

Table 3. Commercially available HA-based hydrogels.

HA-based hydrogel	Crosslinking mechanism	Commercial name	Supplier
Tyramine-substituted sodium hyaluronate (TS-NaHy)	TS-NaHy hydrogels are formed by using the oxidative coupling of tyramine moieties catalyzed by hydrogen peroxide (H ₂ O ₂) and horseradish peroxidase (HRP).	Corgel® BioHydrogel	Lifecore Biomedical, LCC has licensed this technology from the Cleveland Clinic.
Thiol-modified hyaluronan (Glycosil®), thiol-reactive PEGDA crosslinker (Extralink®)	The hydrogel is formed when the crosslinking agent, Extralink®-Lite (PEGDA) is added to a mixture of Glycosil® (thiol-modified hyaluronan).	HyStem® Hydrogels	Developed by Gycosan BioSystems, Inc which was acquired by BioTime in 2011. HyStem® Hydrogels are commercialized by ESI BIO—A Division of BioTime, Inc. The product is licensed for selling by other suppliers (Sigma-Aldrich, Advanced Biomatrix, Thermo Scientific).
Thiol-modified hyaluronic acid, thiol-modified gelatin (Gelin-S®), PEG-norbornene (UVlink™), Irgacure 2959 for photoinitiation	Photopolymerization by UV light.	HyStem® Hydrogel UV	ESI BIO—A Division of BioTime, Inc.

the brain ECM (Placone et al. 2015), 3D culture of human skin-derived precursors for dermal stem cell expansion *in vitro* (Wang et al. 2014b), 2-D plating of human dermal fibroblasts on top of hydrogel (Ferreira et al. 2013). The availability of HA hydrogels able to provide consistent and physiologically relevant environments for cell culture will facilitate their preclinical and clinical application.

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