

1161
DOE/ER/20218-72

FINAL REPORT DE-FG02-96ER20218

FASEB Summer Research Conference on Signal Transduction in Plants CONF-9607174-Sum

July 16-21, 1996, Copper Mt. CO

Terri L. Lomax and Ralph S. Quatrano, Organizers

The second FASEB Conference on Signal Transduction in Plants attracted approximately 50 conferees from the US, United Kingdom, Germany, the Netherlands, Mexico, and Japan, with a good mix of established investigators, young faculty, and postdoctoral fellows still in training. The meeting had a broad emphasis and covered many different aspects of signal transduction including sessions on: 1) Environmental Signaling (Terri Lomax, Oregon State University, chair); 2) Perception and Transduction of Light Signals (Elaine Tobin, UCLA, chair); 3) Signaling in Plant-Microbe Interactions (David Lynn, U. Chicago, chair); 4) Signaling in Plant-Pathogen Interactions (Chris Lamb, Salk Institute, chair); 5) Cell-Cell Communication (Keith Roberts, John Innes Institute, chair); 6) The Cytoskeleton, Plasma Membrane, Cell Wall Continuum (Gloria Muday, Wake Forest University, chair); 7) Signaling Molecules in Plant Growth and Development I (Ralph Quatrano, University of North Carolina, chair); and 8) Signaling Molecules in Plant Growth and Development II (Gretchen Hagen, University of Missouri, chair). Thirty-six speakers made presentations at these sessions, including four postdoctoral scientists whose work was selected as "hot topics" from the poster abstracts.

The level of science and quality of the presentations was extremely high, with much of the data presented being as yet unpublished. Especially notable was progress in elucidating the signaling mechanisms in response to wounding and pathogen attack; the demonstration that gene products can move between plant cells via plasmodesmata; the role of kinases in plant defense responses, cell differentiation, self-incompatibility, plasma membrane-cell wall communication, and stress responses; and breakthroughs in identifying the components in plant hormone response mechanisms. The session on Plant-Microbe Interactions in particular presented a nearly complete picture of how *Agrobacterium tumefaciens* and plants communicate and interact with each other. The discussions between conferees were very interactive and continued both before and after sessions. The participants were uniformly enthusiastic about the meeting and appreciated both the small size of the conference and the broad range of topics that were covered, bringing together workers in different areas of plant signal transduction who do not often (or never!) interact with each other. Several attendees stated that it was one of the most stimulating conferences that they had ever attended.

Despite this level of enthusiasm, no business meeting was held because the general feeling was that the field of plant signal transduction is rapidly becoming too large and complex to be covered at any single meeting. This means that in the future, meetings on more specific topics will need to be proposed. We encouraged the attendees with ideas for such meetings to contact FASEB directly with their proposals, but did not think that a business meeting would generate them at this time. In addition, there is a rising number of related meetings and this may have played a role in the rather low attendance at this meeting. Although we had tried to move the FASEB meeting to a different year from the Gordon Conference on a similar topic, the Gordon Conference then changed the year of their meeting to coincide with ours. This increase in the number of meetings has also led to problems in fund-raising in an atmosphere that is already increasingly difficult.

The logistics of the meeting all went off splendidly, which is a great tribute to the efforts of Jackie Spangler Johnson. The one drawback was the timing of the conference, which was in a week when the Copper Mt. was essentially shut down, with even the lifts not running and many other facilities (swimming pools, etc.) not available. Otherwise, all ran smoothly and allowed an excellent conference to take place. The organizers greatly appreciate Jackie's efforts, both in helping to get the meeting organized and in ensuring its success once at Copper Mountain.

MASTER

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

11

DISCLAIMER

**Portions of this document may be illegible
in electronic image products. Images are
produced from the best available original
document.**

1996 FASEB Summer Symposium - Signal Transduction in Plants
June 16-21, 1996, Copper Mountain, Colorado
Terri L. Lomax and Ralph S. Quatrano, co-chairs

Schedule (5 June 1996 version)

Sunday, June 16

| | |
|-----------------|--|
| 2:00 PM | FASEB conference office opens for registration |
| 6:00 - 7:00 PM | Reception for participants and guests |
| 7:00 - 8:30 PM | Buffet dinner |
| 8:30 - Midnight | Lounge open |

