Selahattin Can Özcan, D.V.M, Ph.D.

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Research Areas: cancer metabolism, erythropoiesis, CRISPR screens, wound healing, regeneration

Research Interests: single-cell CRISPR screens, cell-cell communication, biological game theory

EDUCATION

Uludag University, Graduate School of Health Sciences, Bursa, Turkey (2012 – 2018)

Ph.D. in Biochemistry

"Role of PFKFB2 in the oncogenic transformation of pancreatic ductal epithelial cells"

Advisor: Prof. Dr. Abdullah Yalcin

Uludag University, School of Veterinary Medicine, Bursa, Turkey (2006 – 2011)

Doctor of Veterinary Medicine (D.V.M.)

RESEARCH EXPERIENCE

Associate Research Scientist, Columbia University School of Medicine, New York, USA (2025 –)

Supervisor: Yvon Woappi

- *Developing cell type specific CRISPR screens & analysis tools*
- *Investigating wound healing dynamics & gene expressions in single-cell atlas data*

Associate Research Scientist, Columbia University Irving Cancer Center, New York, USA (2024 – 2025)

Supervisor: Christine Iok In Chio

- *Experience in working with mouse models (floxed models, KPC models, TAM-Cre models)*
- *Designing mouse breeding strategies*
- *Generating organoid models, mouse embryonic fibroblast cell lines*
- *Investigation of the role of methionine oxidation on PKM2 activity in in vivo models*
- *Designing targeted CRISPR libraries for evaluating the outcomes of genome-wide in-vivo screens*

Post-doctoral Researcher, Koç University Research Center for Translational Medicine, Istanbul, Turkey (2019 – 2024)

Supervisor: Ceyda Acilan Ayhan

- *CRISPR screens to identify kinases & metabolic enzymes required for survival of cancer cells with centrosome amplification*
- *CRISPR screen to identify the epigenetic regulation of enucleation of proerytroblasts*
- *Investigation of the role of Nek2A on centrosome clustering/unclustering mechanisms*
- *Identification of novel cell cycle dependent targets of Nek2A with TurboID proximity labeling*
- *Investigating the transcriptional regulation with genomic locus proteomics (Caspex)*
- *Investigation of the centrosomal linkers of PLK4 induced rosette centrosomes*
- *Targeting epigenetic regulation of lysosomal exocytosis to overcome cisplatin resistance*
- *Targeting taxane resistance with epigenetic inhibitors in prostate cancers*

Research Assistant, Biochemistry Laboratory, School of Veterinary Medicine, Uludag University, Bursa, Turkey (2013 – 2018)

Supervisor: Abdullah Yalcin

- *Understanding the role of PFKFB2 in KRAS-driven transformation of pancreatic ductal epithelial cells*
- *Investigation of the role of PFKFB3 in TGFβ-induced invasion and metastasis of PDAC*
- *Investigation of the synergy of PFKFB3-GLS1 co-inhibition in KRAS transformed pancreatic epithelial cells*
- *Role of PFKFB isozymes in differentiation of embryonic stem cells to pancreatic β cells*
- *Role of PFKFB isozymes on cancer stem cell subpopulations in PDAC cells*

Researcher, James Graham Brown Cancer Center, Molecular Targets Group, University of Louisville, Kentucky, United States of America (June 2015 – April 2016)

Supervisor: Jason Chesney

- *Regulation of PFKFB3 phosphorylation and glycolysis by BRAF in melanoma*
- *Understanding the cell cycle regulation by PFKFB3*
- *Identification of the role of PFKFB2 on glucose uptake and glycolysis in PDAC cells*

Visiting Researcher, James Graham Brown Cancer Center, Faculty of Medicine, University of Louisville, Kentucky, United States of America (July 2013 – November 2013)

Supervisor: Abdullah Yalcin, Jason Chesney

- *Investigation of differential intracellular localization of PFKFB2 isoforms.*
- *Understanding the role of PFKFB3 on EMT in PDAC.*

PUBLICATIONS

Adult human enucleation requires epigenetic control by cBAF complex; E. Goksel, **S. C. Ozcan**, W. Chi, A. Kayabolen, S. Ganesan, L. Mekerishvili, T. Onder, O. Yalcin, D. Landau (2027) *in preparation*

Promoter mapping of ATP7B by genomic locus proteomics reveals novel transcriptional regulators of lysosomal exocytosis genes in cisplatin resistance; A. Acar, B. Altay, **S. C. Ozcan**, N. Lack, N. Ozlu, C. Acilan Ayhan (2026) *in preparation*

