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Zefeng Wang
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Biography

- **Prof. Zefeng Wang** received his Ph.D. degree from Johns Hopkins Medical School, worked as a Damon Runyon fellow at Massachusetts Institute of Technology before becoming an assistant professor at University of North Carolina at Chapel Hill. Dr. Wang's research focuses on the regulation of gene expression in RNA level. He has made significant contribution to the field of RNA biology by developing a series of new methods to study RNA splicing and degradation, and has pioneered the field of engineering RNA binding proteins. His work was recognized by several research awards.



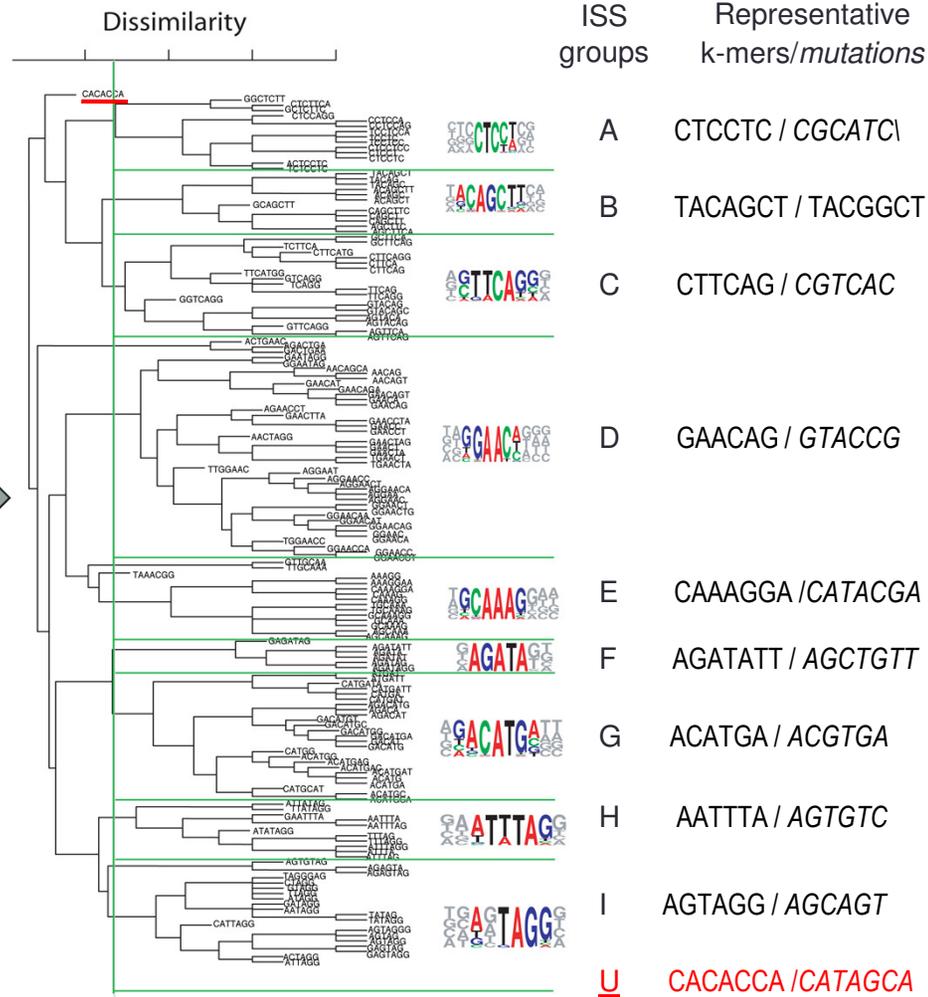
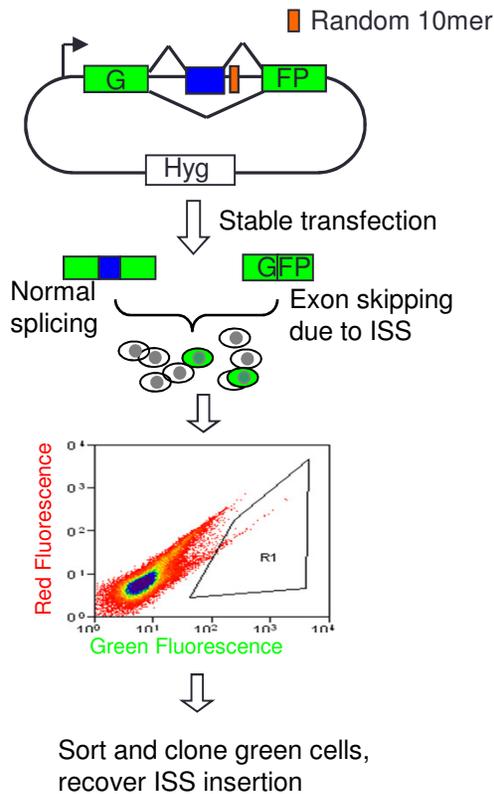
Research Interests

