ROBERT M. ALBA, PhD

CONTACT
rob.alba@oregonstate.edu
Google Scholar LinkedIn

EDUCATION
Postdoctoral Research, Cornell University (2002 – 2007)
PhD, Botany, University of Georgia (1998)
BA, Biology, University of California at Santa Cruz (1990)

PROFESSIONAL EXPERIENCE
Forest Biotechnology Program Manager, Oregon State University (2024 – present)
- Manager of APHIS regulatory permits
- Budget manager for research grants totaling over $5M
- Research administration

Founder & Primary Consultant, Alba Crop Genomics LLC (2016 – present)
- Data scientist
- Genome assembly and comparative genomics
- Collaboration project manager

Founder & Lead Scientist, Firefly Extracts (2018 – 2023)
- Extraction and purification of high-value cannabinoids
- Focused on CBD formulations that target health & wellness
- Managed team of 5 employees

Head of Agricultural Sciences, Bowery Farming Inc (2017 – 2018)
- Plant physiology
- High-throughput phenotyping
- Crop yield optimization

Senior Scientist, Laboratory of Dr. Todd C. Mockler (2014 – 2015)
- Drought stress physiology
- High-throughput phenotyping

Data Science Lead, Monsanto Company (2007 – 2015)
- Phenotype-to-genotype associations
- Functional genomics
- Crop composition

Senior Research Associate, Cornell University (2002 – 2007)
- Fruit quality improvement
- Transcriptome profiling
- Bioinformatics

HONORS & AWARDS
1st Place, CBD Vape Cartridges (2022 Oregon Growers Cup)
ILSI International Food Biotechnology Committee's Recognition Award (2012)
Monsanto Reggie Award – Best Performance, Existing International , Products
(2010) BTI Lawrence Bogorad Molecular Plant Biology Award (2004)
Wilbur Duncan Award for Outstanding Graduate Student in Botany (1997)
UGA Excellence in Teaching Award (1993)
UGA Outstanding TA Award (1992)
Peer-Selected Commencement Speaker, Crown College, UC-Santa Cruz (1990)

COMPUTER PROGRAMMING CERTIFICATIONS
The Data Scientist's Toolbox (2016)R Programming (2016), Bioinformatics (2013), Unix Fundamentals (2013)

PATENTS

MODIFIED PLANTS WITH ENHANCED TRAITS. Pub. No.: US 2020/0362360 A1. Pub. Date: Nov. 19, 2020. Appl. No. 16/765,867. PCT Filed: Nov. 21, 2018. PCT No.: PCT/US2018/062238.

GRANTS

Engineering drought-tolerant pennycress via loss-of-function alleles observed in an aridity extremophile, Joint Genome Institute Community Science Program, Co-PI (2024)

BluePippen Size-Selection System to Facilitate PacBio Sequencing, $17,000; PI (2015)

The *Brachypodium* ENCODE Project – From DNA sequence to physiological function: Predicting physiological responses in grasses to facilitate engineering of biofuel crops, $1,500,000; Co-PI (2014)

NSF Early CAREER Award, $672,000; PI (2002; I declined this grant due to my shift away from a teaching career)

COMMUNITY SERVICE

Associate Editor, *BMC Genomics* (2013 – 2014)

Bioinformatics Advisory Board, Fontbonne University (2013 – 2016)

Digital Future Users Group, American Society of Plant Biologists (2013 – 2016)

Chair, Crop Composition Database Task Force, International Life Sciences Institute (2010)

PUBLICATIONS

Gapper N, **Alba R**, Giovannoni J (2014). Novel insights into the regulation of ethylene biosynthesis/action: Protein turnover by a ripening-related FBOX protein in tomato. *Acta Horticulturae*. **1048**:170.

de Vega-Bartol JJ, Simões M, Lorenz WW, Rodrigues AS, **Alba R**, Dean JFD, Miguel CM (2013). Transcriptomic analysis highlights epigenetic and transcriptional regulation during zygotic embryo development of *Pinus pinaster*. *BMC Plant Biology* **13**:123.

Michael T, **Alba R** (2012). The tomato genome fleshed out. *Nature Biotech.* **30**:1.

Osorio S[1], **Alba R[1]**, Nikoloski Z, Kochevenko A, Fernie AR, Giovannoni J (2012). Integrative comparative analyses of transcript and metabolite profiles from pepper and tomato ripening and development stages uncovers species-specific patterns of network regulatory behaviour. *Plant Physiol.* **159**:1713.