Genomic deletion of PFKFB2 sensitizes pancreatic cancer cells to ferroptosis induction; T. H. Altunok, **S. C. Ozcan**, A. Kahraman, O. Sonmez, A. Sarioglu, E. Bayram, S. Guzel, S. Guler, K. Yildiz, Y. Imbert-Fernandez, R. J. Muchut, A. A. Iglesias, A. N. Lane, A. Yalcin (2026) BMC Cancer & Metabolism, *in review*

Proximity labeling reveals cell cycle–specific NEK2 interactions and a regulatory axis controlling NUSAP1 stability; **S. C. Ozcan**, E. Cicek, B. M. Kalkan, B. Kanevetci, N. E. Ozkan Kucuk, N. Ozlu, C. Acilan Ayhan (2026) Molecular and Cellular Proteomics*, in review*

(bioRxiv: https://doi.org/10.64898/2026.01.25.701545)

Stress adaptation pathways and HA–CD44 signaling maintain survival of pancreatic cancer cells with centrosome amplification; **S. C. Ozcan***, E. Goksel, B. M. Kalkan, E Cicek, B. Kanevetci, C. Acilan Ayhan* (2026) Cell Communication and Signaling*, in review *co-correspondence*

(bioRxiv: https://doi.org/10.64898/2026.01.24.701523)

RESTRICT-seq enables time-gated CRISPR screens and uncovers novel epigenetic dependencies of SCC resistance; **S. C. Ozcan**, D. G. Amador, J. A. Powers, A. G. Njiru, A. Ansari, Woappi, Y. (2026) Nature Communications*, in review*

(bioRxiv: https://doi.org/10.1101/2025.09.17.676440)

Epidrug screening identifies Type-I PRMT inhibitors as modulators of lysosomal exocytosis and drug sensitivity in cancers; B. Sergi, N. Yuksel, **S. C. Ozcan**, U. Duvvuri, K. Kiselyov, C. Acilan Ayhan (2025) Cell Death & Disease, *16, 600*

Nek2A prevents centrosome clustering and induces cell death in cancer cells via KIF2C interaction; B. M. Kalkan, **S. C. Ozcan**, E. Cicek, M. Gonen, C. Acilan Ayhan (2024) Cell Death & Disease 15.3: 222

Prolonged overexpression of PLK4 leads to formation of centriole rosette clusters that are connected via canonical centrosome linker proteins; **S. C. Ozcan**, B. M. Kalkan, E. Cicek, C. Acilan Ayhan (2024) Scientific Reports 14.1: 4370

Identification of Chromatin Regulators Required for Enucleation; E. Goksel, **S.C. Ozcan**, A. Kayabolen, O.Yalcin (2023) Blood; 142, 2445; doi:/10.1182/blood-2023-179111

Keep calm and carry on with extra centrosomes; B. M. Kalkan, **S. C. Ozcan**, N.J. Quintyne, S.L. Reed, C. Acilan Ayhan (2022) Cancers; 14,2; 442; doi: 10.3390/cancers14020442

A deep learning model for automated segmentation of fluorescence cell images; M. Aydın, B. Kiraz, F. Eren, Y. Uysallı, B. Morova, **S.C. Ozcan**, C. Acilan Ayhan, A. Kiraz (2022) Journal of Physics: Conference Series; doi: 10.1088/1742-6596/2191/1/012003

Simultaneous inhibition of PFKFB3 and GLS1 selectively kills KRAS-transformed pancreatic cells; **S. C. Ozcan**, A. Mutlu, T. H. Altunok, Y. Gurpinar, A. Sarioglu, S. Guler, R. J. Muchut, A. A. Iglesias, S. Celikler, P. M. Campbell, A. Yalcin (2021) Biochemical and Biophysical Research Communications; 571; 118-124; doi: 10.1016/j.bbrc.2021.07.070

PFKFB2 regulates glycolysis and proliferation in pancreatic cancer cells; **S. C. Ozcan**, A. Sarioglu, T. H. Altunok, A. Akkoc, S. Guzel, S. Guler, Y. Imbert-Fernandez, R. J. Muchut, A. A. Iglesias, Y. Gurpinar, A. L. Clem, J. A. Chesney, A. Yalcin (2020) Molecular and Cellular Biochemistry; doi: 10.1007/s11010-020-03751-5

