

Citation (brief summary) on the Research Work of the Applicant duly signed by the Nominator.

Mr. Mohd. Rahil Hasan has completed a research project over a period of (1.5-years) "**Development of low-budget-biosensor for the detection of various deadly diseases towards commercialization**". I have witnessed his work efficiency, critical thinking abilities, and inquisitiveness regarding various findings. In the submitted project, developed two biosensors (e-biosensor & colorimetric biosensor). The Electrochemical and colorimetric tests were the most common due to their simplicity of use and low cost. Electrodes are one of the main components in electrochemical biosensors, so scientist used the best of the best electrodes for the development of highly sensitive biosensors, but such electrodes were extremely expensive (**approx.-150 rupees**), which increased the cost of the developed project, and these electrodes were made of plastic substrates, which are not good for our environment. So we have created self-fabricated electrodes on the normal paper with very less-cost (**3 rupees**), As a result, in this study, we employed several paper electrode configurations to build an electrochemical biosensor that detects dengue viral antigen with high sensitivity and low LOD, and also developed another effective and low budget biosensor i.e., colorimetric biosensor, In this work, we **detected ovarian cancer without using any instrument or machines**, the developed sensor based on a simple colour changing principle, so life-threatening diseases can be detected by using such simple colour magic testing, which helps millions of females, that they can easily detect their ovarian-cancer at an early stage so they can take proper treatment on time. As a result, we developed two low-cost biosensors that detect dengue virus and ovarian cancer showing great sensitivity and selectivity.

In the future, our developed biosensors may be commercialized due to their high potential and multiple advantages to humanity and also applicable for utilized in the hospital to patient-bed-site diagnosis. (Both of our developed sensors have been published in high-impact journals).

Dr. Jagirit Narang (Supervisor)

A handwritten signature in blue ink, reading "Jagirit Narang", is written over a light blue rectangular stamp.

