Steven R. Scofield

USDA-ARS Research Geneticist
Adjunct Assistant Professor of Agronomy

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EDUCATION

Ph.D. Indiana University, Bloomington - 1985
A.B. Kenyon College, Gambier, OH - 1976

HONORS

Graduated *cum Laude* Kenyon College
Floyd Memorial Plant Science Scholarship 1983 and 1985

RESEARCH EXPERIENCE

Research Geneticist GS13, USDA-ARS, and Adjunct Associate Professor, Purdue University, 8/02–present. Functional genomics approaches to identify gene required for disease resistance in small grain cereals. Promoted to GS14 (7-2006).

Pathogenomics Group Leader, DNA Plant Technology Corporation, Oakland, CA 2001-2002. Engineering broad-spectrum disease resistance in vegetable crops.

Research Fellow, DNA Plant Technology Corporation, Oakland, CA 1999-2001. Engineering broad-spectrum disease resistance in vegetable crops.

Principal Research Scientist, DNA Plant Technology Corporation, Oakland, CA 1997-1999.
Engineering broad-spectrum disease resistance in vegetable crops.

Assistant Research Geneticist, NSF Center for Engineering Plants for Resistance Against Pathogens (CEPRAP) University of California-Davis 1997-1992. Analysis of the molecular basis of specificity in gene-for-gene disease resistance systems.

Postdoctoral Fellow, Sainsbury Laboratory, John Innes Centre, Norwich, England. 1988-1992. Development of effective *Ac-Ds* transposon systems for gene tagging in tomato and Arabidopsis. Analysis of the regulation of *Ac-Ds* transposable elements. Advisor: Jonathan Jones.

Postdoctoral Fellow, Plant Breeding Institute, Cambridge, England. 1985-1988. Molecular analysis of the behavior of the *Antirrhinum* transposon *Tam3* in transgenic tobacco. Advisor: Mike Bevan.

Graduate Student, Indiana University, Bloomington. 1981 – 1985 Molecular isolation of genes encoding the napin and cruciferin embryo-specific storage proteins of *Brassica napus*. Thesis Advisor: Martha Crouch.

GRANTS

Principle Investigator for the project: Development of a virus-induced gene silencing system for genes that contribute to Fusarium head blight resistance." Funded by the USWBSI FY'06 (Total award $53,906)

Principal Investigator for the project: "Promoters to express *Ac* transposase for efficient gene tagging systems." Funded by the USDA Plant Genome Panel 1993 – 1995 (Total award $120,000)

PROFESSIONAL SERVICE

Leader of the Plant-Pathogen Interaction Committee of International Committee for Genomic Research on Wheat Organization (IGROW).

Member of the American Phytopathological Society's Biotechnology Impact Assessment Committee 2005 - 2006.

Member of the US Wheat and Barley Scab Initiative Genetic Engineering and Transformation Research Advisory Committee 2005 – 2007.

Member of 2005 USDA NRI Grant Review Panel for Plant Functional Genomics.

Member of 2000-2001 USDA Grant Review Panel for the Plant-Microbe Associations Program.

Ad-hoc reviewer for NSF-Plant Genome and USDA-NRI grant programs.

Reviewer for: *Plant Cell, Nature Biotechnology, Plant Journal,* and *Plant Physiology.*

PATENTS

"Methods to design and identify new plant disease resistance genes" Non-provisional US patent application, filed June 14, 1999. Inventor: Steven Scofield

"All liquid plant cell culture and selection system" Provisional US patent application. Inventors: Dean Engler, Steve Scofield, Neal Gutterson and Peter Balint-Kurti.

PUBLICATIONS

Scofield, SR, Huang, L., Brandt, A.S. and Gill, B.S. (2005) Development of virus-induced gene silencing system for hexaploid wheat and its use in functional analysis of the *Lr21*-mediated leaf rust resistance pathway. Plant Phys. (138) 2165-2173.

Scofield, S. R., J. M. Anderson, C. F. Crane, S. B. Goodwin, H. W. Ohm, C. E. Williams,T. A. Lohret, and O. R. Crasta. Analysis of the wheat defense transcriptome, pp. 407-410. In Proceedings of the Tenth International Wheat Genetics Symposium, Paestum, Italy, volume 1. 2003. (Conference Proceedings)

Anderson, J. M., C. E. Williams, S. B. Goodwin, **S. R. Scofield**, and H. W. Ohm. Quantitative analysis of wheat defense-gene expression in response to insect, fungal, and viral pests, pp. 323-326. In Proceedings of the Tenth International Wheat Genetics Symposium, Paestum, Italy, volume 1. 2003. (Conference Proceedings)

Scofield, S.R., Tobias, C., Rathjen, J.R., Chang, J.A., Lavelle, D.T., Michelmore, R.W. and Staskawicz, B.J. (1996) The molecular basis of gene-for-gene specificity in bacterial speck disease of tomato. Science 274: 2063-2065.

Salmeron, J.M., Oldroyd, G.E.D., Rommens, C.M.T., **Scofield, S. R**., Kim, H.S., Lavelle, D.T., Dahlbeck, D. and Staskawicz, B. J. (1996). Tomato *Prf* is a member of the leucine-rich repeat class of plant disease resistance genes and lies embedded within the *Pto* kinase cluster. Cell 86: 123-133.

Christian Tobias, John Salmeron, Giles Oldroyd, Caius Rommens, **Steven Scofield**, and Brian Staskawicz Genetic interactions specifying disease resistance in the bacterial speck disease of tomato. In: Biology of Plant Microbe Interactions Vol1. (1996) International Society for Molecular Plant-Microbe Interactions, St. Paul, MN pp 71-76.