6-phosphofructo-2-kinase/fructose 2, 6-bisphosphatase-3 is required for transforming growth factor ß1-enhanced invasion of Panc1 cells *in vitro*; A. Yalcin, T. H. Solakoglu, **S. C. Ozcan**, S. Guzel, S. Peker, S. Celikler, B. D. Balaban, E. Sevinc, Y. Gurpinar, J. A. Chesney (2017) Biochemical and Biophysical Research Communications; 484; 3; 687-693; doi: 10.1016/j.bbrc.2017.01.178

6-Phosphofructo-2-kinase (PFKFB3) promotes cell cycle progression and suppresses apoptosis via Cdk1-mediated phosphorylation of p27; A. Yalcin, B. F. Clem, Y. Imbert-Fernandez, **S. C. Ozcan**, S. Peker, J. O'Neal, A. C. Klarer, A. L. Clem, S. Telang and J. Chesney (2014) Cell Death and Disease; 5, e1337; doi:10.1038/cddis.2014.292

RESEARCH SKILLS

- Single cell RNAseq computational analysis
- CRISPR screen experiments; design and analysis
- CRISPR library generation, cloning, validation
- Proximity labeling with BioID & TurboID, Genomic locus proteomics with CASPEX, global proteomics and proteomics data analysis (MaxQuant & R)
- Bulk-RNA sequencing and analysis
- *in vivo* xenograft models, orthotopic prostate and pancreatic tumor models
- *in vivo* experiments, performing necropsies, breeding planning of mouse models, genotyping
- Immunoprecipitation, co-IP & ChIP-qPCR
- Flow cytometry & cell sorting (FACS)
- Confocal microscopy and STED (Leica DMi8), live-cell confocal microscopy
- Radioactive metabolic assays
- Seahorse metabolic assays
- Immunohistochemistry, immunofluorescence
- CRISPR knock-in; gRNA & homologous arm design
- Mammalian and primary cell culture
- Restriction enzyme cloning, Golden gate cloning, Gateway cloning, Site-directed mutagenesis
- Basic molecular biology techniques as PCR, qPCR, Western blotting, *in vitro* assays, ELISA

PROJECTS & GRANTS

Characterization of metabolic vulnerability hotspots of cancer cells with centrosome amplification (2022 – 2024)

Role: Principal Investigator

Funding: Turkish Cancer Institute, Health Institutes of Turkey (TUSEB)

Identification of the cell cycle-specific interaction partners of Nek2A and evaluation of their roles on centrosome unclustering (2020 – 2024)

Role: Principal Investigator

Funding: Career Development Program (CAREER) – 3501 – TUBITAK

Identification of the kinases required for the survival of centrosome amplified cancer cells (2022 – 2023)

Role: Researcher Principal Investigator: Ceyda Acilan Ayhan

Funding: SEED Research Fund – Koç University

Identification of epigenetic regulators of enucleation in erythropoiesis by CRISPR/Cas9 screening (2022 – 2025)

Role: Researcher Principal Investigator: Ozlem Yalcin

Funding: Scientific and Technological Research Projects Funding Program – 1001 – TUBITAK

Characterization of the transcriptional regulation of ATP7B gene by genomic locus proteomics and the role of ATP7B regulators on cisplatin resistance in cancer (2021 – 2024)

Role: Researcher Principal Investigator: Ceyda Acilan Ayhan

Funding: Scientific and Technological Research Projects Funding Program – 1001 – TUBITAK

Investigation of the role of Menin complexes in reversing taxane resistance in prostate cancer (2023 – 2026)

Role: Researcher Principal Investigator: Ceyda Acilan Ayhan

Funding: Turkish Cancer Institute, Health Institutes of Turkey (TUSEB)

Development and characterization of selective HDAC6 inhibitors for the treatment of prostate cancer (2021 – 2024)

Role: Researcher Principal Investigator: Ceyda Acilan Ayhan

Funding: Turkish Cancer Institute, Health Institutes of Turkey (TUSEB)

Role of 6-phosphofructo-2-kinase isozymes on murine embryonic stem cell biology (2016 – 2019)

Role: Researcher Principal Investigator: Saime Guzel

Funding: Uludag University Scientific Research Fund

Role of PFKFB2 on oncogenic transformation of pancreatic epithelial cells (2014 – 2018)

Role: Research Scholar Principal Investigator: Abdullah Yalcin

Funding: Scientific and Technological Research Projects Funding Program – 1001 – TUBITAK

Role of PFKFB3 in the regulation of the cell cycle and tumorigenesis (2010 – 2014)

