Personal

Name / Surname: Ferhan Ayaydin, Ph.D.
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Research Experience

1998-2001 Researcher, BRC, Szeged, Hungary (The role of phosphatases and kinases in alfalfa cell division cycle)
2002-2005 Postdoctoral Researcher, NIH-NICHD, Bethesda, USA (Role of SUMO peoteins in human cancer cell division)
2005-2019 Senior Research Associate / Head of Core Facility, BRC, Szeged, Hungary (Regulation of cell division, gene editing and advanced microscopy imaging techniques)
2020- Head of Advanced Core Facility, HCEMM - University of Szeged, Hungary (Translational medicine and advanced microscopy imaging techniques)

Scientific Degrees

1994 B.Sc. METU University, Ankara, Turkey

2001 Ph.D. Molecular and Cell Biology, University of Szeged, Szeged, Hungary

Language

English
Hungarian
German (beginner)
Turkish (native speaker)

Research Visits Abroad

1998 Centre national de la recherche scientifique (CNRS) France
“Cell biology, laser scanning confocal microscopy and flow cytometry”
2002-2005 Postdoctoral research, National Institutes of Health (NIH), USA
“Cell biology, laser scanning confocal microscopy and human cancer research"

Membership

Hungarian Society for Microscopy

Awards

1995-96 UNESCO, International Training Course Scholarship, Szeged, Hungary
1996-98 NATO TUBITAK Ph.D. fellowship, Szeged, Hungary
2002-05 U.S.A. Fogarty postdoctoral scholarship
2017 Secretary General Research Award, Hungarian Academy of Sciences

Selected publications

- Ayaydin, F., Vissi, E., Meszaros, T., Miskolczi, P., Kovacs, I., Feher, A., Dombradi, V., Erdodi, F., Gergely, P. and Dudits, D. (2000). Inhibition of serine/threonine-specific protein phosphatases causes premature activation of cdc2MsF kinase at G2/M transition and early mitotic microtubule organization. Plant J. 23(1):85-96.

- Ayaydin, F. and Dasso, M. (2004). Distinct in vivo dynamics of vertebrate SUMO paralogues. Mol. Biol. Cell 15(12):5208-5218.

- Mukhopadhyay D, Ayaydin F., Kolli N., Tan S.H., Anan T., Kametaka A., Azuma Y., Wilkinson K.D., Dasso M. (2006). SUSP1 antagonizes formation of highly SUMO2/3-conjugated species, J Cell Biol. 174: 939-949.

- Kotogány, E., Dudits, D., Horváth, V.G. and Ayaydin F. (2010). A rapid and robust assay for detection of S-phase cell cycle progression in plant cells and tissues by using ethynyl deoxyuridine. Plant Methods (6:5)

- Ayaydin, F., Kotogány E., Ábrahám E and Horváth V.G. (2011). Synchronization of Medicago sativa Cell Suspension Culture. Methods Mol Biol. 761:227-238.

- Fazakas C., Wilhelm I., Nagyoszi P., Farkas A.E., Haskó J., Molnar J., Bauer H., Bauer H.C., Ayaydin F., Dung N.T.K., Siklós L., Krizbai I.A. (2011). Transmigration of melanoma cells through the blood-brain barrier: role of endothelial tight junctions and melanoma-released serine proteases, PLOS ONE 6: (6) e20758.

- Rigo G., Ayaydin F., Tietz O., Zsigmond L., Kovacs H., Pay A., Salchert K., Darula Z., Medzihradszky K.F., Szabados L., Palme K., Koncz C., Cseplo A. (2013). Inactivation of Plasma Membrane-Localized CDPK-RELATED KINASE5 Decelerates PIN2 Exocytosis and Root Gravitropic Response in Arabidopsis. Plant Cell 25:1592-1608.

