

## Supplementary Material

### Pathogenicity of PKC $\gamma$ Genetic Variants - possible function as a non-invasive diagnostic biomarker in Ovarian Cancer

Kanza Shahid<sup>1</sup>, Khushbukhat Khan<sup>1</sup>, Yasmin Badshah<sup>1</sup>, Naeem Mahmood Ashraf<sup>2</sup>, Arslan Hamid<sup>3</sup>, Janeen H. Trembley<sup>4,5,6</sup>, Maria Shabbir<sup>1\*</sup>, Tayyaba Afsar<sup>7</sup>, Ali Almajwal<sup>7</sup>, Ali Abusharha<sup>8</sup>, Suhail Razak<sup>4\*</sup>

**Table S1:** Genotypic distribution of A24S (rs923331350) SNP in Ovarian Cancer

Genotype	Patient (n= 49)	Control (n=51)	Odds Ratio	95% CI – odds ratio	Relative Risk	95% CI – relative risk	P Value
	N, (%)	N, (%)					
<b>GG</b>	0 0%	0 0%	—	—	—	—	>0.9999
<b>AG</b>	49 100%	51 100%	—	—	—	—	>0.9999
<b>AA</b>	0 0%	0 0%	—	—	—	—	>0.9999

**Table S2:** Docking Parameters of Wild and Mutant Proteins

<b>Docking Parameters</b>	<b>PKCG_Wild</b>	<b>A24S Mutant</b>	<b>K359R Mutant</b>
<b>HADDOCK score</b>	-9.3 +/- 5.7	-2.1 +/- 14.8	-23.6 +/- 3.4
<b>Cluster size</b>	28	8	7
<b>RMSD from the overall lowest-energy structure</b>	19.0 +/- 0.3	20.3 +/- 0.3	22.2 +/- 0.1
<b>Van der Waals energy</b>	-83.6 +/- 8.5	-63.0 +/- 9.1	-122.0 +/- 13.6
<b>Electrostatic energy</b>	-198.0 +/- 36.7	-471.6 +/- 67.9	-238.8 +/- 52.6
<b>Desolvation energy</b>	-6.5 +/- 2.7	-3.4 +/- 8.2	-16.9 +/- 5.8
<b>Restraints violation energy</b>	1205.0 +/- 105.30	1585.6 +/- 182.5	1631.2 +/- 161.16
<b>Buried Surface Area</b>	2742.2 +/- 147.0	2992.5 +/- 341.0	3631.2 +/- 162.4
<b>Z-Score</b>	-2.0	-1.8	-2.2

**Table S3:** Data of each participant from diseased group regarding the clinical features along with I

Sample ID	Clinicopathological features					Genotype		
	Stage				Metastatic	GG	AA	GA
	I	II	III	IV				
ASAB-KS-01				1	1	1		
ASAB-KS-02				1	0			1
ASAB-KS-03		1			0	1		
ASAB-KS-04			1		0			1
ASAB-KS-05			1		1		1	
ASAB-KS-06			1		0			1
ASAB-KS-07	1			1	1	1		
ASAB-KS-08				1	1	1		
ASAB-KS-09			1		0			1
ASAB-KS-10					0	1		
ASAB-KS-11			1		0			1
ASAB-KS-12		1			1		1	
ASAB-KS-13		1			1		1	
ASAB-KS-14			1		1		1	
ASAB-KS-15		1			1		1	
ASAB-KS-16	1				0			1
ASAB-KS-17	1				1		1	
ASAB-KS-18				1	0	1		
ASAB-KS-19		1			0			1
ASAB-KS-20			1		1		1	
ASAB-KS-21	1				0	1		
ASAB-KS-22		1			1		1	
ASAB-KS-23			1		0			1
ASAB-KS-24		1			1			1
ASAB-KS-25			1		1		1	
ASAB-KS-26			1		0	1		
ASAB-KS-27				1	0	1		
ASAB-KS-28				1	0	1		
ASAB-KS-29		1			0		1	
ASAB-KS-30		1			1		1	
ASAB-KS-31				1	0	1		
ASAB-KS-32			1		1			1
ASAB-KS-33				1	1		1	
ASAB-KS-34				1	0		1	
ASAB-KS-35				1	0		1	
ASAB-KS-36			1		0			1
ASAB-KS-37	1				0		1	
ASAB-KS-38				1	1			1
ASAB-KS-39				1	0		1	
ASAB-KS-40				1	0	1		
ASAB-KS-41			1		1			1
ASAB-KS-42				1	0		1	

