

## Prof. Dr. UTKU AVCI

### Kişisel Bilgiler

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### Eğitim Bilgileri

Doktora, North Carolina State University, College of Agriculture and Life Sciences, Amerika Birleşik Devletleri 2003 - 2007

Lisans, Karadeniz Teknik Üniversitesi, Türkiye 1997 - 2000

### Araştırma Alanları

Tarımsal Bilimler, Ziraat, Yaşam Bilimleri, Bitki Biyolojisi, Biyokimya, Biyoteknoloji, Mikrobiyoloji, Moleküler Biyoloji ve Genetik, Temel Bilimler

### Akademik Unvanlar / Görevler

Prof. Dr., Eskişehir Osmangazi Üniversitesi, ZİRAAT FAKÜLTESİ, TARIMSAL BİYOTEKNOLOJİ BÖLÜMÜ, 2023 - Devam Ediyor

Doç. Dr., Eskişehir Osmangazi Üniversitesi, ZİRAAT FAKÜLTESİ, TARIMSAL BİYOTEKNOLOJİ BÖLÜMÜ, 2021 - 2023

Doç. Dr., Recep Tayyip Erdoğan Üniversitesi, Mühendislik Fakültesi, Biyomühendislik Bölümü, 2019 - 2021

Dr. Öğr. Üyesi, Recep Tayyip Erdoğan Üniversitesi, Mühendislik Fakültesi, Biyomühendislik Bölümü, 2015 - 2019

### Akademik İdari Deneyim

Bölüm Başkanı, Recep Tayyip Erdoğan Üniversitesi, Mühendislik Ve Mimarlık Fakültesi, Biyomühendislik, 2018 - 2020

### SCI, SSCI ve AHCI İndekslerine Giren Dergilerde Yayınlanan Makaleler

- Glycome profiling and immunohistochemistry uncover changes in cell walls of Arabidopsis thaliana roots during spaceflight**  
Nakashima J., Pattathil S., Avcı U., Chin S., Alan Sparks J., Hahn M. G., Gilroy S., Blancaflor E. B.  
NPJ MICROGRAVITY, cilt.9, sa.1, 2023 (SCI-Expanded)
- Monoclonal antibodies against methyl glucuronoxylan epitopes for understanding xylan structure and modification**  
AVCI U.  
TURKISH JOURNAL OF BOTANY, cilt.47, sa.3, 2023 (SCI-Expanded)

- III. **Cell Wall Glycan Changes in Different Brachypodium Tissues Give Insights into Monocot Biomass**  
 Avci U.  
 Fermentation, cilt.9, sa.1, ss.52-62, 2023 (SCI-Expanded)
- IV. **A Flat Embedding Method to Orient Gravistimulated Root Samples for Sectioning**  
 AVCI U., Nakashima J.  
 PLANT GRAVITROPISM, cilt.2368, ss.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, cilt.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, cilt.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, cilt.60, sa.1, ss.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, cilt.247, sa.4, ss.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, cilt.120, sa.5, ss.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, cilt.213, sa.4, ss.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, cilt.106, sa.9, ss.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., Humpala J., Uppugundla N., et al.  
 Energy and Environmental Science, cilt.9, sa.4, ss.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, cilt.243, sa.2, ss.337-354, 2016 (SCI-Expanded)
- XIV. **Plant biomass: Insights from imaging cell walls using molecular probes**  
 Avci U.  
 Turkish Journal of Botany, cilt.40, sa.6, ss.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, cilt.8, sa.1, 2015 (SCI-Expanded)
- XVI. **Xyloglucan, galactomannan, glucuronoxylan, 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, cilt.242, sa.5, ss.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, cilt.64, sa.3, ss.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, cilt.167, sa.4, ss.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, cilt.1309, ss.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, cilt.3, sa.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, cilt.83, sa.3, ss.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, cilt.9, sa.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, cilt.5, sa.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, cilt.289, sa.4, ss.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, cilt.104, sa.8, ss.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, cilt.8, sa.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, cilt.25, sa.1, ss.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, cilt.109, sa.35, ss.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, cilt.908, ss.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, cilt.908, ss.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, cilt.102, sa.5, ss.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, cilt.22, sa.3, ss.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, cilt.159, sa.4, ss.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, cilt.4, sa.10, ss.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, cilt.4, sa.2, ss.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, cilt.107, sa.51, ss.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, cilt.153, sa.2, ss.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, cilt.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, cilt.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, cilt.2, sa.5, ss.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, cilt.150, sa.2, ss.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, cilt.56, sa.2, ss.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., Avcı U., Grant E. H., Haigler C. H., Beers E. P.  
PLANT JOURNAL, cilt.53, sa.3, ss.425-436, 2008 (SCI-Expanded)

