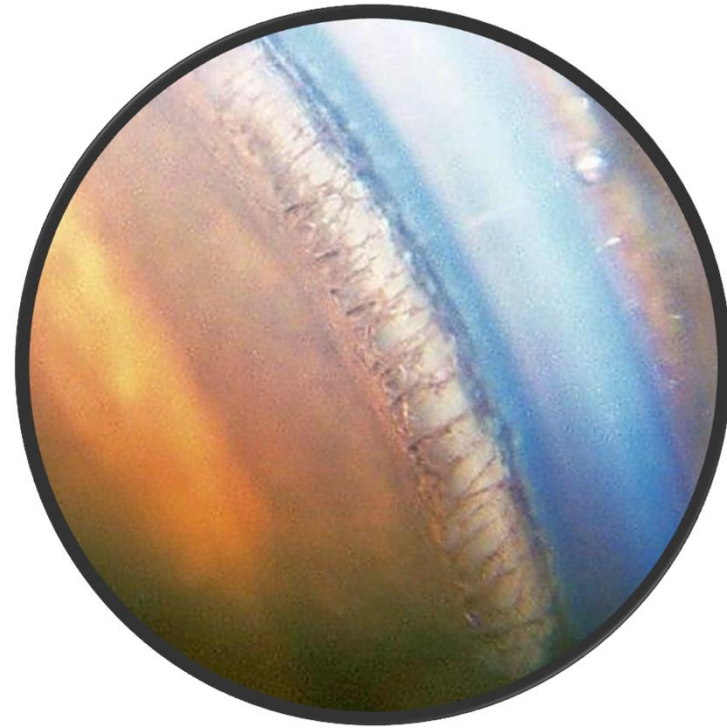# HED session
Gonioscopy

Marianne Richter

ECVO Congress, Estoril 2017

HED committee:

˝ **Proposal** of a new grading system for gonioscopy (draft by M.Richter), presented in Budapest 2016 (M.Richter, F.Stades)

˝ **Collection of comments/ suggestions of all national panels**: A, D, CH, I, F, B, S, N, DK, NL, FIN, GB (M.Richter)

HED committee:

˝ Establishment of a **gonioscopy sub-committee:**
B. Eksten, P. Bedford, C. Bundgaard, G.Chaudieu, A. Guandalini, M. Richter

˝ Slides are kindly provided by B.Spiess

ECVO Manual – **present** guidelines (2016)

˝ At Present: **pectinate ligament abnormality (PLA)** is classified as **unaffected/undetermined/affected** using the terms **fibrae latae (FL)/laminae (LA)/occlusio (OC)**

if affected by PLA, findings are judged as **mild/moderate/severe**, whereas **LA and OC** are to be judged as **moderate or severe**.

ECVO Manual – **present** guidelines (2016)

1. Fibrae latae (FL): in which the normal part of the pectinate ligament fibre is too short and the abnormal part is broadened; also described as broad bands;

2. Laminae (LA): plates or sheets of continuous tissue, with very short remaining fibres in the angle;

3. Occlusio (OC): pectinate ligament completely closed, with flow holes, and narrowed angle and/or shallow anterior chamber;

ECVO Manual – **present** guidelines (2016)

˝ **The severity of laminae (LA) or occlusio (OC) can never be less than moderate or severe. If occlusio is present > 25 % of the angle it is evaluated as: 'severe'.**
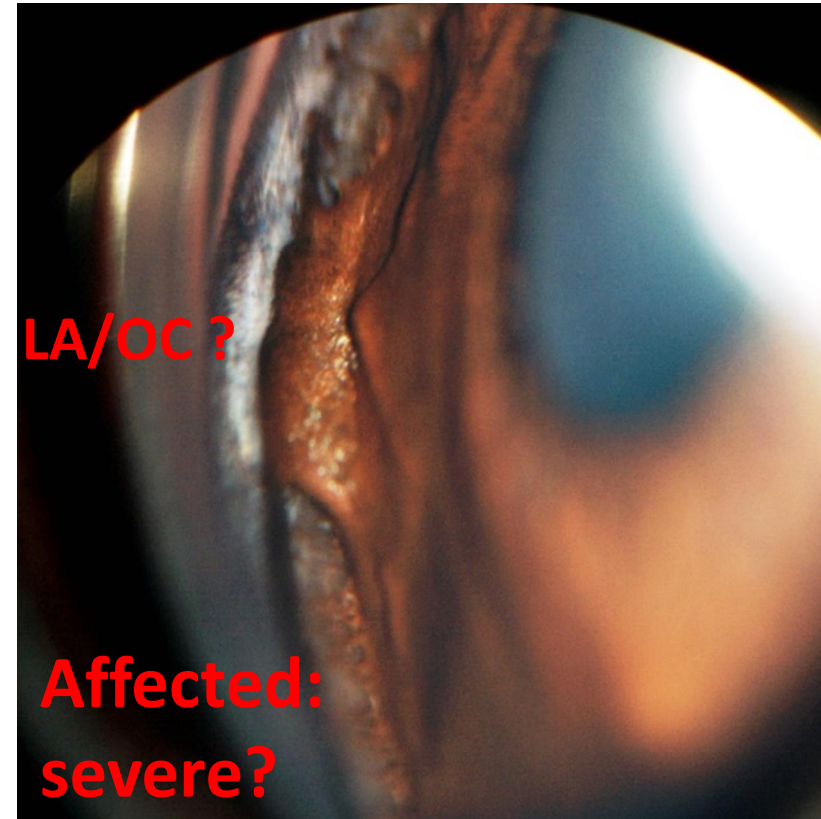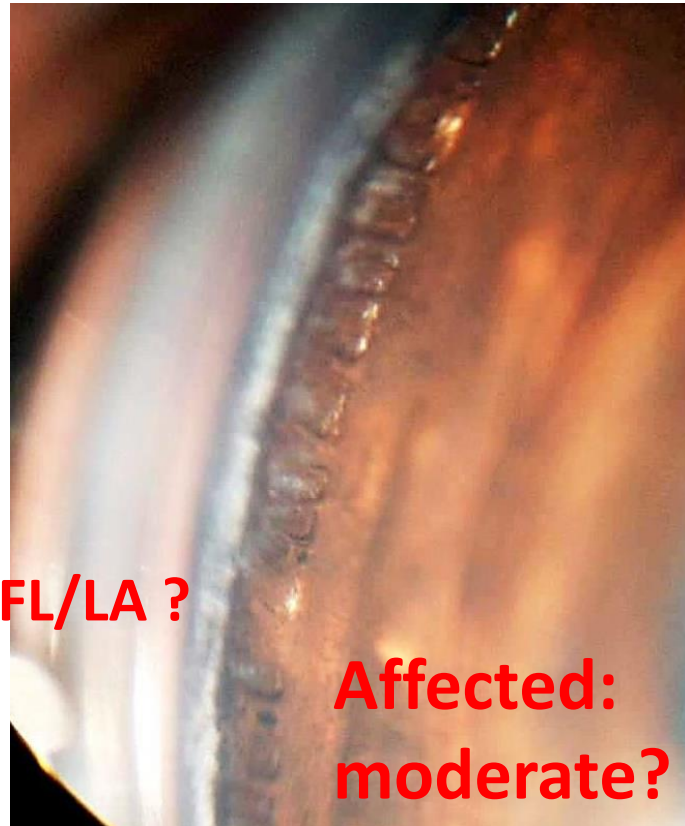
FL/LA ?

Affected: moderate?

LA/OC ?

Affected: severe?

