



Product comparison:

## JENOPTIK GRYPHAX® KAPELLA vs. ProgRes® CFcool

# GRYPHAX® KAPELLA

Explore the micro universe  
colored in low light and bright field.



The **premium solution**  
for research applications with difficult lighting conditions

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## JENOPTIK GRYPHAX® – comparison

All camera comparisons are based on results of our JENOPTIK digital image laboratory. The quality of our cameras is proven by spectral measurement at our laboratory and is based on guidelines of EMVA 1288 standard.

### Comparison of JENOPTIK GRYPHAX® KAPELLA



Refine every microscope workstation.

JENOPTIK GRYPHAX® KAPELLA replaces all colored research CCD cameras.

JENOPTIK GRYPHAX® KAPELLA is the **premium solution** for research microscope applications with difficult lighting conditions. It is powered by a **1/1.2" back-illuminated CMOS sensor made by SONY**.

This camera provides fast live images, with **global shutter** technology, **high dynamic range** and **non-visible noise**. Reach up to **120 fps** in full sensor resolution combined with the brilliant Jenoptik color reproduction.

Within this comparison we take a look at the ProgRes® CFcool compared to JENOPTIK GRYPHAX® KAPELLA, the successor of color research ProgRes® CCD cameras.

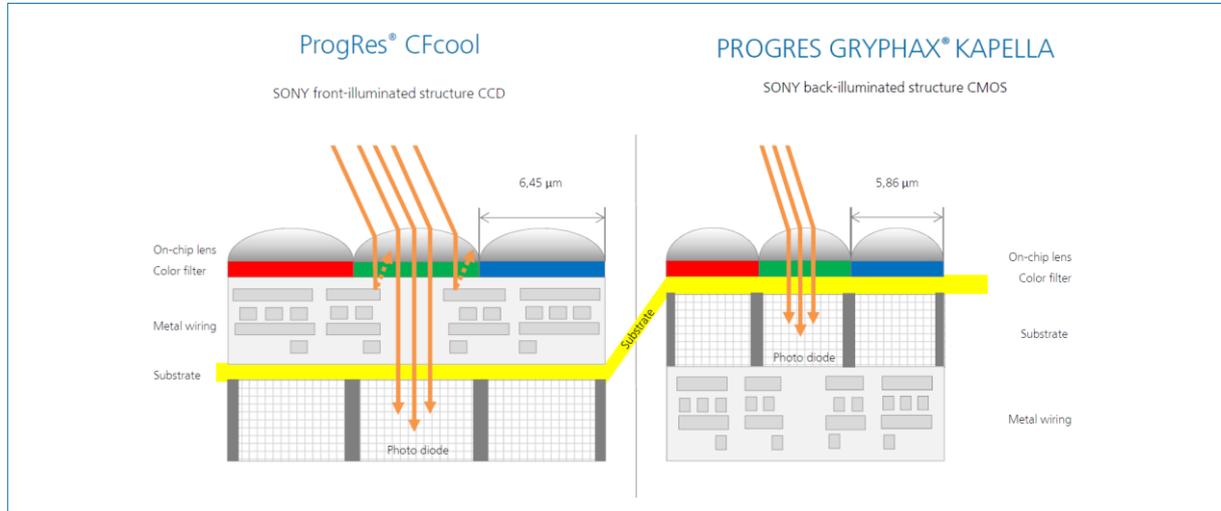
Sensor/Camera	ProgRes® CFcool with IR cut filter	JENOPTIK GRYPHAX® KAPELLA with IR cut filter
Utilized sensor diagonal	10,9 mm	<b>13,3 mm</b>
FPS	13 (1360 x 1024)	<b>120 (1920 x 1200)</b>
Quantum Efficiency [N(e-)/N(p)] @ 532nm (green)	0.32 QE(λ) see spectral data	<b>0.58 QE(λ) see spectral data</b>
Dark Noise [DN/e-]	7 DN (at 14 bit); 9e-	<b>0.8 DN (at 12 bit); 6e-</b>
Dynamic Range (DR)	66 dB	<b>73 dB</b>

By reason on our measurements, done within our laboratory and based on guidelines of EMVA 1288.

