

Assoc. Prof. UTKU AVCI

Personal Information

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International Researcher IDs

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Education Information

Doctorate, North Carolina State University, College Of Agriculture And Life Sciences, United States Of America 2003 - 2007

Undergraduate, Karadeniz Technical University, Fen-Edebiyat Fakültesi, Biyoloji, Turkey 1996 - 2000

Foreign Languages

English, C1 Advanced

Dissertations

Doctorate, Electron Microscopy Complements Genetic Manipulation for Understanding Xylem Development, North Carolina State University, College Of Agricultural And Life Sciences, Crop Science, 2007

Research Areas

Life Sciences, Plant Biology, Histological and Cytological of Plant Tissues, Plant Growth and Development, Biochemistry, Plant Biochemistry, Bioinformatics, Biodiversity, Biotechnology, Plant Biotechnology, Industrial Biotechnology, Microbiology, Immunology, Molecular Biology and Genetics, Plant Molecular Genetics, Natural Sciences

Academic Titles / Tasks

Associate Professor, Recep Tayyip Erdogan University, Mühendislik Fakültesi, Biyomühendislik Bölümü, 2019 - Continues

Assistant Professor, Recep Tayyip Erdogan University, Mühendislik Fakültesi, Biyomühendislik, 2018 - Continues

Assistant Professor, Recep Tayyip Erdogan University, Mühendislik Fakültesi, Biyomühendislik, 2015 - 2018

Other, University of Georgia, Ccrc, Complex Carbohydrate Research Center, 2008 - 2015

Published journal articles indexed by SCI, SSCI, and AHCI

- I. Effects of Extractive Ammonia Pretreatment on the Ultrastructure and Glycan Composition of Corn

Stover

Avci U, Zhou X, Pattathil S, Sousa L. d. C., Hahn M. G., Dale B., Xu Y., Balan V.
FRONTIERS IN ENERGY RESEARCH, vol.7, 2019 (SCI-Expanded)

- II. **Desirable plant cell wall traits for higher-quality miscanthus lignocellulosic biomass**
da Costa R. M. F., Pattathil S., Avci U., Winters A., Hahn M. G., Bosch M.
BIOTECHNOLOGY FOR BIOFUELS, vol.12, 2019 (SCI-Expanded)
- III. **Changes in the abundance of cell wall apiogalacturonan and xylogalacturonan and conservation of rhamnogalacturonan II structure during the diversification of the Lemnoideae**
Avci U., PENA M. J., O'NEILL M. A.
PLANTA, vol.247, no.4, pp.953-971, 2018 (SCI-Expanded)
- IV. **Immunolocalization of cell wall carbohydrate epitopes in seaweeds: presence of land plant epitopes in *Fucus vesiculosus* L. (Phaeophyceae)**
RAIMUNDO S. C., Avci U., HOPPER C., PATTATHIL S., HAHN M. G., POPPER Z. A.
PLANTA, vol.243, no.2, pp.337-354, 2016 (SCI-Expanded)
- V. **Next-generation ammonia pretreatment enhances cellulosic biofuel production**
Sousa L. d. C., Jin M., Chundawat S. P. S., BOKADE V., TANG X., AZARPIRA A., LU F., Avci U., Humpula J., Uppugundla N., et al.
ENERGY & ENVIRONMENTAL SCIENCE, vol.9, no.4, pp.1215-1223, 2016 (SCI-Expanded)
- VI. **Plant biomass: insights from imaging cell walls using molecular probes**
Avci U.
TURKISH JOURNAL OF BOTANY, vol.40, no.6, pp.561-565, 2016 (SCI-Expanded)
- VII. **Loss of function of folylpolyglutamate synthetase 1 reduces lignin content and improves cell wall digestibility in *Arabidopsis***
SRIVASTAVA A. C., CHEN F., RAY T., PATTATHIL S., PENA M. J., Avci U., LI H., HUHMANN D. V., BACKE J., URBANOWICZ B., et al.
BIOTECHNOLOGY FOR BIOFUELS, vol.8, 2015 (SCI-Expanded)
- VIII. **Xyloglucan, galactomannan, glucuronoxylan, and rhamnogalacturonan I do not have identical structures in soybean root and root hair cell walls**
MUSZYNSKI A., O'NEILL M. A., RAMASAMY E., PATTATHIL S., Avci U., PENA M. J., LIBAULT M., HOSSAIN M. S., BRECHENMACHER L., YORK W. S., et al.
PLANTA, vol.242, no.5, pp.1123-1138, 2015 (SCI-Expanded)
- IX. **Activation of miR165b represses AtHB15 expression and induces pith secondary wall development in *Arabidopsis***
Du Q., Avci U., LI S., GALLEGO-GIRALDO L., PATTATHIL S., Qi L., HAHN M. G., Wang H.
PLANT JOURNAL, vol.83, no.3, pp.388-400, 2015 (SCI-Expanded)
- X. **Pathways of bacterial invasion and watermelon seed infection by *Acidovorax citrulli***
DUTTA B., HA Y., LESSL J. T., Avci U., SPARKS A. C., Johnson K. L., WALCOTT R. R.
PLANT PATHOLOGY, vol.64, no.3, pp.537-544, 2015 (SCI-Expanded)
- XI. **Galactose-Depleted Xyloglucan Is Dysfunctional and Leads to Dwarfism in *Arabidopsis***
KONG Y., PENA M. J., Renna L., Avci U., PATTATHIL S., TUOMIVAARA S. T., Li X., Reiter W., Brandizzi F., HAHN M. G., et al.
PLANT PHYSIOLOGY, vol.167, no.4, pp.1296-1324, 2015 (SCI-Expanded)
- XII. **Changes in Cell Wall Properties Coincide with Overexpression of Extensin Fusion Proteins in Suspension Cultured Tobacco Cells**
TAN L., PU Y., PATTATHIL S., Avci U., QIAN J., Arter A., Chen L., HAHN M. G., RAGAUSKAS A. J., Kieliszewski M. J.
PLOS ONE, vol.9, no.12, 2014 (SCI-Expanded)
- XIII. **Transmission of *Pantoea ananatis* and P-agglomerans, Causal Agents of Center Rot of Onion (*Allium cepa*), by Onion Thrips (*Thrips tabaci*) Through Feces**
DUTTA B., BARMAN A. K., SRINIVASAN R., Avci U., ULLMAN D. E., LANGSTON D. B., GITAITIS R. D.
PHYTOPATHOLOGY, vol.104, no.8, pp.812-819, 2014 (SCI-Expanded)
- XIV. **Loss of *Arabidopsis* GAUT12/IRX8 causes anther indehiscence and leads to reduced G lignin**

