OpenVIM
Open-source-video microscope

Component	Experiments (current, or previous publications)	Specification	Notes
Lenses			
Keyence VHZ20R	- Tills et al 2013 Proc Roy Soc B, 280 20131479. - Tills et al 2016 JEMBE, 480, 54-61. - Truebano et al 2018 JEB 221: 171629. - Tills et al 2013 BMC Bioinformatics 14:37.	20 – 200 X magnification	Extremely high depth of field lens, excellent for low magnification imaging of aquatic embryos, 20-200 X digital magnification.
Keyence VHZ100R	- Tills et al 2013 BMC Bioinformatics 14:37. - Rudin-Bitterli et al 2014 PLoS One 9: e113235.	100 – 1000 X magnification	High depth of field 100 - 1000 X digital magnification lens.
Keyence VHZ500R		500 – 5000 X magnification	High magnification lens, good for imaging Protozoa.
Qioptiq Optem Micro Lens	- Hallett et al Sci. Tot. Env. 2016 543 37-43. - Rudin-Bitterli et al 2016 JEB, 219: 1076. - Tills et al 2013 Biol. J. Linn. Soc. 110, 581-590.	Wide range of operating possibilities due to being highly customisable.	Highly modular lens system with a wide range of magnification using combinations of auxillary lenses and TV tubes.
Lighting			
CCS LDR2-42-SW2		An angled 42 mm OD LED ring light for focussed dark field lighting	
Keyence CA-DRW4F	- Tills et al 2013 BMC Bioinformatics 14:37 - Tills et al 2013 Biol. J. Linn. Soc. 110, 581-590. - Tills et al 2013 Proc Roy Soc B, 280 20131479. - Tills et al 2016 JEMBE, 480, 54-61.	A non-focussed 43 mm OD LED ring light.	
Schott EasyLED gooseneck lights		Gooseneck spotlights, can be mounted on optic stainless steel support pole.	A useful lighting apparatus for imaging different types of speciment, although less

			suited to repeatable lighting.
Motorised stages			
Marzhauser SCAN IM 130 x 85	• Truebano et al 2018 JEB 221: 171629.	A motorised stage with 130 x 85 mm of travel – sufficient for a multiwell plate.	The Marzhauser Scan Tango XY stage is a very reliable and robust stage with very good technical and MicroManager support. Platform independant MicroManager support. Controlled with the Tango Desktop controller
Prior ES111 Optiscan stage	• Tills et al 2013 BMC Bioinformatics 14:37 • Tills et al 2013 Biol. J. Linn. Soc. 110, 581-590. • Tills et al 2013 Proc Roy Soc B, 280 20131479. • Tills et al 2016 JEMBE, 480, 54-61.	A motorised stage with 125 x 75 mm of travel – sufficient for a multiwell plate.	A cost effective stage with platform independant MicroManager support. Controlled with previous versions of the ES11 Controller.
Prior ES107 Inverted Optiscan stage		A motorised stage with 114 x 75 mm of travel – sufficient for a multiwell plate. Inverted so suitable for reduced working distance optics.	An inverted XY stage, good for samples requiring high magnification to get the necessarily small working distance required, for example using the VHZ500R lens. Note that this stage requires different support leg offsets in the alumnium base owing to its greater footprint.
Cameras			
Allied Vision Technologies Pike 421B	• Used in experiments 1 – 4 • Tills et al 2013 BMC Bioinformatics 14:37 • Tills et al 2013 Biol. J. Linn. Soc. 110, 581-590. • Tills et al 2013 Proc Roy Soc B, 280 20131479. • Tills et al 2016 JEMBE, 480, 54-61.	Monochrome 2048 x 2048, 7.4 µm pixels.	An excellent camera for darkfield imaging, used with dc1394b FW800 connection. Great MicroManager support owing to new developments

			with the IIDC driver. Allows custom ROI, recording of full 14 bits and precise manipulation of frame rates via control over packet size. Image capture time is recorded with high precision.
Allied Vision Technologies Pike 210C	• Hallett et al Sci. Tot. Env. 2016 543 37-43.	Color 1980 x 1080, 7.4 µm pixels	A lower resolution model of the Pike 421C colour camera
The Imaging Source		Resolution from 0.4-5 MP. Monochrome and colour.	Various colour and monochrome models from the DMK range successfully used.
QImaging Retiga (R3 and R6)		QImaging R3 = 3MP and QImaging R6 = 6 MP. Monochrome and colour.	USB 3.0 cameras available in monochrome and colour, with excellent image quality. However, note that drivers for MicroManager are only available for Windows.
Incubation chambers			
Oko-lab Cryo Boldline	• Tills et al 2016 JEMBE, 480: 54-61. • Tills et al 2015 Mar Genom, 25: 259-260. • Tills et al 2018 Ecol Evol, in press.	Min T = 10-15 °C below ambient, Max T = 60 °C, sample resolution = 0.01 °C . Humidity > 90%. Compatible with digital and manual OKO-Lab gas mixers.	Enables heating and cooling of samples in multiwell plates, with humidification (to reduce evaporation) and excellent data logging facilities. Can also be used with gas mixing modules, including combined mixing of nitrogen, oxygen and carbon dioxide. OKO-Labs can design gas mixing units to user specifications if required.

Oko-lab electrically heated chamber	• Truebano et al 2018 JEB 221: 171629.	Min T = 3 °C above ambient, Max T = 60 °C. Sample resolution = 0.1 °C Humidity > 90 %.	Allows heating of sample within multiwell plates using electrical filament heaters built into an incubation chamber. System integrates this with data logging and controlled temperature humidification. This particular model is discontinued.