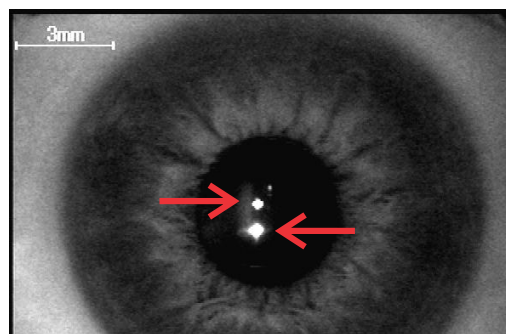


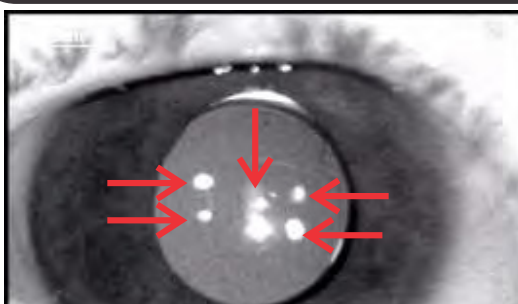
# KONAN CellChek™ Quick Tips

- ☐ Align the patient's forehead to be perpendicular to the forehead bar. Move the head laterally (R $\longleftrightarrow$ L) to center the eye. Do not tilt head.
- ☐ Ask the patient to blink until the auto-alignment moves to the center of the image (or the REC indicator on the upper left starts to flash). Operator may say: "Open wide, watch the green target"
- ☐ Check the number of reflections in the patient's pupil. On typical patients, you will often see only one or two. If multiple reflections are observed, it is likely that the patient is post surgical (IOL, ICL, DSAEK). You may want to select IOL MODE (LED OFF) which can help you obtain great images for these cases. See below: "When cells are not visible".
- ☐ Do not dilate pupil. DSAEK / DMEK: may be helpful to shine a penlight into the fellow eye to constrict the pupils.
- ☐ Images that reveal no visible endothelial cells are important and valuable evidence of the disease state (dystrophies such as Fuchs', I.C.E, Trauma)
- ☐ Advanced corneal dystrophies may alter the cellular surface creating local irregularities that are not reflected and therefore cannot be imaged. This should be documented even if it cannot be analyzed.
- ☐ If typical methods fail, or if dark and white linear vertical bands are present on either left or right side of the specular image, these are signs of optical focus issues with the patient's corneal conditions. Switch to Manual Focus mode and change the focus value by  $\pm 5$  starting with pachymetry divided by 10 until the endothelial plane is imaged.
- ☐ When cells are not readily visible:
  - Request that the patient to look slightly off to one side or the other of the fixation target and re-image. There will often be sufficient visible cells in a different location on the cornea.
  - Make sure that artificial tears are available.
  - Analysis of every image is not possible, but the image creates excellent documentation of the state of the cornea.
- ☐ Automated cell counting defaults to a "Small" reference pattern. Verify with "Pattern" that reference is appropriate.

## IMAGE ACQUISITION



**Typical patient appearance:  
one or two reflections**

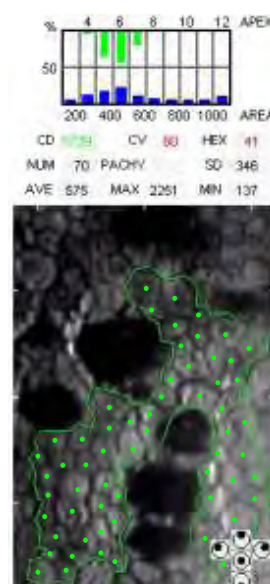


**Multiple reflections  
common with IOL, ICL, DSAEK  
combine / minimize reflections  
by slight off-center fixation**

## IMAGE LOCATION MAKES A DIFFERENCE



Central cornea with coalesced guttata not analyzable  
Check para-central areas for visible cells



Same eye slightly off-center image appropriate for Flex Center method  
Note: lack of contiguous neighbor cells to perform Center Method

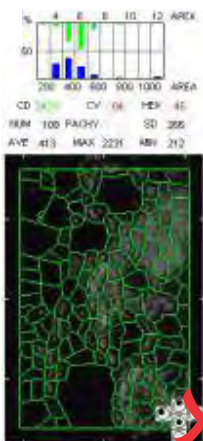
	Analysis	Use Case Examples
Auto	Automated	Routine, no guttata, well defined cells filling entire analysis area
	Automated - Area selected	Few guttata, resize area to > 50% filled with well defined cells (more is better)
Semi-Auto	Center Method™	Generalized pathology, minimum 50 contiguous cells. Large cells, high CV.
	Flex-Center	Significant pathology, large cells, perimeter required to select adequate number of cells

Only Konan features the patented Center Method™ valuable for accurate assessment of clinically significant pathology. The techniques provided here are only validated on and applicable to Konan specular microscopes.