associated with altered matrix polysaccharide deposition

HAO Z., Avci U., TAN L., ZHU X., GLUSHKA J., PATTATHIL S., EBERHARD S., SHOLES T., Rothstein G. E., LUKOWITZ W., et al.

FRONTIERS IN PLANT SCIENCE, vol.5, 2014 (SCI-Expanded)

- XV. **Understanding How the Complex Molecular Architecture of Mannan-degrading Hydrolases Contributes to Plant Cell Wall Degradation**
ZHANG X., ROGOWSKI A., ZHAO L., HAHN M. G., Avci U., Knox J. P., GILBERT H. J.
JOURNAL OF BIOLOGICAL CHEMISTRY, vol.289, no.4, pp.2002-2012, 2014 (SCI-Expanded)
- XVI. **Cotton Fiber Cell Walls of *Gossypium hirsutum* and *Gossypium barbadense* Have Differences Related to Loosely-Bound Xyloglucan**
Avci U., PATTATHIL S., SINGH B., BROWN V. L., HAHN M. G., Haigler C. H.
PLOS ONE, vol.8, no.2, 2013 (SCI-Expanded)
- XVII. **An Arabidopsis Cell Wall Proteoglycan Consists of Pectin and Arabinoxylan Covalently Linked to an Arabinogalactan Protein**
TAN L., EBERHARD S., PATTATHIL S., WARDER C., GLUSHKA J., Yuan C., HAO Z., ZHU X., Avci U., MILLER J. S., et al.
PLANT CELL, vol.25, no.1, pp.270-287, 2013 (SCI-Expanded)
- XVIII. **4-O-methylation of glucuronic acid in Arabidopsis glucuronoxylan is catalyzed by a domain of unknown function family 579 protein**
URBANOWICZ B. R., PENA M. J., RATNAPARKHE S., Avci U., BACKE J., STEET H. F., FOSTON M., LI H., O'NEILL M. A., RAGAUSKAS A. J., et al.
PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA, vol.109, no.35, pp.14253-14258, 2012 (SCI-Expanded)
- XIX. **Mutations in Multiple XXT Genes of Arabidopsis Reveal the Complexity of Xyloglucan Biosynthesis**
Zabotina O. A., Avci U., Cavalier D., PATTATHIL S., Chou Y., EBERHARD S., Danhof L., Keegstra K., HAHN M. G.
PLANT PHYSIOLOGY, vol.159, no.4, pp.1367-1384, 2012 (SCI-Expanded)
- XX. **Location of Acidovorax citrulli in Infested Watermelon Seeds Is Influenced by the Pathway of Bacterial Invasion**
DUTTA B., Avci U., HAHN M. G., WALCOTT R. R.
PHYTOPATHOLOGY, vol.102, no.5, pp.461-468, 2012 (SCI-Expanded)
- XXI. **The ability of land plants to synthesize glucuronoxylans predates the evolution of tracheophytes**
KULKARNI A. R., PENA M. J., Avci U., MAZUMDER K., URBANOWICZ B. R., PATTATHIL S., YIN Y., O'NEILL M. A., Roberts A. W., HAHN M. G., et al.
GLYCOBIOLOGY, vol.22, no.3, pp.439-451, 2012 (SCI-Expanded)
- XXII. **Application of monoclonal antibodies to investigate plant cell wall deconstruction for biofuels production**
DEMARTINI J. D., PATTATHIL S., Avci U., SZEKALSKI K., MAZUMDER K., HAHN M. G., WYMAN C. E.
ENERGY & ENVIRONMENTAL SCIENCE, vol.4, no.10, pp.4332-4339, 2011 (SCI-Expanded)
- XXIII. **Perturbation of Wood Cellulose Synthesis Causes Pleiotropic Effects in Transgenic Aspen**
Joshi C. P., Thammannagowda S., Fujino T., Gou J., Avci U., Haigler C. H., McDonnell L. M., Mansfield S. D., MENGESHA B., CARPITA N. C., et al.
MOLECULAR PLANT, vol.4, no.2, pp.331-345, 2011 (SCI-Expanded)
- XXIV. **Mutation of WRKY transcription factors initiates pith secondary wall formation and increases stem biomass in dicotyledonous plants**
WANG H., Avci U., NAKASHIMA J., HAHN M. G., CHEN F., DIXON R. A.
PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA, vol.107, no.51, pp.22338-22343, 2010 (SCI-Expanded)
- XXV. **A Comprehensive Toolkit of Plant Cell Wall Glycan-Directed Monoclonal Antibodies**
PATTATHIL S., Avci U., BALDWIN D., SWENNES A. G., MCGILL J. A., POPPER Z., BOOTTEN T., ALBERT A., DAVIS R. H., CHENNAREDDY C., et al.
PLANT PHYSIOLOGY, vol.153, no.2, pp.514-525, 2010 (SCI-Expanded)
- XXVI. **Monoclonal antibodies against diverse xyloglucan structures as probes for plant cell wall chemistry**