- Systematic study of the regulation of alternative splicing
- Mechanisms and functional roles of splicing mis-regulation in cancers
- Manipulation of RNA processing with artificial protein factors

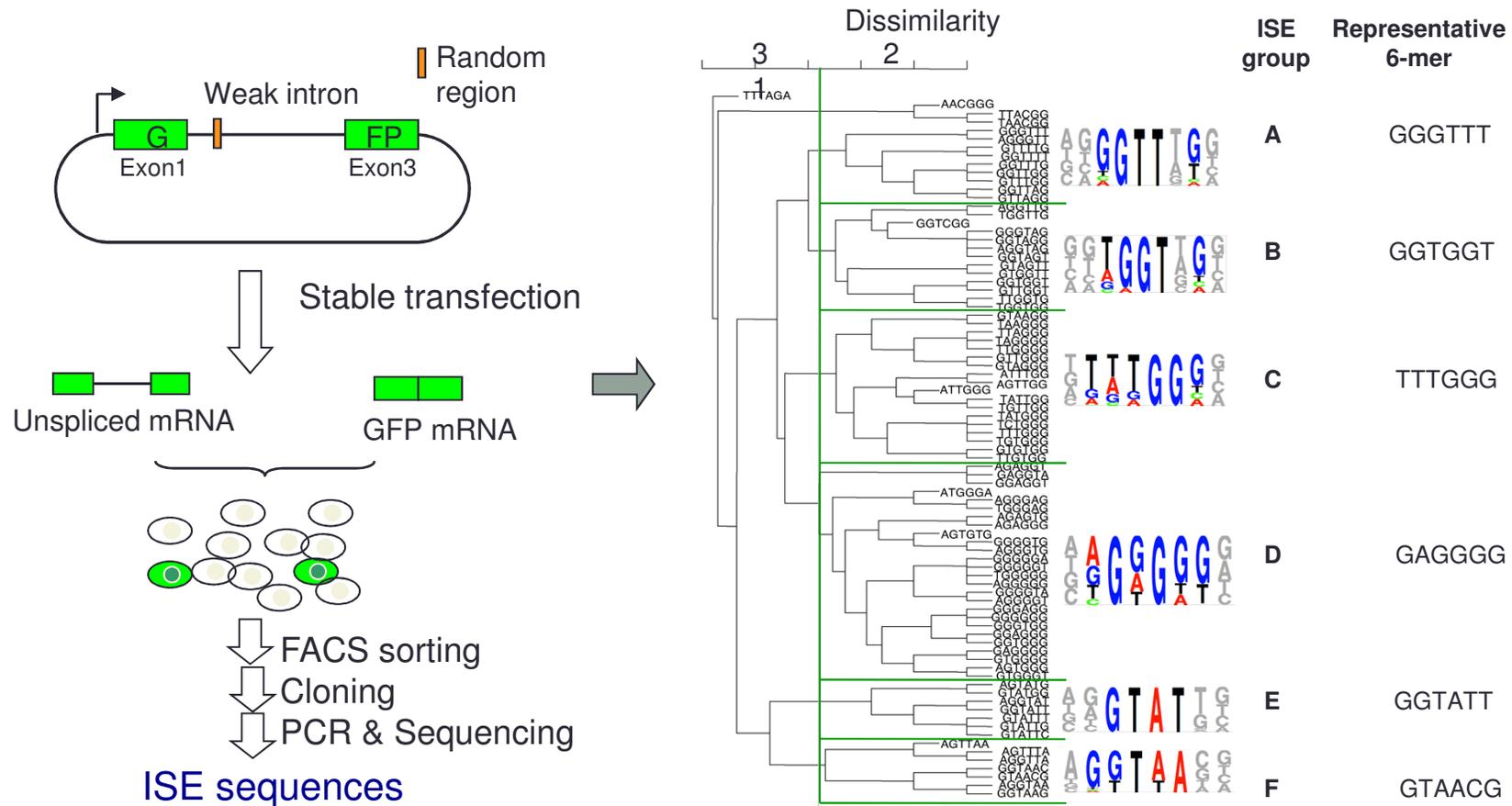
Recent Publications

- Wang Y, Cheong CG, Hall TM and **Wang Z**. Engineering splicing factors with designed specificities (2009). *Nature Method.* 6(11):825-30. Epub 2009 Oct 4
- Wang Y, Ma M, Xiao XS and **Wang Z**. Intronic splicing enhancers, cognate splicing factors and context dependent regulation rules. (2012) *Nature Structure Molecular Biology*, doi:10.1038/nsmb.2377. Epub Sep 16.
- Choudhury R, Dominguez D, Wang Y and **Wang Z**. Engineering RNA endonucleases with customized sequence specificities (2012). *Nature Communication* 23;3:1147. doi: 10.1038/ncomms2154.
- Wang Y, Xiao X, Zhang J, Choudhury R, Robertson A, Li K, Ma M, Burge CB, **Wang Z**. A complex network of factors with overlapping affinities represses splicing through intronic elements. (2013) *Nat Struct Mol Biol.* 20(1):36-45. doi: 10.1038/nsmb.2459. PMID: PMC3537874