Monday June 17

| | | |
|------------------|---|--|
| 7:30 - 9:00 | Breakfast | |
| 8:00 AM | FASEB office opens | |
| 9:00 - 12:00 AM | Environmental Signaling | |
| 9:00 - 9:35 | Terri Lomax* | Environmental regulation of gravitropic signal transduction |
| 9:35-10:10 | Patrick Masson | Root gravitropism and waving in <i>Arabidopsis thaliana</i> |
| 10:10-10:30 | Break | |
| 10:30-11:05 | Kay Walker-Simmons | Wheat abscisic acid-responsive protein kinases that are up-regulated by dehydration and cold |
| 11:05-11:40 | Dianna Bowles | Signal transduction pathways leading to wound-responsive gene expression |
| 11:40-12:00 | Bratislav Stankovic | Intercellular communication in plants: Electrical stimulation of proteinase inhibitor |
| 12:00 - 1:30 PM | Lunch | |
| 1:30 PM - | Afternoon free | |
| 5:00 - 6:00 PM | Poster viewing and lounge open | |
| 6:00 - 7:00 PM | Dinner | |
| 7:00 - 10:00 PM | Perception and Transduction of Light Signals | |
| 7:00-7:40 | Elaine Tobin* | Phytochrome-regulated Lhcb (cab) gene expression |
| 7:40-8:20 | Daniel Chamovitz | Regulators mediating light control of seedling development patterns |
| 8:20-8:40 | Break | |
| 8:40-9:20 | Gary Coté | Light signal transduction in pulvini |
| 9:20-10:00 | Anthony Cashmore | The cryptochrome family of blue light receptors |
| 10:00 - Midnight | Lounge open | |

* = session organizer

Tuesday, June 18

| | | |
|------------------|---|---|
| 7:30 - 9:00 AM | Breakfast | |
| 9:00 - 12:00 AM | Signaling in Plant-Microbe Interactions | |
| 9:00 - 9:40 | David Lynn* | The molecular language of <i>Agrobacterium</i> pathogenesis |
| 9:40-10:20 | Andrew Binns | VirB-mediated transport of diverse substrates from <i>Agrobacterium</i> into plant cells |
| 10:20-10:40 | Break | |
| 10:40-11:20 | Steven Winans | Quorum-sensing by <i>Agrobacterium tumifaciens</i> \ |
| 11:20-12:00 | Steven Farrand | Opines, autoinduction and the central dogma of the <i>Agrobacterium</i> -plant relationship |
| 12:00 - 1:30 PM | Lunch | |
| 1:30 PM - | Afternoon free | |
| 5:00 - 6:00 PM | Poster viewing and lounge open | |
| 6:00 - 7:00 PM | Dinner | |
| 7:00 - 10:00 PM | Signaling in Plant Pathogen Interactions | |
| 7:00-7:40 | Barbara Baker | Molecular-genetic characterization of N gene function |
| 7:40-8:20 | Gregory Martin | Signal transduction events in bacterial speck disease |
| 8:20-8:40 | Break | |
| 8:40-9:20 | Dierk Scheel | Receptor-mediated elicitor recognition and signal transduction in plant defense |
| 9:20-10:00 | Chris Lamb* | Function of the oxidative burst in plant disease resistance |
| 10:00 - Midnight | Lounge open | |

Wednesday, June 19

| | | |
|-----------------|--------------------------------|--|
| 7:30 - 9:00 AM | Breakfast | |
| 9:00 - 12:00 AM | Cell:Cell Communication | |
| 9:00 - 9:30 | Keith Roberts* | Cell-cell interactions and plant cell fate determination |
| 9:30-10:10 | Steven Clark | Regulation of cell differentiation at the shoot and floral meristem by the receptor kinase CLV1 |
| 10:10-10:50 | David Jackson | Plasmodesmal trafficking of Knotted 1 gene products may define a novel cell:cell signaling pathway in plants |
| 10:50-11:05 | Break | |
| 11:05-11:45 | Teh-hui Kao | Role of petunia S-RNAses in self-incompatibility interactions between pollen and pistil |
| 11:45-12:00 | Laura Zonia | Signaling systems regulating pollen development |
| 12:00 - 1:30 PM | Lunch | |
| 1:30 PM - | Afternoon free | |
| 5:00 - 6:00 PM | Poster viewing and lounge open | |
| 6:00 - 7:00 PM | Dinner | |

| | | |
|------------------|---|--|
| 7:00 - 10:00 AM | The Cytoskeleton, Plasma Membrane, and Cell Wall Continuum | |
| 7:00-7:35 | Gloria Muday* | Actin association of an auxin transport protein: In vivo and in vitro evidence |
| 7:35-8:10 | Melvin Schindler | Signal-mediated changes in the tension within the actin network |
| 8:10-8:30 | Break | |
| 8:30-9:05 | Darryl Kropf | Polarity establishment in zygotes |
| 9:05-9:40 | Bruce Kohorn | A cell wall-associated receptor-like kinase |
| 9:40-10:00 | Gail McLean | TMV movement protein association with the plant cytoskeleton: Transport and plasmodesmata permeability |
| 10:00 - Midnight | Lounge open | |

