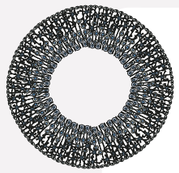
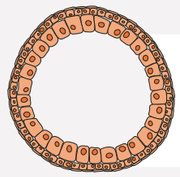
pluripotent stem cell-derived organoids
media recipe quick reference guide

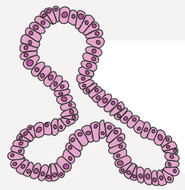


cortical
BDNF, FGF-8, GDNF, TGF-β1
Jacob et al. 2020

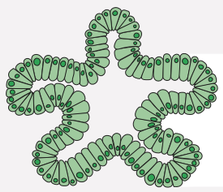
retina
IGF-1
Regent et al. 2020



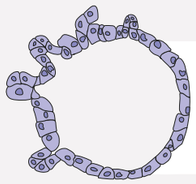
lung
activin A, FGF-4, FGF-10, noggin
Dye et al. 2015



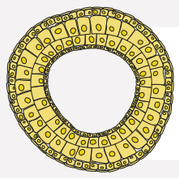
mammary
FGF-10, HGF
Qu et al. 2017



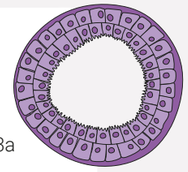
stomach
activin A, EGF, FGF-4, noggin, Wnt3a
McCracken et al. 2014



pancreas
activin A, BMP-4, FGF-4, noggin
Koike et al. 2021

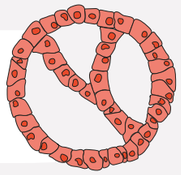


skin
FGF-2, BMP-4
Lee et al. 2020

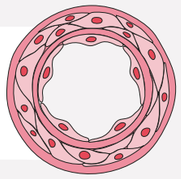


esophagus
activin A, BMP-4, EGF, FGF-2, FGF-10, KGF, noggin
Zhang al. 2018

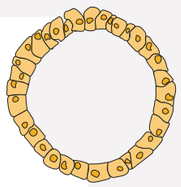
activin A, BMP-4, EGF, FGF-4, FGF-10, noggin, Wnt3a
Trisno al. 2018



heart
FGF-2, TGF-β1
Drakhlis et al. 2021

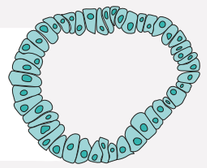


blood vessel
BMP-4, FGF-2, VEGF-A
Wimmer et al. 2019

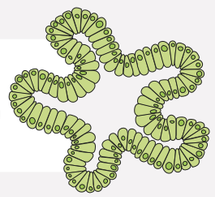


liver
activin A, OSM, (Wnt3a)
Sekine et al. 2017

activin A, BMP-4, BMP-7, EGF, FGF-2, FGF-19, HGF, KGF
Ramli et al. 2020



kidney
FGF-9
Takasato et al. 2015

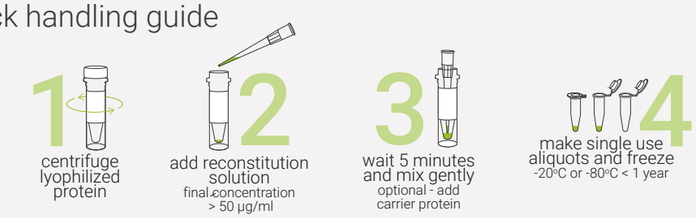


intestine
activin A, EGF, FGF-4, noggin, R-spondin 1, Wnt3a
McCracken et al. 2014

three steps for choosing your growth factors

1. consider why you are using each growth factor: research alternative forms, optimize protein concentration and consider sources of experimental variability
2. look for evidence of protein quality and complete product data
   - ☐ quantitative bioactivity data with EC50
   - ☐ clear SDS-PAGE gel, with high protein loading and staining so you can see spurious bands
   - ☐ purity date such as mass spec to check protein identity, analytical reverse phase and endotoxin testing with limit <0.05 EU/µg (if relevant)
3. find a reliable supplier with good scientific support and rapid delivery (you don't want to run out mid-experiment!)

quick handling guide



reconstitution calculator
for full reconstitution guidance see qkine.com/your-proteins

mass in vial (µg) ÷ desired concentration (µg/ml) × 1000 = volume to add (µl)

1mg = 1000µg 1µg = 1000ng

how is Qkine improving growth factors for organoids

animal-free
Unmatched quality and reliability. All our proteins are made in a dedicated animal-free laboratory in Cambridge, UK.

total-transparency
Know what you're giving your cells. Stringent purity and bioactivity data for all proteins.

protein innovation
Solving stem cell culture challenges with optimised forms and animal-free firsts.