

# Accepted Manuscript

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PII: S0981-9428(17)30421-7

DOI: [10.1016/j.plaphy.2017.12.020](https://doi.org/10.1016/j.plaphy.2017.12.020)

Reference: PLAPHY 5084

To appear in: *Plant Physiology and Biochemistry*

Received Date: 19 April 2017

Revised Date: 11 December 2017

Accepted Date: 12 December 2017

Please cite this article as: Q. Zhang, B. Wang, J. Wei, X. Wang, Q. Han, Z. Kang, *TaNTF2*, a contributor for wheat resistance to the stripe rust pathogen, *Plant Physiology et Biochemistry* (2018), doi: 10.1016/j.plaphy.2017.12.020.

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**TaNTF2, a contributor for wheat resistance to the stripe rust pathogen**

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**Abstract**

Nuclear Transport Factor 2 (NTF2) functions as a critical regulator in balancing the GTP-and GDP-bound forms of Ran, a class of evolutionarily conserved small GTP-binding protein. During the incompatible interaction between wheat-*Puccinia striiformis* f. sp. *tritici* (*Pst*), a cDNA fragment encoding a putative wheat NTF2 gene was found to be significantly induced, suggesting a potential role in wheat resistance to *Pst*. In this work, the full length of *TaNTF2* was obtained, with three copies located on 7A, 7B and 7D chromosomes, respectively. QRT-PCR further verified the up-regulated expression of *TaNTF2* in response to avirulent *Pst*. In addition, *TaNTF2* was also induced by exogenous hormone applications, especially JA treatment. Transient expression of *TaNTF2* in tobacco cells confirmed its subcellular localization in the cytoplasm, perinuclear area and nucleus. And virus induced gene silencing (VIGS) was used to identify the function of *TaNTF2* during an incompatible wheat-*Pst* interaction. When *TaNTF2* was knocked down, resistance of wheat to avirulent *Pst* was decreased, with a bigger necrotic spots, and higher numbers of hyphal branches and haustorial mother cells. Our results demonstrated that *TaNTF2* was a contributor for wheat resistance to the stripe rust pathogen, which will help to comprehensively understand the NTF2/Ran modulating mechanism in wheat-*Pst* interaction.

**Highlights:**

1. The expression of wheat *TaNTF2* was responsive to *Pst* challenge.
2. *TaNTF2* was located in both nucleus and cytoplasm of tobacco epidemic cells.
3. *TaNTF2* was a positive regulator for wheat resistance to *Pst*.

**Key words:** nuclear transport factor 2, plant resistance, *Puccinia striiformis* f. sp. *tritici*, wheat

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