- Gungor B., Gombos I., Crul T., Ayaydin F., Szabo L., Torok Z., Mates L., Vigh L., Horvath I. (2014). Rac1 participates in thermally induced alterations of the cytoskeleton, cell morphology and lipid rafts, and regulates the expression of heat shock proteins in B16F10 melanoma cells. PLOS ONE 9:(2) p. e89136.

- Kuntam S., Puskás L.G., Ayaydin F. (2015). Characterization of a new class of blue-fluorescent lipid droplet markers for live-cell imaging in plants. Plant Cell Rep. 34:655-665.

- Kuntam S. and Ayaydin F.(2015) Detection of S-phase of cell division cycle in plant cells and tissues by using 5-ethynyl-2'-deoxyuridine (EdU) in Plant Microtechniques: Methods and Protocols. Eds. Yeung C.T.E., Stasolla C, Sumner M.J., Huang B.Q. Springer, pp. 311-322.

- Horvath B., Domonkos A., Kereszt A., Szucs A., Abraham E., Ayaydin F., Boka K., Chen Y., Chen R., Murray J.D., Udvardi M.K., Kondorosi E., Kalo P. (2015) Loss of the nodule-specific cysteine rich peptide, NCR169, abolishes symbiotic nitrogen fixation in the Medicago truncatula dnf7 mutant. Proc. Natl. Acad. Sci. USA 112:15232-15237.

- Dudits D., Török K., Cseri A., Paul K., Nagy A.V., Nagy B., Sass L., Ferenc G., Vankova R., Dobrev P., Vass I., Ayaydin F. (2016) Response of Organ Structure and Physiology to Autotetraploidization in Early Development of Energy Willow Salix viminalis. Plant Physiol. 170:1504-1523.

- Tiricz H., Nagy B., Ferenc G., Török K., Nagy I., Dudits D. and Ayaydin F. (2017) Relaxed chromatin induced by histone deacetylase inhibitors improves the oligonucleotide-directed gene editing in plant cells. J Plant Res. Aug 23.

- Fodor E and Ayaydin F. (2018) Fluorescent probes and live imaging of plant cells. "Advances in Plant Ecophysiology Techniques" Eds: Reigosa MJ, Sánchez-Moreiras A. Publisher: Springer Nature pp. 241-251

- Nagy G, Vaz AG, Szebenyi Cs, Takó M, Tóth EJ, Csernetics Á, Bencsik O, Szekeres A, Homa M, Ayaydin F, Galgóczy L, Vágvölgyi Cs, Papp T (2020) CRISPR-Cas9-mediated disruption of the HMG-CoA reductase genes of Mucor circinelloides and subcellular localization of the encoded enzymes. Fungal Genetics and Biology 129, 30-39.

SCIENTOMETRIC INDICATORS

Number of publications: 60 (54 articles, 6 book chapters)
Number of citations: 2582
Hirsch index: 23

