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Tips and Tricks For Improving Gross Specimen Photography





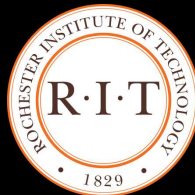
Around 2007 the newspaper industry begins to resemble this...

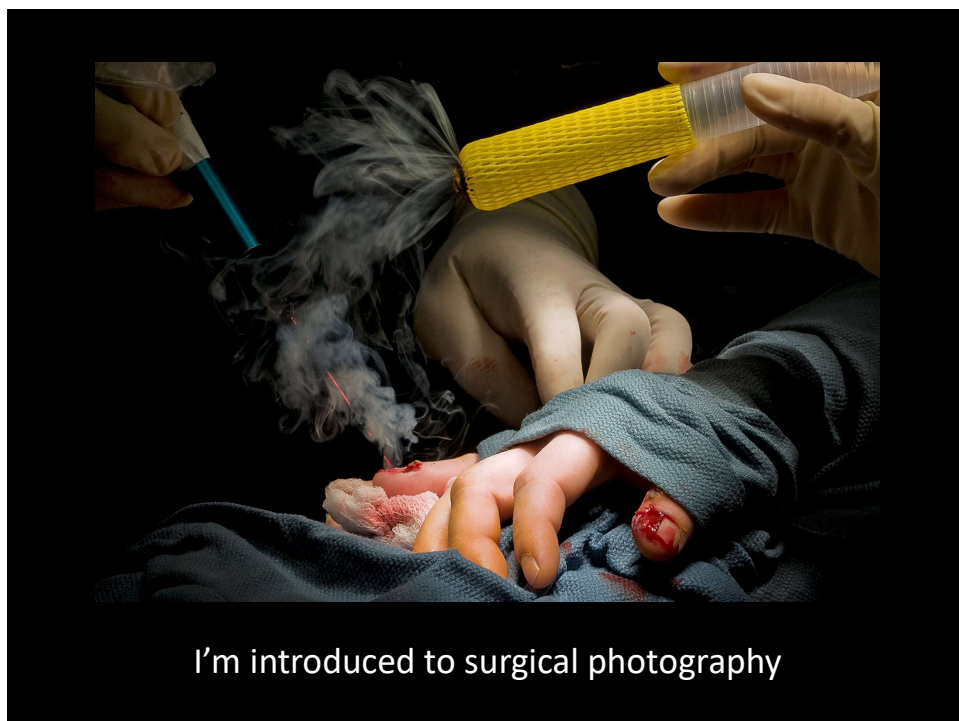
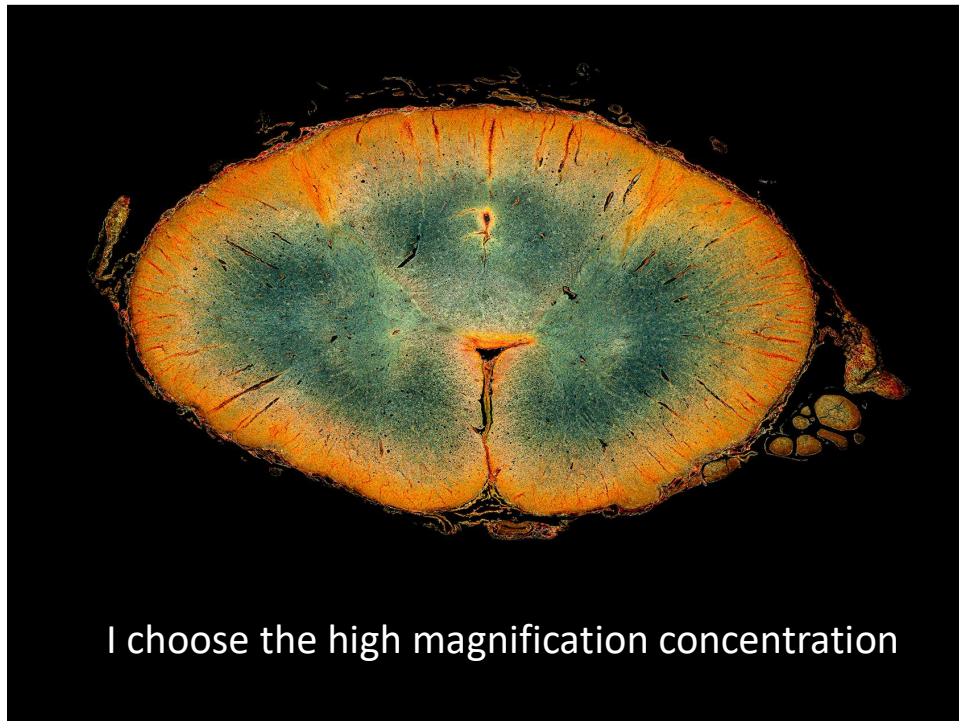




I returned to school in 2008 to study
BIOMEDICAL PHOTOGRAPHIC COMMUNICATIONS
at:

R·I·T



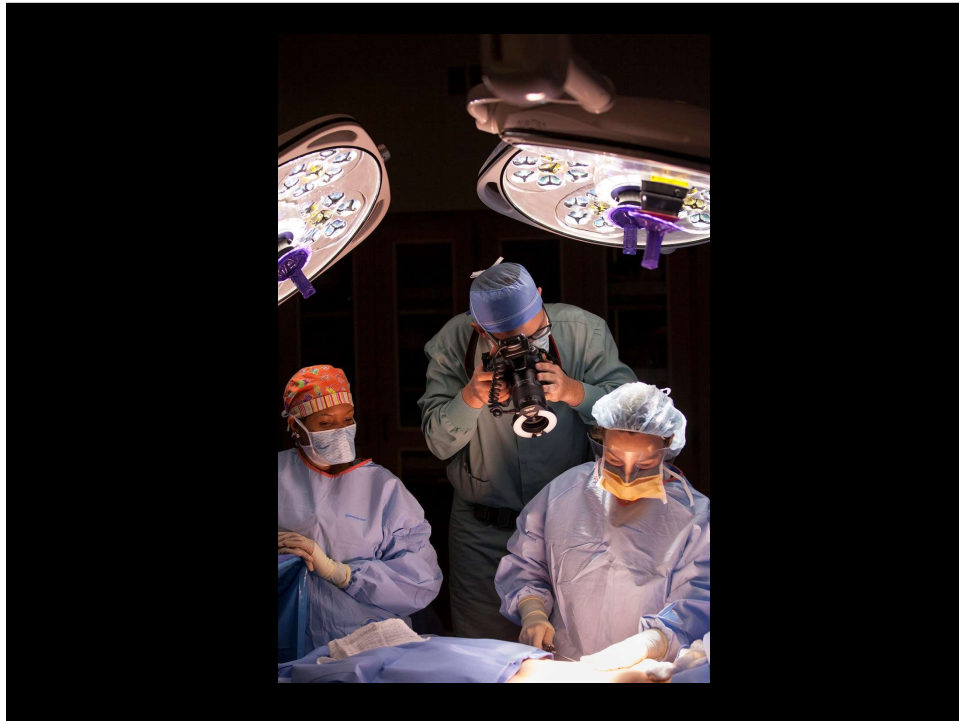




I study standardized medical photography
at the University Hospital of Wales

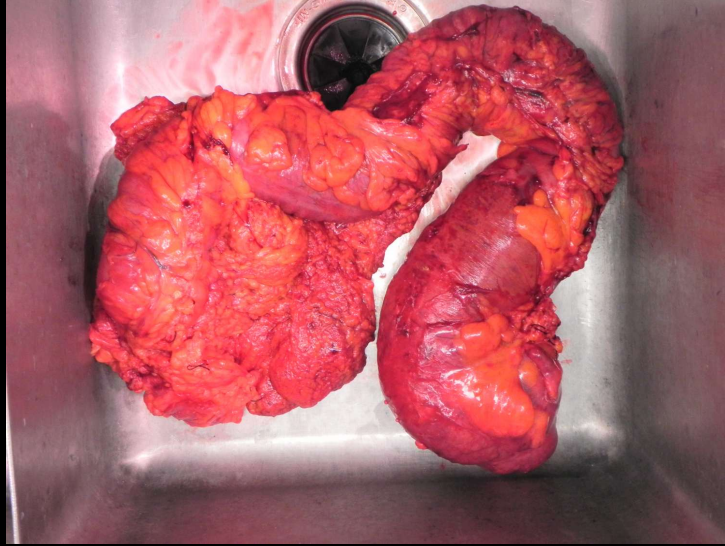


Mayo Clinic Hospital in Phoenix, AZ



- What I inherited was “unique”
- A big part of my job becomes customer service
- Surgical Pathology becomes one of my biggest focus areas
- One goal becomes the improvement of their general photographic output

How can we make this better?



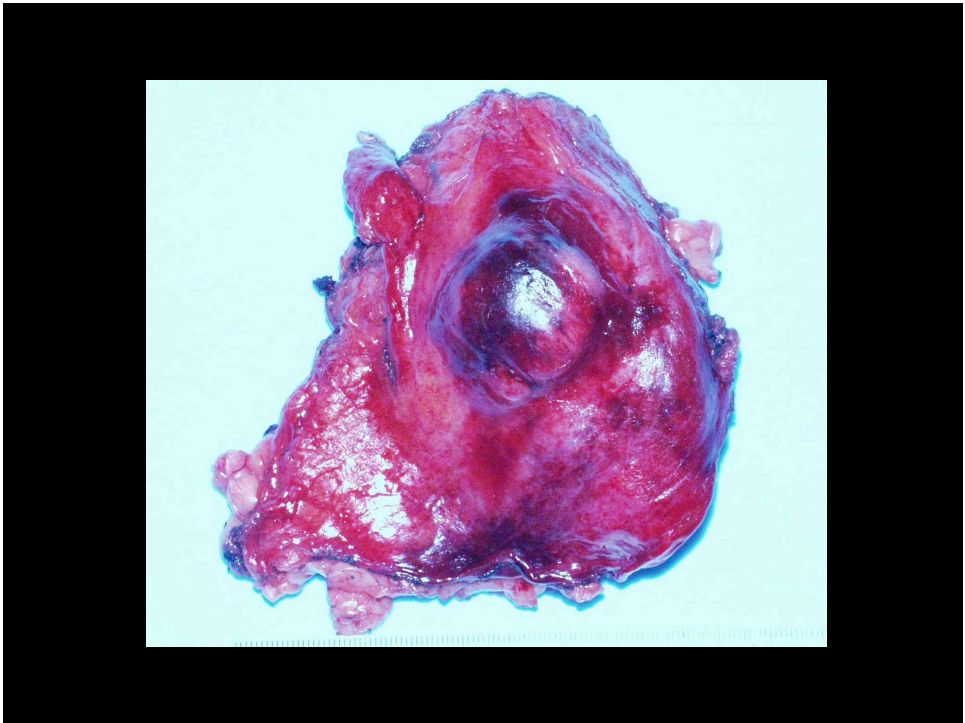
DEPARTMENTAL NEEDS FOR A NEW PHOTO PROTOCOL

- "It has to be safe"
- \$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$
- The operations can't interfere with the regular SURG PATH workflows
- Photos need to be created in the least amount of space possible

I began researching surg-path images in our photo archive to see what improvements could be made

IT WAS SCARY!