Fibrae latae (FL): in which the normal part of the pectinate ligament fibre is too short and the abnormal part is broadened; also described as broad bands;

Laminae (LA): plates or sheets of continuous tissue, with very short remaining fibres in the angle;

Occlusio (OC): pectinate ligament completely closed, with flow holes, and narrowed angle and/or shallow anterior chamber;

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Motivation to change evaluation of the iridocorneal angle (ICA):

˝ The present ECVO certificate does not differentiate **extent** (circumference) of PLA (**focal vs extensive** for LA and OC) and **width** of **ICA**.

˝ From clinical observations the **extent** of **PLA** related to 360 angular degree of the ICA **and** the **width of the ICA** seem to be important concerning the likelihood to develop glaucoma.

Motivation to change evaluation of the iridocorneal angle (ICA):

˝ Breeders need advice about **clinical significance (to develop glaucoma) and which dogs can be used for breeding**

˝ Currently, dogs are selected for breeding by the terms affected FL/LA/OC but not by the clinically important aspect of the **extent of involvement of the ICA (360 degrees)**

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Aim of gonioscopy:

˝ *Detection & Grading* of abnormalities of the **iridocorneal angle (ICA)** by evaluation of pectinate ligament (PL) **and** iridocorneal angle width (ICAW)

˝ *Identification/Selection* of dogs with abnormalities of the ICA *potentially leading to blindness* **(severely affected dogs should be excluded from breeding)**

Grading of the ICA (PL and ICAwidth):

˝ **pectinate ligament (PL):**
normal – fibrae latae – laminae/~~occlusio~~

˝ **iridocorneal angle width (ICAwidth):**
open – narrow – closed

Grading of pectinate ligament (PL):

Present	NEW
˝ FL < 25% = unaffected	˝ 0 – 50% FL = **unaffected**
˝ FL 25-50% = undetermined	˝ ~~undetermined~~
˝ FL > 50% = affected (mild)	˝ >50-100% FL **and/or** < 25% LA/~~OC~~ = **affected (mild)**
˝ LA = affected (moderate/severe)	
˝ OC ≤ 25% = affected (moderate)	˝ 25-50% LA/~~OC~~ = **affected (moderate)**
˝ OC > 25% = affected (severe)	˝ > 50% LA/~~OC~~ = **affected (severe)**

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Grading of pectinate ligament (PL):

Present	NEW
˝ FL < 25% = unaffected	˝ 0 – 50% FL = **unaffected**
˝ FL 25-50% = undetermined	
˝ FL > 50% = affected (mild)	˝ >50-100% FL **and/or** < 25% LA = **affected (mild)**
˝ LA = affected (moderate/severe)	
	˝ 25-50% LA = **affected (moderate)**
˝ OC ≤ 25% = affected (moderate)	
˝ OC > 25% = affected (severe)	˝ > 50% LA = **affected (severe)**

NEW

Grading of iridocorneal angle width (ICAwidth):

″ Open = **normal**

″ Narrow = **affected (moderate)**

″ Closed = **affected (severe)**

Terminology:	**closed**	**narrow**	**open**
Ratio A/B:	**PL not visible**	**A < 1/3 of B**	**A ≥ 1/3 of B**

Modified from publication: «Correlation of morphologic features of the iridocorneal angle to intraocular pressure in Samoyeds» Ekesten B, Narfström K. Am J Vet Res, vol 52, no. 11, November 1991, p 1875-1878.

Terminology:

	closed	narrow	open
Ratio A/B:	PL not visible	A < 1/3 of B	A ≥ 1/3 of B
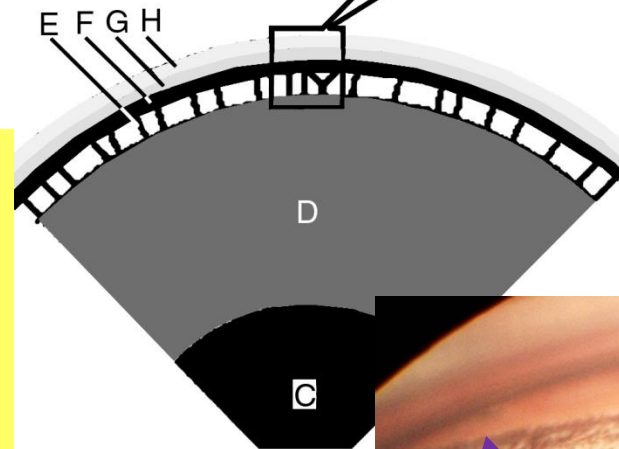
Comparison between 2 distances:

A = length of PL

B = distance from the origin of the PL to the anterior surface of the cornea at the transection area
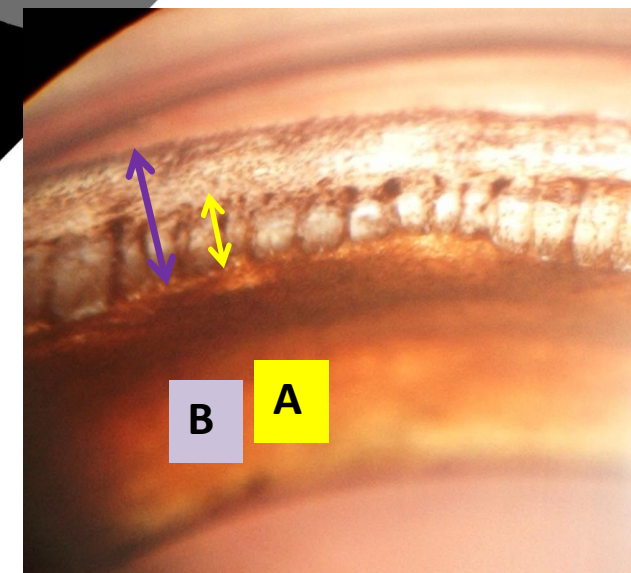
C = Pupil

D = Iris

E = PL

F = inner/deep pigment band

G = outer/superficial pigment band
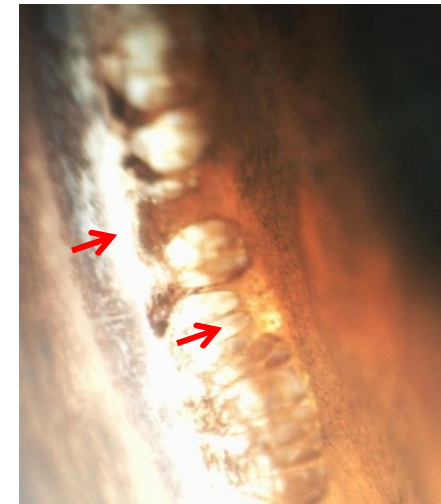
H = corneal transection

Definitions:

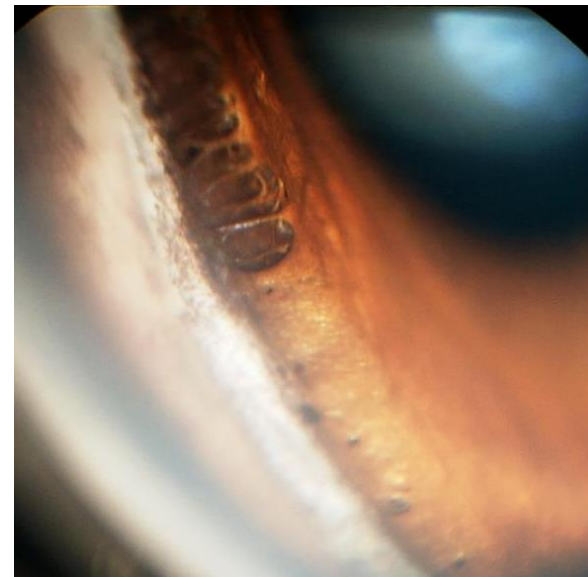˝ **Normal PL:**
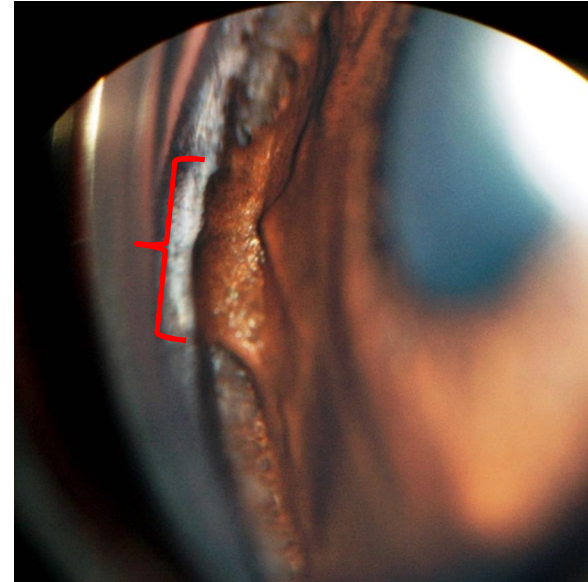thin/filamentous fibres from iris base to its insertion at the cornea