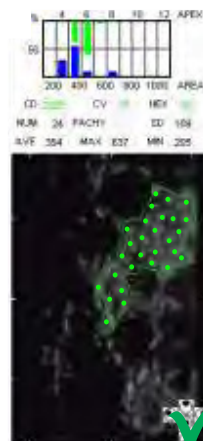
# AUTO VS. SEMI-AUTO IMAGE ANALYSIS



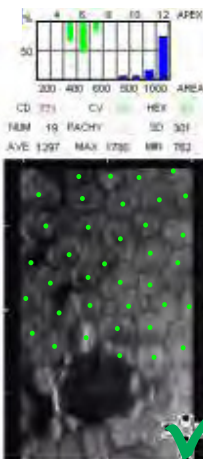
Low number of visible cells for Automated or Center Method - Use Flex Center Method



Automated Analysis "Small" cell size  
**WRONG**  
CD: 2421



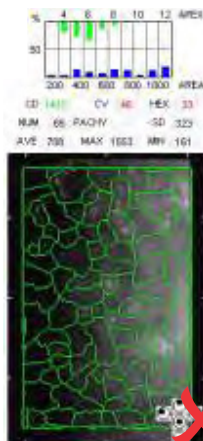
Flex Center Analysis (Semi Auto Analysis)  
**CORRECT**  
CD: 2825



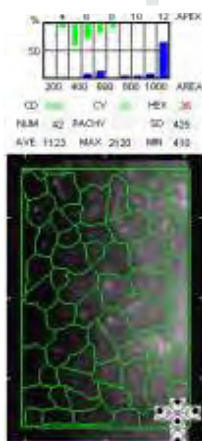
Center Method is Preferred Analysis  
**CORRECT**  
CV: 23  
Note: guttata area properly excluded



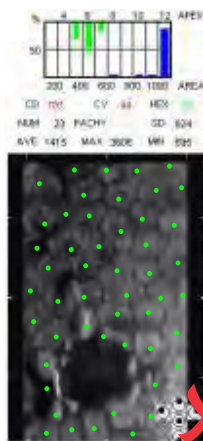
Good photo documentation of advanced disease  
Statistical analysis may not be possible



Automated Analysis  
**WRONG**  
"Medium" cell size  
CD: 1412



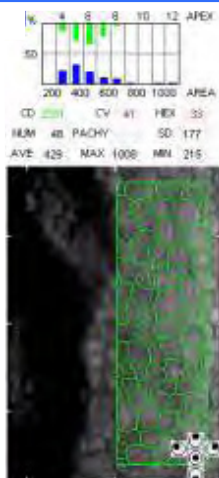
Automated Analysis Large cell Size  
CD: 890  
pre-surgical documentation?



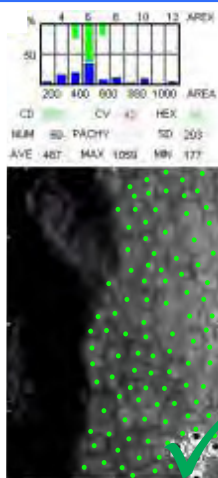
**WRONG**  
Note: guttata area improperly included  
CV: 44 in error

# CENTER METHOD BASICS

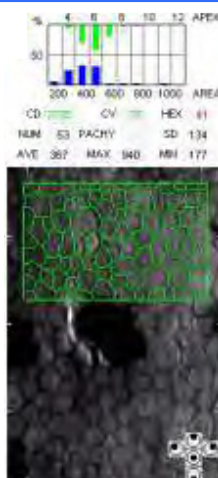
# RESIZING VS. CENTER METHOD



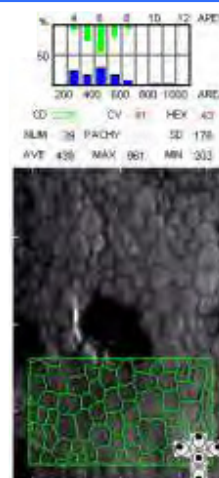
Resized, Small  
CD: 2331  
CV: 41



Preferred Analysis Center Method  
CD: 2058  
CV: 42



Resized top  
CD: 2725  
CV: 37



Resized bottom  
CD: 2278  
CV: 41

Note: large variations in local densities  
Center Method would be preferred analysis method for this image

