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| **Biomaterial** | **Description** | **Ligand** | **Cell Receptor Interaction**  | **Key Papers**  |
| **Alginate** | * Derived from brown algae
* No native ligands, so requires modification
* Most commonly uses ionic crosslinking (using divalent cations) but can utilise covalent crosslinking
* Alginate can be easily dissolved for cell recovery making it desirable for cell-matrix investigations
* Cannot be degraded naturally
 | \*\* Blank Slate | \*\* Dependent on choice of modification | (Lee and Mooney, 2012) |
| **Collagen**  | * Normally sourced from rat tail tendon, bovine skin and tendon
* Enzymatically degradable therefore favourable for invasion assays
* Gelation at room temp produces low mechanical strength and limited long-term stability
* Temperature largely effects the hydrogel architecture with lower temperatures producing longer fibrils
 | GFOGER | α2β1, α2β1 | (Shoulders and Raines, 2009) |
| **Polyacrylamide (PA)** | * Most widely used material and thus largely characterised
* Wide range of mechanical stiffnesses
* Requires protein conjugation for cell attachment
* Only 2D capability
* Fabrication occurs by reacting acrylamide monomer with bisacrylamide crosslinker – in which concentrations can be varied to achieve desired stiffness.
 | \*\* Blank Slate  | \*\* Dependent on choice of ligand | (Pelham and Wang, 1997; Tse and Engler, 2010) |
| **Polyethylene glycol (PEG)** | * Allows high degree of user modification; PEG can be modified with functional groups that utilise chain-growth, step-growth, or mixed-mode polymerisation
* Must be modified with adhesive ligand
* Can be engineered to degrade via passive, proteolytic, or user directed modes
* Chemically modified PEG can be used to crosslink other polymeric materials
 | \*\* Blank Slate | \*\* Dependent on choice of modification | (Lin and Anseth, 2009; Lutolf et al., 2003) |
| **Gelatin Methacryloyl (GelMA)** | * Synthesised from denatured collagen
* Expresses native ligands for cell adhesion
* Addition of photo crosslinker irgacure allows cross-linking of methacrylate sidechains by exposure to UV.
* Offers greater mechanical tuneability and wider range of stiffnesses than collagen
 | RGD | α5β1, α8β1αVβ1, αVβ3, αVβ5, αVβ6, αVβ8, αIIbβ3 | (Kim et al., 2020; Koistinen and Heino, 2013) |
| **Hyaluronic Acid**  | * Sourced from bacterial fermentation or from animal products
* Offers high degree of chemical modification enabling greater tuneability
* Offers native interaction with cell receptors but does not support integrin-mediated cell adhesion
 | Repeating disaccharide unit of glucuronate and *N*-acetylglucosamine  | CD44 | (Burdick and Prestwich, 2011; Dicker et al., 2014) |

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