Kunze, R., Kuhn, S., Jones, J. D. G., and **Scofield, S. R**. Somatic and germinal activities of maize *Activator* (*Ac*) transposase mutants in transgenic tobacco. (1995) Plant J. 8: 45-54.

Carroll, B. J., Klimyuk, V. I., Thomas, C. M., Bishop, G. J., Harrison, K., **Scofield, S. R**., and Jones, J. D. G. (1995) Germinal transposition of the maize element *Dissociation* from T-DNA loci in tomato. Genetics 139: 407-420.

Lawson, E. J. R., **Scofield, S. R**., Sjodin, C., Jones, J. D. G., and Dean, C. (1994) Modification of the 5' untranslated leader region of the maize *Activator* element leads to increased activity in *Arabidopsis*. Mol. Gen. Genet. 245: 608-615.

Scofield, S. R., Jones, D. A., Harrison, K., and Jones, J. D. G. (1994). Chloroplast targeting of spectinomycin adenyl transferase provides a cell

autonomous marker for monitoring transposon excision in tomato. Mol. Gen. Genet. 244: 189-196.

Yang, C.-H., Carroll, B., **Scofield, S. R**., Jones, J. D. G. and Michelmore, R. (1993) Transactivation of *Ds* elements in plants of lettuce (*Lactuca sativa*). Mol. Gen. Genet. 241: 389-398.

Scofield, S. R., English J. J., and Jones, J. D. G. (1993) High levels of *Ac* transposase expressioninhibit excision of *Ds* in tobacco embryos. Cell 75: 507-517.

Scofield, S. R., Harrison, K., Nurrish, S. J. and Jones, J. D. G. (1992) Promoter fusions to the *Ac* transposase gene confer distinct patterns of somatic and germinal excision of *Ds* in tobacco. Plant Cell 4: 573-582.

Swinburne, J., Balcells, L., **Scofield, S. R**., Jones, J. D. G. and Coupland, G. (1992) Elevated levels of expression of *Ac* transposase mRNA induce high frequencies of *Ds* excision in *Arabidopsis*. Plant Cell 4: 583-595.

Jones, J. D. G., Bishop, G., Harrison, K., Jones, D., Carroll, B. and **Scofield, S. R**. (1992) Use of the maize transposon *Ac* to demonstrate that chimeric genes for resistance to phosphinotricin and spectinomycin confer non cell-autonomous resistance phenotypes in tobacco and tomato seedlings. Transgenic Research 2: 63-78.

Jones, J. D. G., Shlumukov, L., Carland, F., English, J., **Scofield, S. R**., Bishop, G. and Harrison, K. (1992) Effective vectors for transformation, expression of heterologous genes, and assaying transposon excision in transgenic plants. Transgenic Research 1: 285-297.

Bancroft, I., Bhatt, A. M., Sjodin, C., **Scofield, S. R**., Jones, J. D. G. and Dean, C. (1992) Development of an efficient two element transposon tagging system in *Arabidopsis thaliana*. Mol. Gen. Genet. 233: 449-461.

Jones, J. D. G., Bishop, B., Carroll, B. Dickinson, M. English, J. Harrison, K., Jones, D., **Scofield, S. R**., and Thomas, C. M. Prospects for establishing a tomato gene tagging system using the maize transposon *Activator* (*Ac)*. In: Proceedings of the Royal Society of Edinburgh Section B - Biological Sciences, 1992 Vol. 99: 107-119.

Dean C; Sjodin C; Bancroft I; Lawson E; Lister C; **Scofield S**; Jones J. Development of an efficient transposon tagging system in *Arabidopsis thaliana*. Symposia of the Society for Experimental Biology, 1991, 45:63-75.

Smart, C. M., **Scofield, S. R**., Bevan, M. W. and Dyer, T. A. (1991) Delayed leaf senescence in tobacco plants transformed with *tmr*, a gene for cytokinin production in *Agrobacterium*. Plant Cell 3: 647-656.

Haring, M. A., **Scofield, S. R**., Teeuwen-de Vroomen, M. J., Leuring, G. S., NijKamp, H. J.J. and Hille, J. (1991) Novel DNA structures resulting from dTam3 excision in tobacco. Plant Mol. Biol. 17: 995-1004.

Burton, R., Lister, C., **Scofield, S**., Jones, J. and Martin, C. (1990) The mechanism and control of Tam3 transposition. In: Proceedings of NATO Advanced Study Institute - Plant Molecular Biology 1990. pp 17-27.

Scofield, S. R. and Crouch, M. L. (1987) Nucleotide sequence of a member of the napin storage protein family from *Brassica napus*. J. Biol. Chem. 262: 12202-12208.

Simon., A. E., Tenbarge, K. M., **Scofield, S. R**., Finkelstein, R. R. and Crouch, M. L. (1985) Nucleotide sequence of a cDNA clone of *Brassica napus* 12S storage protein shows homology with legumin from *Pisum sativum*. Plant Mol. Biol. 5: 191-201.

Crouch, M. L., Tenbarge, K., Simon, A., Finkelstein, R., **Scofield, S. R**. and Solberg, L. (1985) Storage protein mRNA levels can be regulated by abscisic acid in Brassica embryos. In: Molecular Form and Function of the Plant Genome. Plenum Press pp 555-566.

Scofield, S. R., Chooi, W. Y. (1982) Structure of ribosomes and ribosomal subunits of *Drosophila*. Mol. Gen. Genet. 187: 37-41.

Chooi, W. Y., Macklin, M. D., Leiby, K. R., Hong, T. H., **Scofield, S. R**., Sabatini, L. M. and Burns, D. K. (1982) Purification of *Drosophila* acid ribosomal proteins. Eur. J. Bioch. 127: 199-205.