Rohrmann J, Tohge T, **Alba R**, Osorio S, Caldana C, McQuinn R, Arvidsson S, van der Merwe MJ, Riaño-Pachó DM, Mueller-Roeber B, Fei Z, Nunes-Nesi A, Giovannoni JJ, Fernie AR (2011). Combined transcription factor profiling, microarray analysis, and metabolite profiling reveals the transcriptional control of metabolic shifts occurring during tomato fruit development. *Plant J.* **68**:999.

Osorio S[1], **Alba R[1]**, Damascenoa CMB, Lopez-Casado G, Lohse M, Inés Zanor M, Tohge T, Usadel B, Rose JKC, Fei Z, Giovannoni J, Fernie AR (2011). Systems biology of tomato fruit development: Combined transcript, protein and metabolite analysis of tomato transcription factor (*nor, rin*) and ethylene receptor (*Nr*) mutants reveal novel regulatory interactions. *Plant Physiol.* **157**:405.

Lorenz WW, **Alba R**, Yu Y-S, Bordeaux JM, Simões M, Dean JFD (2011). Microarray analysis and scale-free gene networks identify candidate regulators in drought-stressed roots of loblolly pine (*P. taeda* L.). *BMC Genomics*. **12**:264.

Fei Z, Joung J-G, Tang X, Zheng Y, Huang M, Lee JM, McQuinn R, Tieman DM, **Alba R**, Klee HJ, Giovannoni JJ (2011). Tomato functional genomics database (TFGD): A comprehensive resource and analysis package for tomato functional genomics. *Nucl. Acids Res.* **39**:D1156.

Chung M-Y, Vrebalov J, **Alba R**, Lee J, McQuinn R, Chung J-D, Klein P, Giovannoni J (2010). A tomato (*Solanum lycopersicum*) APETALA2/ERF gene, *Sl*AP2a, is a negative regulator of fruit ripening. *Plant J*. **64**:936.

Costa F, **Alba R**, Schouten H, Soglio V, Gianfranceschi L, Serra S, Musacchi S, Sansavini S, Costa G, Giovannoni J (2010). Use of homologous and heterologous gene expression profiling tools to characterize transcription dynamics during apple fruit maturation and ripening. *BMC Plant Biol*. **10**:229.

Alba R, Phillips A, Mackie S, Gillikin N, Maxwell C, Brune P, Ridley W, Fitzpatrick J, Levine M, Harris S (2010). Improvements to the International Life Sciences Institute crop composition database. *J. Food Compos. Anal*. **23**:741.

Costa F, **Alba R**, Soglio V, Schouten HJ, Gianfranceschi L, Costa G, Sansavini S, Giovannoni J (2009). Comparative apple-tomato genomics to unravel the 1-MCP effect on apple maturation and ripening. XI *International Symposium on Plant Bioregulators in Fruit Production*. **884**:95.

Janssen B, Thodey K, Schaffer R, **Alba R**, Balakrishnan L, Bishop R, Bowen J, Crowhurst R, Gleave A, Ledger S, McArtney S, Pichler F, Snowden K, Ward S (2008). Global gene expression analysis of apple fruit development from the floral bud to ripe fruit. *BMC Plant Biol*. **8**:16.

Costa F, Costa G, Sansavini S, Soglio V, Gianfranceschi L, Schouten HJ, **Alba R**, Giovannoni J (2007). Heterologous

comparative genomics to identify candidate genes impacting fruit quality in apple (malus x domestica borkh.). *XII EUCARPIA Symposium on Fruit Breeding and Genetics*. **814**:517.

Harbut R, Pritts M, **Alba R** (2007). A century of strawberry breeding: A photosynthetic evaluation. In *Proceedings of the 2007 North American Strawberry Symposium* (eds. F Takeda, D Handley, E Poling), pp 18.

Fei Z, Tang X, **Alba R**, Giovannoni J (2006). Tomato expression database (TED): A suite of data presentation and analysis tools. *Nucl. Acids Res.* **34**:766.

Alba R, Payton P, Fei Z, McQuinn R, Debbie P, Martin G, Tanksley S, Giovannoni J (2005). Transcriptome and selected metabolite analyses reveal multiple points of ethylene control during tomato fruit development. *Plant Cell*. **17**:2954.

Alba R, Fei Z, Payton P, Liu Y, Moore S, Debbie P, Cohn J, D'Ascenzo M, Gordon J, Rose J, Martin G, Tanksley S, Bouzayen M, Jahn M, Giovannoni J (2004). ESTs, cDNA microarrays, and gene expression profiling: Tools for dissecting plant physiology and development. *Plant J.* **39**:697.