Thursday, June 20

| | | |
|------------------|---|---|
| 7:30 - 9:00 AM | Breakfast | |
| 9:00 - 12:00 AM | Signaling Molecules in Plant Growth and Development I | |
| 9:00 - 9:35 | Ralph Quatrano* | Regulation of gene expression by ABA and VP1 |
| 9:35-10:10 | Ton Bisseling | A peptide encoded by ENOD40 of legumes and non-legumes modifies phytohormone response |
| 10:10-10:30 | Break | |
| 10:30-11:05 | Richard Walden | Molecular dissection of auxin action |
| 11:05-11:40 | Clarence Ryan | Polypeptide signaling for systemic wound response proteins (SWRPs) |
| 11:40-12:00 | Marian Löbler | Jasmonate recognition in barley |
| 12:00 - 1:30 PM | Lunch | |
| 1:30 PM - | Afternoon free | |
| 5:00 - 6:00 PM | Poster viewing and lounge open | |
| 6:00 - 7:00 PM | Dinner | |
| 7:00 - 10:00 PM | Signaling Molecules in Plant Growth and Development II | |
| 7:00-7:40 | Neil Olszewski | Gibberellin signal transduction in <i>Arabidopsis</i> |
| 7:40-8:20 | Anthony Bleeker | Characteristics of the ethylene receptor ETR1 from <i>Arabidopsis</i> |
| 8:20-8:40 | Break | |
| 8:40-9:00 | Gretchen Hagen* | Auxin-responsive genes |
| 9:00-9:40 | Thomas Guilfoyle | Composite auxin response elements |
| 10:00 - Midnight | Lounge open | |

Friday, June 21

| | |
|------------------|---|
| 7:30 - 9:00 AM | Breakfast |
| 11:30 - 12:30 PM | Box lunches |
| 12:00 noon | Bus departs for airport (box lunch served on bus) |
| 1:30 PM | FASEB office closes |

WE GRATEFULLY ACKNOWLEDGE THE FOLLOWING CONTRIBUTORS

CIBA-GEIGY

DEPARTMENT OF ENERGY

E. I. DU PONT de NEMOURS

MONSANTO

NATIONAL SCIENCE FOUNDATION

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

PARTICIPANT LIST ** Conference : 1 -- SIGNAL TRANSDUC IN PLANTS
FASEB SUMMER RESEARCH CONFERENCES

Dr. Barbara Baker
Department of Plant Biology
USDA Plant Gene Expression Ctr
800 Buchanan St
Albany CA 94710-1100
510-559-5912
510-559-5678
bbaker@garnet.berkeley.edu

Dr. Andrew Binns
Department of Biology
Univ of Pennsylvania
415 S University Ave/Leidy Lab
Philadelphia PA 19104-6018
215-898-8684
215-898-8780
abinns@mail.sas.upenn.edu

Dr. Ton Bisseling
Molecular Biology
Agricultural Univ
Dreyenlaan 3
Wageningen 6703 HA
THE NETHERLANDS
31 837-082640
31 837-083584
ton.bisseling@mac.mb.wau.nl

Dr. Anthony B. Bleeda
Botany Dept
Univ of Wisconsin
430 Lincoln Drive
Madison WI 53706
608-262-4009
608-262-7509
ableck@macc.wisc.edu

Dr. Dianna Bowles
Biology-Plant Laboratory
University of York
PO Box 373
York 401 5DD
UNITED KINGDOM
44 1904-434334
44 1904-434336
djb32@york.ac.uk

Dr. Anthony R. Cashmore
Biology
Univ of Pennsylvania
Plant Science Inst
Philadelphia PA 19104-6018
215-898-9383/81
215-898-8780
cashmore@sas.upenn.edu

Dr. Daniel A Chamovitz
Biology
Yale University
PO Box 208104
New Haven CT 06520-8104
203-432-8909
203-432-3854
chamo@peapplant.biology.yale.edu

Dr. Steven Clark
Dept of Biology
University of Michigan
830 North University
Ann Arbor MI 48109-1048
313-747-4151
313-747-0884
clarks@umich.edu

