

## Prof. UTKU AVCI

### Personal Information

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### International Researcher IDs

ORCID: 0000-0001-5355-9906

Yoksis Researcher ID: 240556

### Education Information

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

Undergraduate, Karadeniz Technical University, Turkey 1997 - 2000

### Research Areas

Agricultural Sciences, Agriculture, Life Sciences, Plant Biology, Biochemistry, Biotechnology, Microbiology, Molecular Biology and Genetics, Natural Sciences

### Academic Titles / Tasks

Professor, Eskisehir Osmangazi University, ZİRAAT FAKÜLTESİ, TARIMSAL BİYOTEKNOLOJİ BÖLÜMÜ, 2023 - Continues  
Associate Professor, Eskisehir Osmangazi University, ZİRAAT FAKÜLTESİ, TARIMSAL BİYOTEKNOLOJİ BÖLÜMÜ, 2021 - 2023

Associate Professor, Recep Tayyip Erdogan University, Mühendislik Fakültesi, Biyomühendislik Bölümü, 2019 - 2021

Assistant Professor, Recep Tayyip Erdogan University, Mühendislik Fakültesi, Biyomühendislik Bölümü, 2015 - 2019

### Academic and Administrative Experience

Head of Department, Recep Tayyip Erdogan University, Mühendislik Ve Mimarlık Fakültesi, Biyomühendislik, 2018 - 2020

### Published journal articles indexed by SCI, SSCI, and AHCI

- I. **Glycome profiling and immunohistochemistry uncover changes in cell walls of Arabidopsis thaliana roots during spaceflight**  
Nakashima J., Pattathil S., Avci U., Chin S., Alan Sparks J., Hahn M. G., Gilroy S., Blancaflor E. B.  
NPJ MICROGRAVITY, vol.9, no.1, 2023 (SCI-Expanded)
- II. **Monoclonal antibodies against methyl glucuronoxylan epitopes for understanding xylan structure and modification**  
AVCI U.

TURKISH JOURNAL OF BOTANY, vol.47, no.3, 2023 (SCI-Expanded)