- Zhang W, Wang Y, Dong S, Choudhury R, Jin Y and **Wang Z** Treatment of type 1 Myotonic Dystrophy by engineering site-specific RNA endonucleases that target (CUG)_n repeats. (2013) *Molecular Therapy.* Oct 23 doi: 10.1038/mt.2013.251 Epub ahead of print
- Choudhury R, Ghose Roy S, Tsai YS, Tripathy A, Graves LM and **Wang Z**. The splicing activator DAZAP1 integrates splicing control into MEK/Erk regulated cell proliferation and migration. *Nature Communications* (2014) Jan 23;5:3078. doi: 10.1038/ncomms4078
- Matera AG* and **Wang Z*** (**co-corresponding author**). Ribonucleoprotein assembly and dynamics: A day in the life of the spliceosome. *Nature Review Molecular Cell Biology* (2014) Jan 23;15(2):108-21. doi: 10.1038/nrm3742
- Tsai YS, Gomez SM, and **Wang Z**. Prevalent RNA recognition motif duplication in the human genome. *RNA* (2014) May;20(5):702-12. doi: 10.1261/rna.044081.113. Epub 2014 Mar 25
- Wang Y, Chen D, Qian H, Tsai YS, Shao S, Dominguez D and **Wang Z**. The splicing factor RBM4 controls apoptosis, proliferation, and migration to suppress tumor progression. *Cancer Cell* (2014) Sep 8; 26(3):374-89. doi: 10.1016/j.ccr.2014.07.010.