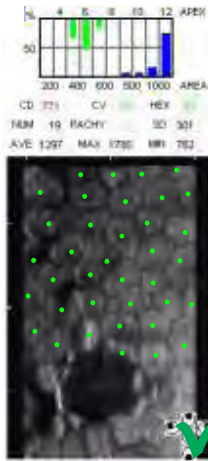
Never include non-visible cells on Guttata (black area) within analyzed area



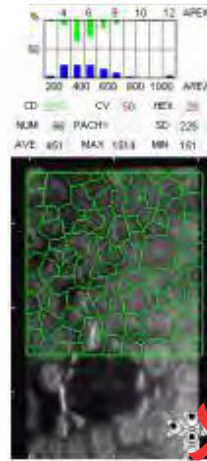
# OPTIMIZED ANALYSIS METHOD



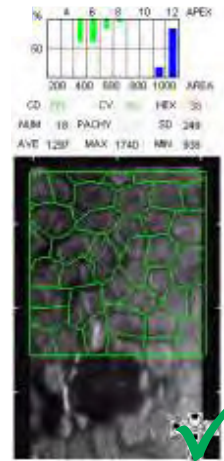
Resizing Candidate  
Good area of  
contiguous cells  
and few guttata



Center Method  
**BEST** Analysis  
CD: 771  
**Do not surround  
guttata**



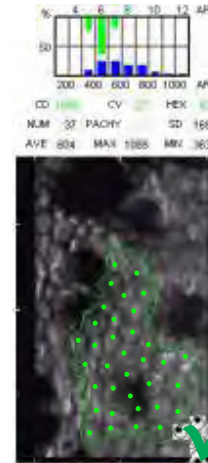
Resize "Small"  
Automated Method  
**WRONG**  
CD: 2217



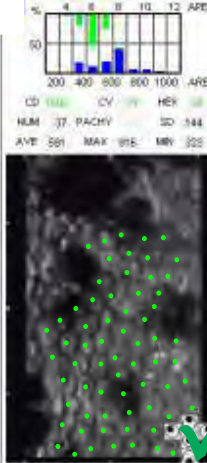
Resize "XL"  
Automated Method  
Note: CD: 771 =  
Center Method CD: 771



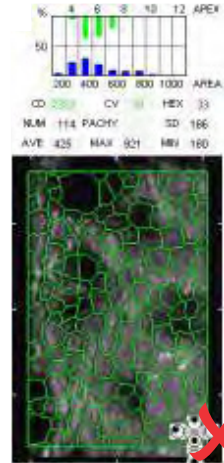
Center Method  
Candidate



Flex Center Method  
**CORRECT**, but ample cells for  
Center Method  
CD: 1656 CV: 27

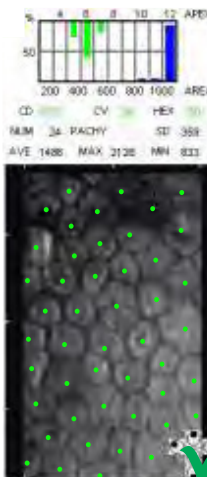


Center Method  
**CORRECT**  
Preferred (faster/easier)  
CD: 1692 CV: 24

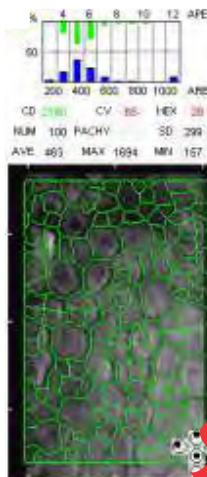


Automated Analysis "Small".  
Note "Small" cell size  
**WRONG** CD: 2353  
VS. Center Method CD: 1692

# LOW CELL DENSITY

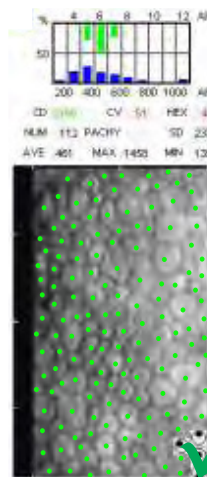


Center Method  
**CORRECT**  
CD: 673 CV: 24  
Note substantial  
change in histogram