PUBLICATIONS

Google Scholar: https://scholar.google.com/citations?user=b4poxZQAAAAJ&hl=en

SELECTED PUBLICATIONS

Regulation of cancer

- Antal, O., Peter, M., Hackler, L., Jr., Man, I., Szebeni, G., **Ayaydin, F.**, Hideghety, K., Vigh, L., Kitajka, K., Balogh, G., and Puskas, L. G. (2015). Lipidomic analysis reveals a radiosensitizing role of gamma-linolenic acid in glioma cells. Biochim Biophys Acta 1851, 1271-1282.
- Fazakas, C., Wilhelm, I., Nagyoszi, P., Farkas, A. E., Hasko, J., Molnar, J., Bauer, H., Bauer, H. C., **Ayaydin, F.**, Dung, N. T., et al. (2011). Transmigration of melanoma cells through the blood-brain barrier: role of endothelial tight junctions and melanoma-released serine proteases. PLoS One 6, e20758.
- Gungor, B., Gombos, I., Crul, T., **Ayaydin, F.**, Szabo, L., Torok, Z., Mates, L., Vigh, L., and Horvath, I. (2014). Rac1 participates in thermally induced alterations of the cytoskeleton, cell morphology and lipid rafts, and regulates the expression of heat shock proteins in B16F10 melanoma cells. PLoS One 9, e89136.
- Nagy, L. I., Molnar, E., Kanizsai, I., Madacsi, R., Ozsvari, B., Feher, L. Z., Fabian, G., Marton, A., Vizler, C., **Ayaydin, F.**, et al. (2013). Lipid droplet binding thalidomide analogs activate endoplasmic reticulum stress and suppress hepatocellular carcinoma in a chemically induced transgenic mouse model. Lipids Health Dis 12, 175.
- Szebeni, G. J., Balazs, A., Madarasz, I., Pocz, G., **Ayaydin, F.**, Kanizsai, I., Fajka-Boja, R., Alfoldi, R., Hackler, L., Jr., and Puskas, L. G. (2017). Achiral Mannich-Base Curcumin Analogs Induce Unfolded Protein Response and Mitochondrial Membrane Depolarization in PANC-1 Cells. Int J Mol Sci 18.
- Puskas, L. G., Feher, L. Z., Vizler, C., **Ayaydin, F.**, Raso, E., Molnar, E., Magyary, I., Kanizsai, I., Gyuris, M., Madacsi, R., et al. (2010). Polyunsaturated fatty acids synergize with lipid droplet binding thalidomide analogs to induce oxidative stress in cancer cells. Lipids Health Dis 9, 56.

Control of cell division cycle

- **Ayaydin, F.**, Vissi, E., Meszaros, T., Miskolczi, P., Kovacs, I., Feher, A., Dombradi, V., Erdodi, F., Gergely, P., and Dudits, D. (2000). Inhibition of serine/threonine-specific protein phosphatases causes premature activation of cdc2MsF kinase at G2/M transition and early mitotic microtubule organisation in alfalfa. Plant J 23, 85-96.
- Dudits, D., Abraham, E., Miskolczi, P., **Ayaydin, F.**, Bilgin, M., and Horvath, G. V. (2011). Cell-cycle control as a target for calcium, hormonal and developmental signals: the role of phosphorylation in the retinoblastoma-centred pathway. Ann Bot 107, 1193-1202.
- Meszaros, T., Miskolczi, P., **Ayaydin, F.**, Pettko-Szandtner, A., Peres, A., Magyar, Z., Horvath, G. V., Bako, L., Feher, A., and Dudits, D. (2000). Multiple cyclin-dependent kinase complexes and phosphatases control G2/M progression in alfalfa cells. Plant Mol Biol 43, 595-605.
- Pasternak, T., Miskolczi, P., **Ayaydin, F.**, Meszaros, T., Dudits, D., and Feher, A. (2000). Exogenous auxin and cytokinin dependent activation of CDKs and cell division in leaf protoplast-derived cells of alfalfa. Plant Growth Regul 32, 129-141.
- Peres, A., **Ayaydin, F.**, Nikovics, K., Gutierrez, C., Horvath, G. V., Dudits, D. N., and Feher, A. (1999). Partial synchronization of cell division in cultured maize (Zea mays L.) cells: differential cyclin, cdc2, histone, and retinoblastoma transcript accumulation during the cell cycle. J Exp Bot 50, 1373-1379.

Biomolecules of importance (Cancer, immune response, cardiovascular diseases)

