

BIOGRAPHICAL SKETCH

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NAME Frederick M. Ausubel	POSITION TITLE Molecular Biologist; Professor of Genetics		
eRA COMMONS USER NAME Fausubel			
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
University of Illinois, Urbana, IL	BS	1966	Chemistry
Massachusetts Institute of Technology, Cambridge, MA	PhD	1972	Biology

A: POSITIONS AND AWARDS:

EXPERIENCE/EMPLOYMENT:

- 1966 - 1971: Graduate Student, M.I.T. Purification and properties of bacteriophage lambda integrase.
- 1972 - 1973: Instructor and Research Associate, M.I.T. Genetic analysis of nitrogen fixation genes.
- 1974 - 1975: Research Fellow, Harvard University. Genetic analysis of nitrogen fixation genes.
- 1975 - 1982: Assistant and Associate Professor of Biology, Department of Cellular and Developmental Biology, Harvard University. Molecular-genetic analysis of nitrogen fixation genes.
- 1982 - Professor of Genetics, Harvard Medical School / Molecular Biologist, Massachusetts General Hospital. Molecular genetics of microbial patho-genesis and host defense.

AWARDS:

- Member, National Academy of Sciences, 1994
- Member, National Academy of Microbiology, 2002
- Member, American Academy of Arts and Sciences, 2003

B. SELECTED REFEREED PUBLICATIONS 1995 TO PRESENT OUT OF 267 PUBLICATIONS:

- Rahme, L., E. Stevens, S. Wolfort, J. Shao, R. Tompkins, and F. M. Ausubel (1995) Common virulence factors for bacterial pathogenicity in plants and animals. *Science* **268**:1899-1902.
- Rahme, L.G., M.-W. Tan, L. Le, S.M. Wong, R.G. Tompkins, S.B. Calderwood and F.M. Ausubel (1997) Use of model plant hosts to identify *Pseudomonas aeruginosa* virulence factors. *Proc. Natl. Acad. Sci. USA* **94**:13245-13250.
- Mahajan-Miklos, S., M.-W. Tan, L.G. Rahme and F.M. Ausubel (1999) Molecular mechanisms of bacterial virulence elucidated using a *Pseudomonas aeruginosa*-*Caenorhabditis elegans* pathogenesis model. *Cell* **96**:47-56.
- Tan, M.-W., S. Mahajan-Miklos, and F.M. Ausubel (1999) Killing of *C. elegans* by *P. aeruginosa* used to model mammalian bacterial pathogenesis. *Proc. Natl. Acad. Sci. USA* **96**:715-720.
- Tan, M.-W., L.G. Rahme, J. Sternberg, R.G. Tompkins and F.M. Ausubel. (1999) *Pseudomonas aeruginosa* killing of *Caenorhabditis elegans* used to identify *P. aeruginosa* virulence factors. *Proc. Natl. Acad. Sci. USA* **96**:2408-13.
- Jander, G., L.G. Rahme and F.M. Ausubel (2000) Positive correlation between virulence of *Pseudomonas aeruginosa* mutants in mice and insects. *J. Bacteriol.* **182**:3843-3845.
- Aballay, A., P. Yorgey and F.M. Ausubel (2000) *Salmonella typhimurium* proliferates and establishes a persistent infection in the intestine of *Caenorhabditis elegans*. *Current Biology* **10**:1539-1542.
- Plotnikova, J.M., L.G. Rahme and F.M. Ausubel (2000) Pathogenesis of the human opportunistic pathogen *Pseudomonas aeruginosa* PA14 in Arabidopsis. *Plant Physiol.* **124**:1766-1774.
- Aballay, A. and F.M. Ausubel (2001) Programmed cell death mediated by *ced-3* and *ced-4* protects *Caenorhabditis elegans* from *Salmonella typhimurium*-mediated killing. *Proc. Natl. Acad. Sci. USA* **98**:2735-2739.
- Yorgey, P., L.G. Rahme, M.-W. Tan and F.M. Ausubel (2001) The roles of *mucD* and alginate in the virulence of *Pseudomonas aeruginosa* in plants, nematodes, and mice. *Mol. Microbiol.* **41**:1063-1076.
- Garsin, D.A., C.D. Sifri, E. Mylonakis, X. Qin, K.V. Singh, B.E. Murray, S.B. Calderwood and F.M. Ausubel (2001) A simple model host for identifying gram-positive virulence factors. *Proc. Natl. Acad. Sci. USA* **98**:10892-10897.
- Hendrickson, E.L., J. Plotnikova, S. Mahajan-Miklos, L.G. Rahme and F.M. Ausubel (2001) Differential roles of the *Pseudomonas aeruginosa* PA14 *rpoN* gene in pathogenicity in plants, nematodes, insects and mice. *J. Bacteriol.* **183**:7126-7134.

