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## Bioimprinted substrates: An approach for understanding and controlling cell response

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Amongst various factors of the biomaterial surface which have been known to influence cellular response both *in vitro* and *in vivo*, the effect of physical cues, especially surface topography, on cellular response has drawn a lot of attention. With advancements in technology, there has been a gradual shift from micro-patterned surfaces, which represent the micro-environment of cell to nano-featured materials. However, the conventionally available nano- and micro-fabrication techniques are capable of preparing regularly patterned surfaces, which bear no resemblance to cellular micro-environment. Therefore, the current work within the group involves replicating cellular details captured from cell grown in 2D-culture into a polymer matrix; in this case in PDMS. This provides details which represent negative signature of cells which can thereby be replicated into another PDMS layer, hence providing positive replica. These details can then be replicated into any polymer material of choice, providing details which represent positive and negative signatures of cells. These surfaces are termed as positive and negative bioimprints. The characterization of these surfaces confirms successful replication of fine details of cells without any loss of details during replication procedure. These bioimprints were thereafter used with or without further processing to culture secondary cells. These surfaces serve as model surfaces to provide an insight as to how cells respond to their own signatures and differentiate between the roles of chemical and topographical environments in cell growth.

### Biography

Isha Mutreja received her MSc in Nanoscience (2009) from Amity University, Noida, India; and her PhD in Biomaterials and Tissue Engineering from University of Ulster, UK (2012). She is a Marsden Research Fellow, working on 'Interaction of biological cells with bio-imprinted patterns' at University of Canterbury, New Zealand.

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