Fei Z, Tang X, **Alba R**, White J, Ronning C, Martin G, Tanksley S, Giovannoni J (2004). Comprehensive EST analysis of tomato and comparative genomics of fruit ripening. *Plant J.* **40**:47

Payton P, **Alba R**, Moore S (2003). Gene expression profiling. In: *Handbook of Plant Biotechnology* (H Klee, P Christou, eds.). John Wiley and Sons, Ltd.

Fei Z, Tang X, **Alba R**, Payton P, Giovannoni J (2003). Tomato expression database (TED): An interactive management tool for tomato expression profiling data. *Proc. Comp. Sys. Bioinform.* **03**:424.

Adams-Phillips L, **Alba R**, Barry C, Giovannoni J (2002). Genomics of ethylene signal transduction in tomato. In: *Biology and Biotechnology of the Plant Hormone Ethylene* (M Vendrel, ed.). Kluwer Publishers, pp 131.

Alba R, Cordonnier-Pratt M-M, Pratt L (2000). Fruit-localized phytochromes regulate lycopene accumulation independently of ethylene production in tomatoes. *Plant Physiol.* **123**:363.

Alba R, Kelmenson P, Cordonnier-Pratt M-M, Pratt L (2000). The phytochrome gene family in tomato and the rapid differential evolution of this family in angiosperms. *Mol. Biol. Evol.* **17**:362.

Alba R, Valenzano C, Kays S, Cordonnier-Pratt M-M, Pratt L (1999). Genetic manipulation of phytochromes in tomato: A novel approach to crop improvement. *Acta Hort.* **487**:93.

Pratt L, Cordonnier-Pratt M-M, Kelmenson P, Lazarova G, Kubota T, **Alba R** (1997). The phytochrome gene family in tomato (*Solanum lycopersicum* L.). *Plant Cell Environ.* **20**:672.

Pratt L, Cordonnier-Pratt M-M, Hauser B, **Alba R**, Kelmenson P, Kendrick R, Matsui M, Lazarova G, Kubota T, Frances S, Szell M, Koornneef M, van Tuinen A, Kerckhoffs L (1996). Phytochrome family and functions in tomato. In: *Proc Intl Congr Photobio*, Vienna.

Côté F, Cheong J-J, **Alba R**, Hahn M (1995). Characterization of binding proteins that recognize oligoglucoside elicitors of phytoalexin accumulation in soybean. *Physiol. Plant.* **93**:401.

Hahn M, Cheong J-J, **Alba R**, Côté F (1994). Characterization of hepta-β-glucoside elicitor-binding protein(s) in soybean. *Biochem. Soc. Trans.* **22**:408.

Cheong J-J, **Alba R**, Côté F, Enkerli J, Hahn M (1993). Solubilization of functional plasma membrane-localized hepta-β-glucoside elicitor-binding proteins from soybean. *Plant Physiol.* **103**:1173.

Hahn M, Cheong J-J, **Alba R**, Enkerli J, Côté F (1993). Oligosaccharide elicitors: Structures and recognition. In: *Mechanisms of Plant Defense Responses* (B Fritig, M Legrand, eds.). Kluwer Academic Publishers, pp 99.

Hahn M, Cheong J-J, **Alba R**, Côté F (1993). Characterization of glucan elicitor binding protein(s) from soybean. In: *Molecular Botany – Signals and the Environment* (D Bowles, P Gilmartin, J Knox, G Lunt, eds). Portland Press Ltd., pp 101.

Hahn M, Cheong J-J, **Alba R**, Côté F (1993). Oligosaccharide elicitors: Structures and signal transduction. In: *Plant Signals in Interactions with Other Organisms* (J Schultz, I Raskin, eds). American Society of Plant Physiologists Publishing, pp 24.

Hahn M, Cheong J-J, **Alba R**, Côté F (1993). Signal perception in plants: Hepta-β-glucoside elicitor binding protein(s) in soybean. In: *Cellular Communication in Plants* (R Amasino, ed.). Plenum Publ., pp 7.

Hahn M, Cheong J-J, **Alba R**, O'Neill M, Côté F (1992). Structure and perception of oligosaccharin signals in plants. In: *Proceedings of the Plant Growth Regulator Society of America* (R Carlson, ed.), pp. 303.

[1]Co-first authors