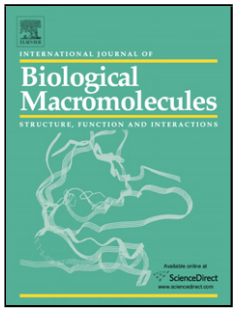
# Accepted Manuscript

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# Characterization of the bacteriophages binding to human matrix molecules

Running title: Matrix binding phages

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**Abstract**

Recent literature has suggested a novel symbiotic relationship between bacteriophage and metazoan host that provides antimicrobial defense protecting mucosal surface by binding to host matrix mucin glycoproteins. Here, we isolated and studied different bacteriophages that specifically interact with human extracellular matrix molecules such as fibronectin, gelatin, heparin and demonstrated their potency for protection to host against microbial infections. We showed that subpopulations of bacteriophages that work against clinical isolates of *Escherichia coli* can bind to pure gelatin, fibronectin and heparin and reduced bacterial load in human colon cell line HT29. The bacteriophages were characterized with respect to their genome sizes, melting curve patterns and host tropism (cross-reactivity with different hosts). Since, the bacteriophages are non-toxic to the host and can effectively reduce bacterial load in HT29 cell line their therapeutic potency against bacterial infection could be explored.

Keywords: Gelatin; Heparin; Fibronectin; Bacteriophages; Human matrix

## 1. Introduction

Emergence of multidrug resistant pathogens jeopardized efficacy of several antibiotics and forced to think about alternative treatment of microbial infections like phage therapy. The potential role of endogenous bacteriophages in controlling pathogenic infections have been widely studied in recent years. Mammalians may host bacteriophages to protect themselves against bacterial pathogens[1,2]. Barr *et al*., [3] have shown