and ultrastructure

TUOMIVAARA S., Avci U., O'NEILL M., HAHN M. G., YORK W. S.

FASEB JOURNAL, vol.24, 2010 (SCI-Expanded)

XXVII. The Bioenergy Science Center (BESC) and Overcoming Recalcitrance of Populus to Biofuel Production

Mohnen D., Biswal A., Hao Zhangying H. Z., Sholes T., Gelineo-Albersheim I., Hunt K., Darvill A., Hahn M., Kong Yingzhen K. Y., Zhou Gongke Z. G., et al.

IN VITRO CELLULAR & DEVELOPMENTAL BIOLOGY-ANIMAL, vol.46, 2010 (SCI-Expanded)

XXVIII. Two Poplar Glycosyltransferase Genes, PdGATL1.1 and PdGATL1.2, Are Functional Orthologs to PARVUS/AtGATL1 in Arabidopsis

KONG Y., ZHOU G., Avci U., GU X., JONES C., YIN Y., XU Y., HAHN M. G.

MOLECULAR PLANT, vol.2, no.5, pp.1040-1050, 2009 (SCI-Expanded)

XXIX. Rapid Microwave Processing of Winter Cereals for Histology Allows Identification of Separate Zones of Freezing Injury in the Crown

LIVINGSTON D. P., TUONG T. D., Haigler C. H., Avci U., TALLURY S. P.

CROP SCIENCE, vol.49, no.5, pp.1837-1842, 2009 (SCI-Expanded)

XXX. A Specialized Outer Layer of the Primary Cell Wall Joins Elongating Cotton Fibers into Tissue-Like Bundles

Singh B., Avci U., INWOOD S. E. E., GRIMSON M. J., Landgraf J., MOHNEN D., Sorensen I., Wilkerson C. G., Willats W. G. T., Haigler C. H.

PLANT PHYSIOLOGY, vol.150, no.2, pp.684-699, 2009 (SCI-Expanded)

XXXI. Cysteine proteases XCP1 and XCP2 aid micro-autolysis within the intact central vacuole during xylogenesis in Arabidopsis roots

Avci U., PETZOLD H. E., ISMAIL I. O., BEERS E. P., Haigler C. H.

PLANT JOURNAL, vol.56, no.2, pp.303-315, 2008 (SCI-Expanded)

XXXII. XND1, a member of the NAC domain family in Arabidopsis thaliana, negatively regulates lignocellulose synthesis and programmed cell death in xylem

ZHAO C., Avci U., GRANT E. H., Haigler C. H., BEERS E. P.