## Sensor



JENOPTIK GRYPHAX® KAPELLA is equipped with SONY’s back-illuminated CMOS sensor technology.

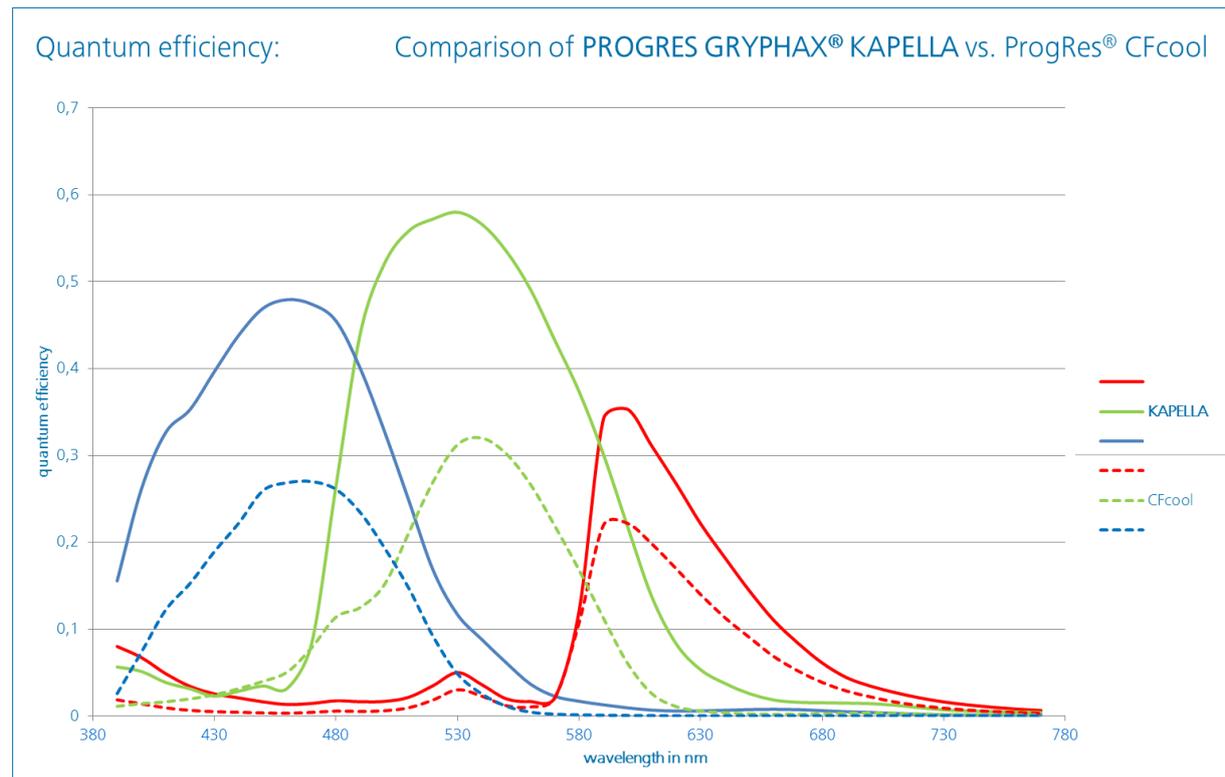


Source: Graphic done by Jenoptik based on information from [www.sony.net](http://www.sony.net)

