

# Protein Calculation Worksheet

For culture media, and gamete & embryo manipulation

Protein supplements facilitate gamete and embryo manipulation *in vitro* by preventing them from sticking to glass and plastic. Protein may benefit embryo development by altering the solvent properties of the medium to make it more similar to the native tubal environment *in vivo*.

**Human Serum Albumin (HSA)** solution consists of HSA (100 mg/mL) from a therapeutic grade source material in a saline solution. This represents 10% total protein (w/v), in normal saline.

**Serum Substitute Supplement (SSS)** consists of 84% HSA (50 mg/mL, 5% w/v) from a therapeutic grade source material and 16% alpha and beta globulins (10 mg/mL, 1% w/v) in a saline solution. This represents 6% total protein (w/v), in normal saline.

**Dextran Serum Supplement (DSS)** consists of HSA (50 mg/mL, 5% w/v) from a therapeutic grade source material and dextran (20 mg/mL, 2% w/v) added as a non-protein alternative to globulins, in a saline solution. This represents 5% total protein (w/v), in normal saline.

Product	Protein Concentration (mg/mL)	HSA Macromolecule (mg/mL)	Alpha & Beta Globulin Macromolecule (mg/mL)	Dextran Macromolecule (mg/mL)	Protein Concentration (%w/v=g/100 mL)	Dilution Into Culture Medium (%V/V)	Final Protein Concentration in Culture Medium
HSA (9988)	100 mg/mL	100 mg/mL	N/A	N/A	10% w/v = 10 g/100 mL	1/20 = 5% v/v (eg. add 0.5 mL of 9988 to 9.5 mL medium)	5 mg/mL = 0.5% w/v
SSS (99193)	60 mg/mL	50 mg/mL	10 mg/mL	N/A	6% w/v = 6 g/100 mL	1/10 = 10% v/v (eg. add 1.0 mL of 99193 to 9.0 mL medium)	6 mg/mL = 0.6% w/v
DSS (9301)	50 mg/mL	50 mg/mL	N/A	20 mg/mL	5% w/v = 5 g/100 mL	1/10 = 10% v/v (eg. add 1.0 mL of 9301 to 9.0 mL medium)	5 mg/mL = 0.5% w/v

Product	Protein Concentration (mg/mL)	Dextran Macromolecule (mg/mL)	Final Macromolecule Concentration (%w/v=g/100 mL)	Equivalent Dilution Into Culture Medium (%V/V)	Final Protein Concentration in Culture Medium
CSCM-C (90165)	5 mg/mL HSA	N/A	Contains 0.5% w/v HSA	Contains 5% v/v HSA	5 mg/mL = 0.5% w/v
Complete ECM w/ SSS (90140)	6 mg/mL SSS	N/A	Contains 0.6% w/v SSS	Contains 10% v/v SSS	6 mg/mL = 0.6% w/v
Complete ECM w/ DSS (90142)	5 mg/mL DSS	2 mg/mL	Contains 0.7% w/v DSS	Contains 10% v/v DSS	5 mg/mL = 0.5% w/v
Complete MultiBlast w/ SSS (90143)	6 mg/mL SSS	N/A	Contains 0.6% w/v SSS	Contains 10% v/v SSS	6 mg/mL = 0.6% w/v
Complete MultiBlast w/ DSS (90141)	5 mg/mL DSS	2 mg/mL	Contains 0.7% w/v DSS	Contains 10% v/v DSS	5 mg/mL = 0.5% w/v
Complete P-1 Medium w/SSS (99242)	6 mg/mL SSS	N/A	Contains 0.6% w/v SSS	Contains 10% v/v SSS	6 mg/mL = 0.6% w/v