PLANT JOURNAL, vol.53, no.3, pp.425-436, 2008 (SCI-Expanded)

Articles Published in Other Journals

I. Yüksek Frekanslı Elektromanyetik Radyasyon ve Bitki Gelişimi

AVCI U.

Recep Tayyip Erdoğan Üniversitesi Fen ve Mühendislik Bilimleri Dergisi, vol.1, no.1, pp.68-73, 2020 (Peer-Reviewed Journal)

Books & Book Chapters

I. A Flat Embedding Method to Orient Thin Biological Samples for Sectioning

AVCI U., Nakashima J.

in: Plant Gravitropism, Elison B. Blancaflor, Editor, Springer New York, New York, pp.13-22, 2015

II. A Flat Embedding Method to Orient Thin Biological Samples for Sectioning

AVCI U., Nakashima J.

in: Plant Gravitropism, Elison B. Blancaflor, Editor, Springer New York, pp.13-22, 2015

III. Immunological Approaches to Plant Cell Wall and Biomass Characterization: Glycome Profiling

Pattathil S., AVCI U., Hahn M. G.

in: Biomass Conversion Methods and Protocols, Michael E. Himmel, Editor, Humana Press, New York, pp.61-72, 2012

- IV. **Immunological Approaches to Plant Cell Wall and Biomass Characterization: Immunolocalization of Glycan Epitopes**
 AVCI U., Pattathil S., Hahn M. G.
 in: Biomass Conversion Methods and Protocols, Michael E Himmel, Editor, Humana Press, New York, pp.73-82, 2012
- V. **From Plant Cell Walls to Biofuels—Arabidopsis thaliana Model**
 Pattathil S., AVCI U., Biswal A., Badhan A. K.
 in: Handbook of Bioenergy Crop Plants, Chittaranjan Kole, Chandrashekhar P. Joshi, David R. Shonnard, Editor, Crc Press, Boca Raton, pp.75-97, 2012

Refereed Congress / Symposium Publications in Proceedings

- I. **Diversity of Plant Cell Walls**
 AVCI U.
 Eurasian Congress on Molecular Biotechnology, 21 - 23 September 2019
- II. **Illuminating Plant Cell Walls**
 AVCI U.
 International Congress on Biological and Medical Science, 31 October - 03 November 2018
- III. **Imaging cell walls of a model grass Brachypodium distachyon**
 AVCI U.
 22nd edition of International Conference on Biotechnology, 16 - 17 April 2018
- IV. **Imaging plant cell walls by using molecular probes**
 AVCI U.
 International Conference on Technology, Engineering and Science, 26 November - 29 December 2017
- V. **Insights from imaging plant cell walls by using molecular probes**
 AVCI U.
 International Conference on Biological Sciences, Konya, Turkey, 21 - 23 October 2016
- VI. **The cell walls of Spirodela polyrhiza greater duckweed Polysaccharide composition and distribution**
 AVCI U., PATTATHIL S., Michael G H., ONEILL M. A.
 Gordon Research Conference on Plant Cell Walls, Waltham, 12 - 17 July 2015
- VII. **Effects of extractive ammonia pretreatment on the ultrastructure and glycan composition of plant cell walls**
 AVCI U., Leonardo da Costa S., Sivakumar P., Venkatesh B., Michael G H., Bruce E D.
 37th Symposium on Biotechnology for Fuels and Chemicals, San Diego, United States Of America, 27 - 30 April 2015
- VIII. **Characterization of monoclonal antibodies against xylan epitopes**
 AVCI U., Pattathil S., Clay R., Mazumder K., York W., Hahn M.
 The XIIIth Cell Wall Meeting, Nantes, France, 7 - 12 July 2013
- IX. **Insights into plant cell wall structure and dynamics using glycan directed monoclonal antibodies**
 AVCI U.
 5th Annual BioEnergy Science Retreat, Chattanooga, United States Of America, 18 July 2011
- X. **Distribution of cell wall glycans in switchgrass Panicum virgatum**
 AVCI U.
 33rd Symposium on Biotechnology for Fuels and Chemicals, 02 May 2011

Metrics

Publication: 48

Citation (WoS): 1695

Citation (Scopus): 1784

H-Index (WoS): 20

H-Index (Scopus): 20

Congress and Symposium Activities

Gordon Research Conference on Plant Cell Walls, Attendee, Massachusetts, United States Of America, 2015

37th Symposium on Biotechnology for Fuels and Chemicals, Attendee, California, United States Of America, 2015

The XIIIth Cell Wall Meeting, Attendee, Nantes, France, 2013

Gordon Research Conference on Plant Cell Walls, Attendee, Maine, United States Of America, 2012

33rd Symposium on Biotechnology for Fuels and Chemicals, Attendee, Washington, United States Of America, 2011

XII Cell Wall Meeting, Attendee, Porto, Portugal, 2010