With a conventional front-illumination structure, the metal wiring and transistors on the surface of the silicon substrate that form the sensor’s light-sensitive area (photo-diode) impede photon gathering carried out by the on-chip lens, and this has also been an important issue in the miniaturization of pixels and widening optical angle response. A back-illuminated structure minimizes the degradation of sensitivity to optical angle response, while also increasing the amount of light that enters each pixel due to the lack of obstacles such as metal wiring and transistors that have been moved to the reverse of the silicon substrate. However, compared to conventional front-illuminated structures, back-illuminated structures commonly causes problems such as noise, dark current, defective pixels and color mixture that lead to image degradation and also cause a decrease in the signal-to-noise ratio. To overcome this Sony has developed a unique photo-diode structure and on-chip lens optimized for back-illuminated structures, that achieves a higher sensitivity and a lower random noise without light by reducing noise, dark current and defect pixels compared to the conventional front-illuminated structure. Additionally, Sony’s advanced technologies such as high-precision alignment have addressed any color mixture problems.

Source: information from [www.sony.net](http://www.sony.net)

## Quantum efficiency with IR-cut filter





JENOPTIK GRYPHAX® KAPELLA quantum efficiency is nearly **two times higher** (at 532 nm) than ProgRes® CFcool

### Camera cooling



JENOPTIK GRYPHAX® KAPELLA has a unique vibration-free software cooling developed by JENOPTIK.

The so-called **software cooling** is a camera individual calibration for temperature correction to deliver best noise level to the images.

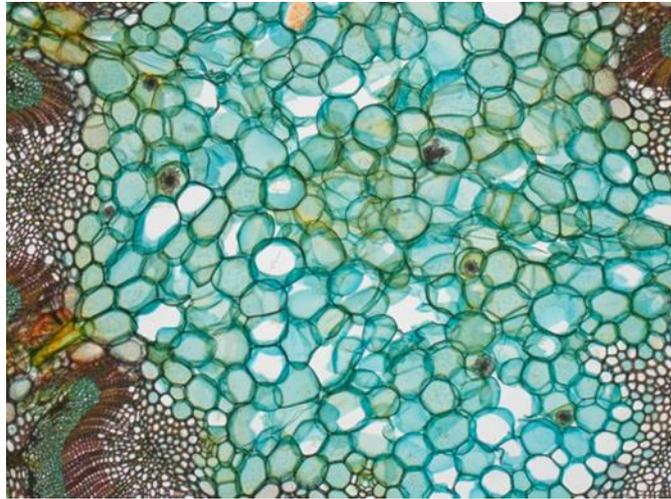
### JENOPTIK GRYPHAX® KAPELLA advantages:

- ☆ **Effective** photon to electron transformation
- ☆ No interlace effect & no smear
- ☆ **Low dark noise** and **low dark current**
- ☆ **Cooling** - Unique vibration-free software cooling developed by JENOPTIK\*
- ☆ **High live & video frame rate**
- ☆ High input clock frequency
- ☆ **High dynamic range**
- ☆ **Secure investment:** long-lasting & reliable hardware

### Sensor size and basic TV-adapter 1,0

ProgRes® CFcool

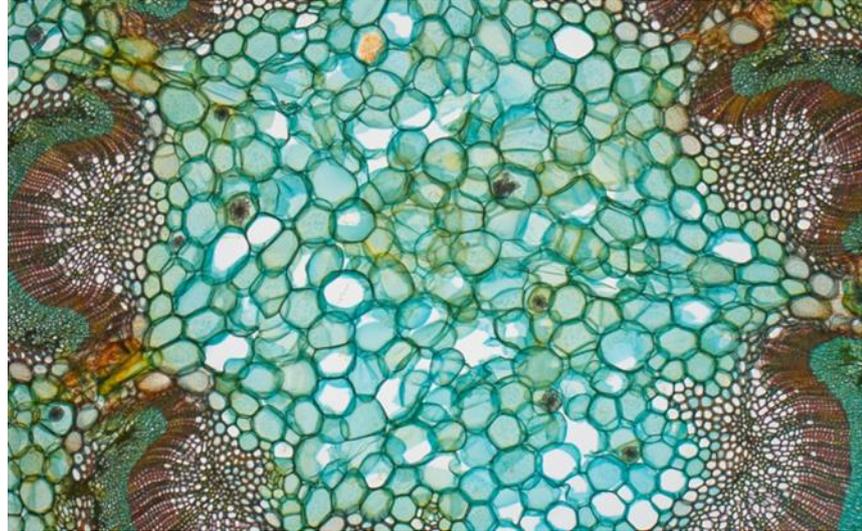
CCD 2/3"