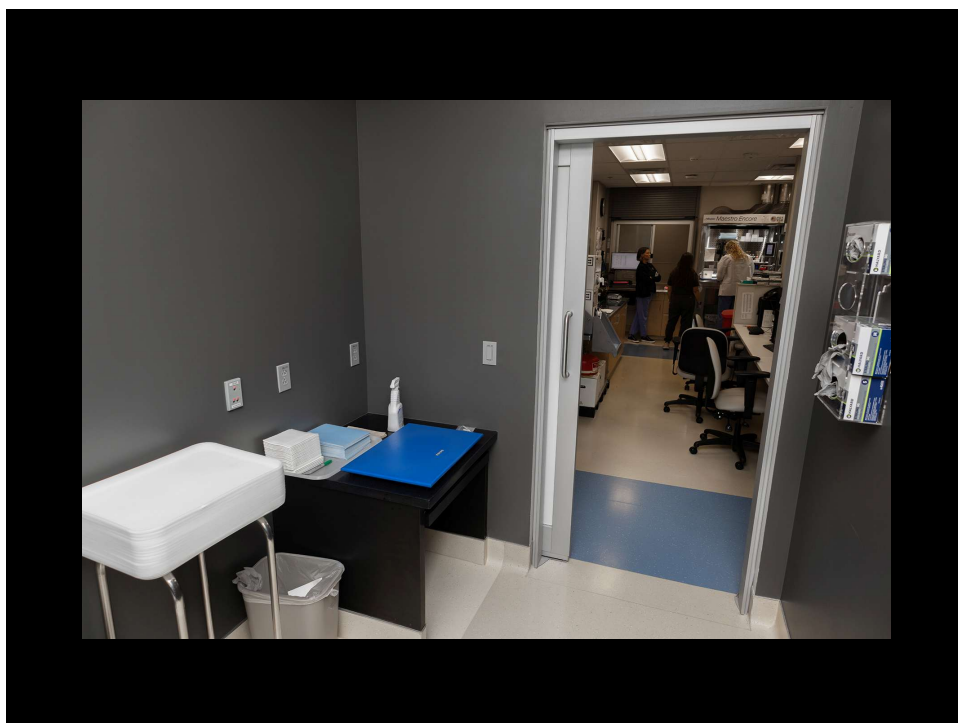
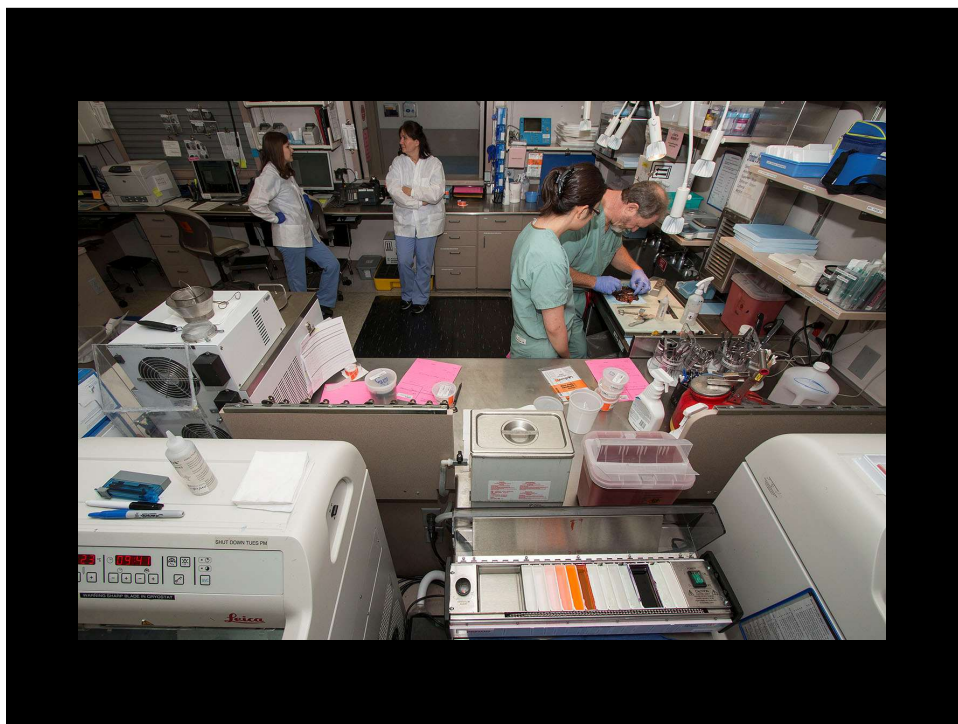
INITIAL CONCLUSIONS

- Upgrade the technology (BUY A NEW CAMERA)
- PAs and techs would benefit from some basic photography training/education (from me)
- Implement standardization

LAB EXPANSION PROJECT \$\$\$\$



B&H

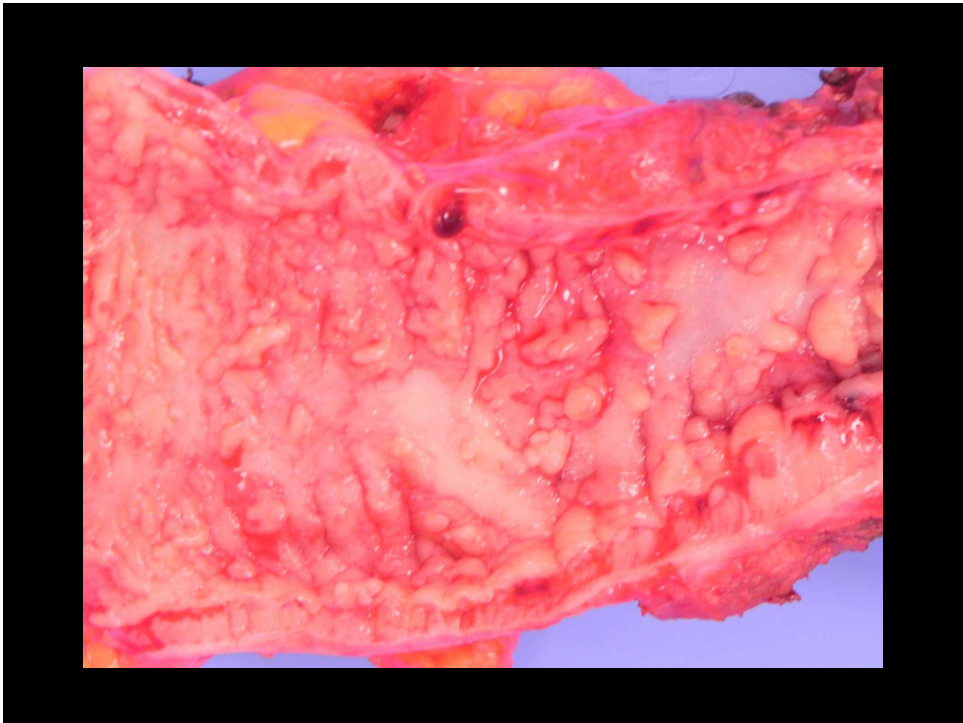


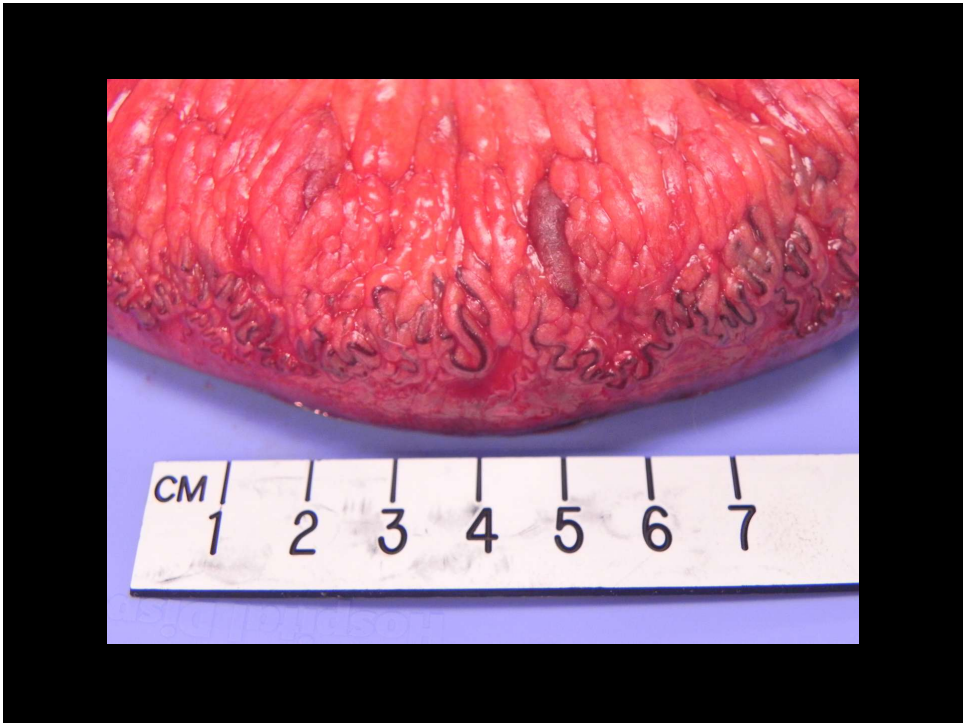
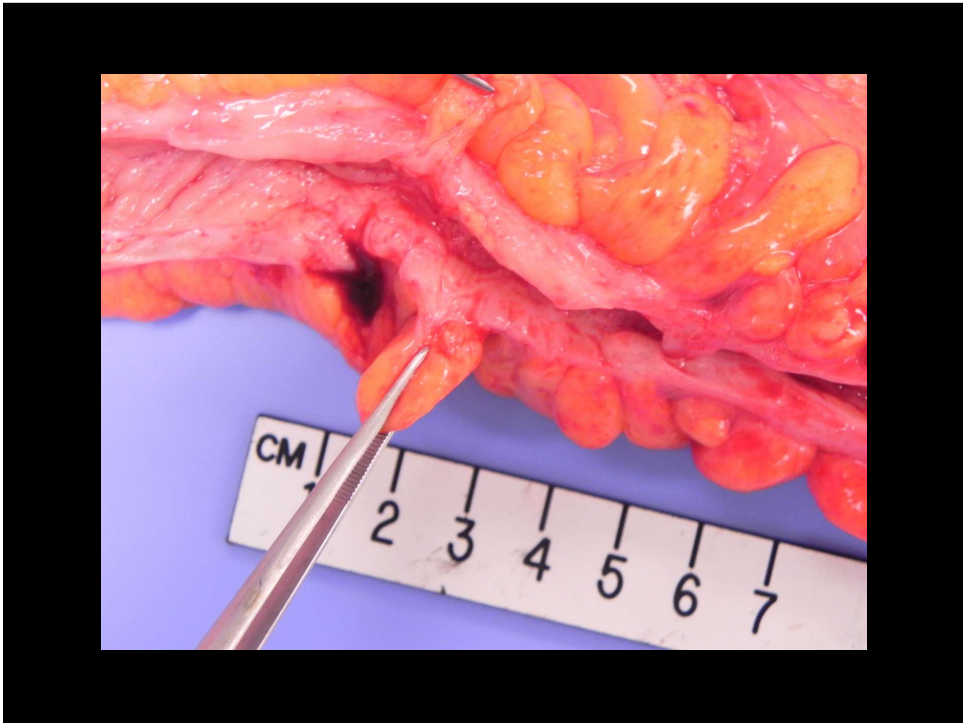
THE NEW 'CAMERA'