Role: Research Scholar Principal Investigator: Abdullah Yalcin

Funding: European Union - Marie Curie 7th Frame

TEACHING EXPERIENCE

Invited Lecturer, Koç University, Istanbul, Turkey (February 2019)

"*Biochemical technics in experimental animal research"*

Training of laboratory animal usage certificate

Teaching Assistant, Uludag University, Bursa, Turkey (2013 – 2018)

Biochemistry-I & Biochemistry-II & Clinical Biochemistry

AWARDS

2214-A Abroad Research Program in Doctoral Education Scholarship (2015 – 9 months)

Scientific and Technological Research Council of Turkey (TUBITAK), Directorate of Science Fellowships and Grant Program

ADDITIONAL SKILLS & COURSES

Language – Turkish, English

Programming Unix/Linux – Intermediate

R – Intermediate

Python – Intermediate

Software – R Studio, MaxQuant, LaTeX, LASX, Huygens Professional, FlowJo, Cytoscape, SnapGene, ImageJ, GraphPad, SigmaPlot, Adobe Illustrator, Photoshop, Lightroom

Certificate for Experimental Animal Biology and Biomedical Application Techniques, Uludag University (2012)

Transcriptome Analysis Workshop, Koç University & University of Oxford (2022)

ORAL AND POSTER PRESENTATIONS

65th ASH Annual Meeting; Identification of Chromatin Regulators Required for Enucleation, Poster presentation, San Diego, USA, 2023

EMBO Workshop: Centrosomes and spindle pole bodies; Glutamine metabolism regulates the survival of pancreatic cancer cells with centrosome amplification, Poster presentation, Istanbul, Turkey, 2023

Advanced Imaging in Life Sciences Workshop; A brief story of rosette centrosomes, Oral presentation, Istanbul, Turkey, 2023

EACR-AstraZeneca Cancer Epigenetics; Implications of Lysosomal Sequestration and Exocytosis in Chemotherapeutic Resistance: The Role of Epigenetic Modifiers, Poster presentation, Virtual, 2023

Abcam Cell Cycle Club Virtual Meeting; Nek2 regulates multipolar metaphase formation in centrosome amplified cancer cells, Oral presentation, Virtual, UK, 2022

17th National Medical Biology Congress; Investigation of Nek2A kinase targets on centrosome clustering; Oral presentation, Virtual, Turkey, 2021

EMBO Workshop: Centrosomes and spindle pole bodies; Centrosome rosette complexes generated by long term PLK4 over-expression; poster presentation, Copenhagen, Denmark (virtual), 2021.

KUTTAM Seminar; Role of PFKFB2 in pancreatic cancer metabolism; Invited talk, Istanbul, Turkey, 2018.

ESMO Asia Congress; PFKFB2: Different roles of distinct splices; Poster presentation, Singapore, Singapore, 2017.

15th National Medical Biology Congress; Spontaneous differentiation of murine embryonic stem cells increases PFKFB3 expression; Poster presentation; Mugla, Turkey; 2017.

FEBS Congress; 6-Phosphofructo-2-kinase/fructose 2,6-bisphosphatase-3 regulates the epithelial-mesenchymal transition in tumor cells; Poster presentation; Izmir, Turkey, 2016.

Keystone symposia on molecular and cellular biology, New Frontiers in Understanding Tumor Metabolism; Silencing of PFKFB2 reduces fructose 2,6 bisphosphate levels without affecting glycolysis in K-Ras^{G12V}-transformed pancreatic duct cells; Poster presentation; Canada, 2016.

8th National Veterinary Biochemistry and Clinical Biochemistry Congress; Roles of PFKFB2 isoforms in KRAS transformed pancreatic ductal cells; Oral presentation; Bursa, Turkey, 2016.

EACR-AACR-SIC Anticancer Drug Action and Drug Resistance: from Cancer Biology to the Clinic; A role for 6-phosphofructo-2-kinase in the epithelial-mesenchymal transition of tumor cells; Poster presentation; Florence, Italy, 2015.

European Cancer Congress; Regulation of twist and slug by PFKFB2; Poster presentation; Vienna, Austria, 2015.

MEMBERSHIPS

European Association of Cancer Research (EACR) 2019 – present
Molecular Cancer Research Association / Turkey (MOKAD) 2018 - present

ADDITIONAL INFORMATION

Amateur pianist
Amateur photographer

REFERENCES

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James Graham Brown Cancer Center
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Louisville, KY, USA
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Columbia University
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