˝ **FL (fibrae latae) :** fibres with a confluent (broad) base and shortened thin insertions at the cornea or thick fibres (<5 fibres)
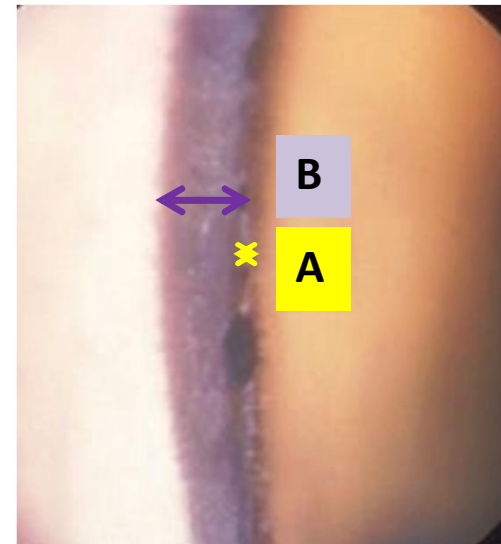
Definitions:
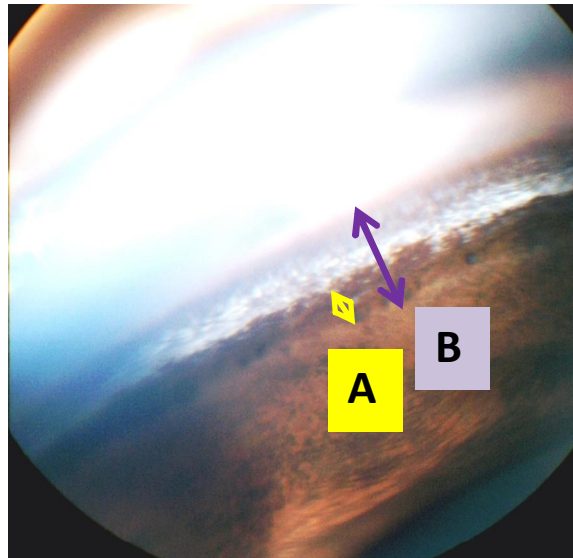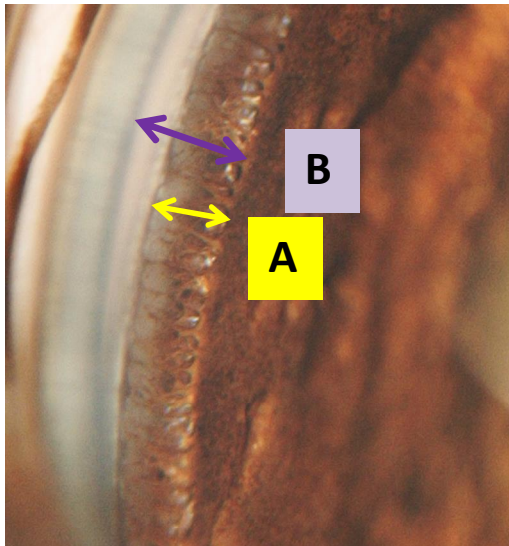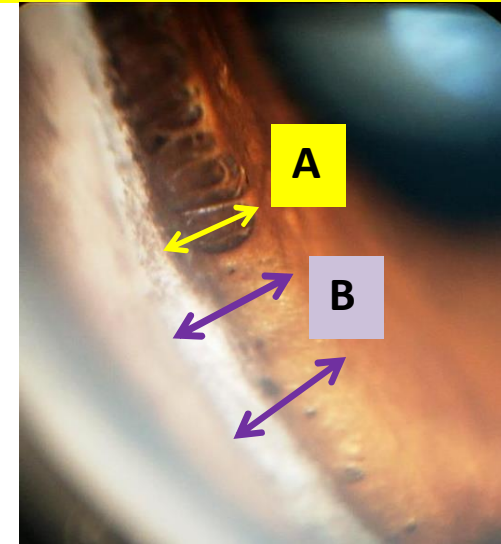
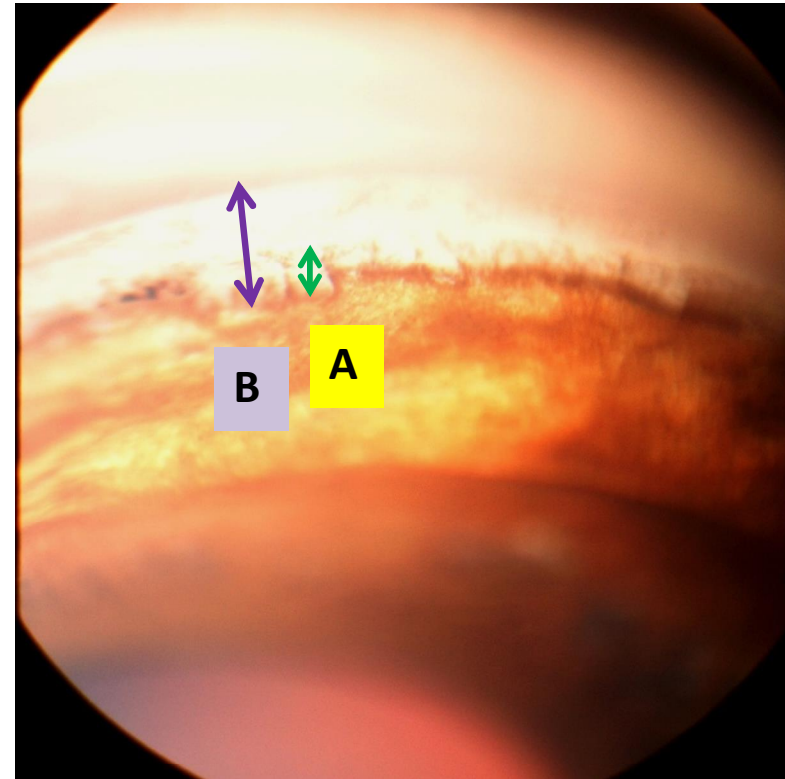˝ **LA (laminae):** plates or sheets of continuous tissue (>5 fibres), with or without flow holes

