## List of funded projects for potential PhD Candidates - Biological Sciences

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name, Email address and Department of Primary Supervisor</th>
<th>Supervisory Team</th>
<th>Title of Project/ Source of funding</th>
<th>Research Funding available</th>
<th>Funds available until</th>
<th>Key Objectives of research project</th>
</tr>
</thead>
</table>
| 1       | Dr. Zahra Hasan [Zahra.hasan@aku.edu](mailto:Zahra.hasan@aku.edu) Pathology & Laboratory Medicine | Drs. Kiran Iqbal; Muhammad Irfan | Host transcriptome in diabetes – how does this affect immunity to infections such as Tuberculosis? Funding source: HEC | PKR 15 million | December 2020 | • Human transcriptome analysis will be used to dissect gene expression analysis to investigate disease mechanisms in tuberculosis.  
• To investigate the transcriptome using microarray analysis to understand the modifications caused by diabetes and to investigate its impact on the outcome of patients with tuberculosis.  
• |
| 2       | Dr. S. M. Adnan Ali [syed.adnan@aku.edu](mailto:syed.adnan@aku.edu) Surgery | Drs. Zubair Ahmad Yumna Mirza | Correlation of Molecular Markers Expression and Overall Survival in Pancreatic Adenocarcinoma Patients. | PKR 2,000,000 | June 2021 | Primary Objective:  
The expression patterns of pancreatic markers CD44, CD24, CD133, PD-L1 and HER-2 in pancreatic adenocarcinoma patients  
Secondary Objectives:  
• To examine the impact of CD44, CD24, CD133, PD-L1 and HER-2 on patient’s overall survival.  
• To analyze the association between the expressions of markers and clinic-pathological characteristics to determine clinical implications in pancreatic adenocarcinoma patients.  
• |
| 3       | Dr. Rumina Hasan [rumina.hasan@aku.edu](mailto:rumina.hasan@aku.edu) Pathology & Laboratory Medicine | Drs. Zahra Hasan; Sadia Shakoor | Whole genome sequencing based determination of drug resistance in human pathogens –driving rapid diagnostics, treatment and outbreak investigations. Funding source: Health Security Partners (HSP) | $100,000 December 2019 (Likely to be funded for 2020 as well) |   | • The study will take a whole genome sequencing based approach to identify mutations associated with drug resistance in human pathogens; to identify appropriate drug treatments in extensively drug resistant isolates; used to identify outbreak investigations.  
• Pathogens of study will be those of significance to human health such as, *M. tuberculosis* and *Enterobacteriaceae*  
• A Next generation sequencing and bioinformatics pipeline approach will be developed to correlated phenotypic and genotypic resistance of bacterial strains  
• This will allow rapid, genetic identification of drug resistance associated mutations which will guide for appropriate treatment of the disease  
• It will provide opportunities for outbreak investigation in strains collected from specific regions  
• |
| 4       | Dr. Syed Hani Abidi  
Dr. Syed Faisal | Analysis of Population-Specific | PKR 2.15 May 2020 |   |   | • Identify population-specific HIV pol mutations conferring |
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<tr>
<th>Project Number</th>
<th>Investigator</th>
<th>Co-Investigator</th>
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<th>Funding Source</th>
<th>Duration</th>
<th>Amount</th>
<th>Objectives</th>
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| 5.             | Dr. Syed Hani Abidi | Mahmood        | Immunoevolution of HIV Gag Protein and Characterization of Gag Epitopes Specific to Pakistani HIV-Infected Cohorts | PKR 7.14 million | December 2020 | • Identify population-specific mutations in HIV-1 Gag protein from Pakistani HIV-infected patients.  
• Develop association between population-specific mutations and HLA alleles of Pakistani HIV-infected patients.  
• To determine how the population-specific mutations affect processing and generation of Gag epitopes via antigen presentation pathway.  
• To characterize the HIV-1 Gag epitopes unique to Pakistani population. |
| 6.             | Dr. Mohammad Asim Beg | Dr. Najia Ghanchi | Detection of pfhrp2 and pfhrp3 Gene Deletion in *Plasmodium falciparum* Patients in Karachi, Pakistan | $30,000 | June, 2020 | • Determine the percentage of *P. falciparum* parasites lacking the pfhrp2 or pfhrp3 genes in malaria patients from rural Sindh  
• Determine the percentage of chloroquine, sulphadoxine–pyrimethamine or artemisinin drug-resistance mutations in *P. falciparum* parasites from malaria patients. |
| 7.             | Dr. Mohammad Asim Beg | Dr. Najia Ghanchi | Clinical and molecular characterization of severe vivax malaria in Karachi, Pakistan | $22,000 | June, 2020 | • Define the incidence, clinical characteristics, and risk of death due to severe and complicated *P. vivax* malaria admitted at tertiary care hospital  
• Compare the features of severe vivax malaria with severe *P. falciparum* and uncomplicated malaria  
• Molecular typing of *P. vivax* isolated from severe and uncomplicated malaria cases using high throughput methods.  
• Determination of plasma levels of IL-6, MCP-1/CCL2, IP-10, CXCL-16 and IL-10 during acute and convalescent stages of uncomplicated and severe *vivax* infected patients. |
## Clinical Sciences