- III. **Cell Wall Glycan Changes in Different Brachypodium Tissues Give Insights into Monocot Biomass**  
Avci U.  
Fermentation, vol.9, no.1, pp.52-62, 2023 (SCI-Expanded)
- IV. **A Flat Embedding Method to Orient Gravistimulated Root Samples for Sectioning**  
AVCI U., Nakashima J.  
PLANT GRAVITROPISM, vol.2368, pp.153-163, 2022 (SCI-Expanded)
- V. **Effects of Extractive Ammonia Pretreatment on the Ultrastructure and Glycan Composition of Corn Stover**  
Avci U., Zhou X., Pattathil S., da Costa Sousa L., Hahn M. G., Dale B., Xu Y., Balan V.  
Frontiers in Energy Research, vol.7, 2019 (SCI-Expanded)
- VI. **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)
- VII. **The alpha-Aurora Kinases Function in Vascular Development in Arabidopsis**  
Lee K., Utku A., Qi L., Wang H.  
PLANT AND CELL PHYSIOLOGY, vol.60, no.1, pp.188-201, 2019 (SCI-Expanded)
- VIII. **Changes in the abundance of cell wall apiogalacturonan and xylogalacturonan and conservation of rhamnogalacturonan II structure during the diversification of the Lemnoideae**  
Avci U., Peña M. J., O'Neill M. A.  
Planta, vol.247, no.4, pp.953-971, 2018 (SCI-Expanded)
- IX. **Cell wall changes during the formation of aerenchyma in sugarcane roots**  
Leite D., Grandis A., Tavares E., Piovezani A., Pattathil S., Avci U., Rossini A., Cambler A., De Souza A., Hahn M., et al.  
Annals of Botany, vol.120, no.5, pp.693-708, 2017 (SCI-Expanded)
- X. **A cell wall reference profile for Miscanthus bioenergy crops highlights compositional and structural variations associated with development and organ origin**  
da Costa R. M. F., Pattathil S., Avci U., Lee S. J., Hazen S. P., Winters A., Hahn M. G., Bosch M.  
New Phytologist, vol.213, no.4, pp.1710-1725, 2017 (SCI-Expanded)
- XI. **Interactions Between Frankliniella fusca and Pantoea ananatis in the Center Rot Epidemic of Onion (Allium cepa)**  
Dutta B., Gitaitis R., Barman A., AVCI U., Marasigan K., Srinivasan R.  
PHYTOPATHOLOGY, vol.106, no.9, pp.956-962, 2016 (SCI-Expanded)
- XII. **Next-generation ammonia pretreatment enhances cellulosic biofuel production**  
Da Costa Sousa L., Jin M., Chundawat S. P. S., Bokade V., Tang X., Azarpira A., Lu F., Avci U., Humpula J., Uppugundla N., et al.  
Energy and Environmental Science, vol.9, no.4, pp.1215-1223, 2016 (SCI-Expanded)
- XIII. **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)
- XIV. **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)
- XV. **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., Peña M. J., Avci U., Li H., Huhman D. V., Backe J., Urbanowicz B., et al.  
Biotechnology for Biofuels, vol.8, no.1, 2015 (SCI-Expanded)
- XVI. **Xyloglucan, galactomannan, glucuronoxyylan, and rhamnogalacturonan I do not have identical structures in soybean root and root hair cell walls**  
Muszyński A., O'Neill M. A., Ramasamy E., Pattathil S., Avci U., Peña 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)
- XVII. **Pathways of bacterial invasion and watermelon seed infection by *Acidovorax citrulli***  
Dutta B., Ha Y., Lessl J., Avci U., Sparks A., Johnson K., Walcott R.  
Plant Pathology, vol.64, no.3, pp.537-544, 2015 (SCI-Expanded)
- XVIII. **Galactose-depleted xyloglucan is dysfunctional and leads to dwarfism in arabidopsis**  
Kong Y., Peña 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.1296-1306, 2015 (SCI-Expanded)
- XIX. **A flat embedding method to orient thin biological samples for sectioning**  
Avci U., Nakashima J.  
Methods in Molecular Biology, vol.1309, pp.13-22, 2015 (SCI-Expanded)
- XX. **Immunological approaches to biomass characterization and utilization**  
Pattathil S., Avci U., Zhang T., Cardenas C. L., Hahn M. G.  
Frontiers in Bioengineering and Biotechnology, vol.3, no.OCT, 2015 (SCI-Expanded)
- XXI. **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)
- XXII. **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)
- XXIII. **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, no.JUL, 2014 (SCI-Expanded)
- XXIV. **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)
- XXV. **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., Srinivasan R., Avci U., Ullman D., Langston D., Gitaitis R.  
Phytopathology, vol.104, no.8, pp.812-819, 2014 (SCI-Expanded)
- XXVI. **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)
- XXVII. **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)
- XXVIII. **4-O-methylation of glucuronic acid in Arabidopsis glucuronoxylan is catalyzed by a domain of unknown function family 579 protein**  
Urbanowicz B. R., Peña 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)
- XXIX. **Immunological approaches to plant cell wall and biomass characterization: Glycome profiling**  
Pattathil S., Avci U., Miller J. S., Hahn M. G.  
Methods in Molecular Biology, vol.908, pp.61-72, 2012 (SCI-Expanded)
- XXX. **Immunological approaches to plant cell wall and biomass characterization: Immunolocalization of**

## **glycan epitopes**

Avci U, Pattathil S, Hahn M. G.

Methods in Molecular Biology, vol.908, pp.73-82, 2012 (SCI-Expanded)

- XXXI. **Location of Acidovorax citrulli in infested watermelon seeds is influenced by the pathway of bacterial invasion**  
Dutta B., Avci U., Hahn M., Walcott R.  
Phytopathology, vol.102, no.5, pp.461-468, 2012 (SCI-Expanded)
- XXXII. **The ability of land plants to synthesize glucuronoxylans predates the evolution of tracheophytes**  
Kulkarni A. R., Peña 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)
- XXXIII. **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)
- XXXIV. **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)
- XXXV. **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)
- XXXVI. **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)
- XXXVII. **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)
- XXXVIII. **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)
- XXXIX. **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)
- XL. **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)
- XLI. **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)
- XLII. **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)

**XLIII. 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. Trafficking of Xylan to Plant Cell Walls**

Avci U.