Systematic Identification of Intronic Splicing Silencers with FAS-ISS



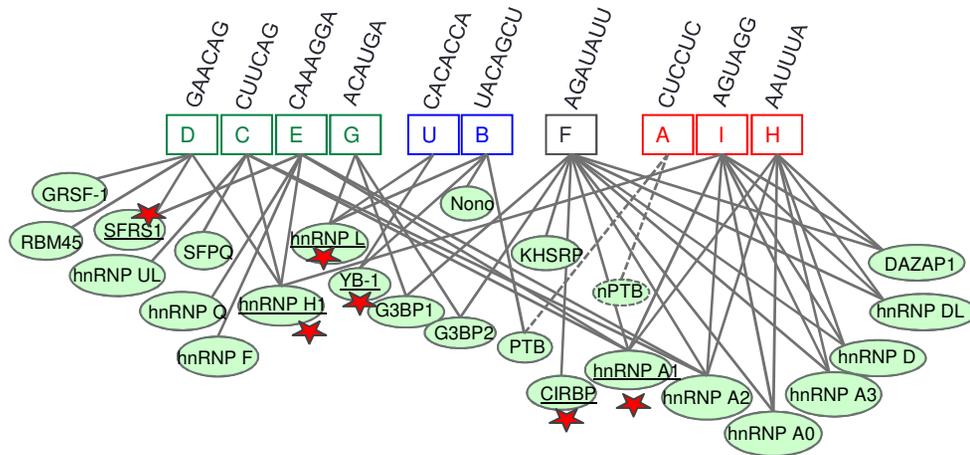
Identify intronic splicing enhancers by FAS-ISE