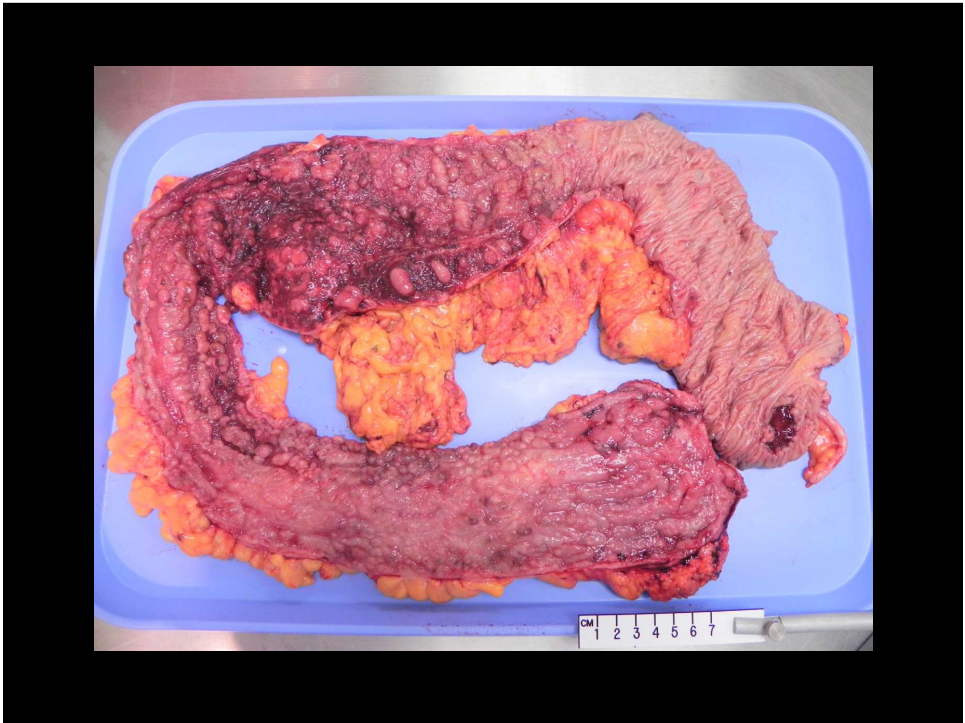


Nikon Coolpix P100 10 megapixel





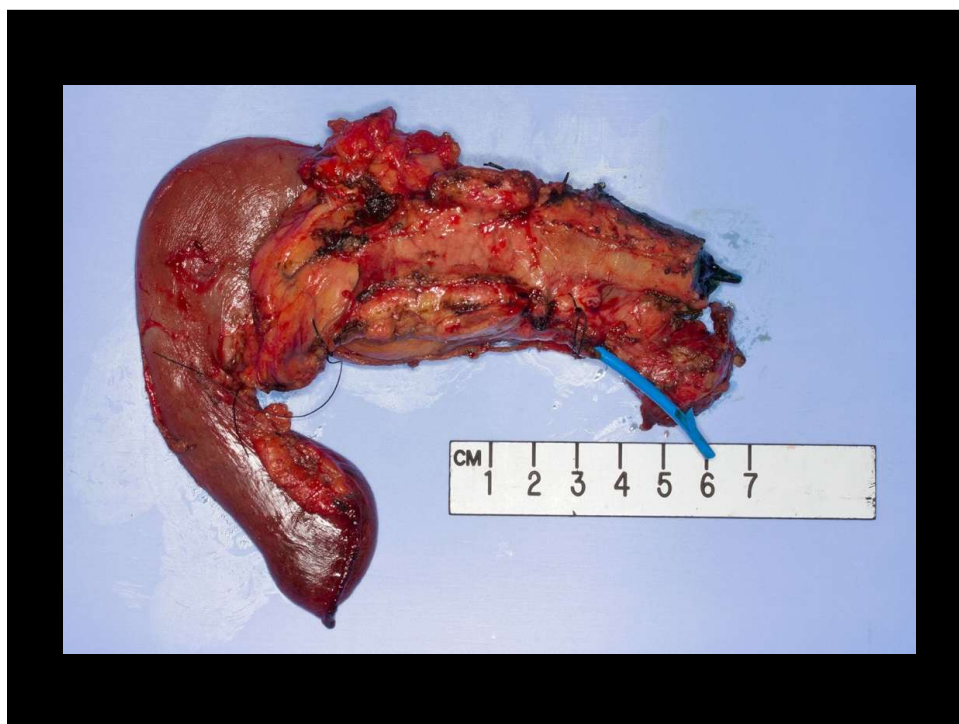


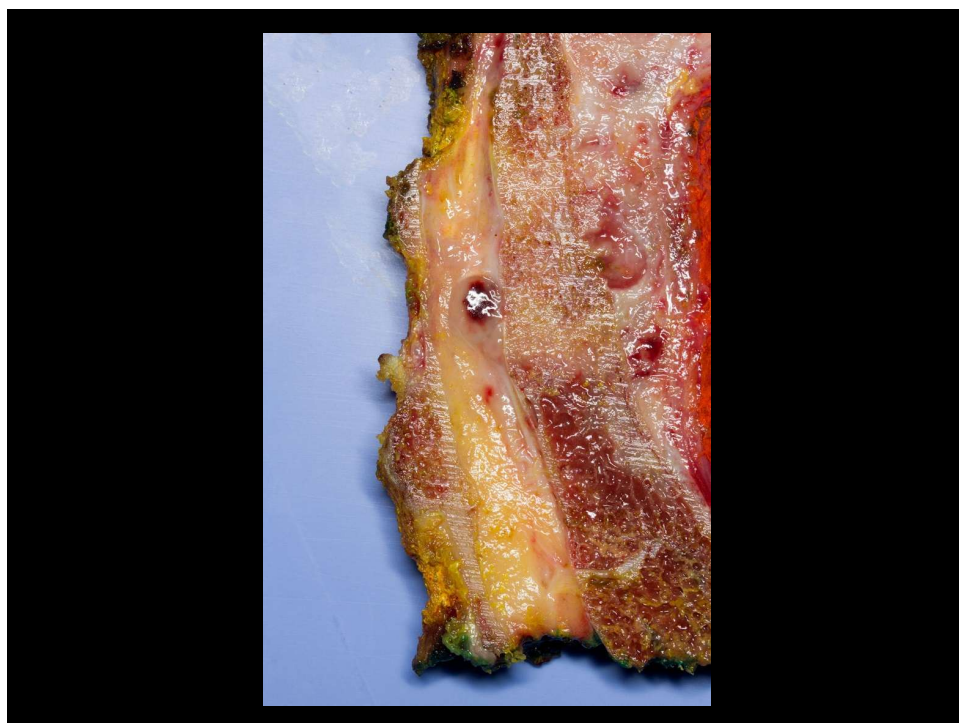


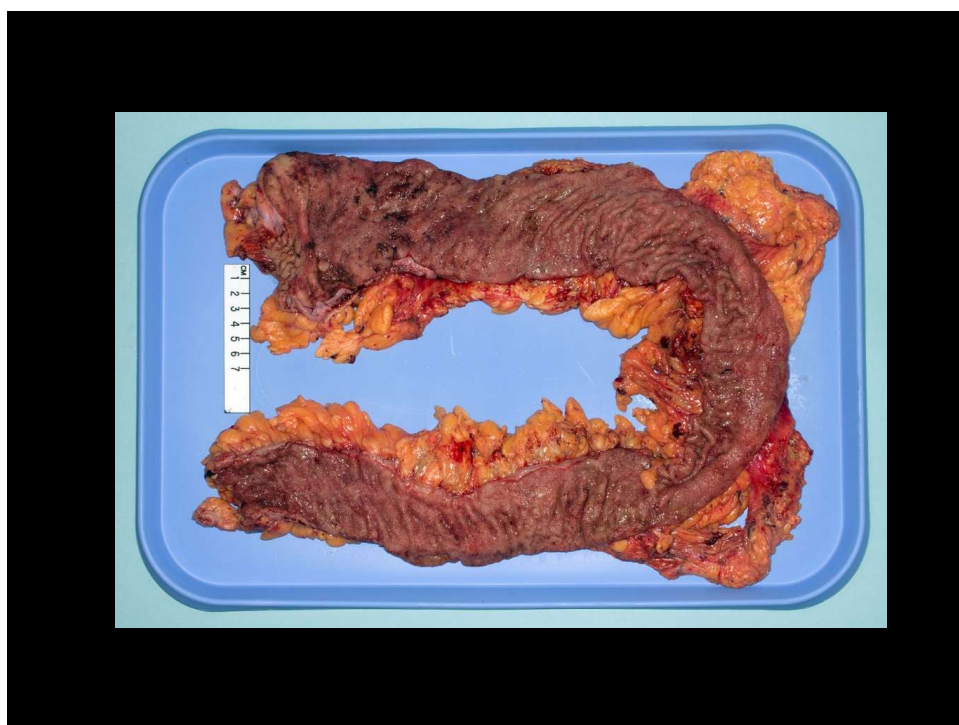
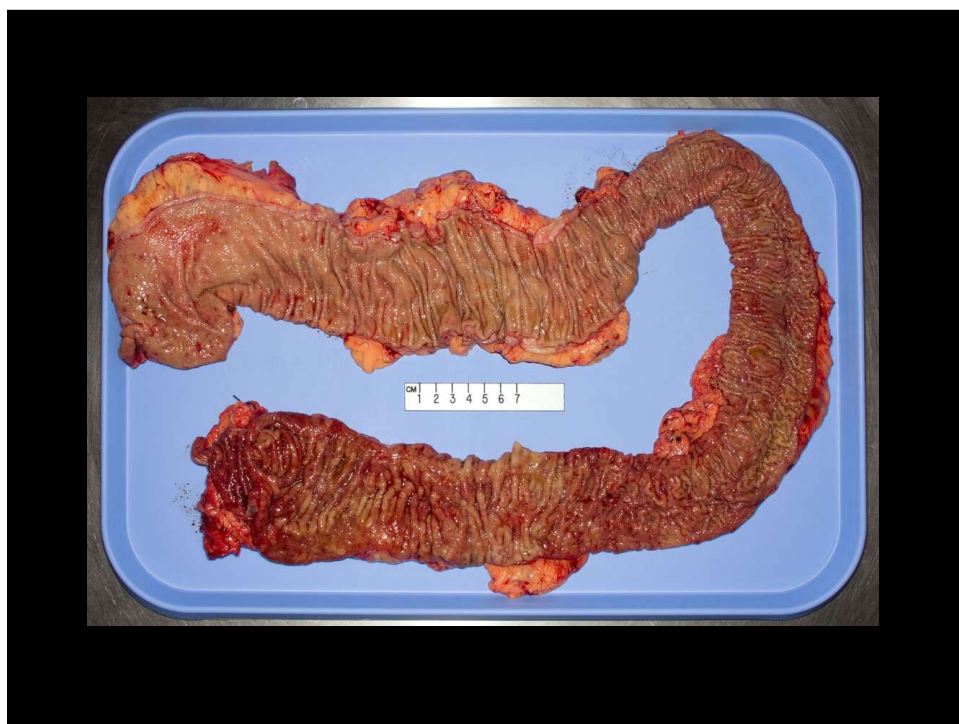
- A hiring freeze is announced that stalls the expansion project
- \$\$\$ for a photo station is gone
- We were going to have to work with what was already available

NEXT ROUND OF CONCLUSIONS

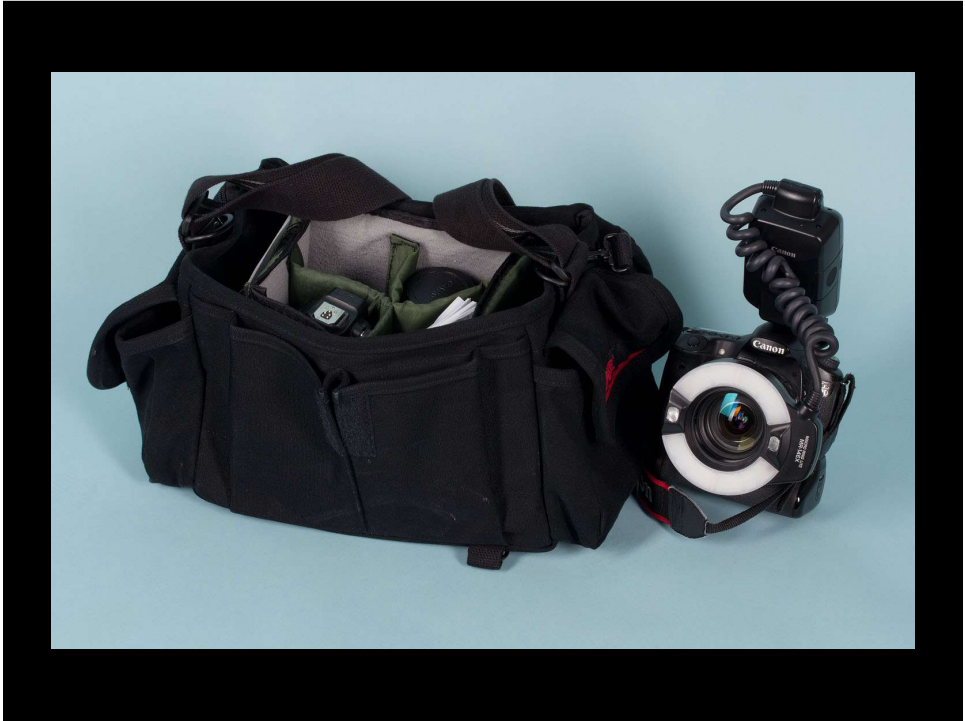
- Call the photographer !