ASAB-KS-43	1		1		1	
ASAB-KS-44		1	0			1
ASAB-KS-45	1		0		1	
ASAB-KS-46		1	0			1
ASAB-KS-47	1		0		1	
ASAB-KS-48		1	0	1		
ASAB-KS-49		1	0	1		



ASAB

ATTA-UR-RAHMAN SCHOOL OF APPLIED BIOSCIENCES  
NATIONAL UNIVERSITY OF SCIENCES & TECHNOLOGY

## Table S4: Patient Consent Form

### Cancer Associated Pathogenic Variant of KPC family

**Project Title:** Possible Prognostic Impact of KPCI, KPCE, KPCG Genetic Variant in Prostate, Cervical and Ovarian cancer

**IRB Number:** \_\_\_\_\_

Participant ID: \_\_\_\_\_

Participants Name: \_\_\_\_\_

Principle Investigator: Dr Maria Shabbir

#### Study Purpose:

Study aims to identify genetic variation in KPC family genes that are associated with cancer in Pakistani Population. Identification of polymorphism will help in pre-diagnosis and prognosis of the disease. Information collected in the study will be kept confidential and blood sample collected in the study will solemnly be used for research purpose.

*PI:* \_\_\_\_\_

#### For Donors:

I voluntarily agree to take part in this research project. I have been informed how and where my sample will be used. My blood sample may be collected and used in this study as defined in this consent form. Aim of this study has been conveyed to me in my native language too.

*Donor's Signature:* \_\_\_\_\_

*Date:* \_\_\_\_\_



ASAB

ATTA-UR-RAHMAN SCHOOL OF APPLIED BIOSCIENCES  
NATIONAL UNIVERSITY OF SCIENCES & TECHNOLOGY

### Table S5: Patient History Form

#### Patient details

Name \_\_\_\_\_ Age \_\_\_\_\_

Gender: Male / Female

Marital status: Single/Married

Ethnic background \_\_\_\_\_

Education: \_\_\_\_\_

Please select from chart below:

Cancer localization				
Cancer type	Primary		Secondary	
Cancer metastasis	Yes		No	
Cancer stage	I	II	III	IV
Treatment status	Treated		Not treated	
If yes, duration of treatment				
Family History	Yes		No	
If Yes, please state the name of cancer: _____				
Relationship with the patient: _____				
Smoking	Yes		No	
Alcohol/drug consumption	Yes		No	
Co-Morbidity	Yes		No	
If Yes, please state the name of the disease.				

Participants: \_\_\_\_\_

Principle Investigator: \_\_\_\_\_



**National University of Sciences & Technology  
(NUST) Sector H-12, Islamabad**

**Table S6: Ethical approval form.**

- **Research Project Title:** Impact of KPCI, KPCE, KPCG Genetic Variant in Prostate, Cervical and Ovarian cancer.

Name of Principal Investigator	Dr. Maia Shabbir
Duration	24 Months
Name of School/Department	ASAB-NUST
IRB No.	10-2021-01/01

The project entitled above has been reviewed by the NUST Ethical Review Committee Meeting held on **October 25, 2021**. Keeping in view the following mentioned areas.

- Qualification and Expertise of the Principle Investigator.
- Proposed Goals of the Study
- Selection Criteria of the Subjects
- Informed Consent in local language if required
- Potential Problems
- Research Design and Methods
- Potential Benefits of the study
- Risks of the Study
- Assessment & Management of Risk
- Confidentiality & Conflict of Interest.

**The Committee approves above entitled project on scale and criteria given below to be implemented before/during project execution.**

- Safety measures of carcinogenic chemicals.
- Designated space/work place/rooms for the experimental work.
- Protection of other research students/lab staff/animals from chemical hazardous.

The Ethical Review Committee reserves the rights to re-review the project during the project execution to address the suggested guidelines.

**Prof. Dr. Peter John**  
Deptt of Healthcare Biotechnology  
Atta-ur-Rahman School of Applied  
Biosciences (ASAB), NUST Islamabad

**Prof. Dr. Peter John**

**President Ethical Review Committee**