Dr. Gary G. Cote
Biology
Millikin Univ
Decatur IL 62522
217-362-6460
217-424-3993
gcote@mail.millikin.edu

Dr. Carmen W. Dessauer
Pharmacology
U.T. Southwestern Medical Ctr
5323 Harry Hines Blvd
Dallas TX 75235-9041
214-648-8714
214-648-8812
UTSMC-1.cdesa@mednet.swmed.edu

Dr. Steven Farrand
Plant Pathology
Univ of Illinois
1102 South Goodwin Ave
Urbana IL 61801
217-333-1524
217-244-7830
stephenf@uiuc.edu

Dr. Gary Gardner
Horticultural Science
Univ of Minnesota
305 Alderman Hall/1970 Folwell
St Paul MN 55108
612-624-3606
612-624-4941
ggardner@maroon.tc.umn.edu

Dr. Rene Geurts
Molecular Biology
Agricultural Univ Wageningen
Dreijenlaan 3
Wageningen 6703 HA
THE NETHERLANDS
31 317 482640
31 317 48 3584
rene.geurts@mac(mb).wau.nc

Dr. Luis E. Gonzalez
Biotecnologia y Bioquimica
Unidad Irapuato CINVESTAV-IPN
APDO Postal 629
Irapuato 36500
MEXICO
462-516-00
462-459-96
lgonzale@irapuato.ira.cinvesta
v.mx

Susanna Grafe
Cell and Molecular Biology
Hans-Knoll-Institut
Beutenbergstr.11
Jena 07745
GERMANY
49-3641-656690
49-3641-656694
sgraefe@leutra.imb-jeua.de

PARTICIPANT LIST ** Conference : 1 -- SIGNAL TRANSDUC IN PLANTS
FASEB SUMMER RESEARCH CONFERENCES

Dr. Thomas J. Guilfoyle
Biochemistry
Univ of Missouri
117 Schweitzer Hall
Columbia MO 65211
314-882-7648
314-882-5635
bctguil@mizzou1.missouri.edu

Dr. Gretchen Hagen
Biochemistry
Univ of Missouri
117 Schweitzer Hall
Columbia MO 65211
314-882-7300
314-882-5635
bcghagen@muccmail.missouri.edu

Dr. David Jackson
USDA Plant Gene Expression Ctr
800 Buchanan St
Albany CA 94710
510-559-5976
510-559-5678
djakson@nature.berkeley.edu

Dr. Teh-Hui Kao
Biochemistry & Molecular Biol
Penn State Univ
403 Althouse Lab
University Park PA 16802
814-863-1042
814-863-9416
txk3@psuvm.psu.edu

Dr. Joe L. Key
Botany-OYPR 6096 SRC
Univ of Georgia
609 Grad Studies Research Ctr
Athens GA 30602
706-542-5969
706-542-5778
jkey@uga.cc.uga.edu

Dr. Bruce Kohorn
DCMB
Duke University
Box 91000/LSRC
Durham NC 27708
919-613-8182/8183
919-613-8177
kohorn@acpub.duke.edu

Dr. Darryl Kropf
Biology
Univ of Utah
Salt Lake City UT 84112
801-581-5432
801-581-4668
kropf@bioscience.utah.edu

Dr. Christopher Lamb
Plant Biology Laboratory
The Salk Institute
10010 North Torrey Pines Rd
La Jolla CA 92037
619-532-8974
619-558-6379
chris_lamb@qm.salk.edu

Dr. Marian Loebler
Inst fur Pflanzenbiochemie
Weinberg 3
Halle D-06120
GERMANY
49-234-5582-253
49-234 5582 166
loebler@ipb.uni-halle.de

Dr. Terri L. Lomax
Botany & Plant Pathology
Oregon State University
2082 Cordley Hall
Corvallis OR 97331-2902
541-737-5278
541-737-3573
lomaxt@bcc.orst.edu

Dr. David G. Lynn
Searle Chemistry Laboratory
The Univ of Chicago
5759 Ellis Avenue
Chicago IL 60637
312-702-7063
312-702-0805
d-lynn@uchicago.edu

Dr. Gregory Martin
Dept of Agronomy
Purdue University
1150 Lilly Hall of Life Sci
West Lafayette IN 47907-1150
317-494-4790
317-496-2926
gmartin@dept.agry.purdue.edu

Dr. Patrick Masson
Lab of Genetics
Univ of Wisconsin/Madison
445 Henry Mall
Madison WI 53706
608-265-2312
608-262-2976
pmasson@mail.wisc.edu