- Drenkard, E. and F.M. Ausubel (2002) *Pseudomonas* biofilm formation and antibiotic resistance are linked to phenotypic variation. **Nature** 416:740-743.
- Kim, D.H., R. Feinbaum, G. Alloing, F.E. Emerson, D.A. Garsin, H. Inoue, M. Tanaka-Hino, N. Hisamoto, K. Matsumoto, M.-W. Tan and F.M. Ausubel (2002) A conserved p38 MAP kinase pathway in *Caenorhabditis elegans* innate immunity. **Science** 297:623-626.
- Mylonakis, E., F.M. Ausubel, J.R. Perfect, J. Heitman and S.B. Calderwood (2002) Killing of *Caenorhabditis elegans* by *Cryptococcus neoformans* as a model of yeast pathogenesis. **Proc. Natl. Acad. Sci. USA** 99:15675-15680.
- Aballay, A., E. Drenkard, L.R. Hilbun and F.M. Ausubel (2003) *Caenorhabditis elegans* innate immune response triggered by *Salmonella* requires intact LPS and is mediated by a MAPK signaling pathway. **Current Biology** 13:47-52.
- Coleman, F.T., S. Mueschenborn, G. Meluleni, C. Ray, V. Carey, S.O. Vargas, C.L. Cannon, F.M. Ausubel, G.B. Pier (2003) Hypersusceptibility of cystic fibrosis mice to chronic *Pseudomonas aeruginosa* oropharyngeal colonization and lung infection. **Proc. Natl. Acad. Sci. USA** 100:1949-1954.
- Sifri, C.D., J. Begun, F.M. Ausubel and S.B. Calderwood (2003) *Caenorhabditis elegans* as a model host for *Staphylococcus aureus* pathogenesis. **Infection and Immunity** 71:2208-2217.
- Miyata, S., M. Casey, D.W. Frank, F.M. Ausubel and E. Drenkard (2003) Use of the *Galleria mellonella* caterpillar as a model host to study the role of the type III secretion system in *Pseudomonas aeruginosa* pathogenesis. **Infection and Immunity** 71:2404-13.
- Garsin, D.A., J. Villanueva, J. Begun, C.D. Sifri, D.H. Kim, S.B. Calderwood, G.B. Ruvkun and F.M. Ausubel (2003) Long-lived *C. elegans* *daf-2* mutants are resistant to bacterial pathogens. **Science** 300:1921.
- Liberati, N.T., K.A. Fitzgerald, D.H. Kim, R. Feinbaum, D.T. Golenbock, and F.M. Ausubel (2004) Requirement for a conserved Toll/interleukin-1 resistance domain protein in the *Caenorhabditis elegans* immune response. **Proc. Natl. Acad. Sci. USA** 101:6593-6598.
- Tenor, J., B.A. McCormick, F.M. Ausubel, and A. Aballay (2004) *Caenorhabditis elegans*-based screen identified *Salmonella* virulence factors required for conserved host-pathogen interactions. **Current Biology** 14:1018-1024.
- Kim, D.H., N.T. Liberati, T. Mizuno, H. Inoue, N. Hisamoto, K. Matsumoto and F.M. Ausubel (2004) Integration of *Caenorhabditis elegans* MAPK pathways mediating immunity and stress resistance by MEK-1 MAPK kinase and VHP-1 MAPK phosphatase. **Proc. Natl. Acad. Sci. USA** 101:10990-10994.
