nderstand intercellular signaling in radial
embryo development. Plants homozygous
tor-Like Kinases (RLKs) RPK1 and TOAD2
ype, known as the Toadstool phenotype,
are involved in proper radial patterning
AD2 have overlapping expression during
pment, and their Leucine-Rich Repeat
vary considerably, are likely important in
xperiments have pointed towards CLE
E genes, interacting with RPK1 and/or
abidopsis roots with a CLE peptide inhibits
s are treated with the same peptide, no
, suggesting that the TOAD2 receptor is
response to the CLE peptide. To further
n RPK1/TOAD2 mediated signaling, I am
ne expression pattern of these genes. Thus
omoter fusions, as well as GUS promoter
een found to be expressed during early
ing the information from the expression
educed CLE gene activity affects radial
ndicated by a change in frequency of the
tential redundancy within this 32 member
es expressed in the embryo complicates
ese ligands. To circumvent the problem of
l genetic strain that may allow for detection
ns. Lastly, I am using a yeast two-hybrid
s an interaction between the CLE ligands
RPK1 and TOAD2 receptors. Together,
te the expression and function of these
peptides interact with RPK1 and TOAD2.
Foundation, as well as NSF grants
78.

**agonistically regulate dynamic auxin
nterdigitation of leaf pavement cells in**

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levelop interdigitated lobes and indentations
e previously shown that auxin acts as a
oordinate lobing with indenting by activating
signaling pathways. In expanding Arabidopsis
ents apparently show tip- and margin-high
with the progression of PC interdigitation from
otyledons. We found that defects in cytokinin
es or cytokinin receptor mutant *ahk3cre1* caused
ation and accumulation of auxin, whereas over-
20 over-expression), auxin receptors (TIR1 and
18 function mutant delayed or abolished PC
on. In all these cases the intercalation defects
d auxin, in contrast to the *abp1-5* and *rop2 rop4*
t be rescued by auxin. These results support the
signaling and cytokinin counteract to produce
which act as an instructive signal to globally
hroughout the entire leaf. Accordingly auxin
n the level of auxin for a specific cell, and this
ation and cell-cell coordination of lobing with
P-dependent pathways. These findings establish
ne signaling pathways that control a specific
gnaling that regulates nuclear gene expression
a hormonal signal that modulates a specific
na membrane/cytoplasmic signaling mechanism

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Plasmodesmata (PD) are plant-unique intercellular communication channels that provide plants the basis for multicellular or supracellular organization. These fundamental structures are thought to play crucial roles in controlling systemic defense responses against pathogens as well as in orchestrating cellular differentiation and pattern formation during plant development. Here we report the identification of the PD-targeted protein PDLP5, which may play a critical role in orchestrating PD-mediated cell-to-cell communication and defense signaling. Supporting evidence showed that PDLP5 accumulated at the primary pit-fields, its expression was induced by pathogen infection and salicylic acid treatment, and modulation of this gene altered PD permeability and susceptibility to pathogen. Moreover, constitutive overexpression of this protein led to a spontaneous cell death reminiscent of hyper-sensitive response in leaf tissue, formation of autophagy, and hyperinduction of chloroplast stromules. The working model, along with molecular mechanisms potentially underlying this process, that illustrates PDLP5 as a novel molecular link between coordinated regulation of cell communication at the PD level and controlled cell death will be presented.

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152 **Interaction of the receptor-like protein Cf-4 with components of endosomal trafficking and identification of novel interactors**

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The plasma membrane-resident tomato (*Solanum lycopersicum* (*Sl*)) Cf receptor-like proteins recognize Avr effectors of the fungal pathogen *Cladosporium fulvum*. To date, very few host components involved in Cf-signaling have been identified. Cf-4 contains a typical Yxxø endocytosis motif in its short cytoplasmic domain. These motifs bind μ adaptins involved in clathrin-mediated endocytosis. *Agrobacterium*-mediated co-expression of Cf-4, mutated in the Yxxø motif, with Avr4 in *Nicotiana benthamiana* does not result in a hypersensitive response (HR), in contrast to wild-type Cf-4, suggesting the Yxxø motif is of functional significance.

We here employed a split-ubiquitin-based yeast two-hybrid method to study interaction of full-length Cf-4 with tomato μ adaptins. The adaptins (A-D) were cloned based on homology to the *Arabidopsis* μ adaptins (1). Cf-4 specifically interacts with adaptin *Sl*μC, confirming earlier observations using only the cytoplasmic domain of Cf-4 in a conventional yeast two-hybrid assay. Cf-4 variants altered in the Yxxø motif, Cf-4^{Y780A} and Cf-4^{W783D}, still bind *Sl*μC in the split-ubiquitin assay, indicating that the motif at positions 780-783 is not required for *Sl*μC binding. There is a second Yxxø motif present at the very C-terminus of the transmembrane domain and we will investigate whether this motif is required for *Sl*μC binding.

A split-ubiquitin tomato cDNA library, enriched for expressed defense genes, was screened for Cf-4 interactors. This library was generated from *Cf-4/Avr4* tomato plants mounting the HR (2). A first screen revealed several interesting novel Cf-4 candidate interactors that are currently validated. In addition new screens will be performed.

Acknowledgment: This work is supported by grant CBSG2012 PG6

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In *Arabidopsis* flowers, abscissi
triggered by activation of HAES
(HSL2), a pair of redundant, leu
kinases (Cho et al., 2008). We
ribosylation factor GTPase-activ
(NEV), that regulates membran
required for the movement of ke
abscission. Through a sensitize
restore organ shedding in *nev* fl
of three receptor-like kinases—
and CAST AWAY (CST)—that fu
inhibitors of abscission. The org
prematurely, and enlarged absc
evr, *nev serk1* and *nev cst* flowe
reported for plants constitutively
signaling ligand for HAE and HS
pathway may be ectopically acti
nev cst flowers. We will present
model in which EVR, SERK1 an
region of abscission by regulatir
of HAE and HSL2.

Research funded by NSF IOS-0

155 **Involvement of Arabidops
and its Regulation by Abscisic Acid**

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Earlier studies have shown that RACK
ABA responses in Arabidopsis, but the
RACK1 in these processes remains elu
revealed that approximately 40% of the
were affected in a similar manner by th
view that RACK1 is a major regulator o
co-expression analysis revealed that >
RACK1 encode ribosome proteins, imp
RACK1's function and the ribosome co
the regulatory role for RACK1 in ABA re
putative function in protein translation,
processes that mammalian and yeast F
three Arabidopsis *RACK1* homologous
and *RACK1C*, complemented the grow
rack1 mutant. In addition, RACK1 phys
eukaryotic Initiation Factor 6 (eIF6), wh
key regulator of protein translation initia
displayed hypersensitivity to anisomycin
and displayed characteristics of impaire
and 60S ribosomal subunit biogenesis i
expression analysis revealed that ABA
and *eIF6*. Taken together, these results
in the control of protein translation and
regulated by ABA.

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