

# Stanford

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## Teresa Wang

Klaus Bensch Professor in Experimental Pathology, Emerita

 Curriculum Vitae available Online

### CONTACT INFORMATION

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### Bio

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#### ACADEMIC APPOINTMENTS

- Emeritus Faculty, Acad Council, Pathology
- Member, Stanford Cancer Institute

### Research & Scholarship

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#### CURRENT RESEARCH AND SCHOLARLY INTERESTS

Our major focus is to understand the molecular mechanisms involved in maintaining genome integrity during chromosome replication. Our current research programs are:

(1). We investigate what types of mutation in genes that play a critical role in DNA replication can cause an early event in tumorigenesis and are a source of the genetic instability observed in cancer cells. We use both budding and fission yeast as the model organisms to identify replication mutators. Similar and identical mutations are then introduced into homologous genes in human cell lines. We then investigate the physiological effects of the replication mutators on human cells by cytogenetic, cell biologic, and biochemical approaches to resolve the molecular mechanisms that cause the aberrant phenotype in human cells.

(2). We investigate how cells respond to replication stress to maintain genome integrity by checkpoint mechanisms. We used fission yeast as the model organism and replication mutants to induce stress in S-phase. We then investigate how the checkpoint mechanisms maintain genome integrity by inducing tolerance of the replication stress, preventing replication fork collapse, and promoting replication fork re-start. Knowledge gained from the fission yeast studies is then applied to investigate how mammalian cells respond to replication stress to maintain genome integrity.

### Teaching

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#### GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Cancer Biology (PhD Program)

## Publications

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### PUBLICATIONS

- **Replication-compromised cells require the mitotic checkpoint to prevent tetraploidization** *CHROMOSOMA*  
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Taricani, L., Wang, T. S.  
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- **Methods for studying mutagenesis and checkpoints in *Schizosaccharomyces pombe*** *DNA REPAIR, PT B*  
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- **Replication checkpoint kinase Cds1 regulates Mus81 to reserve genome integrity during replication stress** *GENES & DEVELOPMENT*  
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- **A coordinated temporal interplay of nucleosome reorganization factor, sister chromatin cohesion factor, and DNA polymerase alpha facilitates DNA replication** *MOLECULAR AND CELLULAR BIOLOGY*  
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- **The B-subunit of DNA polymerase alpha-primase associates with the origin recognition complex for initiation of DNA replication** *MOLECULAR AND CELLULAR BIOLOGY*  
Uchiyama, M., Wang, T. S.  
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Kai, M., Wang, T. S.  
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- **Genomic instability induced by mutations in *Saccharomyces cerevisiae* POL1** *GENETICS*  
Gutierrez, P. J., Wang, T. S.  
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- **Replication proteins influence the maintenance of telomere length and telomerase protein stability** *MOLECULAR AND CELLULAR BIOLOGY*  
Dahlen, M., Sunnerhagen, P., Wang, T. S.  
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- **Checkpoint activation regulates mutagenic translesion synthesis** *GENES & DEVELOPMENT*  
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- **Fission yeast Rad17 associates with chromatin in response to aberrant genomic structures** *MOLECULAR AND CELLULAR BIOLOGY*  
Kai, M., Tanaka, H., Wang, T. S.  
2001; 21 (10): 3289-3301

- **Role of fission yeast primase catalytic subunit in the replication checkpoint** *MOLECULAR BIOLOGY OF THE CELL*  
Griffiths, D. J., Liu, V. F., Nurse, P., Wang, T. S.  
2001; 12 (1): 115-128
- **Analysis of fission yeast primase defines the checkpoint responses to aberrant S phase initiation** *MOLECULAR AND CELLULAR BIOLOGY*  
Tan, S. Y., Wang, T. S.  
2000; 20 (21): 7853-7866
- **A novel mutant allele of the chromatin-bound fission yeast checkpoint protein Rad17 separates the DNA structure checkpoints** *JOURNAL OF CELL SCIENCE*  
Griffiths, D., Uchiyama, M., Nurse, P., Wang, T. S.  
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- **Mutator phenotype induced by aberrant replication** *MOLECULAR AND CELLULAR BIOLOGY*  
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Galli, I., Uchiyama, M., Wang, T. S.  
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- **Purification of mammalian DNA polymerases: DNA polymerase alpha** *DNA REPLICATION*  
Wang, T. S., Copeland, W. C., Rogge, L., Dong, Q.  
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Wang, T. S., Korn, D.

