primarily by diffusion followed by diffusion and erosion of the gel. The gel erosion/degradation can be tailored over a duration of 1–6 weeks (Ramesh and Kirk 2008).

**OncoGel™** is the formulation of drug paclitaxel in ReGel for local delivery to solid tumours to achieve therapeutic cytotoxic concentration at tumour site without causing systemic toxicities (Elstad and Fowers 2009). OncoGel™ provides constant release of paclitaxel for a period of 4 to 6 weeks.

**Cytoryn™** is a peri-tumoral, injectable depot formulation based on ReGel technology to deliver interleukin-2 (IL-2) for cancer immunotherapy. With Cytoryn™ the effect of IL-2 on tumour regression was enhanced four fold as compared to conventional therapy. The stability and bioactivity of IL-2 was also enhanced by the ReGel system (Madan et al. 2009).

### *InGell gamma™*

InGell Gamma is an aliphatically modified triblock copolymer composed of PCL-PEG-PCL (Jo et al. 2006). Both hydrophilic and hydrophobic drugs can be delivered using this copolymer. The sol-to-gel transition is through micelles formation. At lower temperatures, the micelles are dispersed in an aqueous solution and therefore easily administered. At body temperature the hydrophobic character of the amphiphilic triblock copolymers dominates and consequently the micelles aggregate to form a gel network. In contrast to ReGel technology, caprolactone present in InGell, stabilises the hydrogels allowing better control over drug releasing characteristics. The aliphatic modification further enhances the hydrophobicity of the triblock copolymer resulting in decreased burst effect, which is one of the challenges in controlled drug delivery applications (Petit et al. 2012).

### *Mebiol® gel*

Mebiol gel is a copolymer consisting of thermoresponsive polymer PNIPAAm and hydrophilic polymer PEG (PNIPAAm-PEG) and is commercialised as a cell/tissue culture reagent (Kataoka and Huh 2010). Its unique sol-to-gel transition makes it ideal for cell/tissue culture. The thermoresponsive blocks are hydrophilic at low temperatures and are hydrophobic at 37°C. At high temperature in aqueous media, the hydrophobic interaction results in formation of a rigid 3D polymer network providing highly lipophilic environment that mimics physiological condition which is beneficial for cell growth and proliferation. Cells or tissues can be embedded in cooled Mebiol Gel solution and then cultured in a gel state at 37°C. Cultured cells can be conveniently recovered by cooling below the sol-gel transition temperature.

## Conclusion

Increasing attention has been paid to hydrogels and their applications in drug delivery and tissue engineering due to their ease of preparation and handling. The specific porous structures permit loading of a wide range of drugs into the gel matrix and releasing drugs at a controlled and sustained rate to the target tissues. The 3D