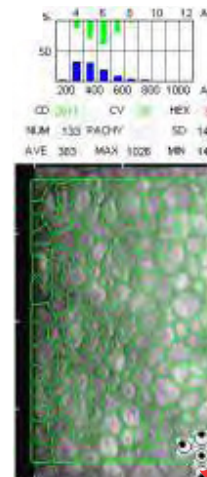


Automated Method  
Selected "Small"  
**Wrong**  
CD: 2160 CV: 65

# HIGH CV

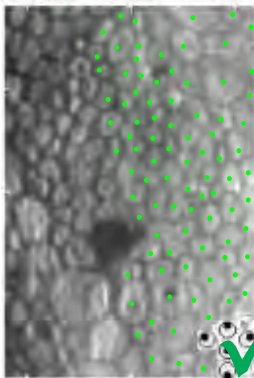
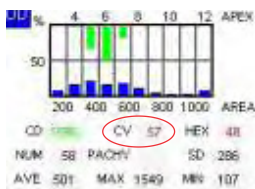


Center Method  
**CORRECT**  
CD: 2169 CV: 51



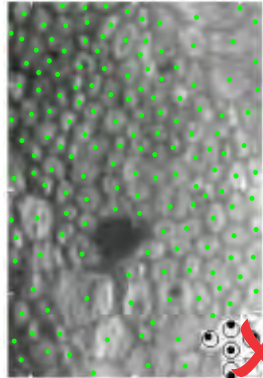
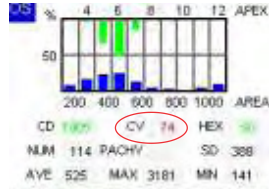
Automated Analysis  
"Small" size is incorrect  
**WRONG**  
CD: 2611 CV: 38

## HIGH POLYMEGETHISM



**CORRECT**

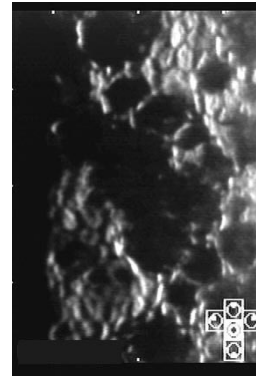
Center Method analyzed avoiding black area obscured cells from Guttata



**WRONG**

Center Method includes black area of obscured cells (Guttata)  
CV in error over estimated at 74 (rather than 57)

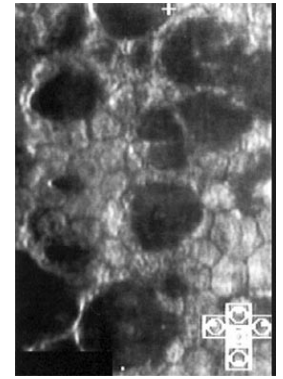
## CELL DENSITY WITH GUTTATA



+3 Guttata  
CD: 1800

Higher Guttata prevalence but

**higher cell density = More Stable Cornea**



+2 Guttata  
CD: 900

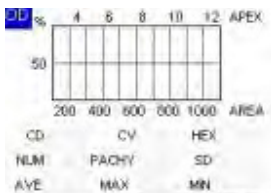
Lower Guttata prevalence but

**lower cell density = Less Stable Cornea**

## WHEN DO YOU SELECT MANUAL IMAGING?

If auto-focus fails, switch to Manual mode. Examples of some difficult cases can include some: post corneal surgery, IOL, ICL, advanced disease, edema

## MANUAL IMAGING



**AQUEOUS**

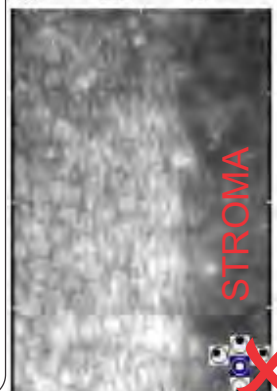
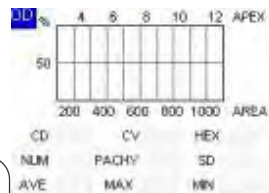
**Too deep** focus when using setting "60"  
Black on left = aqueous  
Reduce focus setting (50 or 45) and repeat



**STROMA**

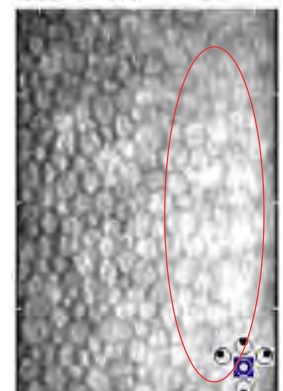
**Too shallow** focus when using setting "35"  
White on right = stroma  
Increase focus value (50 or 45) and repeat

## STROMAL REFLEX



**STROMA**

Another example of stromal reflection on the right aspect, try Manual Imaging mode



Automated imaging with dry eye patient  
Note zonal loss of resolution  
Eye drops and / or manual focus may improve imaging