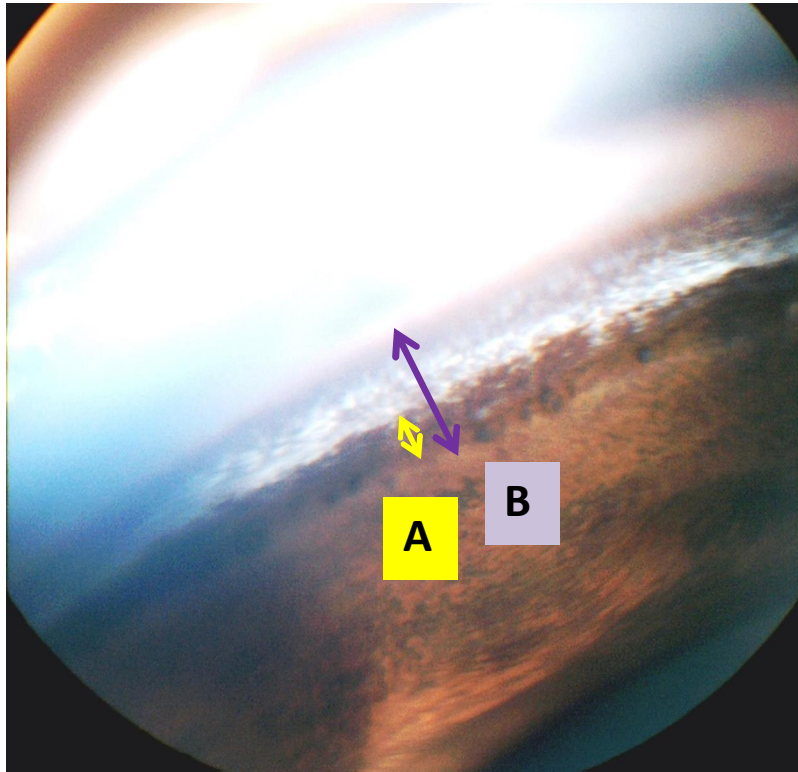**Definitions:**

˝ **iridocorneal angle width (ICAwidth):**
open – narrow – closed

Terminology:	closed	narrow	open
Ratio A/B:	PL not visible	A < 1/3 of B	A ≥ 1/3 of B

present:

Eye disease no. …………………………… ▭ mild   ▭ moderate   ▭ severe

	*UNAFFECTED	**UNDETERMINED	*AFFECTED

8. Lig. Pectinate abnormality (only after gonioscopy)   ▭   ▭   ▭ — fibrae latae / laminae / occlusio

NEW:

8. ICAA: PLA — ▭ mild / ▭ moderate / ▭ severe

ICA (width) — ▭ narrow (= moderate) / ▭ closed (= severe)

Eye disease no. …………………………… ▭ mild   ▭ severe

	*UNAFFECTED	**UNDETERMINED	*AFFECTED

8. Iridocorneal angle abnormality (ICAA): (only after gonioscopy)   ▭   ▭ — mild / moderate / severe

Advantage: the examiner clearly indicates the severity of ICA abnormality in its entirety and ist clinical impact; comprehensible to the breeder

Eye disease no. …………8……………… ☐ mild ☒ moderate ☐ severe

	* UNAFFECTED	** UNDETERMINED	* AFFECTED	

8. Lig. Pectinate abnormality (only after gonioscopy)

☐ (UNAFFECTED) ☐ (UNDETERMINED) ☒ (AFFECTED) → ☐ fibrae latae / ☐ laminae / ☐ occlusio

NEW Certificate:

Eye disease no. …………………………… ☐ mild ☐ severe

	* UNAFFECTED	** UNDETERMINED	* AFFECTED	

8. Iridocorneal angle abnormality (ICAA): (only after gonioscopy)

☐ (UNAFFECTED) ☒ (UNDETERMINED) ☒ (AFFECTED) → ☐ mild / ☐ moderate / ☐ severe

8. ICAA: PLA → ☐ mild / ☒ moderate / ☐ severe

ICA (width) → ☐ narrow (= moderate) / ☐ closed (= severe)

In the area above for descriptive comments, the examiner specifies the type of ICA abnormality: PLA (pectinate ligament abnormality and/or ICA (iridocorneal angle) width

Fig 81

Normal PL: thin fibres from iris base to its insertion at the cornea
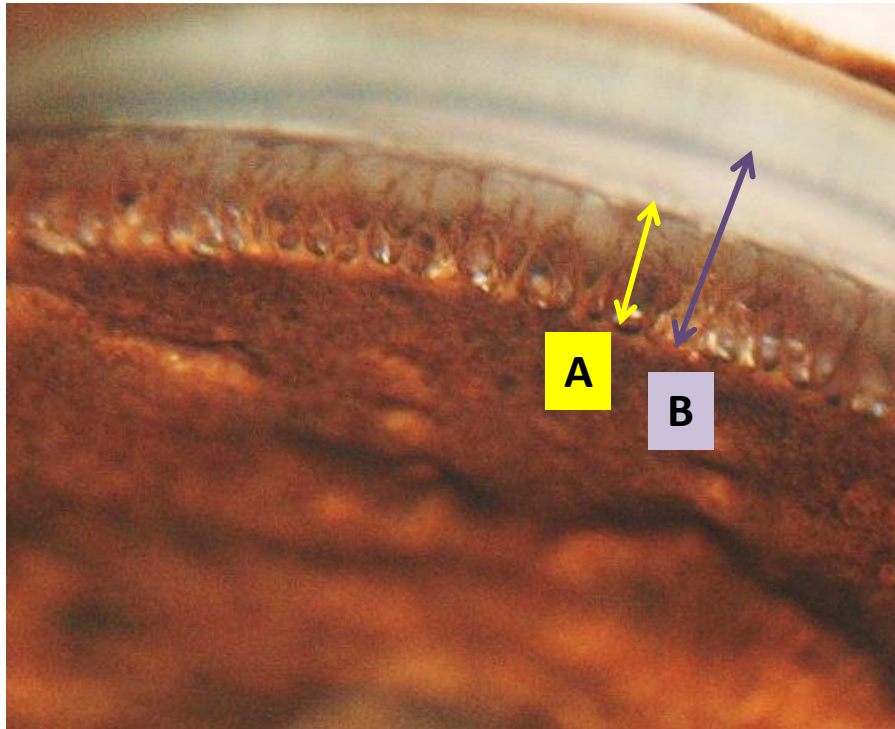
FL : fibres with a confluent (broad) base and shortened thin insertions at the cornea or thick fibres (< 5 fibres)

LA: plates or sheets of continuous tissue, with or without flow holes

ICAW: open-narrow-closed

PLA: 0-50% FL around 360° = **unaffected**

Fig 81

A = length of PL
B = distance from the origin of the PL to the anterior surface of the cornea

PLA: 0-50% FL around 360° = **unaffected**
ICAW: open

Terminology:	closed	narrow	open
Ratio A/B:	PL not visible	A < 1/3 of B	A ≥ 1/3 of B

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You can still use the present Certificate

Eye disease no. ……………………..... ☐ mild ☐ moderate ☐ severe

	* UNAFFECTED	** UNDETERMINED	* AFFECTED	
8. Lig. Pectinate abnormality (only after gonioscopy)	✖	☐	☐	☐ fibrae latae ☐ laminae ☐ occlusio

8. ICAA: PLA ☐ mild
☐ moderate
☐ severe

ICA (width) ☐ narrow (= moderate)
☐ closed (= severe)

NEW:

Eye disease no. ……………….…….…… ☐ mild ☐ severe

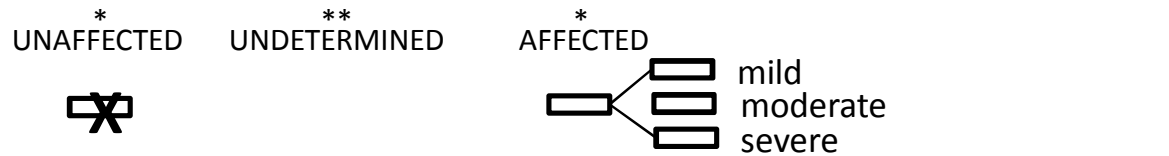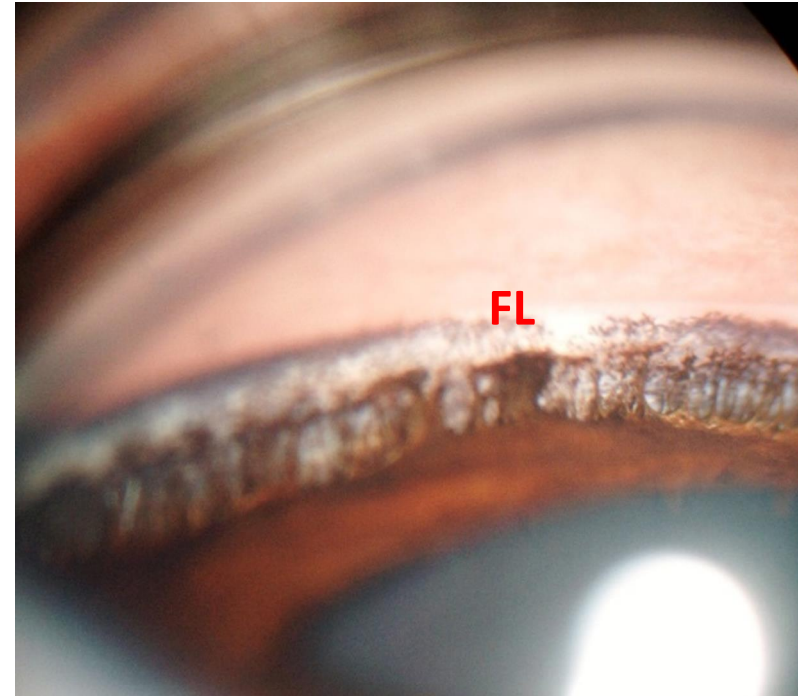|	* UNAFFECTED	** UNDETERMINED	* AFFECTED	
8. Iridocorneal angle abnormality (ICAA): (only after gonioscopy)	✖		☐	☐ mild ☐ moderate ☐ severe

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Fig 72

Normal PL: thin fibres from iris base to its insertion at the cornea
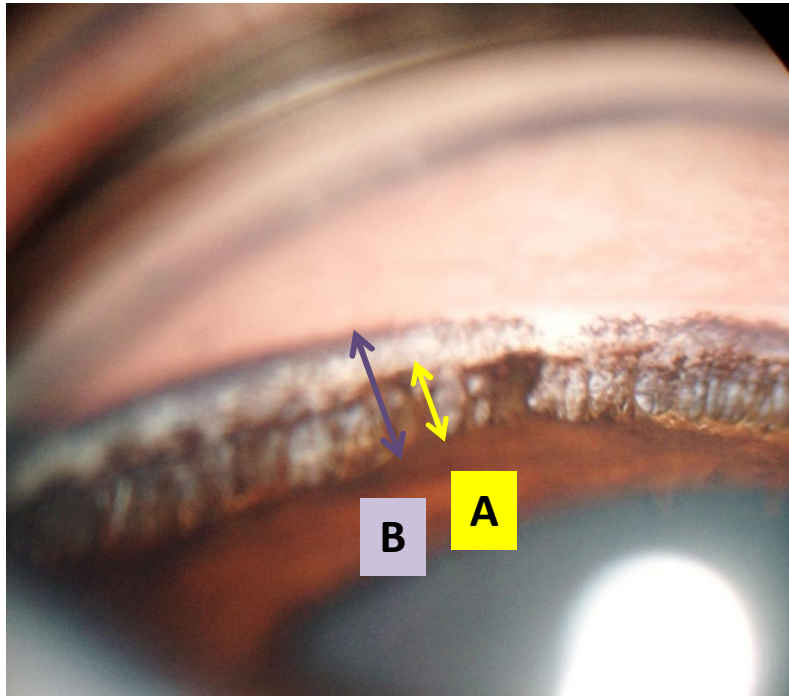
FL : fibres with a confluent (broad) base and shortened thin insertions at the cornea or thick fibres (< 5 fibres)

LA: plates or sheets of continuous tissue, with or without flow holes

ICAW: open-narrow-closed

PLA: 0-50% FL around 360°= unaffected

A = length of PL
B = distance from the origin of the PL to the anterior surface of the cornea

PLA: 0-50% FL around 360° = **unaffected**
ICAW: open

Fig 72

Terminology:	closed	narrow	open
Ratio A/B:	PL not visible	A < 1/3 of B	A ≥ 1/3 of B

You can still use the present Certificate:

Eye disease no. …………………….... ☐ mild   ☐ moderate   ☐ severe

	*UNAFFECTED	**UNDETERMINED	*AFFECTED	
8. Lig. Pectinate abnormality (only after gonioscopy)	✖	▭	☐	☐ fibrae latae / laminae / occlusio

(crossed out with red X)

<mark>NEW:</mark>

8. ICAA: PLA		☐ mild		
		☐ moderate		
		☐ severe		
ICA (width)		☐ narrow (= moderate)		
		☐ closed (= severe)		

Eye disease no. ………………………….. ☐ mild   ☐ severe

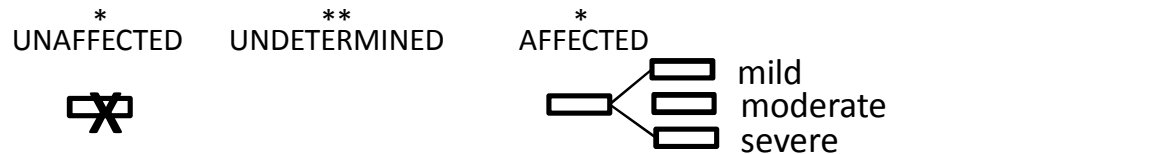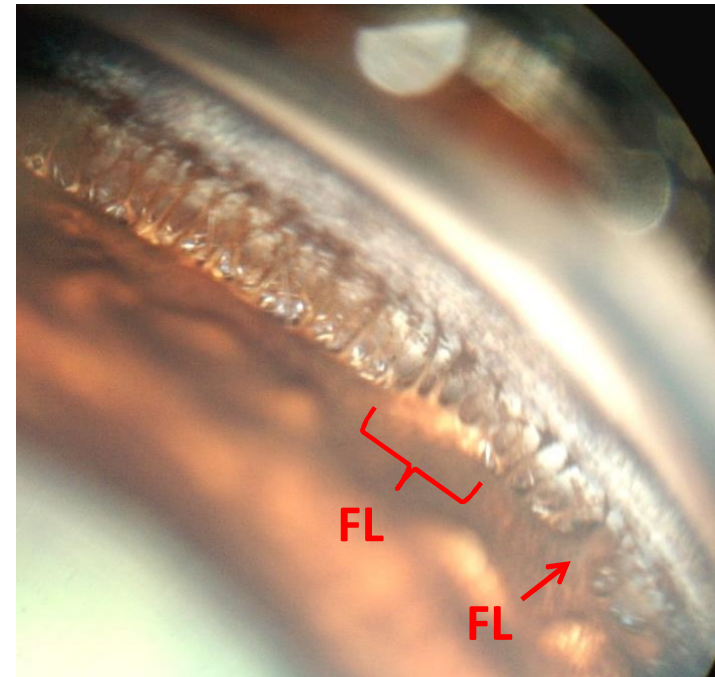|	*UNAFFECTED	**UNDETERMINED	*AFFECTED	
8. Iridocorneal angle abnormality (ICAA): (only after gonioscopy)	✖		☐	☐ mild / moderate / severe