- **Ayaydin, F.**, and Dasso, M. (2004). Distinct in vivo dynamics of vertebrate SUMO paralogues. Mol Biol Cell 15, 5208-5218.
- Caliskan, G., Baris, I. C., **Ayaydin, F.**, Dobson, M. J., Senarisoy, M., Boros, I. M., Topcu, Z., and Zencir, S. (2017). Che1/AATF interacts with subunits of the histone acetyltransferase core module of SAGA complexes. PLoS One 12, e0189193.
- Mukhopadhyay, D., **Ayaydin, F.**, Kolli, N., Tan, S. H., Anan, T., Kametaka, A., Azuma, Y., Wilkinson, K. D., and Dasso, M. (2006). SUSP1 antagonizes formation of highly SUMO2/3-conjugated species. J Cell Biol 174, 939-949.
- Toth, E., Kulcsar, P. I., Fodor, E., **Ayaydin, F.**, Kalmar, L., Borsy, A. E., Laszlo, L., and Welker, E. (2013). The highly conserved, N-terminal (RXXX)8 motif of mouse Shadoo mediates nuclear accumulation. Biochim Biophys Acta 1833, 1199-1211.
- Zencir, S., Banerjee, M., Dobson, M. J., **Ayaydin, F.**, Fodor, E. A., Topcu, Z., and Mohanty, S. (2013a). New partner proteins containing novel internal recognition motif for human glutaminase interacting protein (hGIP). Biochem Biophys Res Commun 432, 10-15.
- Zencir, S., Sike, A., Dobson, M. J., **Ayaydin, F.**, Boros, I., and Topcu, Z. (2013b). Identification of transcriptional and phosphatase regulators as interaction partners of human ADA3, a component of histone acetyltransferase complexes. Biochem J 450, 311-320.

Development of novel technologies and methods

- Bogdanov, A., Endresz, V., Urban, S., Lantos, I., Deak, J., Burian, K., Onder, K., **Ayaydin, F.**, Balazs, P., and Virok, D. P. (2014). Application of DNA Chip Scanning Technology for Automatic Detection of Chlamydia trachomatis and Chlamydia pneumoniae Inclusions. Antimicrob Agents Ch 58, 405-413.
- Kalai, T., Hideg, E., **Ayaydin, F.**, and Hideg, K. (2013). Synthesis and potential use of 1,8-naphthalimide type O-1(2) sensor molecules. Photoch Photobio Sci 12, 432-438.
- Kotogany, E., Dudits, D., Horvath, G. V., and **Ayaydin, F.** (2010). A rapid and robust assay for detection of S-phase cell cycle progression in plant cells and tissues by using ethynyl deoxyuridine. Plant Methods 6.
- Kuntam, S., and **Ayaydin, F.** (2015). Detection of S-Phase of Cell Division Cycle in Plant Cells and Tissues by Using 5-Ethynyl-2'- Deoxyuridine (EdU). In Plant Microtechniques and Protocols, E.C.T. Yeung, C. Stasolla, M.J. Sumner, and B.Q. Huang, eds. (Dordrecht, Hollandia: Springer), pp. 311-322.
- Molnar, E., Kuntam, S., Cingaram, P. K. R., Peksel, B., Suresh, B., Fabian, G., Feher, L. Z., Bokros, A., Medgyesi, A., **Ayaydin, F.**, and Puskas, L. G. (2013). Combination of Small Molecule Microarray and Confocal Microscopy Techniques for Live Cell Staining Fluorescent Dye Discovery. Molecules 18, 9999-10013.
- Mozes, E., Hunya, A., Toth, A., **Ayaydin, F.**, Penke, B., and Datki, Z. L. (2011). A novel application of the fluorescent dye bis-ANS for labeling neurons in acute brain slices. Brain Res Bull 86, 217-221.
- Tiricz, H., Nagy, B., Ferenc, G., Torok, K., Nagy, I., Dudits, D., and **Ayaydin, F.** (2018). Relaxed chromatin induced by histone deacetylase inhibitors improves the oligonucleotide-directed gene editing in plant cells. J Plant Res 131, 179-189.
- Umenhoffer, K., Feher, T., Baliko, G., **Ayaydin, F.**, Posfai, J., Blattner, F. R., and Posfai, G. (2010). Reduced evolvability of Escherichia coli MDS42, an IS-less cellular chassis for molecular and synthetic biology applications. Microb Cell Fact 9.