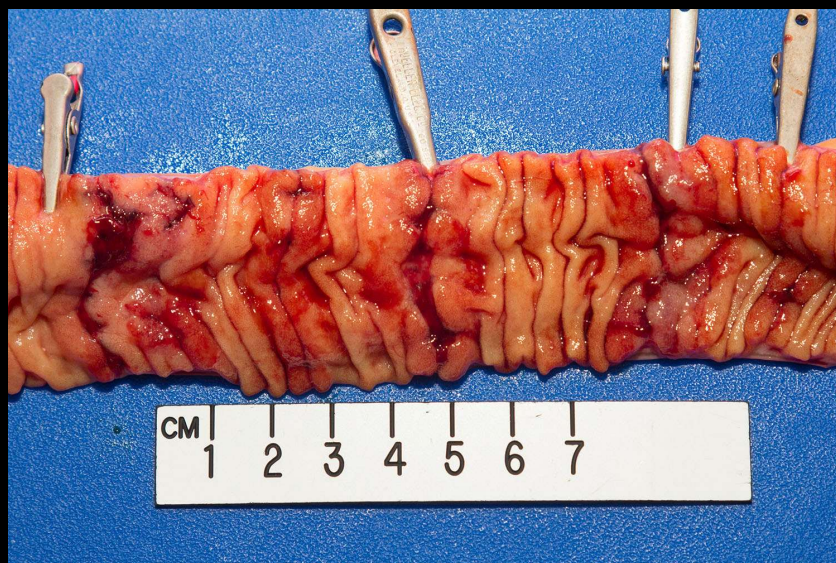


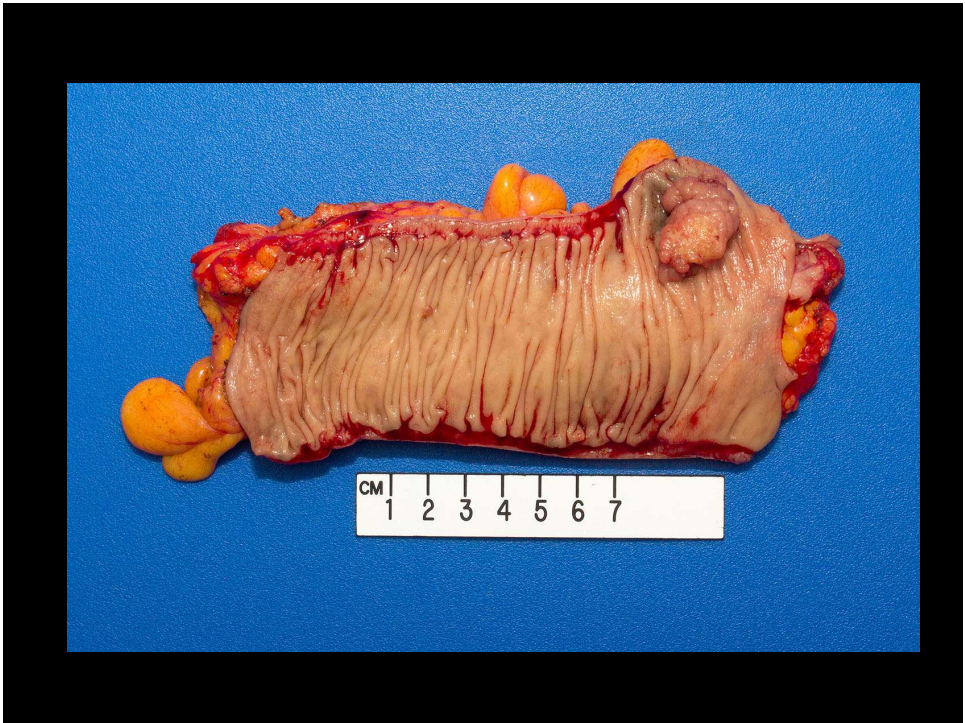
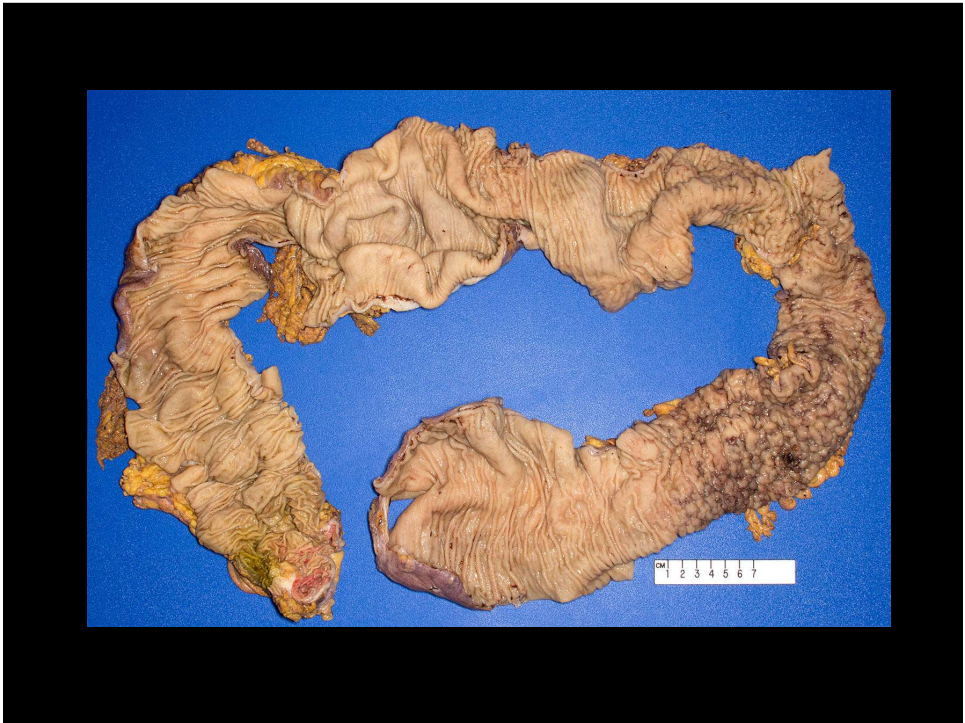


Why don't we bounce the light source ???