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Fig 3

Normal PL: thin fibres from iris base to its insertion at the cornea
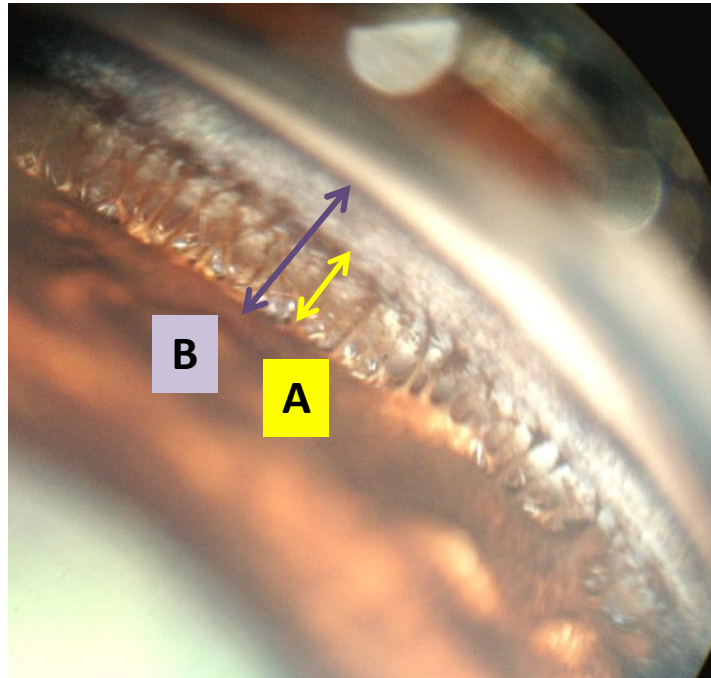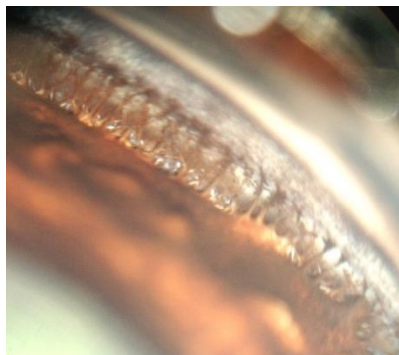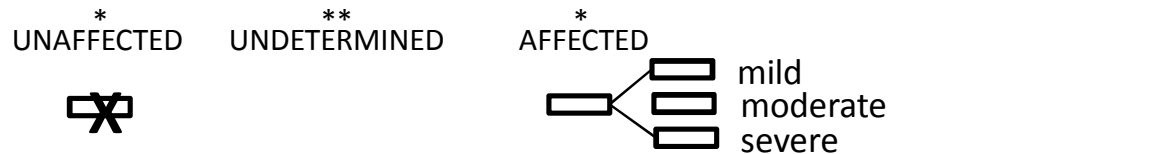
FL : fibres with a confluent (broad) base and shortened thin insertions at the cornea or thick fibres (< 5 fibres)

LA: plates or sheets of continuous tissue, with or without flow holes

ICAW: open-narrow-closed

PLA: 0-50% FL around 360°= unaffected

A = length of PL
B = distance from the origin of the PL to the anterior surface of the cornea

PLA: 0-50% FL around 360° = **unaffected**
ICAW: open

Fig 3

Terminology:	closed	narrow	open
Ratio A/B:	PL not visible	A < 1/3 of B	A ≥ 1/3 of B

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You can still use the present Certificate:

Eye disease no. ………………………… ☐ mild   ☐ moderate   ☐ severe

	* UNAFFECTED	** UNDETERMINED	* AFFECTED	
8. Lig. Pectinate abnormality (only after gonioscopy)	☒	☐	☐	fibrae latae / laminae / occlusio

NEW:

8. ICAA: PLA ☐ mild / ☐ moderate / ☐ severe

ICA (width) ☐ narrow (= moderate) / ☐ closed (= severe)

Eye disease no. ………………………… ☐ mild   ☐ severe

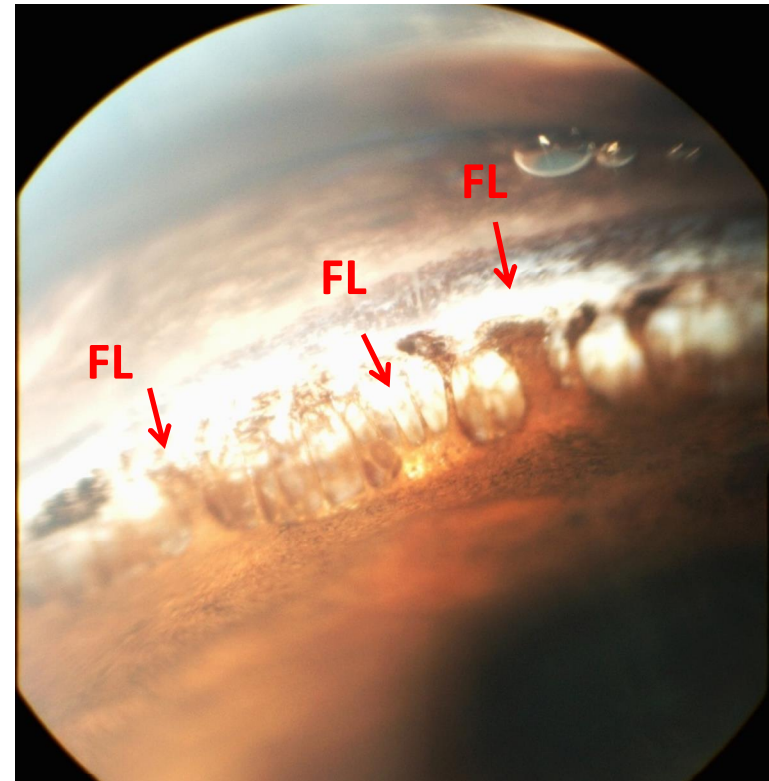|	* UNAFFECTED	** UNDETERMINED	* AFFECTED	
8. Iridocorneal angle abnormality (ICAA): (only after gonioscopy)	☒		☐	mild / moderate / severe

Fig 56

Normal PL: thin fibres from iris base to its insertion at the cornea
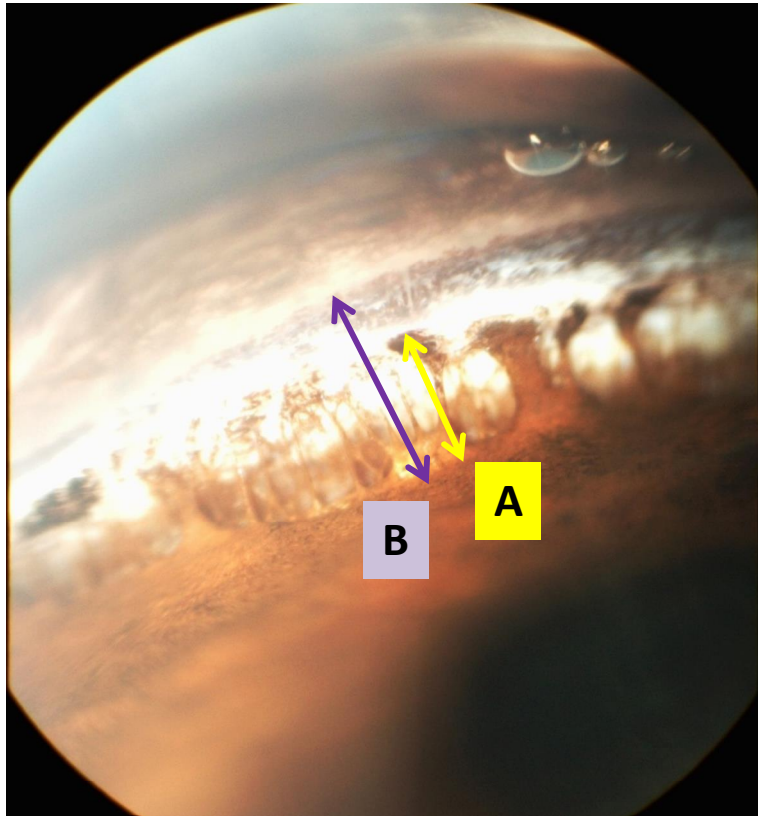
FL : fibres with a confluent (broad) base and shortened thin insertions at the cornea or thick fibres (< 5 fibres)

