No. 2018-13

Thu., **12 Apr.**, 2pm

Jukhyun Bio Auditorium(RM.121)

School of Life Sciences

Seminar Series

2018 Spring Semester

English

Cellular Precision for Cell Surface Integrity and Plant Fitness

Speaker | June M. Kwak , Ph.D.

Affiliation | DGIST

Host | Prof. Chul-Seung Park

광주과학기술원 생명과학부

Gwangju Institute of Science and Technology School of Life science

School of Life Sciences

Seminar Series

Thursday, **12 April** 2018, 2:00 PM

Jukhyun Bio Auditorium(RM.121)

No. 2018-13

Abstract

The cell wall, a defining feature of plants, provides a rigid structure critical for bonding cells together. To overcome this physical constraint, plants must process cell wall linkages during growth and development. However, little is known about the mechanism guiding cell-cell detachment and cell wall remodeling. Here, we identify two neighboring cell types in Arabidopsis that coordinate their activities to control cell wall processing, thereby ensuring precise abscission to discard organs. One cell type produces a honeycomb structure of lignin, which acts as a mechanical 'brace' to localize cell wall breakdown and spatially limit abscising cells. The second cell type undergoes transdifferentiation into epidermal cells, forming protective cuticle, demonstrating de novo specification of epidermal cells, previously thought to be restricted to embryogenesis. Loss of the lignin brace leads to inadequate cuticle formation, resulting in surface barrier defects and susceptible to infection. Altogether, we show how plants precisely accomplish abscission.

School of Life Sciences

Seminar Series

Thursday, **12 April** 2018, 2:00 PM

Jukhyun Bio Auditorium(RM.121)

No. 2018-13

Speaker

June M. Kwak, Ph.D.

Education/Experience

1987	B.S., Biochemistry, Yonsei University
1993	M.S., Life Sciences, POSTECH
1997	Ph.D., Life Sciences, POSTECH
1997-2002	Postdoctoral fellow of Human Frontier Science Program & Korea Research Foundation, UCSD, USA
2002-2003	Senior Research Associate, Division of Biological Sciences, UCSD, USA
2003-2013	Assistant Professor, Associate Professor with Tenure, Dept. of Cell Biology and Molecular Genetics, University of Maryland, College Park
2014-2017	Group Leader, Center for Plant Aging Research, Institute for Basic Science, Korea
2014-present	Professor, Associate Professor with Tenure, Department of New Biology, DGIST

Research Interests

We are interested in understanding how environmental changes cause adjustments in plant growth, aging and death as well as the metamorphosis from cell growth to cell death using multidisciplinary approaches, including systems-level analysis, genetics, cell and molecular biology. Our studies will help to predict physiological and genetic changes in plants during the plant's lifespan that global climate change causes, and also aid in preparing for the future ecological reshaping.

광주과학기술원 생명과학부
Gwangju Institute of Science and Technology School of Life Sciences