\$30 - \$40



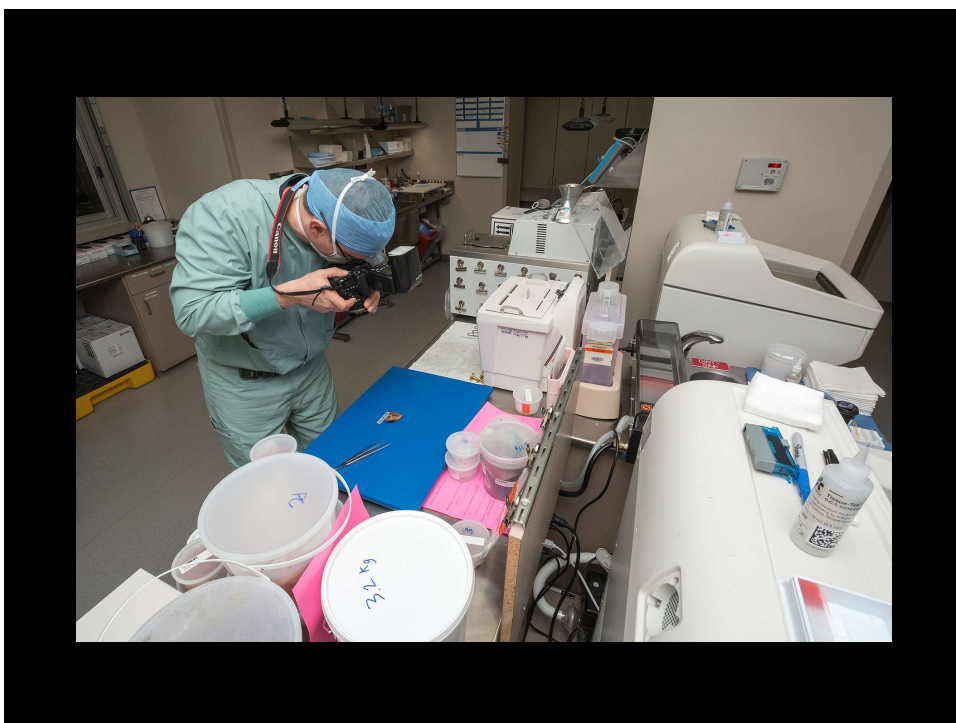


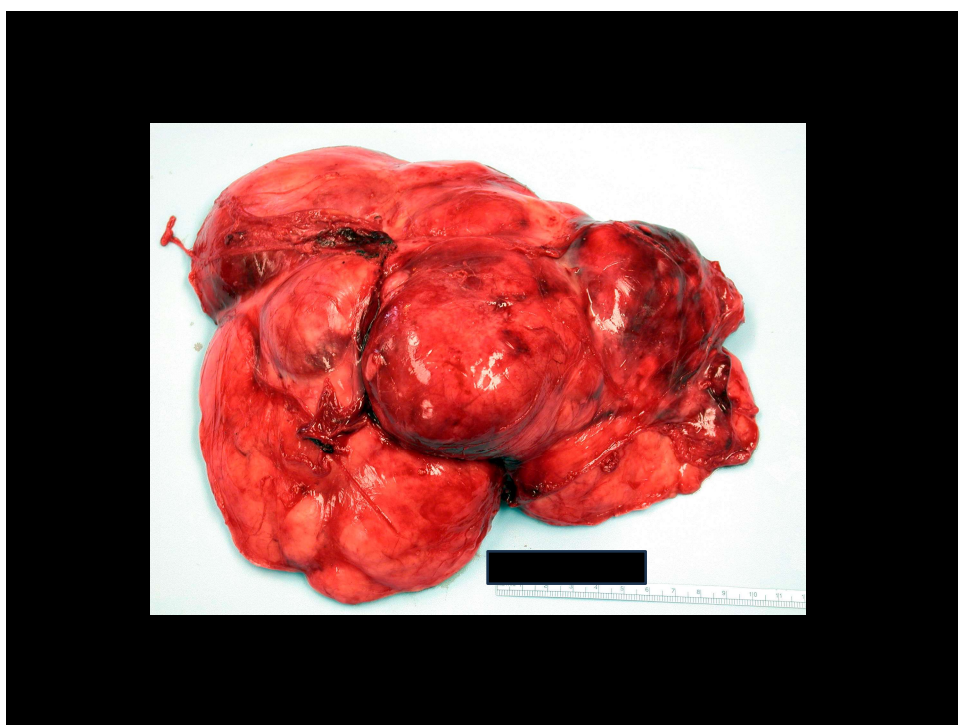


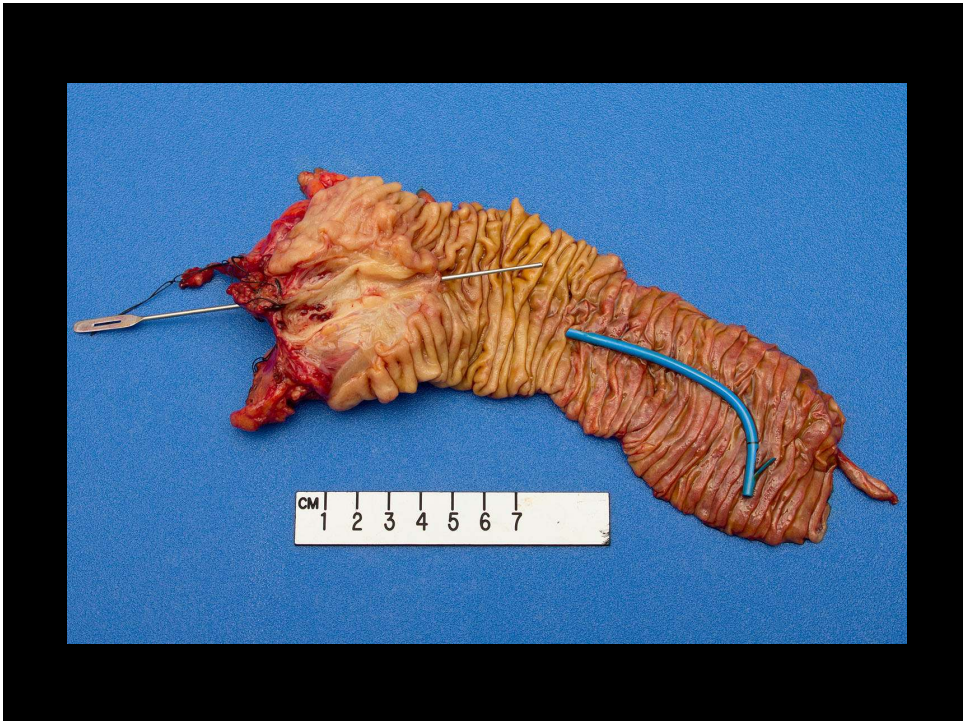
Wide panel for diffusion



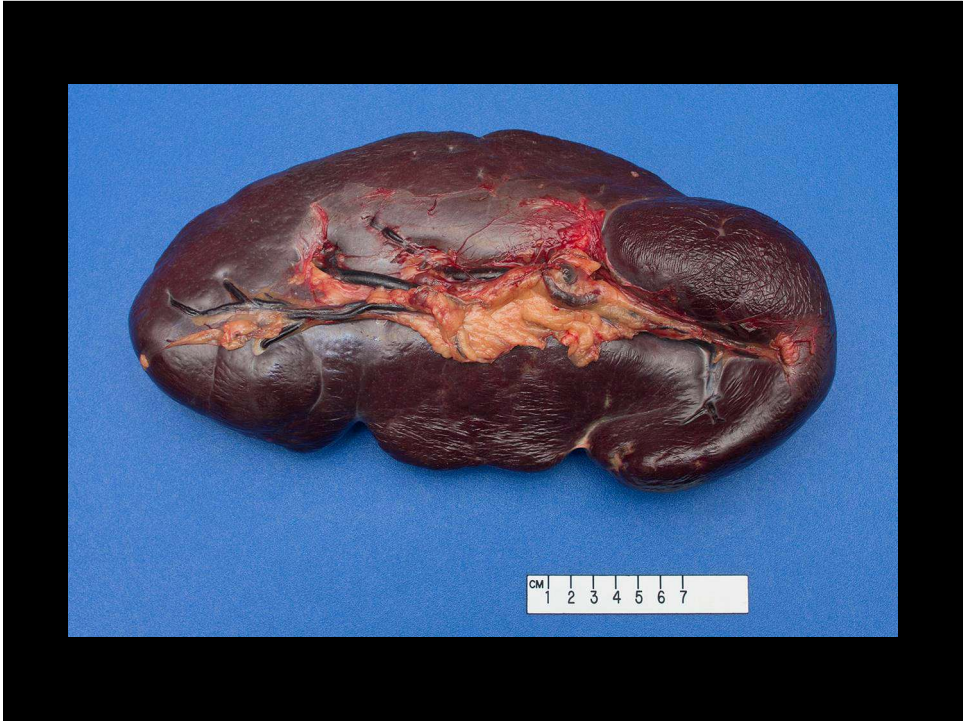


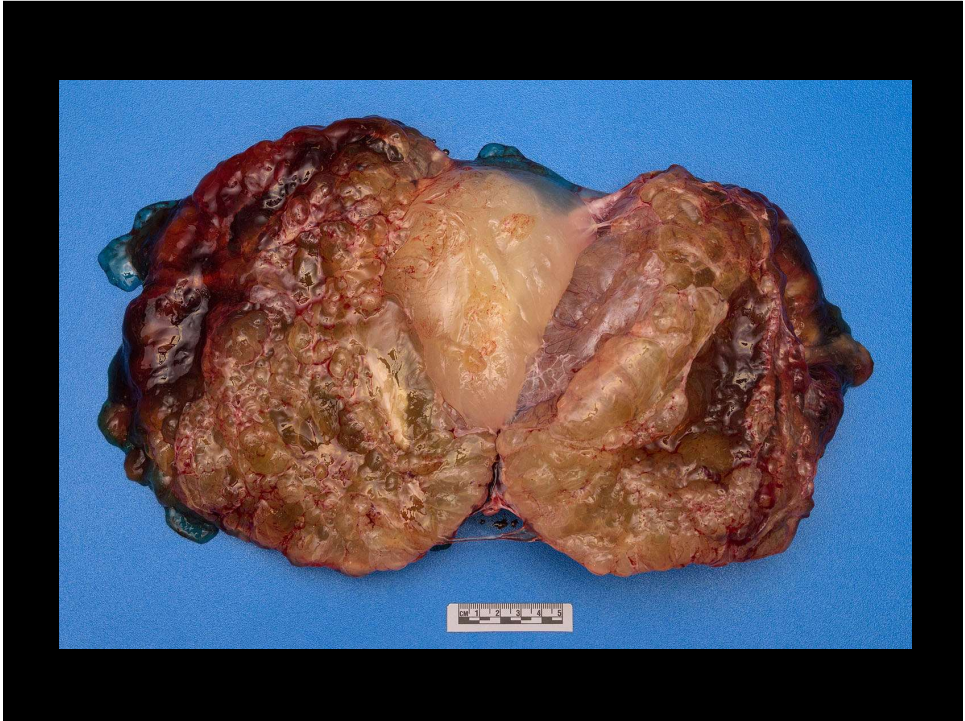




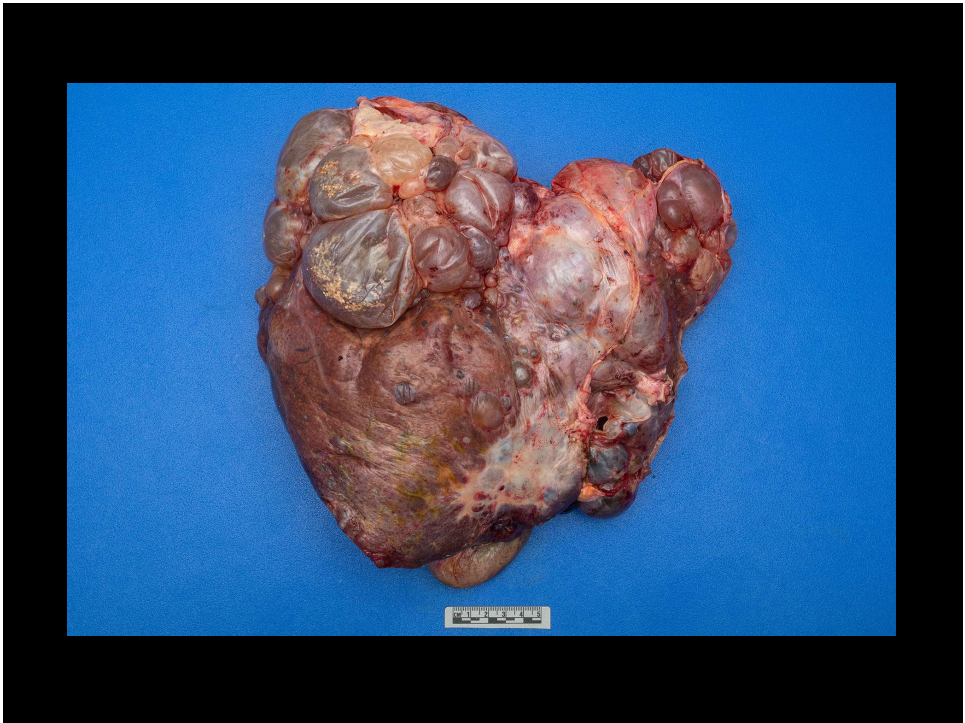
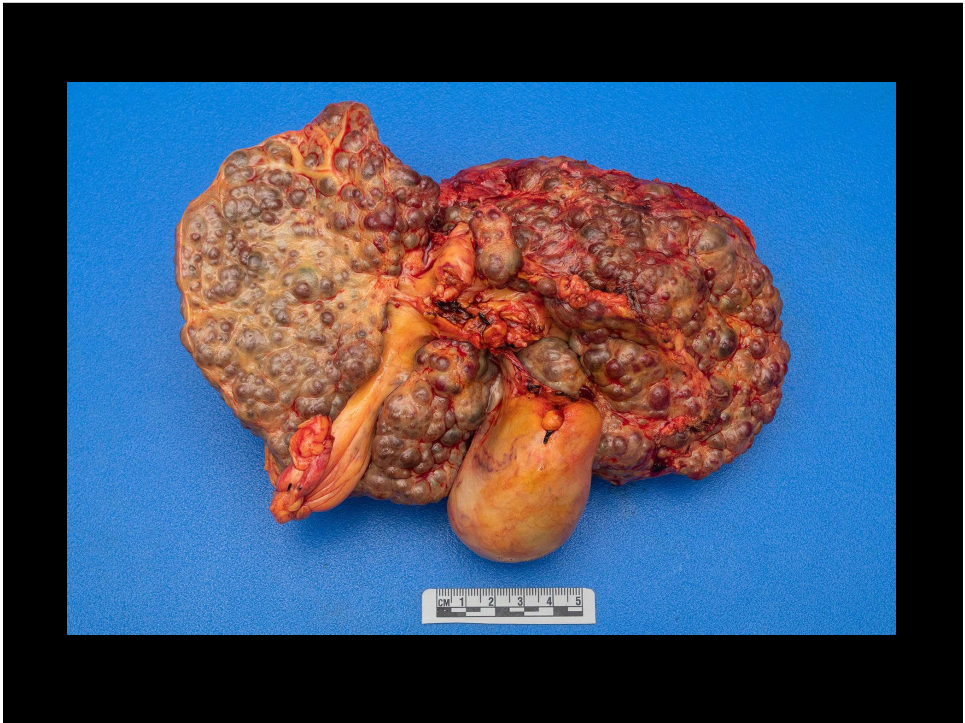