LA: plates or sheets of continuous tissue, with or without flow holes

ICAW: open-narrow-closed

PLA: 0-50% FL around 360°= **unaffected**

A = length of PL
B = distance from the origin of the PL to the anterior surface of the cornea

PLA: 0-50% FL around 360°= **unaffected**
ICAW: open

Fig 56

Terminology:	closed	narrow	open
Ratio A/B:	PL not visible	A < 1/3 of B	A ≥ 1/3 of B

You can still use the present Certificate:

Eye disease no. .... ☐ mild   ☐ moderate   ☐ severe

	* UNAFFECTED	** UNDETERMINED	* AFFECTED	
8. Lig. Pectinate abnormality (only after gonioscopy)	☒	— ☐ —	☐	☐ fibrae latae ☐ laminae ☐ occlusio

NEW:

8. ICAA: PLA ☐ mild
☐ moderate
☐ severe

ICA
(width) ☐ narrow (= moderate)
☐ closed (= severe)

Eye disease no. .... ☐ mild   ☐ severe

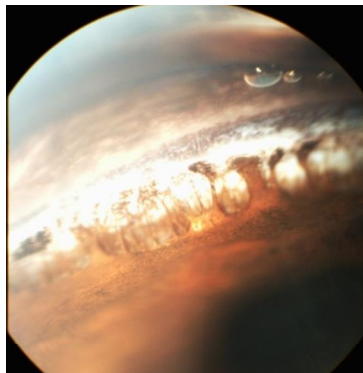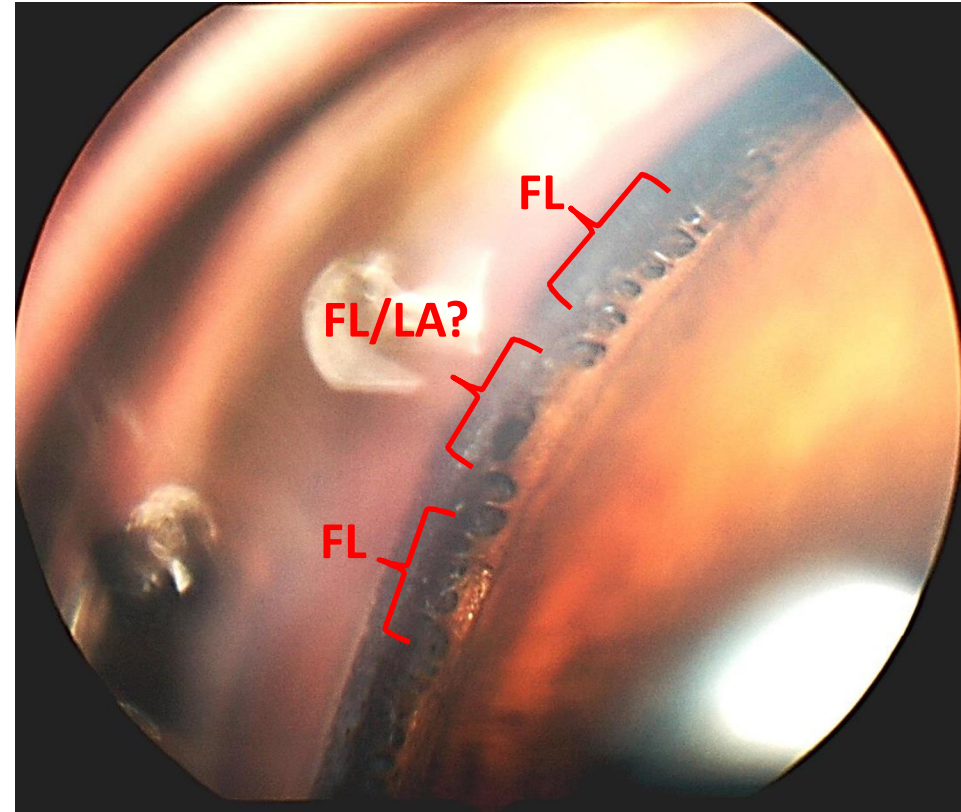|	* UNAFFECTED	** UNDETERMINED	* AFFECTED	
8. Iridocorneal angle abnormality (ICAA): (only after gonioscopy)	☒		☐	☐ mild ☐ moderate ☐ severe

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Fig 20

Normal PL: thin fibres from iris base to its insertion at the cornea
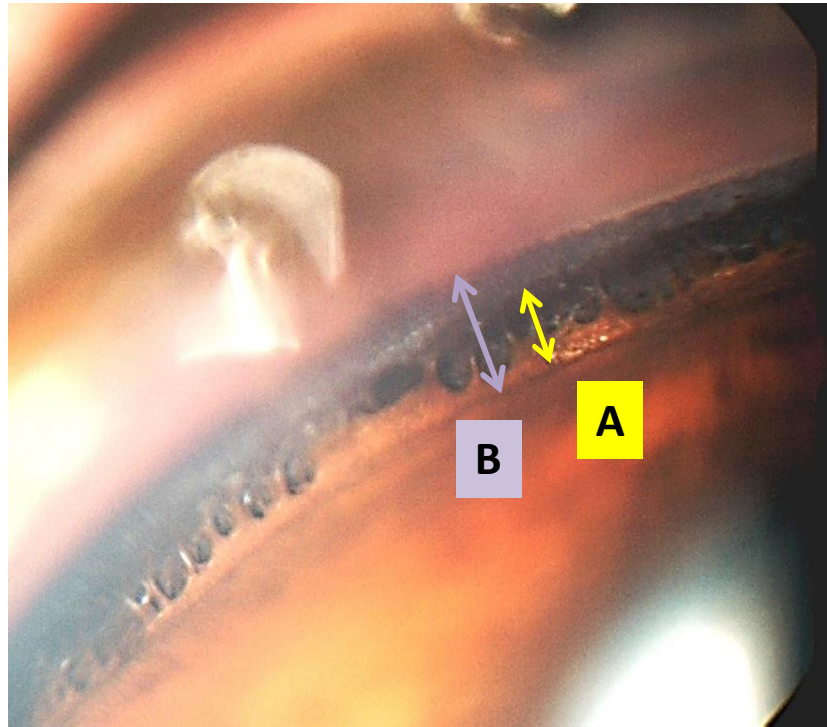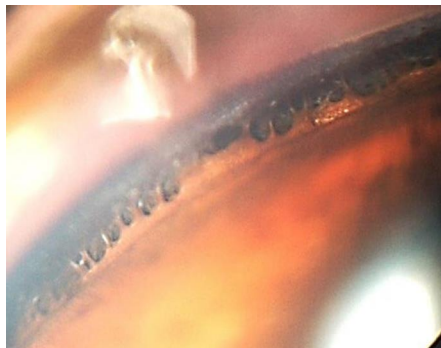
FL : fibres with a confluent (broad) base and shortened thin insertions at the cornea or thick fibres (< 5 fibres)

LA: plates or sheets of continuous tissue, with or without flow holes

ICAW: open-narrow-closed

PLA: >50-100% FL **and/or** <25% LA
 = **affected – mild**

A = length of PL
B = distance from the origin of the PL to the anterior surface of the cornea

PLA: >50-100% FL **and/or** <25% LA
 = **affected – mild**
ICAW: open

Fig 20

Terminology:	closed	narrow	open
Ratio A/B:	PL not visible	A < 1/3 of B	A ≥ 1/3 of B

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You can still use the present Certificate:

Eye disease no. ....8................ ☒ mild ☐ moderate ☐ severe

	* UNAFFECTED	** UNDETERMINED	* AFFECTED	
8. Lig. Pectinate abnormality (only after gonioscopy)	☐	~~☐~~	☒	☐ ~~fibrae latae~~ ☐ ~~laminae~~ ☐ ~~occlusio~~

