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**Molecular Dynamics Simulation and Statistics Analysis Reveals the Defense Response Mechanism in Plants** ZHICHAO LIU, YUNJIE ZHAO, CHEN ZENG, Department of Physics, The George Washington University, COMPUTATIONAL BIOPHYSICS LAB TEAM — As the main protein of the bacterial flagella, flagellin plays an important role in perception and defense response. The newly discovered locus, FLS2, is ubiquitously expressed. FLS2 encodes a putative receptor kinase and shares many homologies with some plant resistance genes and even with some components of immune system of mammals and insects. In Arabidopsis, FLS2 perception is achieved by the recognition of epitope flg22, which induces FLS2 heteromerization with BAK1 and finally the plant immunity. Here we use both analytical methods such as Direct Coupling Analysis (DCA) and Molecular Dynamics (MD) Simulations to get a better understanding of the defense mechanism of FLS2. This may facilitate a redesign of flg22 or de-novo design for desired specificity and potency to extend the immune properties of FLS2 to other important crops and vegetables.

Zhichao Liu  
Department of Physics, The George Washington University

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