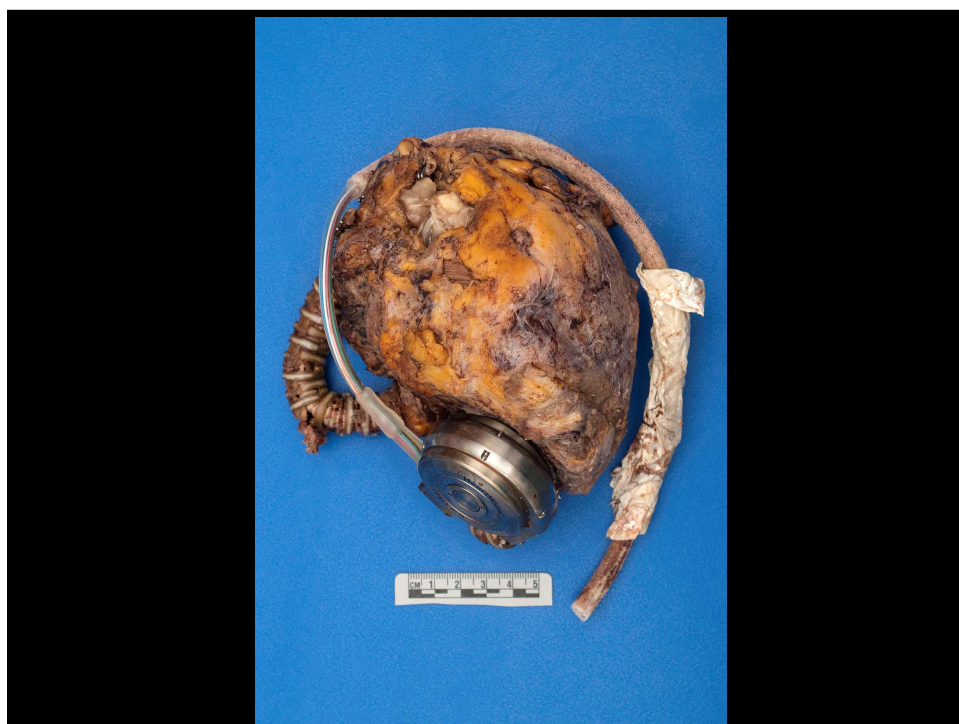




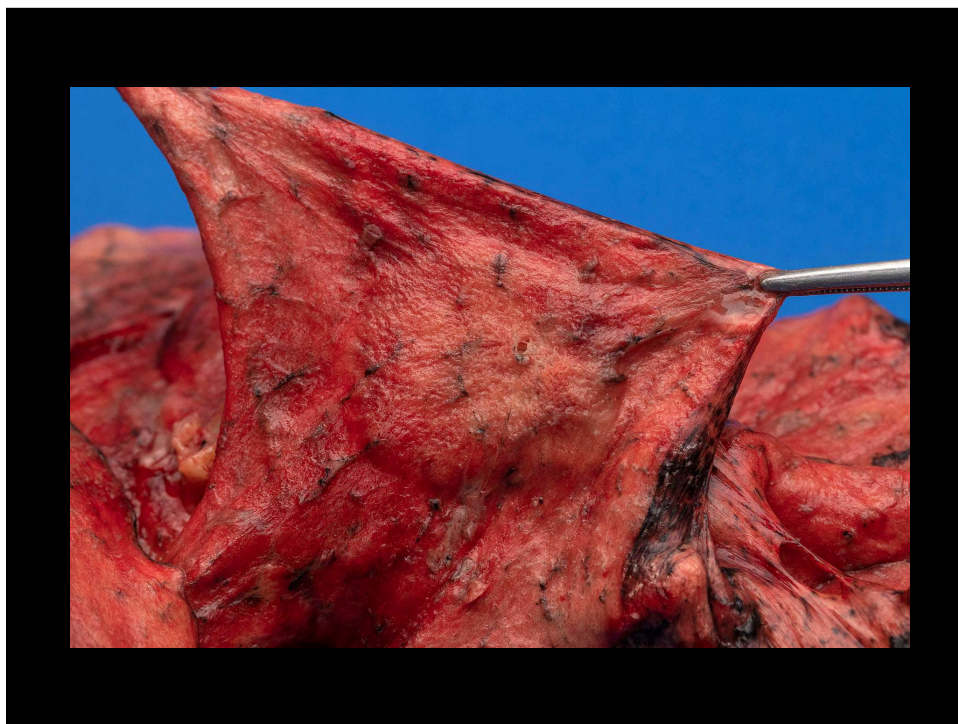








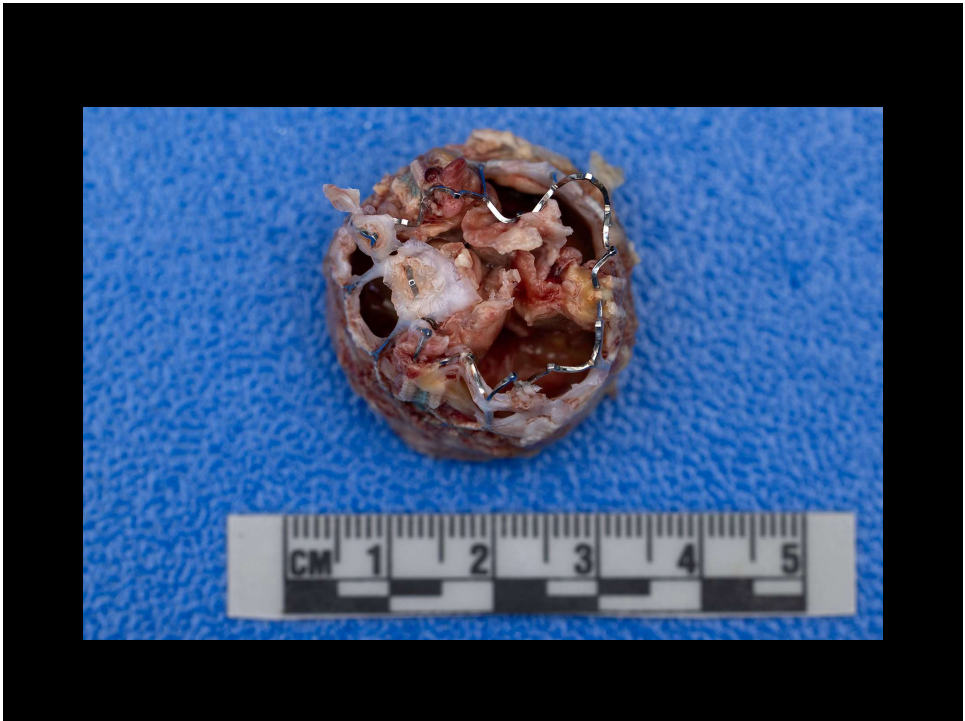












How it's done

Exposure



Exposure can be defined as the amount of light that falls onto the camera's light-sensitive surface (sensor)

There are three ways to control exposure:

- Aperture
- Shutter Speed
- ISO

Together they are known as
THE EXPOSURE TRIANGLE

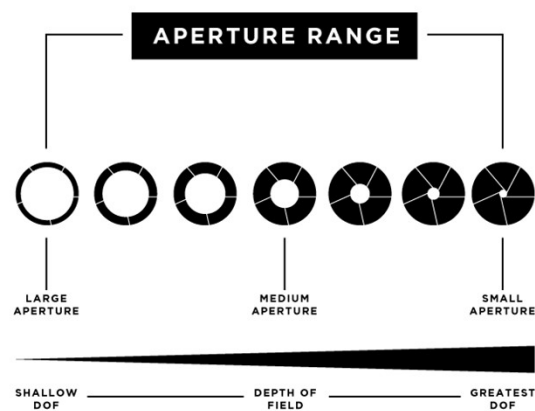
Aperture

An opening that light passes through on its way into an optical or photographic instrument

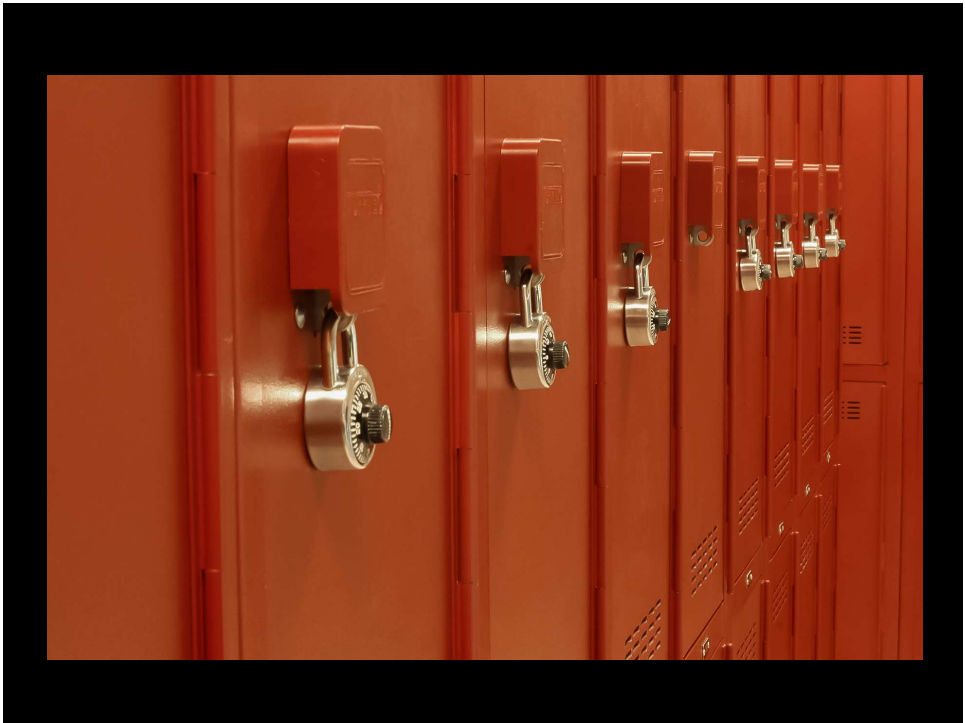
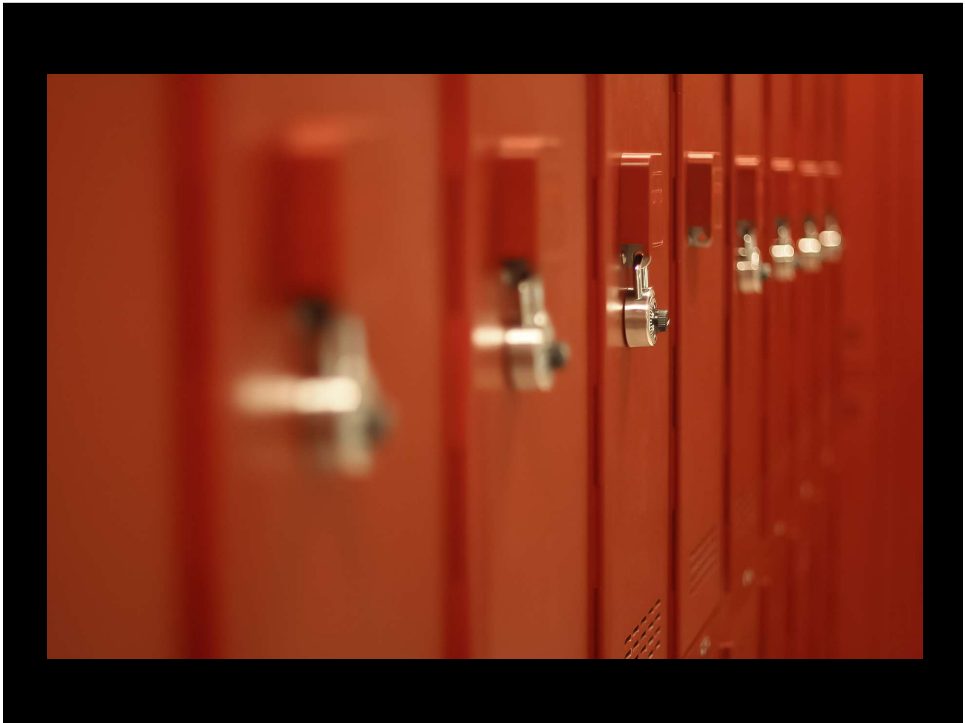
This opening is found inside the lens and can be adjusted to control the amount of light reaching the image sensor. The size of the aperture is measured with a scale devised of units called f-stops



- Aperture controls depth of field (DOF)
- DOF is the area of good definition (or sharpness) in an image
- The larger the aperture, the smaller the depth of field (smaller f-stop number)
- The smaller the aperture, the larger the depth of field (larger f stop number)



CreativeLive



Shutter Speed

The Camera Shutter

A shutter is the device that allows light passing through a camera to land directly onto it's imaging sensor for a determined period of time



Envatotuts+

Shutter Speed

- The shutter speed is the unit of measurement which determines how long the shutter remains open
- Shutter speeds are expressed in seconds or fractions of a second (For example ...2, 1, 1/2, 1/4, 1/8...)
- Shutter speed 'freezes' action as it increases and cause 'blur' when it is decreased
- Motion starts to become completely frozen at about 1/500 of a second

Higher Shutter Speeds Freeze Action



Slower Shutter Speeds Show Motion Blur

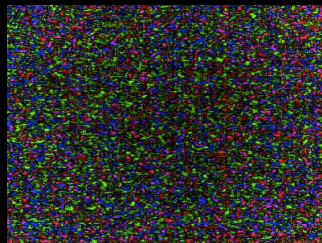


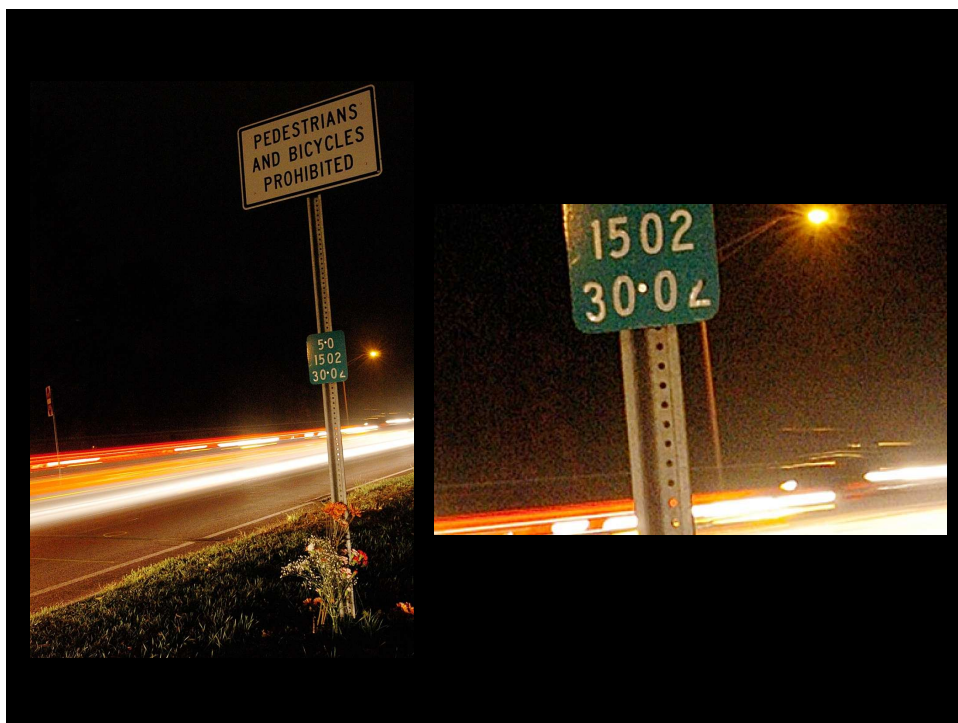
Shutter Speed and Aperture: “A Give and Take Relationship”

- Together they control the total amount of light reaching the sensor
- Faster shutter speeds require more light entering the system to achieve proper exposure. This usually means a smaller f-stop, or larger aperture
- Slower Shutter speeds require less light in order to achieve the proper exposure. This usually means a larger f-stop, or smaller aperture

ISO

- The International Organization for Standardization
- ISO measures the light sensitivity of the image sensor
- Lower ISO settings are good in bright light and produce images with better image resolution
- Higher ISO settings are generally used in darker situations
- Higher ISO settings result in a loss of image resolution and the introduction of digital NOISE.