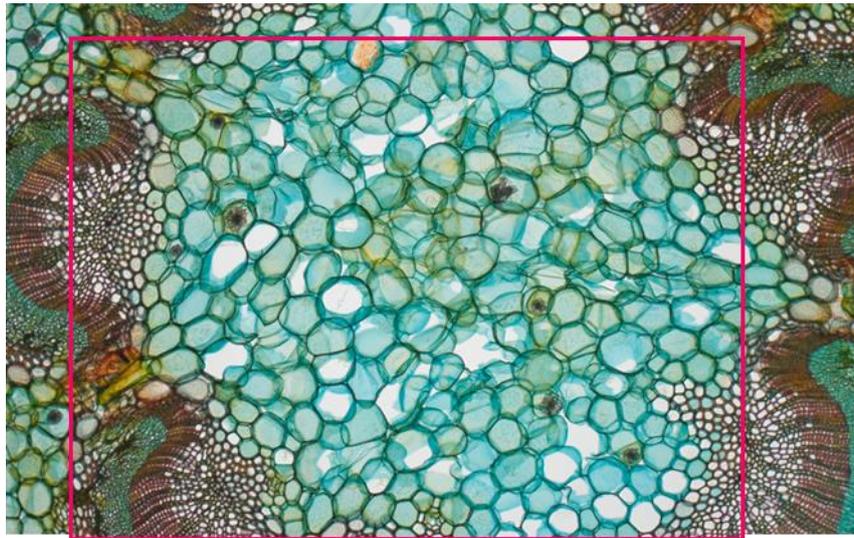
TV-Adaption Zeiss 1,0x (60N-C 1")

JENOPTIK GRYPHAX® KAPELLA

CMOS 1/1.2"



TV-Adaption Zeiss 1,0x (60N-C 1")



<b>Equipment:</b>	Microscope	Zeiss AxioScope.A1
	Lens	Zeiss 5x EC-Eiplan-NEOFLUAR
<b>Sample:</b>	Hedera Helix (Gemeiner Efeu) Blattstiel quer "1037"	

Sensor size and best fitting TV-adapter 0,63

ProgRes® CFcool  
CCD 2/3"



TV-Adaption Zeiss 0,63x (60N-C 2/3")

JENOPTIK GRYPHAX® KAPELLA  
CMOS 1/1.2"



TV-Adaption Zeiss 0,63x (60N-C 2/3")



**Equipment:** Microscope Zeiss AxioScope.A1  
 Lens Zeiss 5x EC-Epiplan-NEOFLUAR  
**Sample:** Hedera Helix (Gemeiner Efeu) Blattstiel quer "1037"



JENOPTIK GRYPHAX® KAPELLA has a more than **37 % larger** sensor field than ProgRes® CFcool.

JENOPTIK GRYPHAX® KAPELLA **advantages:**

- ☆ Microscopy-**optimized** field of view
- ☆ Cost-**efficient** TV adaption 1x are suitable
- ☆ **Brilliant** image colors by proven JENOPTIK color reproduction

## Live image



JENOPTIK GRYPHAX® KAPELLA is equipped with an **all pixel scan** and **global shutter** sensor. It provides **120 fps at 2.3 MPix** live image speed, perfect for video recording. This is **more than 9 times faster** compared to CFcool frame rate.

Main features of JENOPTIK GRYPHAX software take advantage of the modern camera characteristics.

### Video / Slow motion record

JENOPTIK GRYPHAX® KAPELLA **advantages:**

- ☆ Video speed at live image: “You get what you see”
- ☆ Video recording of living or to be moved specimen at brilliant image quality, without interlace effect.