Dr. Hideaki Matsuoka
Biotechnology
Tokyo Univ of Agriculture/Tech
2-24-16 Nakamachi
Tokyo, Koganei 184
JAPAN
81-423-88-7029
81-423-87-1503
bio-funct@cc.tuat.ac.jp

Dr. Gail McLean
Plant Biology
Univ of California/Berkeley
111 Kashland Hall
Berkeley CA 94720-3102
510-643-9204
510-642-4995
bgmclean@nature.berkeley.edu

PARTICIPANT LIST ** Conference : 1 -- SIGNAL TRANSDUC IN PLANTS
FASEB SUMMER RESEARCH CONFERENCES

Dr. Jing-Hong Mu
Pharmacology
UT Southwestern Med Ctr
5323 Harry Hines Blvd
Dallas TX 75235
214-648-3005
214-648-2994
JMU@mednet.swmed.edu

Dr. Gloria K. Muday
Biology
Wake Forest Univ
Faculty Dr/Rm 226 Winston Hall
Winston-Salem NC 27109-7325
910-759-5316
910-759-6008
muday@wfu.edu

Dr. Dirk Nennstiel
Institut of Plant Biochemistry
Weinberg 3
Halle/Saale 06120
GERMANY
49-345-5582-241
49-345-5582-164
dnennsti@ipb.uni-halle.de

Dr. Neil E. Olszewski
Plant Biology
Univ of Minnesota
220 Biological Sciences Ctr
St Paul MN 55108-1095
612-625-3129
612-625-5754
neil@molbio.cbs.umn.edu

Dr. Ralph S. Quatrano
Dept of Biology/CB#3280
Univ of NC/Chapel Hill
Coker Hall - South Road
Chapel Hill NC 27599-3280
919-962-2098
919-962-6840
rsq@unc.edu

Dr. Keith Roberts
Cell Biology
John Innes Inst
Colney Lane
Norwich NR4 7UH
UNITED KINGDOM
44 16034-52571
44 16034-56844
c/o M. McCann mccannm@bbsrc.ac.uk

Dr. Clarence A. Ryan
Inst of Biological Chemistry
Washington State Univ
Pullman WA 99164-6340
509-335-3304
509-335-7143
ryan@wsuvm1.csc.wsu.edu

Dr. Mikako Saito
Department of Biotechnology
Tokyo Univ of Agriculture/Tech
2-24-16, Nakamachi
Tokyo, Koganei 184
JAPAN
81-423-88-7029
81-423-87-1503
bio-cell@cc.tuat.ac.jp

Dr. Dierk Scheel
Stress & Developmental Biology
Inst of Plant Biochemistry
Weinberg 3
Halle/Saale D-06120
GERMANY
49 345-5582-257
49 345-5582-164
dscheel@ipb.uni-halle.de

Dr. Melvin S. Schindler
Biochemistry
Michigan State University
East Lansing MI 48864
517-355-6490
517-353-9334
schindl1@pilot.msu.edu

Dr. Bratislav Stankovic
Plant Biology
Ohio State Univ
1735 Neil Ave
Columbus OH 43210
614-688-4305
614-292-6345
stankovic.1@osu.edu

Dr. Elaine Tobin
MCD Biology
Univ of California/Los Angeles
405 Hilgard Avenue
Los Angeles CA 90095-1606
310-825-7700
310-825-4386
etobin@ucla.edu

Dr. Richard Walden
Max-Planck-Inst Zuchungsforschung
Carl-von-Linne-Weg 10
Cologne 50829
GERMANY
0049-22-5062-240
0049-221-5026-213
walden@mpiz-koeln.mpg.de

Dr. M. Kay Walker-Simmons
USDA/ARS
Washington State Univ
209 Johnson Hall
Pullman WA 99164-6420
509-335-8696
509-335-8674
ksimmons@wsu.edu

Dr. Stephen C Winans
Section of Microbiology
Cornell Univ
Wing Hall
Ithaca NY 14853
607-255-2413
607-255-3094
scw2@cornell.edu

PARTICIPANT LIST ** Conference : 1 -- SIGNAL TRANSDUC IN PLANTS
FASEB SUMMER RESEARCH CONFERENCES

Dr. Laura E. Zonia
Biological Sciences
Purdue Univ
1392 LILLY Hall of Life Sci
W Lafayette IN 47907
317-496-1768
317-496-1496
Izonia@bilbo.bio.purdue.edu