

# Dr. Acheampong Atiako

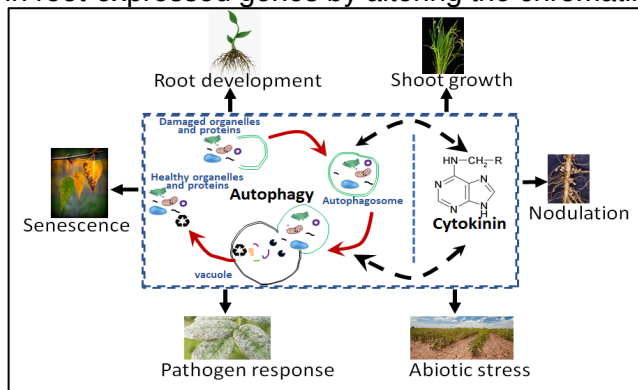
University of North Carolina at Chapel Hill

Friday October 22, 4pm



## Understanding the mechanisms underlying cytokinin-dependent root responses

How organisms reprogram cellular systems in response to rapid changes in internal and external cues is central to growth and development. Plants are sessile organisms that require intricate interplay between cellular systems such as phytohormone, cytokinin, and protein degradation mechanism of autophagy, to activate organ-specific responses to ever-changing environmental stimuli or physiological cues (Fig. 1). I explored the molecular mechanism underlying the interaction between cytokinin and autophagy in root development. Findings from my research show that cytokinin-dependent responses of *Arabidopsis* roots proceed via a novel pathway that involves the post-translational autophagic regulation of cytokinin signaling components. In a parallel research, using a combination of omics assays in rice, I show that cytokinin regulates transcriptional changes in root-expressed genes by altering the chromatin landscape near these genes.



**Fig. 1: Cytokinin and autophagy regulate diverse physiological processes in plant**

Dr. Acheampong earned his BSc. Biochemistry from the University of Ghana in Ghana, a MSc. in Crop Protection (Plant Pathology) from Kwame Nkrumah University of Science and Technology, Ghana, and a Ph. D in Horticulture from the Hebrew University of Jerusalem, Israel. He started his postdoctoral training in 2014 at A.R.O.-Volcani Center, Bet Dagan, Israel in the lab of Dr. Etti Or where he characterized grapevine VvDELLA2. In 2015, he joined the lab of Dr. Joseph Kieber at UNC-Chapel Hill as a Postdoctoral Researcher, studying interplay between cytokinin signaling and autophagy in regulating plant development. In 2021, he accepted a Research Associate position in the same lab and is currently studying the role of cytokinin in regulating physiological and developmental processes in rice. Dr. Acheampong has experience in teaching and mentoring graduate and undergraduate students. He participated in the UNC-approved K-12 Assisting in Development and Mentoring an Innovative Research Experience in Science (ADMIREs) program where he mentored a 9th grade African American in literature-based scientific research, guiding him in both scientific and social aspects of life.

### Recent publication

**Acheampong, A.K.**, Shanks, C.M., Cheng, C.Y., Schaller, E.G., Dagdas, Y. and Kieber, J.J. (2020). EXO70D isoforms mediate selective autophagic degradation of type-A ARR proteins to regulate cytokinin sensitivity. *Proceedings of the National Academy of Science - PNAS*.

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