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| 1.      | Dr. S. M. Adnan Ali syed.adnan@aku.edu Surgery | Drs. M. Sohail Awan; Yumna Mirza | Genetic mutations causing hearing loss in the families of Sindh and Baluchistan | PKR 2,556,305 | December 2020 | • To identify genetic mutations in GJB2, MYO15A and SLC26A4 causing hearing loss in the population of Sindh and Baluchistan using PCR and Sanger Sequencing.  
• To identify novel gene mutations using whole exome sequencing in ten selected patients who show genetic mutations in the above mentioned genes.  
• To counsel families carrying autosomal recessive genes to not promote consanguineous marriages in their siblings, children and cousins.  
• To establish the basis for further studies regarding development of screening/therapeutic measures in future. |
| 2.      | Dr. S. Ather Enam ather.enam@aku.edu Surgery | Drs. Alf Giese S. M. Adnan Ali | Gene Expression of Cancer Stem Cell Markers in Glioblastoma Multiforme Patients | PKR 2,000,000 | December 2020 | • To investigate the expression patterns of LGR5, CD133, CD44 & L1CAM markers in Glioblastoma patients.  
• To assess the risk factors associated with LGR5, CD133, CD44 & L1CAM among Glioblastoma patients.  
• To examine the effect of CSC marker expression on patient prognosis. |
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<td>1.</td>
<td>Dr. Mohammad Asim Beg <a href="mailto:masim.beg@aku.edu">masim.beg@aku.edu</a> Pathology &amp; Laboratory Medicine</td>
<td>Dr. Rehana Siddiqui</td>
<td>Detection of pfhrp2 and pfhrp3 Gene Deletion in <em>Plasmodium falciparum</em> Patients in Karachi, Pakistan</td>
<td>$ 30,000</td>
<td>June, 2020</td>
<td>• Determine the percentage of <em>P. falciparum</em> parasites lacking the pfhrp2 or pfhrp3 genes in malaria patients from rural Sindh • Determine the percentage of chloroquine, sulphadoxine–pyrimethamine or artemisinin drug-resistance mutations in <em>P. falciparum</em> parasites from malaria patients.</td>
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<tr>
<td>2.</td>
<td>Dr. Romaina Iqbal <a href="mailto:romaina.iqbal@aku.edu">romaina.iqbal@aku.edu</a> Community Health Sciences</td>
<td>Drs. Narjis Rizvi; Javaid Khan</td>
<td>ASTRA: Addressing Smokeless Tobacco use and building Research capacity in South Asia</td>
<td>BP 200,000</td>
<td>2021</td>
<td>• To design and test community based interventions for smokeless tobacco intake cessation • To assess the implications of policy on the uptake of tobacco products • To understand the role of tobacco sellers in the use of tobacco products</td>
</tr>
<tr>
<td>3.</td>
<td>Dr. Romaina Iqbal <a href="mailto:romaina.iqbal@aku.edu">romaina.iqbal@aku.edu</a> Community Health Sciences</td>
<td>Dr. Khawar Kazmi; Mr. Iqbal Azam</td>
<td>PURE: Prospective Urban and Rural Epidemiological study</td>
<td>$ 50000</td>
<td>2021</td>
<td>• To understand the determinants of Cardiovascular Diseases in healthy population • To contrast the risk factors of NCDs in urban vs. rural populations • To design and test community based interventions for reducing the burden of NCDs</td>
</tr>
<tr>
<td>4.</td>
<td>Dr. Romaina Iqbal <a href="mailto:romaina.iqbal@aku.edu">romaina.iqbal@aku.edu</a> Community Health Sciences</td>
<td>Dr Narjis Rizvi; Mr. Iqbal Azam</td>
<td>Access to Care in Urban Slums</td>
<td>BP 250000</td>
<td>2021</td>
<td>• To understand the health seeking behavior of vulnerable population groups • To understand access to care concerns of vulnerable population groups • To design sustainable programs for enhancing the quality of care for vulnerable population groups • To understand disease burden in vulnerable population groups</td>
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### Aga Khan University – FHS-PhD Programme

**SONAM- Research Projects for potential PhD candidates-2019**

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| 1.  | Dr. Rubina Barolia rubina.barolia@aku.edu              | Jennifer Anastasi jenanastasi@gmail.com | Nurse –Led culturally relevant smoking cessation interventions for the patients with cardiovascular disease in tertiary care hospital setting | PKR 21,10,000 | December 2020 | • Identifying the essential/ important factors/construct to design culturally relevant smoking cessations interventions.  
• Test the acceptability and relevancy of the intervention for providers and cardiac patients  
• Assessing the effectiveness of nurse led intervention to establish nurse-led smoking cessation clinic in the hospital setting.  
• Designing and implementing nurse led smoking cessation programme in Pakistan |
| 2.  | Dr. David Arthur David.arthur@aku.edu SONAM           |                    | Neonatal mental health: developing and testing an intervention for depressed mothers and their infants |                        |                    | • To examine the communication patterns between depressed mothers/parents and their infants in the Pakistani context.  
• To design intervention strategies to help improve communication between depressed mothers and their neonates.  
• To develop a clinical laboratory for depressed mothers and their neonates to explore their communication patterns through video recording and test healthy communication patterns through video role play. |