than 6,000 researchers working in the multidisciplinary fields representing biophysics. With more than 3,600 poster presentations, over 200 exhibits, and more than 20 symposia, the BPS Annual Meeting is the largest meeting of biophysicists in the world. Despite its size, the meeting retains its small-meeting flavor through its subgroup symposia, platform sessions, social activities and committee programs. The 61st Annual Meeting will be held at Ernest N. Morial Convention Center in New Orleans, Louisiana.



## PRESS REGISTRATION

The Biophysical Society invites professional journalists, freelance science writers and public information officers to attend its Annual Meeting free of charge. For press registration, contact Ellen Weiss at [EWeiss@biophysics.org](mailto:EWeiss@biophysics.org) or the Media Line at the American Institute of Physics at [media@aip.org](mailto:media@aip.org) or 301-209-3090.

## NEWS RELEASES

Embargoed press releases describing in detail some of the breakthroughs to be discussed at the meeting are available on Newswise and Alpha Galileo or by contacting the Media Line at the American Institute of Physics at [media@aip.org](mailto:media@aip.org) or 301-209-3090.

## QUICK LINKS

Main Meeting Page: <http://www.biophysics.org/2017meeting/Home/tabid/6672/Default.aspx>

Symposia:

<http://www.biophysics.org/2017meeting/Program/ScientificSessions/Symposia/tabid/6756/Default.aspx>

Desktop planner: <http://www.abstractsonline.com/pp8/#!/4279>

## ABOUT THE SOCIETY

The Biophysical Society, founded in 1958, is a professional, scientific Society established to encourage development and dissemination of knowledge in biophysics. The Society promotes growth in this expanding field through its annual meeting, monthly journal, and committee and outreach activities. Its 9,000 members are located throughout the U.S. and the world, where they teach and conduct research in colleges, universities, laboratories, government agencies, and industry. For more information on the Society, or the 2017 Annual Meeting, visit <http://www.biophysics.org>.

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