- Moy, T.I., E. Mylonakis, S.B. Calderwood and F.M. Ausubel (2004) Cytotoxicity from hydrogen peroxide produced by *Enterococcus faecium*. **Infection and Immunity** 72:4512-4520.
- Garsin, D.A., J. Urbach, J.C. Huguet-Tapia, J.E. Peters and F.M. Ausubel (2004) Construction of an *Enterococcus faecalis* Tn917-mediated gene disruption library offers insight into Tn917 insertion patterns. **J. Bacteriol.** 186:7280-7289.
- Begun, J., C.D. Sifri, S. Goldman, S.B. Calderwood and F.M. Ausubel (2005) *Staphylococcus aureus* virulence factors identified using a high throughput *Caenorhabditis elegans* killing model. **Infection and Immunity** 73:872-877.
- Mylonakis, E., R. Moreno, J.B. El Khoury, A. Idnurm, J. Heitman, S.B. Calderwood, F.M. Ausubel and A. Diener (2005). *Galleria mellonella* as a model system to study *Cryptococcus neoformans* pathogenesis. **Infection and Immunity** 73:3842-3850.
- Liberati, N.T., J.M. Urbach, S. Miyata, D.G. Lee, E. Drenkard, G. Wu, J. Villanueva, T. Wei, and F.M. Ausubel (2006) An ordered non-redundant library of *Pseudomonas aeruginosa* strain PA14 transposon insertion mutants. **Proc. Natl. Acad. Sci. USA** 103: 2833-2838.
- Moy, T.I., A.R. Ball, Z. Anklesaria, G. Casadei, K. Lewis and F.M. Ausubel (2006). Identification of novel antimicrobials using a live-animal infection model. **Proc. Natl. Acad. Sci. USA** 103:10414-10419.
- Troemel, E.R., S.W. Chu, V. Reinke, S.S. Lee, F.M. Ausubel and D.H. Kim (2006) p38 MAPK regulates expression of immune response genes and contributes to longevity in *C. elegans*. **PLoS Genetics** 2:e183. Doi:10.1371/journal.pgen.0020183.
- Ball, A.R., G. Casadei, S. Samosorn, J.B. Bremner, F.M. Ausubel, T.I. Moy, K. Lewis (2006) Conjugating berberine to an MDR pump inhibitor creates an effective antimicrobial. **ACS Chemical Biology**, 1:594-600.
- Lee, D.G., J.M. Urbach, G. Wu, N.T. Liberati, R. Feinbaum, S. Miyata, L.T. Diggins, J. He, M. Saucier, E. Deziel, L. Friedman, L. Li, G. Grills, K. Montgomery, R. Kucherlapati, L.G. Rahme and F.M. Ausubel. (2006) Genomic analysis reveals that *Pseudomonas aeruginosa* virulence is combinatorial. **Genome Biol.** 7:R90. <http://genomebiology.com/2006/7/10/R90>.
- Breger, J., G. Aperis, B.B. Fuchs, T.I. Moy, F.M. Ausubel and E. Mylonakis (2007) Antifungal chemical compounds identified using a *C. elegans* pathogenicity assay. **PLoS Pathogens** 3:e18. doi:10.1371/journal.ppat.0030018.
- Begun, J., J.M. Gaiani, H. Rohde, D. Mack, S.B. Calderwood, F.M. Ausubel and C.D. Sifri (2007) Staphylococcal biofilm exopolysaccharide protects against *Caenorhabditis elegans* immune defenses. **PLoS Pathogens**, in press.