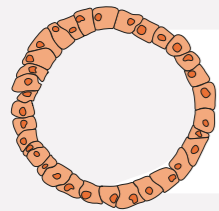
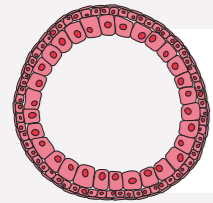


adult stem cell-derived organoids

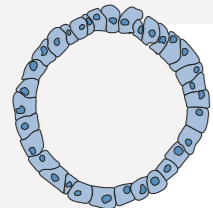
media recipe quick reference guide



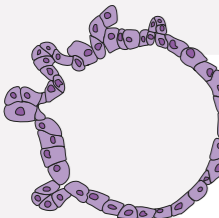
oral mucosa
EGF, FGF-2, FGF-10, noggin, R-spondin 1
Driehuis et al. 2019



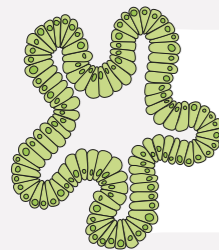
lung
activin A, FGF-4, FGF-10, noggin
Dye et al. 2015



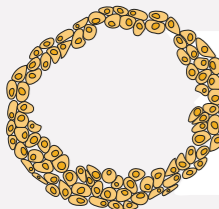
liver
EGF, FGF-10, HGF, noggin, R-spondin 1, Wnt3a
Huch et al. 2015
liver (hepatocyte)
EGF, FGF-7, FGF-10, HGF, TGF- α , R-spondin 1
Hu et al. 2018
extrahepatic biliary tree
R-spondin 1
Sampaziotis et al. 2017



pancreatic duct
EGF, FGF-10, noggin, R-spondin 1, Wnt3a
Boj et al. 2015

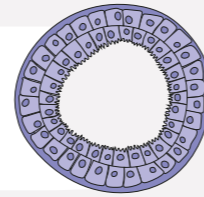


intestine
EGF, noggin, R-spondin 1, Wnt3a
Sato et al. 2011
EGF, FGF-2, IGF-1, noggin, R-spondin 1, Wnt3a
Fujii et al. 2018

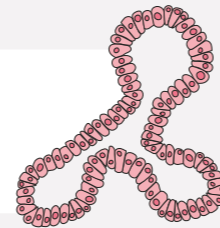


urothelium
FGF-2, FGF-7, FGF-10
Mullenders et al. 2018

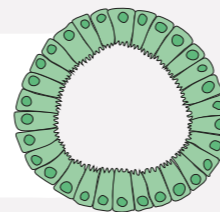
esophagus
EGF, FGF10, noggin, R-spondin1, Wnt3a
Jiang et al. 2017



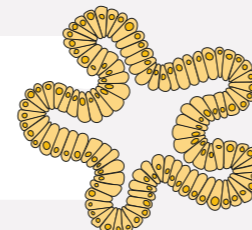
mammary
EGF, FGF-7, FGF-10, NRG-1, noggin, R-spondin 1
Sachs et al. 2018



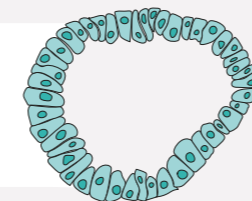
gallbladder
EGF, FGF-10, HGF, noggin, R-spondin 1
Lugli et al. 2016



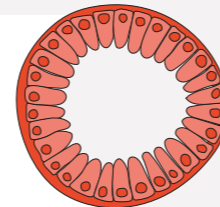
stomach
EGF, FGF-10, noggin, R-spondin 1, Wnt3a
Bartfeld et al. 2015



kidney tubule
EGF, FGF-10, R-spondin 1
Schutgens et al. 2019



endometrium
EGF, FGF10, HGF, noggin, R-spondin 1
Turco et al. 2017



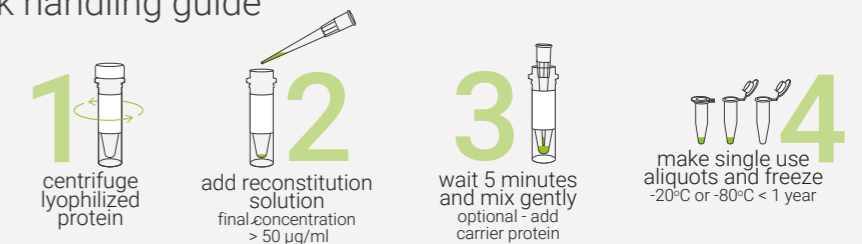
fallopian tube
EGF, FGF10, noggin, R-spondin 1, Wnt3a
Kessler et al. 2015

ovarian surface epithelium
EGF, NRG-1, noggin, R-spondin 1, Wnt3a
Kooper et al. 2019

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 data such as mass spec to check protein identity, analytical reverse phase and endotoxin testing with limit <0.05 EU/ μ g (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

$$\frac{\text{mass in vial } (\mu\text{g})}{\text{desired concentration } (\mu\text{g/ml})} \times 1000 = \text{volume to add } (\mu\text{l})$$

1mg = 1000 μ g 1 μ g = 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.