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# Plant Pathology Seminar

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## *Distinguished Lecture Series*

### **Programing Plants for Abiotic and Biotic Stress Tolerance and Improved Nutrition through Symbiogenics**



**Dr. Rusty Rodriguez, CEO • Dr. Regina Redman, President**  
Symbiogenics; Seattle, WA, <http://www.symbiogenics.org/>

The greatest need in agriculture this century is to mitigate impacts of abiotic (drought, temperature, salinity) and biotic (pathogens, pests) stresses on crop plants. Efforts over the last 40 years to generate stress tolerant crops via breeding or genetic modification have not been very fruitful because the underlying strategies assumed plants adapt themselves to stress. However, plants in high-stress habitats are adapted to environmental stresses only through symbiosis with fungal endophytes. Without the fungal partners, plants are no more adapted to stress than agricultural crops. Both partners have the ability to alter the outcome of the association and individual fungal isolates can switch between parasitism and mutualism. This "plasticity" in symbiotic associations appears to control the adaptive potential of plants and provides sufficient ecological flexibility for colonization across environmental landscapes. Although several biochemical processes have been correlated to plant stress tolerance, few processes correlate with symbiotically conferred stress tolerance. Symbiotically conferred stress tolerance involves altered plant gene regulation, increased metabolic efficiency, and an increased ability to manage reactive oxygen species.

Based on >20 years of research studying how plants in nature adapt to stress, Adaptive Symbiotic Technologies (AST) developed the product line BioEnsure®, a novel seed treatment comprising fungal endophytes that form symbiotic associations with a diverse group of crop plants and confer significant levels of abiotic stress tolerance. Field tests have demonstrated that during periods of high drought and salinity stress, BioEnsure® increases crop yield an average of 26-60%. During growing seasons with little to no stress, BioEnsure® increases yields an average of 3%. The seminar will cover the science behind BioEnsure®, results from 6 years of field testing, effort to bring this technology to poor rural farmers in India and future of sustainable agriculture.

4:10 pm | March 26 | Johnson Hall 343  
*Plant Pathology 515, Spring, 2018*

***Annual Department of Plant Pathology Student-Invited Lecturer***



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