

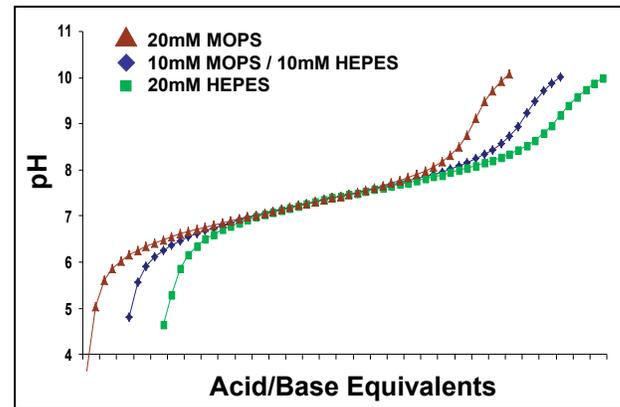
# Multipurpose Handling Medium™ (MHM™)

## The first multipurpose dual buffering medium for use with gametes and embryos

Minimizing stress imposed upon gametes and embryos and maintaining homeostasis during in vitro manipulations are important for optimizing ART success. A key to this endeavor is the use of an appropriate handling medium utilized for cellular manipulations outside of the laboratory incubator.

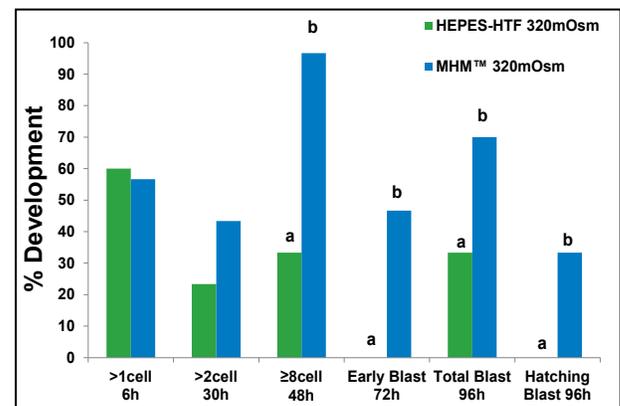
MHM™ maintains an appropriate and stable pH during gamete and embryo manipulation at room atmosphere by employing the first combination buffering system containing safe and effective pH buffers, HEPES and MOPS (Swain 2010, RBMonline 21(1):6-16 ; Swain et al. 2011 J Asst Reprod Gen DOI: 10.1007/s10815-011-9582-0). By using these two proven pH buffers in specific ratios, pH buffering can be optimized for gametes and embryos and can lower amounts of each buffer utilized (Swain & Pool, 2009, RBM Online, 18(6). 799-810).

Use of a combination buffering system containing HEPES and MOPS, such as MHM™ allows adjustment of pKa, or optimal buffering capacity, not available in mono-buffered media. This permits formulation of a custom medium with a lower individual buffer concentration, with pH buffering optimized for use with gametes and embryos. This phenomenon is demonstrated by comparing pH titration curves.



MHM™ also contains key beneficial amino acids, glycine and taurine, which maintain cellular homeostasis, in part, by serving as potent osmolytes, thereby providing a safer environment for cellular manipulation (McKiernan & Bavister 1998, Hum Reprod. 13(3):724-9; Dawson & Baltz, 1998, Biol Reprod, 59(2):225-32; Hammer et al. 2000, Hum Reprod, 15(2):419-426; Dumoulin et al. 1997, Biol Reprod. 1997, 56(3):739-44; Devreker et al. 1999, Hum Reprod. 14(9):2350-6).

Inclusion of evidence-based amino acids, glycine and taurine, found in MHM™ helps maintain cellular homeostasis, in part, by acting as potent osmolytes. These potent osmolytes in MHM™ provide added protection and permit embryo development in media with high osmolality that may be obtained via common laboratory practices during cell manipulation (Swain et al. 2010, Fertil Steril 94 Suppl 4: s32). Different superscripts within a developmental time point indicated a significant difference in development.



MHM™ is recommended for in vitro procedures involving manipulation of gametes and embryos at room atmosphere, such as sperm washing, oocyte recovery, micromanipulation and embryo transfer to maintain a stable and appropriate pH. MHM™ should be supplemented with protein and warmed to ~37°C prior to use.