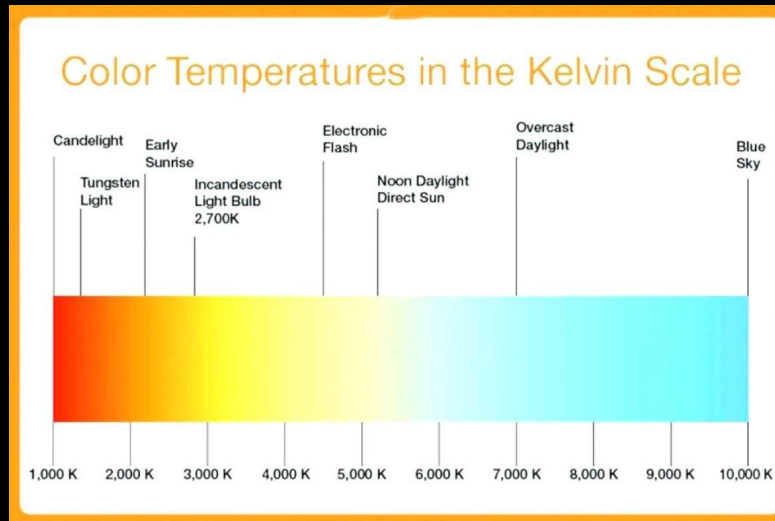


White Balance

- White balancing is the calibration of a camera to see the color white in relation to the light source being used.
- The user is telling the camera what the color white is
- Light is color and different like sources produce different colors
- The human eye has the natural ability to adjust to different colored light source on its own

The Kelvin Scale:

William Thomas (Lord Kelvin)



~2700 K

60 W Incandescent

3500 K

13 W Fluorescent

5500 K

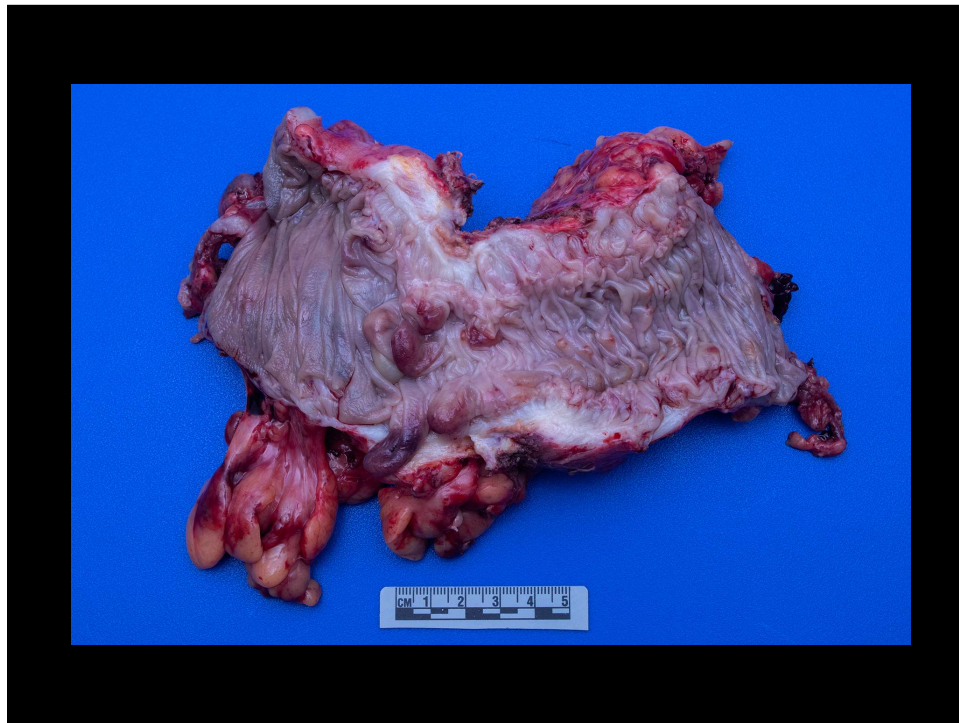
13 W Fluorescent

Wikipedia

Preset White Balance Settings

AWB Auto	 Tungsten	 Fluorescent	
 Daylight	 Cloudy	 Flash	 Shade





My Base Camera Exposure

ISO 500

Shutter Speed 200 (my camera's flash sync speed)

APERTURE = f7.1 to f13

White balance = Flash Preset

Flash set to MANUAL at FULL power (1:1)

Gear



What camera should I buy?

An expensive camera will not make you
a better photographer

It will provide you with the ability
to create better images

Purchase as many megapixels
as you can afford

Pixel

The smallest individual
light-sensitive sensor cell
on a digital camera's
imaging sensor

Megapixel

One million pixels

Common types of cameras:

- Cell phone
- Point and shoot
- DSLR / Digital Single-Lens Reflex
- Mirrorless

Cell phone cameras:



iPhone X something

Cell phone cameras:

- Not ideal for this type of work!
- HIPAA risks
- They should be dedicated offline device
- The phone should be secured when not in use
- Patient images should be removed and securely stored immediately after capture or daily
- Photo apps

Point and shoot cameras:



\$60 Yiglo



\$900 Sony

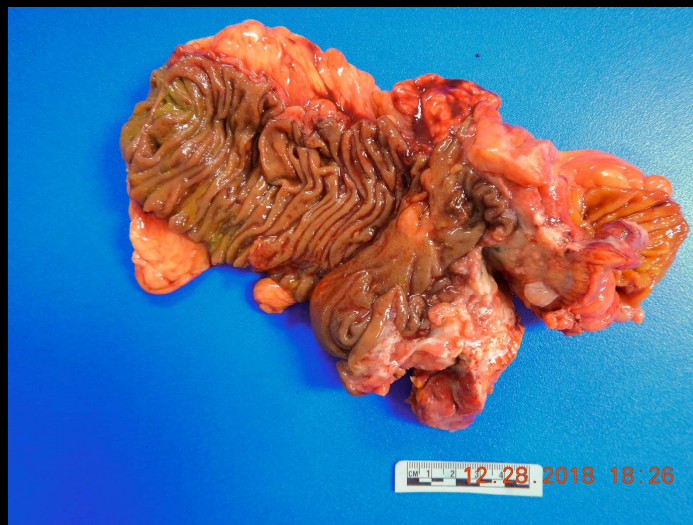


\$2000 Leica

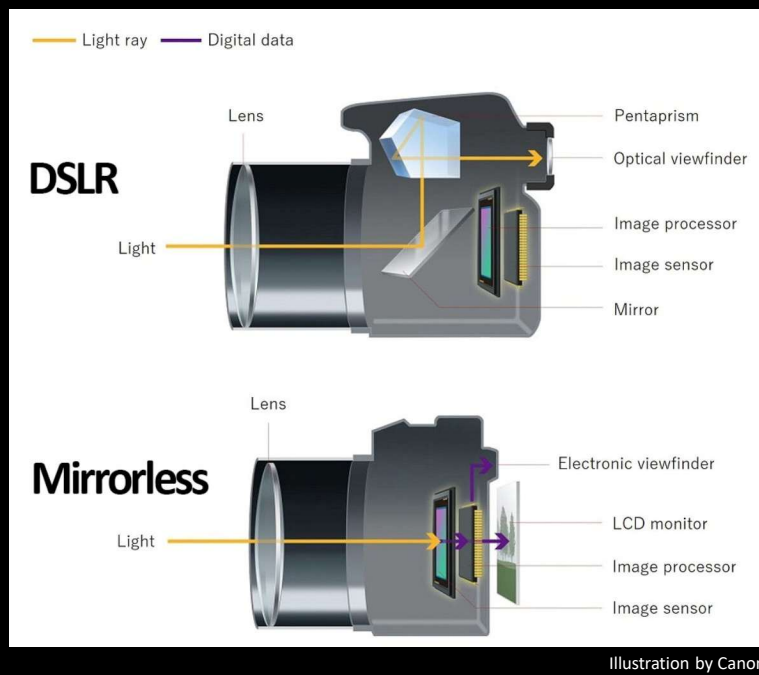
Point and shoot cameras:

- Mirrorless
- P&S have both manual and automatic function
- Offline device
- Off camera lighting
- Should also be stored securely with any patient info removed when not in use

Point and shoot cameras:



DSLR/ Mirrorless:



Lenses



Macro Lenses





Wide Angle Lenses



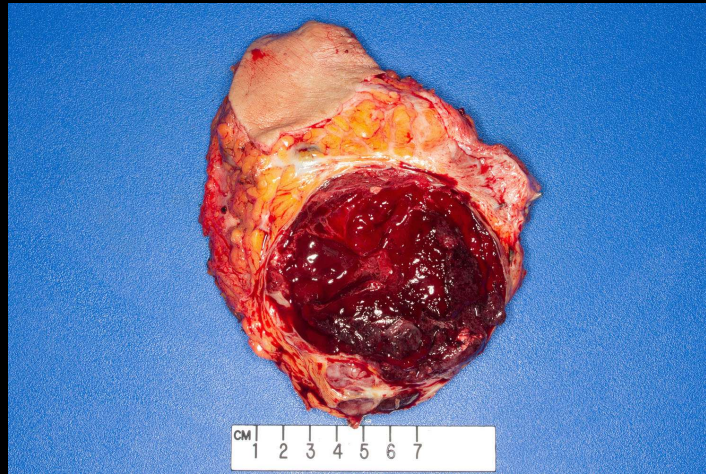
24 mm – 105 mm wide-to-zoom



Lights and Lighting



Canon 600EX-RT Speedlite and Canon MR-14EX II Macro Ring Lite



Direct / Directional

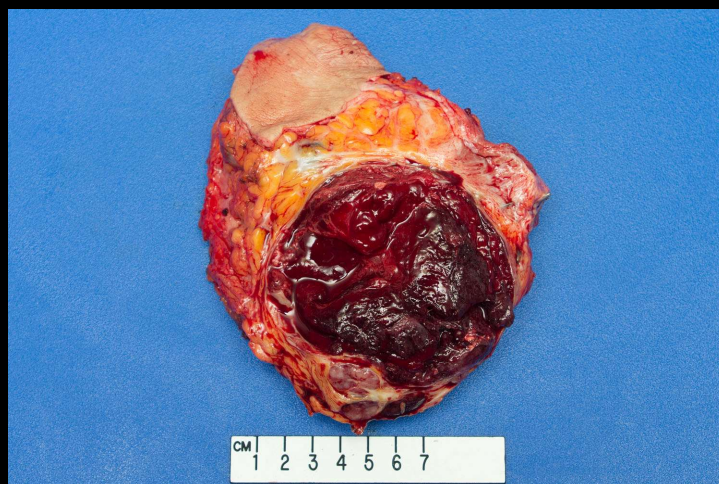




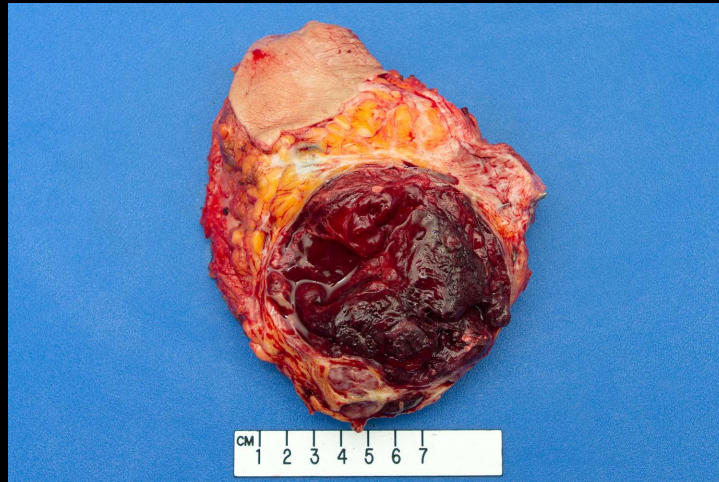
Handheld



Speedlite



Reflected



Reflected and diffused





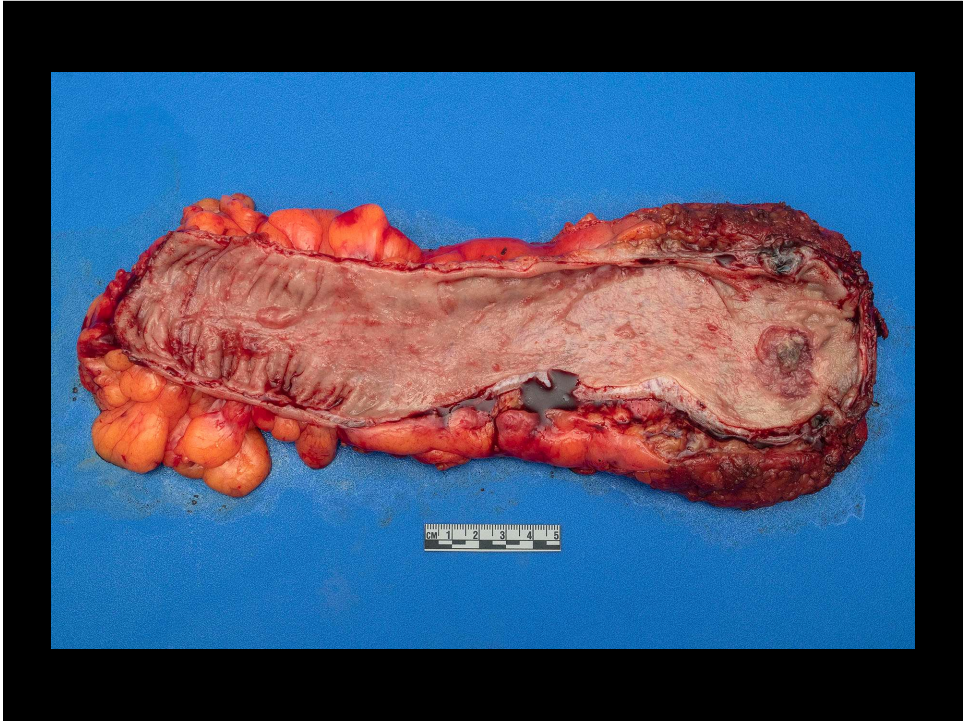


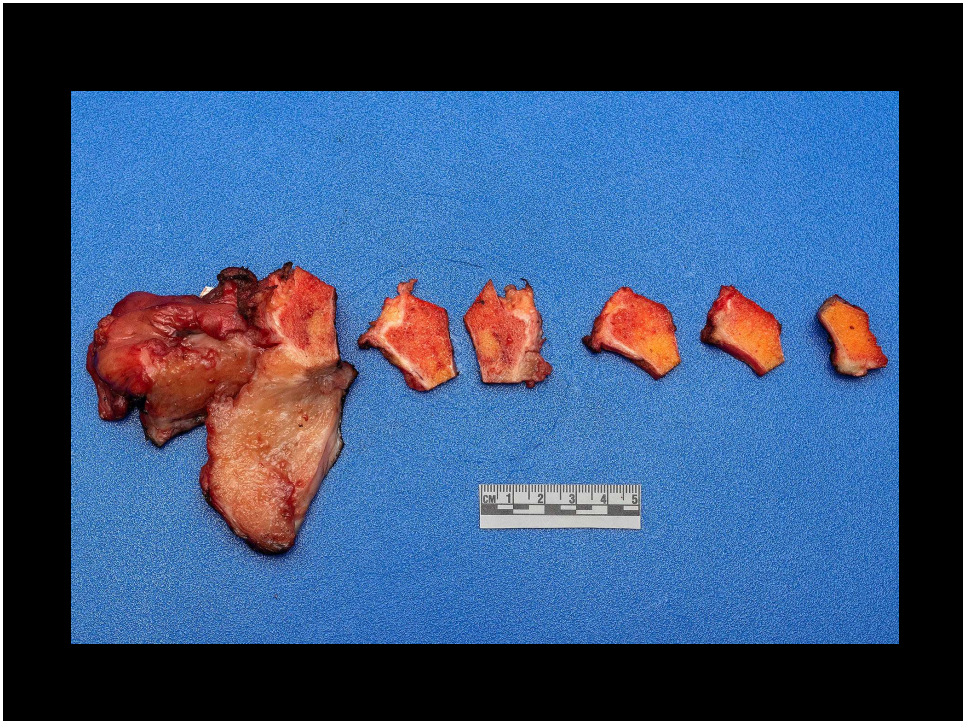
Off camera lighting



Presentation

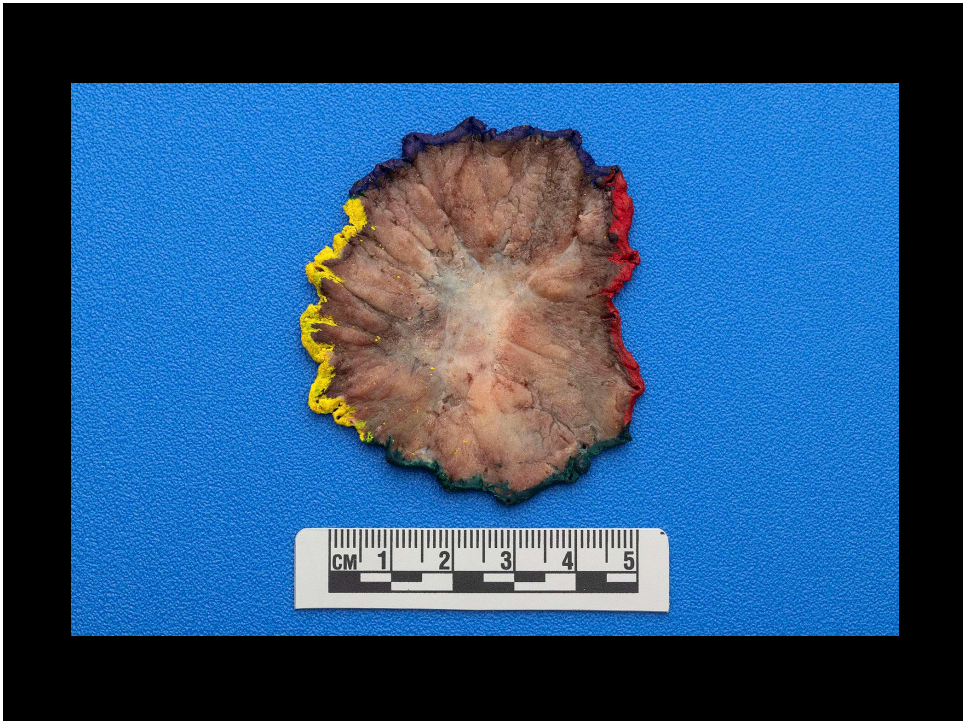


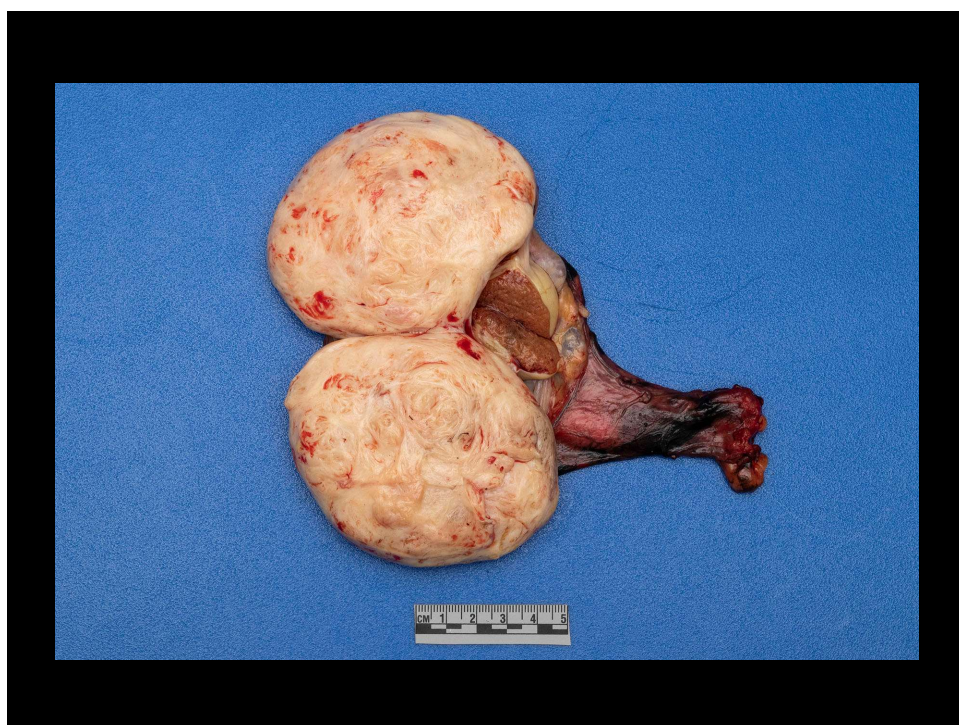


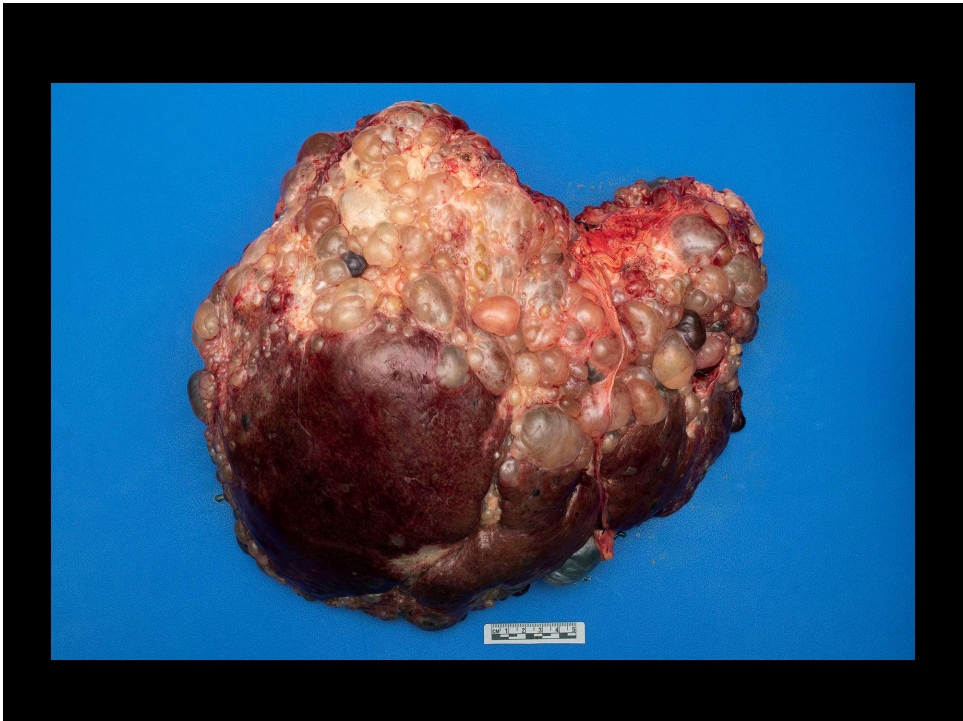


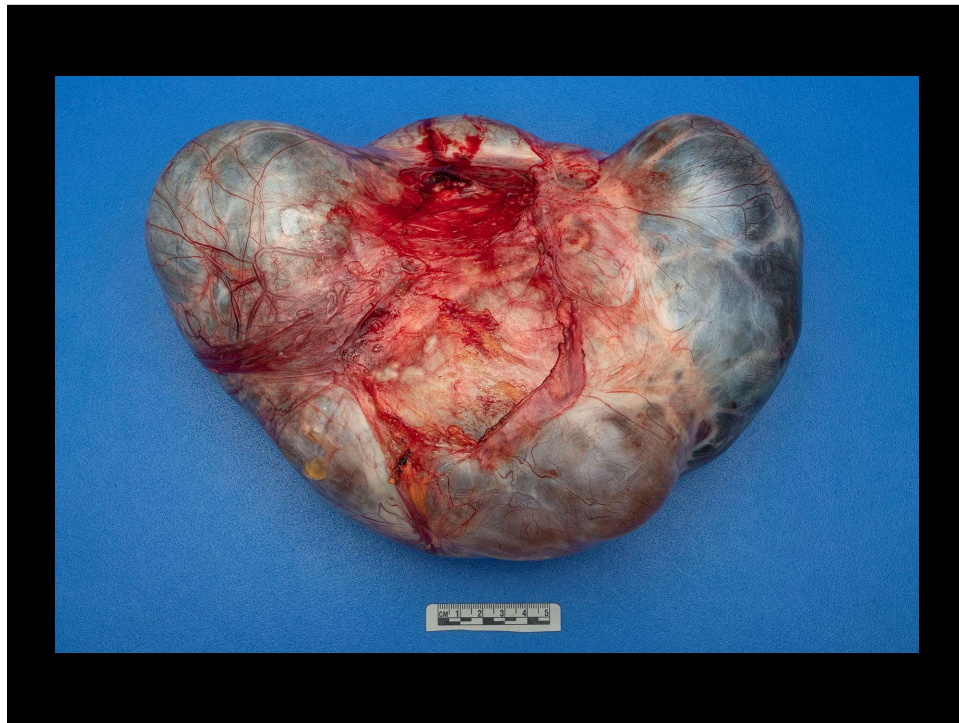












THANK
YOU!

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