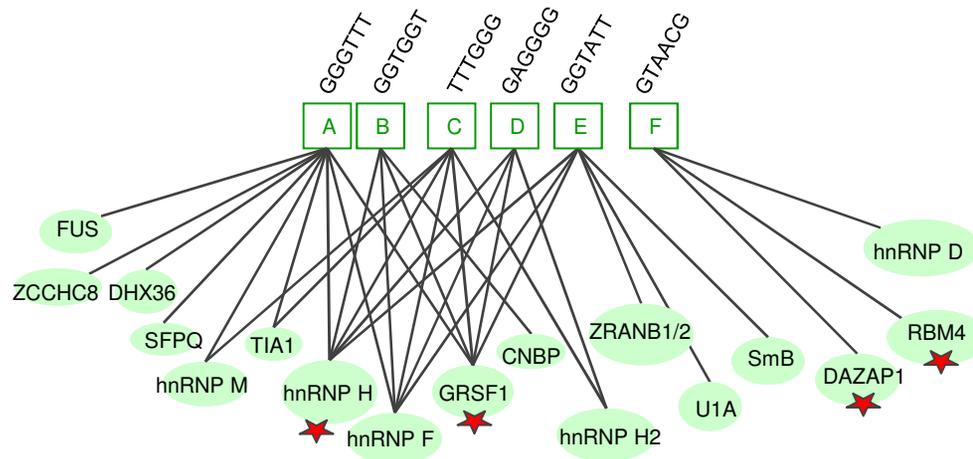
117 ISE decamers, 109 unique

All ISE function as ESS (i.e., inhibit splicing) when inserted in exons

An Overlapping Network of *trans*-factors Recognize ISSs and ISEs



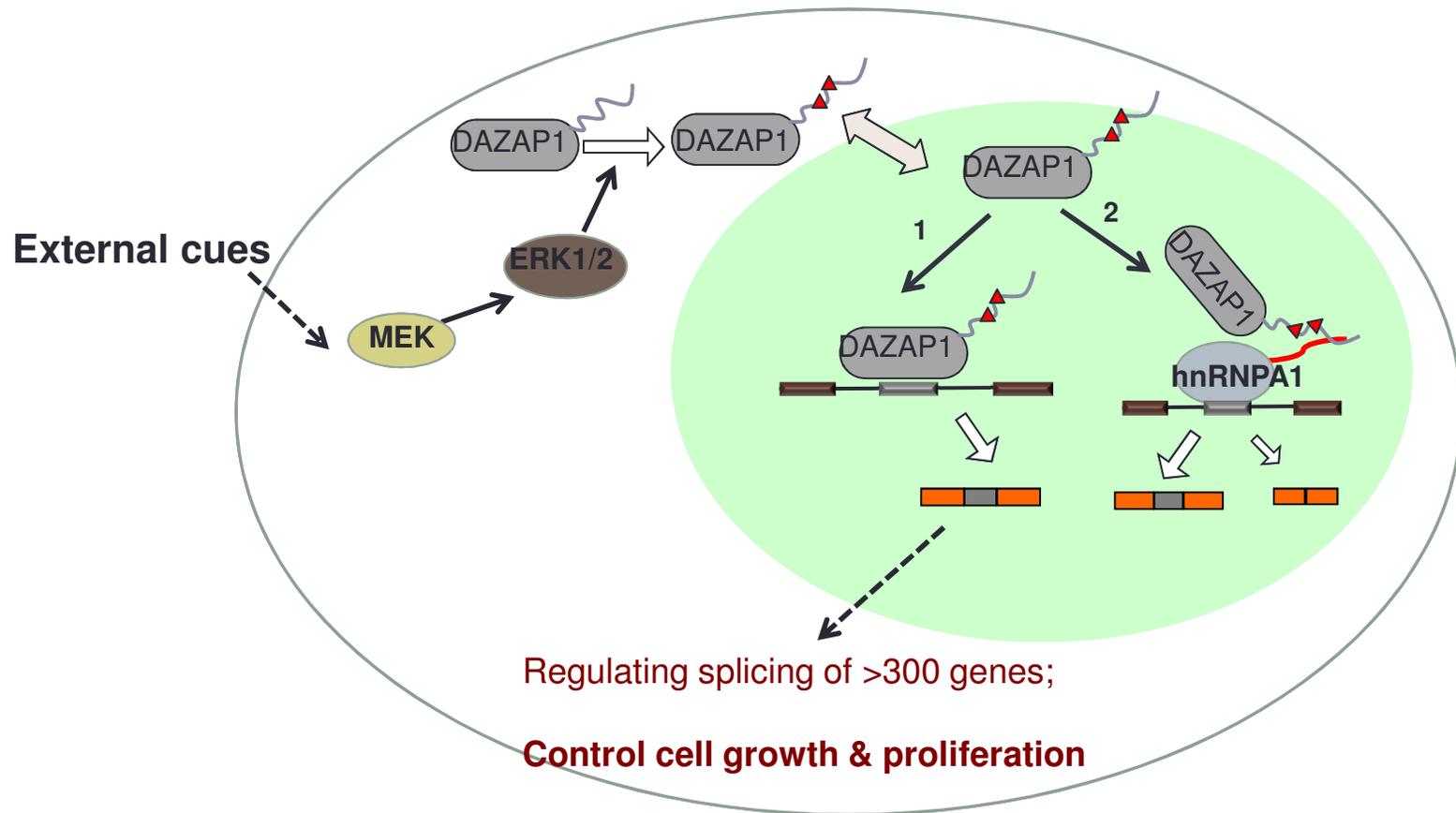
A complex connectivity map
=> regulatory plasticity