### EDF / Z-stacking

JENOPTIK GRYPHAX® KAPELLA **advantage:**

- ☆ Real-time appearance of EDF/ Z-stacking images (no interlace effect, no distorted images) saves time.

### Panorama

JENOPTIK GRYPHAX® KAPELLA **advantage:**

- ☆ Real-time appearance of panorama images (no interlace effect, no distorted images) saves time.

## Captured Image

JENOPTIK GRYPHAX® KAPELLA **advantage:**

- ☆ This camera provides 60 % more resolution and therefore more details.

## Software



JENOPTIK GRYPHAX software is workflow optimized capture software. It is created to help users intuitive getting the perfect live and captured image and saving time.

JENOPTIK GRYPHAX® Software **advantage:**

- ☆ Cross-platform compatible **WIN, MAC** and **LINUX**
- ☆ **Identical GUI** across WIN, MAC and LINUX platform
- ☆ **Versatility:** Free SDK, wide range of 3rd party software support
- ☆ **Drivers for:** µManager, Twain, MetaMorph and DirectX support included
- ☆ **Stability:** Made in Germany, software updates free of charge

## Weight and dimension

ProgRes® CFcool	JENOPTIK GRYPHAX® KAPELLA
Weight: ~ 800 gr	Weight: ~ 400 gr
Dimension:: L x W x H in mm 89 x 84 x 93	Dimension: L x W x H in mm 85 x 75 x 50,2

### JENOPTIK GRYPHAX® Packaging advantage:

- ☆ Lower transport costs due to less weight and dimension of housing and camera packaging.

## Applications and contrast techniques

### JENOPTIK GRYPHAX® KAPELLA recommended Applications

- Life & Medical Science
- Education Life & Medical Science
- Material & Manufacturing
- Education Material & Manufacturing
- Fluorescence
- Education Fluorescence

### JENOPTIK GRYPHAX® KAPELLA recommended contrast techniques

- BF – Bright-Field
- DF – Dark-Field
- DIC – Differential-Interference-Contrast
- Ph – Phase contrast
- Pol - Polarization

JENOPTIK GRYPHAX® KAPELLA is the superior solution for fluorescence applications.

## Summary

### JENOPTIK GRYPHAX® KAPELLA advantages at a glance:

- ☆ **Effective** photon to electron transformation
- ☆ No interlace effect & no smear
- ☆ **Low dark noise** and **low dark current**
- ☆ **High dynamic range**
- ☆ **Cooling** - Unique vibration-free software cooling developed by JENOPTIK\*
- ☆ High input clock frequency
- ☆ **High live & video frame rate**
- ☆ **Secure investment:** long-lasting & reliable hardware
- ☆ **37% larger** field of view
- ☆ Microscopy-**optimized** field of view
- ☆ **Brilliant** image colors by proven JENOPTIK color reproduction
- ☆ Cost-**efficient** TV adaption 1x are suitable
- ☆ Video speed at live image: "You get what you see"
- ☆ Real-time appearance of **EDF/ Z-stacking** images saves time
- ☆ Real-time appearance of **panorama** saves time
- ☆ Camera provides **60 % more resolution** and therefore more details
- ☆ Cross-platform compatible **WIN, MAC** and **LINUX**
- ☆ **Identical GUI** across WIN, MAC and LINUX platform
- ☆ **Versatility:** Free SDK, wide range of 3rd party software support
- ☆ **Drivers for:** µManager, Twain, MetaMorph and DirectX support included
- ☆ **Stability:** Made in Germany, software updates free of charge
- ☆ Low transport costs due to less weight and dimension

\*unique vibration-free software cooling developed by JENOPTIK (further information [gryphax@jenoptik.com](mailto:gryphax@jenoptik.com))



Refine every microscope workstation with  
JENOPTIK GRYPHAX® KAPELLA

The **premium solution** for research applications with  
difficulty lighting conditions

Also take a look on our [new product portfolio JENOPTIK GRYPHAX®!](#)

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