Biomass, vol.2, no.3, pp.188-194, 2022 (Scopus)

**II. 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. Genome Editing of Gene Families for Crop Improvement**

AVCI U., SİPAHİ H.

in: A Roadmap for Plant Genome Editing, Agnès Riccio • Dennis Eriksson Dragana Miladinović • Jeremy Sweet Katrijn Van Laere • Ewa Woźniak-Gientka, Editor, Springer, pp.3-15, 2023

**II. A Flat Embedding Method to Orient Gravistimulated Root Samples for Sectioning**

AVCI U., Nakashima J.

in: Plant Gravitropism, Elison B. Blancaflor, Editor, Humana, New York, NY, New York, pp.153-163, 2022

**III. Bitki Fizyolojisi Laboratuvarı**

KADIOĞLU A., SAĞLAM A., AVCI U.

Gündüz Ofset, Matbaacılık ve yayıncılık, 2016

**IV. 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

## Refereed Congress / Symposium Publications in Proceedings

**I. Understanding Transport Routes of Xylan Polysaccharide to Plant Cell Walls**

AVCI U.

4th Bioenergy Studies Symposium, Turkey, 27 May 2022

**II. Turkish blanket bogs as national biodiversity conservation areas**

AVCI U., AKAR B.

1st International Symposium of Biodiversity Studies, Ankara, Turkey, 23 - 25 May 2022, pp.28

**III. Algal biodiversity of Turkish blanket bogs**

AKAR B., AVCI U.

1st International Symposium of Biodiversity Studies, Ankara, Turkey, 23 - 25 May 2022, pp.53

**IV. Diversity of Plant Cell Walls**

AVCI U.

Eurasian Congress on Molecular Biotechnology, 21 - 23 September 2019

**V. Illuminating Plant Cell Walls**

AVCI U.

International Congress on Biological and Medical Science, 31 October - 03 November 2018

**VI. Imaging cell walls of a model grass *Brachypodium distachyon***

AVCI U.

22nd edition of International Conference on Biotechnology, 16 - 17 April 2018

**VII. Imaging plant cell walls by using molecular probes**

AVCI U.

International Conference on Technology, Engineering and Science, 26 November - 29 December 2017

**VIII. Insights from imaging plant cell walls by using molecular probes**

AVCI U.

International Conference on Biological Sciences, Konya, Turkey, 21 - 23 October 2016

**IX. 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

**X. 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

**XI. 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

**XII. 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

**XIII. Distribution of cell wall glycans in switchgrass *Panicum virgatum***

AVCI U.

33rd Symposium on Biotechnology for Fuels and Chemicals, 02 May 2011

## Supported Projects

AVCI U., ELİBOL İLERİ C., Project Supported by Higher Education Institutions, Türkiye'deki Termal Kaynaklardan İzole Edilen Bakterilerin Ürettiği Ksilanaz Enzimlerinin Safılaştırılması, Karakterizasyonu ve Biyoteknolojik Uygulamalarının İncelenmesi, 2023 - Continues

Avcı U., Akar B., TÜBİTAK Project, Türkiye Örtü Turbalıklarının Alg Floralarının Belirlenmesi, 2021 - 2024

Avcı U., Kadioğlu A., Sağlam A., Kavas M., Project Supported by Higher Education Institutions, Termofil Heliotropium thermophilum Bitkisine Ait İki Ksiloglukan EndoTransglikozilazHidrolaz TranskriptininAşırı İfadesinin Yüksek Sıcaklık Sıcaklık ile Birlikte Kuraklık ve Tuzluluk Kombine Streslerine Toleransındaki RolününAraştırılması, 2020 - 2023

Avcı U., TÜBİTAK Project, Ksilan Polisakkaritinin Bitki Sekonder Hücre Çeperine Taşınma Yollarının İmmünoelektron Mikroskopi Teknikleri Kullanılarak İncelenmesi, 2020 - 2022

Avcı U., Project Supported by Other Official Institutions, Bitki Hücre Duvarına Özgün Monoklonal Antikorların Teknolojik Transferi, 2016 - 2018

## Activities in Scientific Journals

Turkish Journal of Botany, Editor, 2017 - Continues

## Metrics

Publication: 62

Citation (WoS): 771

Citation (Scopus): 1810

H-Index (WoS): 8

H-Index (Scopus): 20

## **Non Academic Experience**

Technology Development Zone, Pros Biyoteknoloji, AR-GE

University of Georgia

North Carolina State University