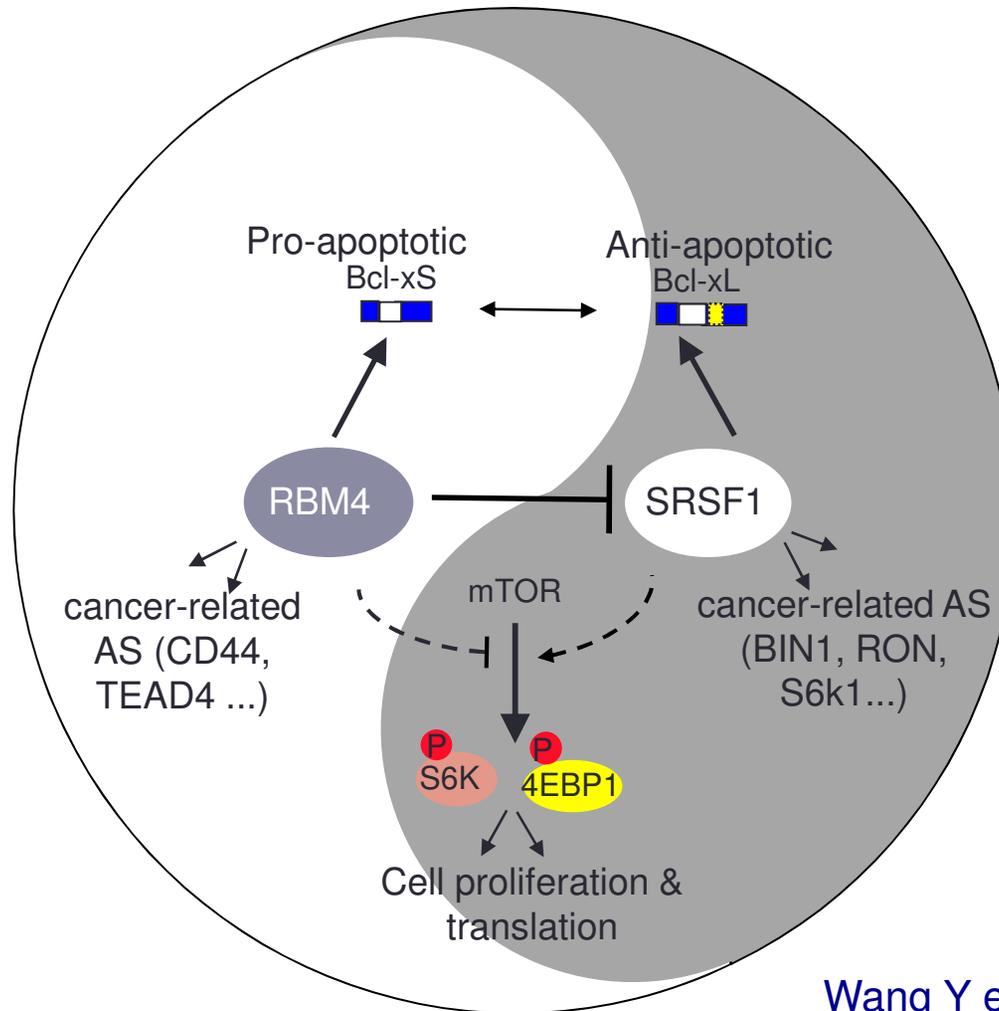
★ Factors involved in tumor pathogenesis

Wang Y et. al, *Nat Struc & Mol Bio* 2012
Wang Y et. al, *Nat Struc & Mol Bio* 2013

DAZAP1 integrates splicing control into MEK/Erk regulated cell proliferation and migration

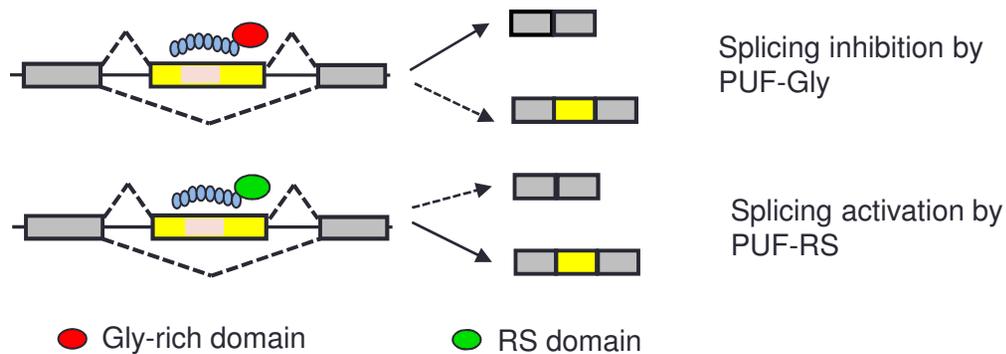


RBM4-mediated splicing regulation balance controls cell growth/proliferation



Wang Y et. al, *Cancer Cell*, 2014

Engineered splicing factors: Restore normal splicing in cancer



Artificial site-specific RNA endonuclease: Cleave toxic RNA Gene silencing in mitochondrion & chloroplast



Wang Y et al, 2009 Nature Methods
Chundhury et al, 2012, Nature Communications

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