Unraveling multifaceted roles of Grainyhead-like transcription factor-2 in breast cancer

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List of commonly used abbreviations

A2AR	Adenosine A2A receptor
ABC	ATP-binding cassette
ADP	Adenosine di-phosphate
AFC	Average fold change
AMP	Adenosine mono-phosphate
ANOVA	Analysis of variance
APCP	An enzymatic inhibitor of CD73, α,β-methylene ADP
AR	Androgen receptor
ATP	Adenosine triphosphate
BCA	Biicinchoninic acid
CAFs	Cancer-associated fibroblasts
CD39	Cluster of Differentiation 39; ectonucleoside triphosphate diphosphohydrolase-1
CD73	Cluster of Differentiation 73; ecto-5'-nucleotidase
CD8	Cluster of Differentiation 8;
CDCA7L	Cell division cycle-associated 7-like protein
CDH1	Cadherin-1
CDH2	Cadherin-2
cDNA	CopyDNA of complement DNA
ChIP	Chromatin immunoprecipitation
CLDN4	Claudin-4
CO2	Carbon dioxide
CRC	Cancer,30 colo-rectal cancer
CTR	Cell cycle phase distribution in sgCTR
CXCL12	C-X-C motif chemokine ligand 12
DMSO	Dimethylsulfoxide
DNA	Deoxyribonucleic acid
ECL	Electrochemilumeniscence
ECM	Extracellular matrix
EDTA	Ethylenediaminetetraacetic acid
EGF	Epidermal growth factor
EHF	ETS homologous factor

EMT	Epithelial-mesenchymal transition
EMT-TFs	Epithelial-mesenchymal transition transcription factors
ER	Estrogen receptor
ERa	Estrogen receptor alpha
EV	Empty vector
FACS	Fluorescence-activated cell sorting
FAK	Focal adhesion kinase
FC	Fold-change
FIMO	Find Individual Motif Occurrences
FOXA1	Forkhead box protein A1
GAPDH	Glyceraldehyde 3-phosphate dehydrogenase
GATA3	GATA binding protein 3
GEO	Gene Expression Omnibus
GO	Gene Ontology
GRHL	Grainyhead like
HA	Hyaluronic acid
HER2	Human epidermal growth factor re-ceptor 2
HH	Hedgehog
hTERT	Human telomerase reverse transcriptase
IHC	Immunohistochemistry
IP	Immunoprecipitation
IPA	Ingenuity pathway analysis
KO	Knock out
LOXL2	Lysyl oxidase homolog 2
MACS	Model-based analysis of ChIP-Seq
MAPK	Mitogen-activated protein kinase
MCM2	Mini-chromosome maintenance protein-2
MET	Mesenchymal-to-epithelial transition
METABRIC	Molecular Taxonomy of Breast Cancer International Consor-tium
mRNA	Messenger-ribonucleic acid
NaCl	Sodium chloride
NECA	5’-N-ethylcarboxamide adenosine
NK	Natural killer cells

NT5E	Ecto-5′-nucleotidase
OVOL2	Ovo like zinc finger 2
PBS	Phosphate buffered saline
PCR	Polymerase chain reaction
PI3K	Phosphoinositide 3-kinase
PR	Progesterone receptor
PVDF	Polyvinylidene difluoride
qPCR	Quantitative polymerase chain reaction
RNA	Ribonucleic acid
ROCK	Rho-associated kinase
RPMI	Roswell Park Memorial Institute medium
RT	Room temperature
RT-qPCR	Realtime quantitative PCR
SD	Sented as the mean ± standard deviation
SDS-PAGE	Sodium do-decyl sulfate–polyacrylamide gel electrophoresis
SE	Standard error
SEM	Standard error of the mean
SRB	Sulforhodamine B
TCA	Trichloroacetic acid
TERT	Telomerase reverse transcriptase
TFs	Transcription factors
TGF	Transforming growth factor
TME	Tumor microenvironment
TNBC	Triple negative breast cancer
TSS	Transcription start site
UCSC	University of California Santa Cruz
WT	Wild type
YAP	Yes1 associated transcriptional regulator
ZEB1	Zinc finger E-box binding homeobox 1
ZO-1	Zonula occludens-1

Curriculum vitae

Bircan Çoban was born on April 20, 1990, in Izmir, Türkiye. In 2008, she began her Bachelor's degree in Biology at Hacettepe University in Ankara, Türkiye. During her undergraduate studies, she participated in the Erasmus Mundus Summer Training program, working on the role of RNA binding protein, HuD, in the onset and progression of childhood tumor neuroblastoma under the supervision of Dr. Daniele Peroni at the Centre for Integrative Biology at the University of Trento, Italy in 2011.

After completing her B.Sc. in 2012, she joined the lab of Dr. Tolga Emre at Bogazici University in Istanbul, Türkiye, as a trainee student from 2013 to 2014. There, she focused on the characterization of IRF4 in melanoma cell lines. In 2014, she received a tuition waiver to pursue her Master's in Molecular Biology and Genetics, supervised by Dr. Ozlen Konu at Bilkent University in Ankara, Türkiye. Her research on the regulation of Mineralocorticoid receptor (MR) and its downstream targets by Estrogen and Aldosterone in breast cancer sparked her curiosity about protein biology, leading her to a short-term scientific mission at the University of Lausanne, Switzerland in 2015. At Lausanne, she worked with interdisciplinary researchers in the group of Prof. Olivier Staub, obtaining preliminary results for her Master's thesis.

After successfully obtaining her M.Sc. degree in 2016, she moved to Munich to further her career as a graduate student at the Technical University of Munich, Germany. She spent seven months there, gaining experience with *in vivo* mouse models and organoid cultures of pancreatic adenocarcinoma.

In 2018, she began her Ph.D. studies under the supervision of Prof. Erik Danen at Leiden Academic Centre for Drug Research, Leiden University, the Netherlands. Her project, supported by Dutch Cancer Society, focused on identifying the context-specific roles of the Grainyhead-like transcription factor-2 across breast cancer subtypes. After completing her experiments in the lab, she worked as a Research Scientist at ProteoNic BV in 2023-2024. Currently, she is on sabbatical and dedicating her time to travels and personal development.

List of publications

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