## **Diğer Dergilerde Yayınlanan Makaleler**

- I. **Trafficking of Xylan to Plant Cell Walls**  
Avcı U.  
Biomass, cilt.2, sa.3, ss.188-194, 2022 (Scopus)
- II. **Yüksek Frekanslı Elektromanyetik Radyasyon ve Bitki Gelişimi**  
AVCI U.  
Recep Tayyip Erdoğan Üniversitesi Fen ve Mühendislik Bilimleri Dergisi, cilt.1, sa.1, ss.68-73, 2020 (Hakemli Dergi)

## **Kitap & Kitap Bölümleri**

- I. **Genome Editing of Gene Families for Crop Improvement**  
AVCI U., SİPAHİ H.  
A Roadmap for Plant Genome Editing, Agnès Ricroch • Dennis Eriksson Dragana Miladinović • Jeremy Sweet  
Katrijn Van Laere • Ewa Woźniak-Gientka, Editör, Springer, ss.3-15, 2023
- II. **A Flat Embedding Method to Orient Gravistimulated Root Samples for Sectioning**  
AVCI U., Nakashima J.  
Plant Gravitropism, Alison B. Blancaflor, Editör, Humana, New York, NY, New York, ss.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.  
Plant Gravitropism, Alison B. Blancaflor, Editör, Springer New York, ss.13-22, 2015

## **Hakemli Kongre / Sempozyum Bildiri Kitaplarında Yer Alan Yayınlar**

- I. **Understanding Transport Routes of Xylan Polysaccharide to Plant Cell Walls**  
AVCI U.  
4th Bioenergy Studies Symposium, Türkiye, 27 Mayıs 2022
- II. **Turkish blanket bogs as national biodiversity conservation areas**  
AVCI U., AKAR B.  
1st International Symposium of Biodiversity Studies, Ankara, Türkiye, 23 - 25 Mayıs 2022, ss.28
- III. **Algal biodiversity of Turkish blanket bogs**  
AKAR B., AVCI U.  
1st International Symposium of Biodiversity Studies, Ankara, Türkiye, 23 - 25 Mayıs 2022, ss.53
- IV. **Diversity of Plant Cell Walls**  
AVCI U.  
Eurasian Congress on Molecular Biotechnology, 21 - 23 Eylül 2019
- V. **Illuminating Plant Cell Walls**  
AVCI U.  
International Congress on Biological and Medical Science, 31 Ekim - 03 Kasım 2018

- VI. **Imaging cell walls of a model grass *Brachypodium distachyon***  
AVCI U.  
22nd edition of International Conference on Biotechnology, 16 - 17 Nisan 2018
- VII. **Imaging plant cell walls by using molecular probes**  
AVCI U.  
International Conference on Technology, Engineering and Science, 26 Kasım - 29 Aralık 2017
- VIII. **Insights from imaging plant cell walls by using molecular probes**  
AVCI U.  
International Conference on Biological Sciences, Konya, Türkiye, 21 - 23 Ekim 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 Temmuz 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, Amerika Birleşik Devletleri, 27 - 30 Nisan 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, Fransa, 7 - 12 Temmuz 2013
- XII. **Insights into plant cell wall structure and dynamics using glycan directed monoclonal antibodies**  
AVCI U.  
5th Annual BioEnergy Science Retreat, Chattanooga, Amerika Birleşik Devletleri, 18 Temmuz 2011
- XIII. **Distribution of cell wall glycans in switchgrass *Panicum virgatum***  
AVCI U.  
33rd Symposium on Biotechnology for Fuels and Chemicals, 02 Mayıs 2011

## Desteklenen Projeler

AVCI U., ELİBOL İLERİ C., Yükseköğretim Kurumları Destekli Proje, Türkiye'deki Termal Kaynaklardan İzole Edilen Bakterilerin Ürettiği Ksilanaz Enzimlerinin Saflaştırılması, Karakterizasyonu ve Biyoteknolojik Uygulamalarının İncelenmesi, 2023 - Devam Ediyor

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

Avcı U., Kadioğlu A., Sağlam A., Kavas M., Yükseköğretim Kurumları Destekli Proje, Termofil *Heliotropium thermophilum* Bitkisine Ait İki Ksiloglukan EndoTransglukozilazHidrolaz Transkriptinin Aşırı İfadesinin Yüksek Sıcaklık Sıcaklık ile Birlikte Kuraklık ve Tuzluluk Kombine Streslerine Toleransındaki Rolünün Araştırılması, 2020 - 2023

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

Avcı U., Diğer Resmi Kurumlarca Desteklenen Proje, Bitki Hücre Duvarına Özgün Monoklonal Antikorların Teknolojik Transferi, 2016 - 2018

## Bilimsel Dergilerdeki Faaliyetler

Turkish Journal of Botany, Editör, 2017 - Devam Ediyor

## Metrikler

Yayın: 62

Atıf (WoS): 771

Atıf (Scopus): 1810

H-İndeks (WoS): 8

H-İndeks (Scopus): 20

## **Akademi Dışı Deneyim**

Teknoloji Geliştirme Bölgesi, Pros Biyoteknoloji, AR-GE

University of Georgia

North Carolina State University