



## JAE RAN YU

PROFESSOR

DEPT. OF ENVIRONMENTAL AND TROPICAL MEDICINE

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### Educations

- 1988 M.D., Seoul National University, Seoul, Korea
- 1990 M.S., Seoul National University, Seoul, Korea
- 1992 Ph.D., Seoul National University, Seoul, Korea

### Professional Background

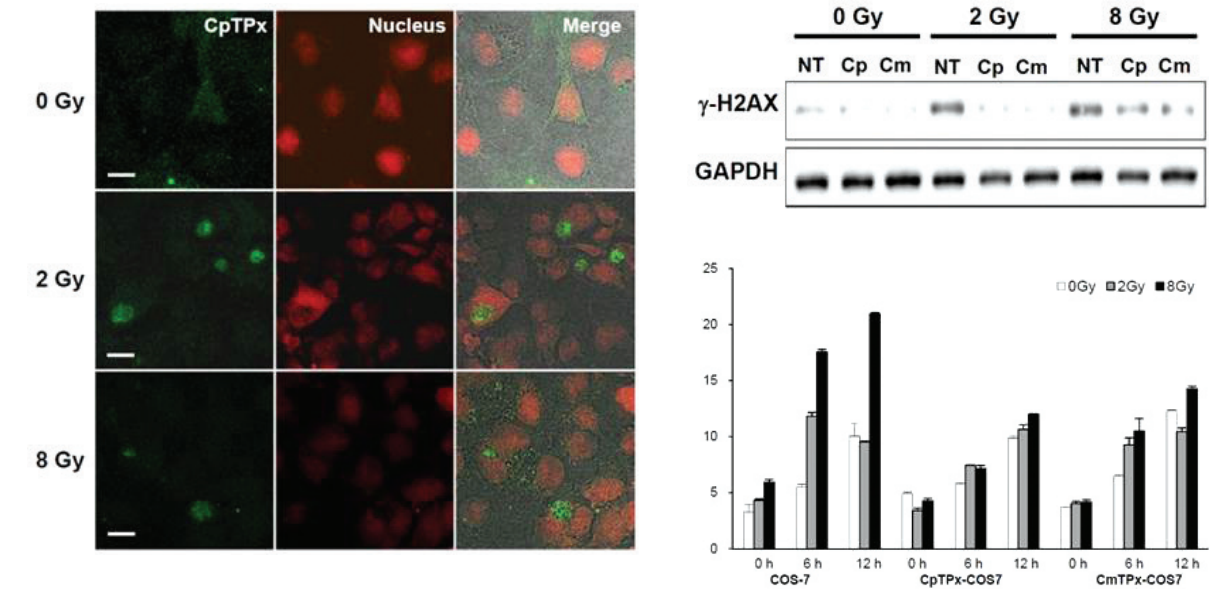
- 2013-Present Director: Brain Korea 21 Plus program supported by Ministry of Education
- 2008-2009 Team director: Team of Malaria and Parasitic Diseases, Korea Center for Disease Control & Prevention
- 2006-2007 Dean of School of Medicine: Konkuk University School of Medicine
- 2001-Present Professor: Dept. of Environmental and Tropical Medicine, Konkuk University School of Medicine
- 1998-2000 Visiting Professor: Dept. of Biological Sciences, University of Iowa
- 1996-2001 Associate Professor: Dept. of Parasitology, College of Medicine, Konkuk University
- 1992-1996 Assistant Professor: Dept. of Parasitology, College of Medicine, Konkuk University
- 1988-1992 Teaching Assistant: Dept. of Parasitology, Seoul National University, College of Medicine

### Top 5 Publications

- Hong S, Kim JH, Yoon S, Kim K, Sim S, Park WY, **Yu JR**. Expression of *Cryptosporidium parvum* thioredoxin peroxidase in COS-7 cells confers radioprotection. *Exp Parasitol*. 2016 Apr;163:8-15
- Kim K, Yoon S, Cheun HI, Kim JH, Sim S, **Yu JR**. Detection of *Encephalitozoon* spp. from human diarrheal stool and farm soil samples in Korea. *J Korean Med Sci*. 2015 Mar;30(3):227-32
- Yoon S, Park WY, **Yu JR**. Recombinant thioredoxin peroxidase from *Cryptosporidium parvum* has more powerful antioxidant activity than that from *Cryptosporidium muris*. *Exp Parasitol*. 2012 Jul;131(3):333-8
- Joung M, Yoon S, Choi K, Kim JY, Park WY, **Yu JR**. Characterization of the thioredoxin peroxidase from *Cryptosporidium parvum*. *Exp Parasitol*. 2011. Dec;129(4):331-6
- Lee SU, Joung M, Nam T, Park WY, Ji YH, **Yu JR**. *Cryptosporidium parvum*: radiation-induced alteration of the oocyst proteome. *Exp Parasitol*. 2011. Jan;127(1):25-30

## RESEARCH INTERESTS

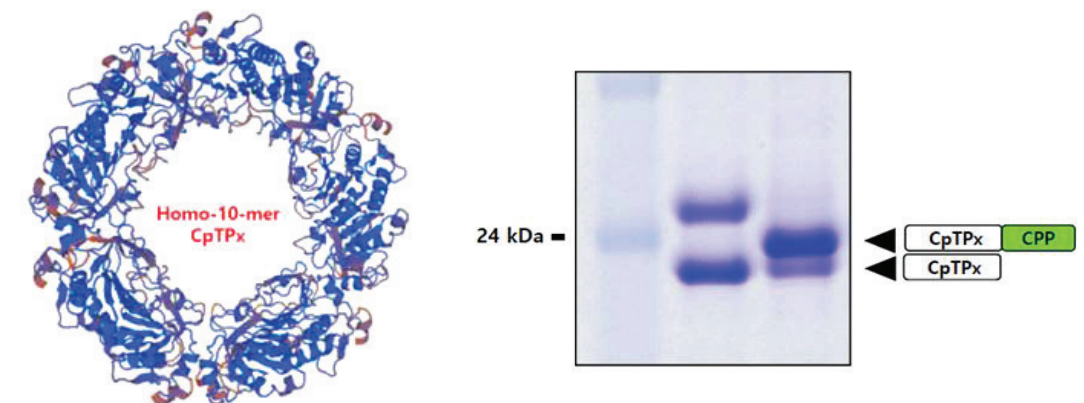
### 1. Radioresistant Properties of *Cryptosporidium Parvum* and Thioredoxin Peroxidase



We are interested in the radioresistant properties of *Cryptosporidium parvum*, a protozoan parasite. A previous study confirmed that a high dose of  $\gamma$ -radiation (over 25 kGy) is necessary to eliminate *C. parvum* in infected mice. Furthermore, a recent proteomic study revealed that the expression level of thioredoxin peroxidase (TPx) was increased in *C. parvum* that had been exposed to gamma-irradiation.

Recently, we showed that when TPx from *C. parvum* (CpTPx) was expressed in mammalian cells via gene-transfection, ROS activity was reduced and cell-cycle was conserved in host cells that were exposed to gamma irradiation. This finding suggests a radioprotective role for CpTPx in mammalian cells.

### 2. Cell-penetrating Peptide Conjugated CpTPx



We are working to generate a cell-permeable version of CpTPx for use as a protein-based drug therapy. A cell-penetrating peptide (CPP) conjugated to the protein complex (CPP-CpTPx) should be able to reach the cytoplasm of cells, where CpTPx is able

to act as an anti-oxidant under stressful conditions. To this end, various protein delivery systems, such as expressed protein ligation (EPL) or a macromolecule transduction method (iTOP), will be applied to mammalian cells.