NEW:

8. ICAA: PLA ☒ mild
☐ moderate
☐ severe

ICA (width) ☐ narrow (= moderate)
☐ closed (= severe)

Eye disease no. ....… ☐ mild ☐ severe

|	* UNAFFECTED	** UNDETERMINED	* AFFECTED	
8. Iridocorneal angle abnormality (ICAA): (only after gonioscopy)	☐		☒	☒ mild ☐ moderate ☐ severe

Fig 57

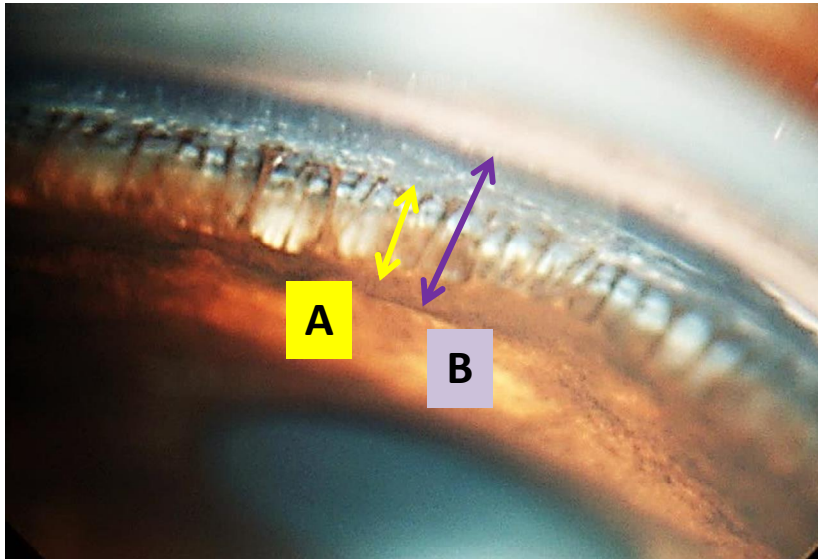**Normal PL:** thin fibres from iris base to its insertion at the cornea

FL : fibres with a confluent (broad) base and shortened thin insertions at the cornea or thick fibres (< 5 fibres)

LA: plates or sheets of continuous tissue, with or without flow holes

ICAW: open-narrow-closed
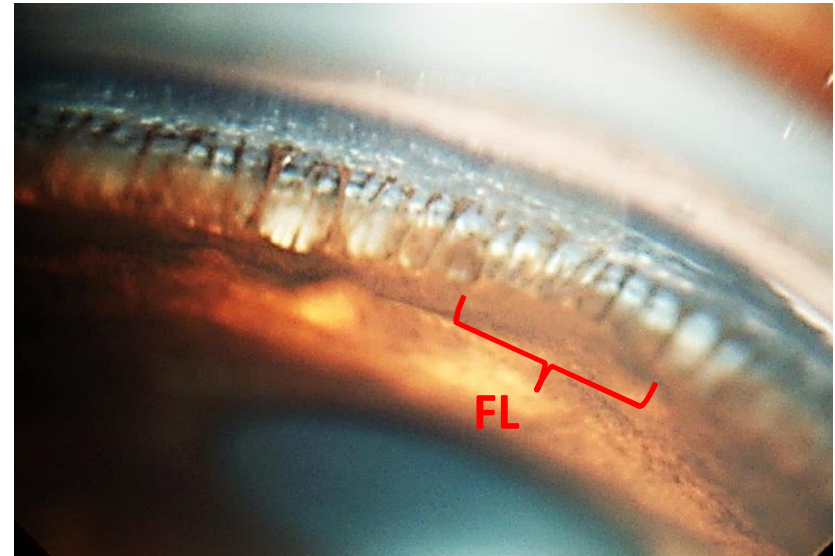
PLA: 0-50% FL around 360°= **unaffected**

A = length of PL
B = distance from the origin of the PL to the anterior surface of the cornea

PLA: 0-50% FL around 360°= **unaffected**
ICAW: open

Fig 57

Terminology:	closed	narrow	open
Ratio A/B:	PL not visible	A < 1/3 of B	A ≥ 1/3 of B

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You can still use the present Certificate:

Eye disease no. ……………………….. ☐ mild   ☐ moderate   ☐ severe

	*UNAFFECTED	**UNDETERMINED	*AFFECTED

8. Lig. Pectinate abnormality (only after gonioscopy)

fibrae latae
laminae
occlusio

NEW:

8. ICAA: PLA
☐ mild
☐ moderate
☐ severe

ICA (width)
☐ narrow (= moderate)
☐ closed (= severe)

Eye disease no. ………………..………… ☐ mild   ☐ severe

	*UNAFFECTED	**UNDETERMINED	*AFFECTED

8. Iridocorneal angle abnormality (ICAA): (only after gonioscopy)

☐ mild
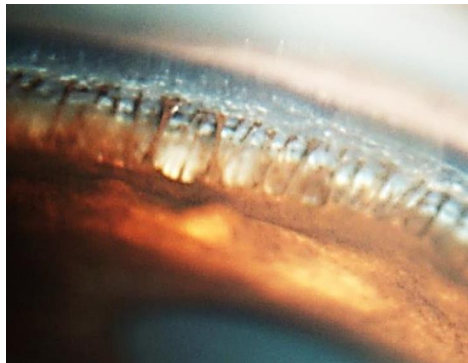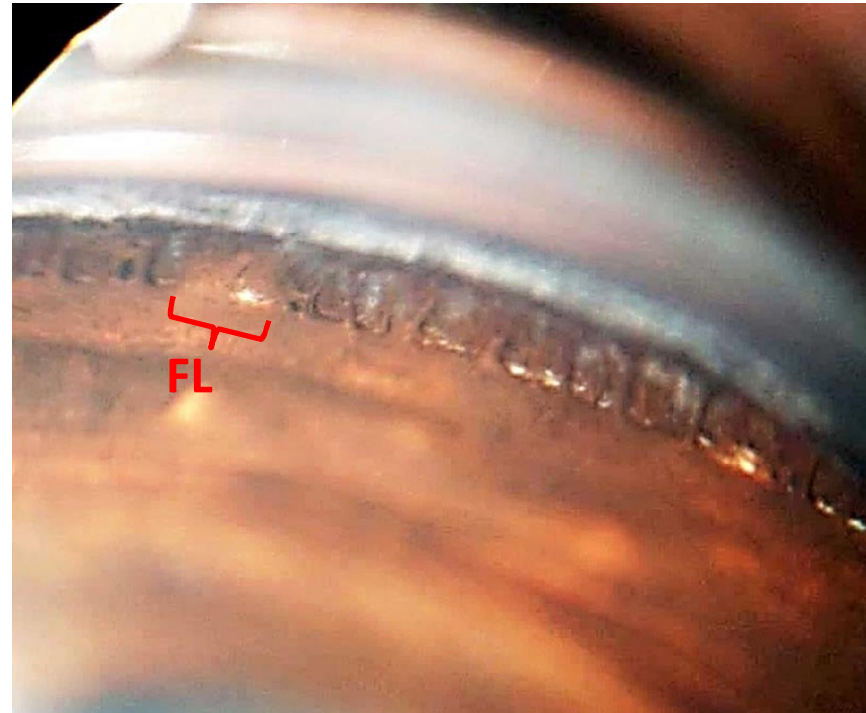☐ moderate
☐ severe

M.Richter, Estoril 2017

Fig 84

Normal PL: thin fibres from iris base to its insertion at the cornea

FL : fibres with a confluent (broad) base and shortened thin insertions at the cornea or thick fibres (< 5 fibres)
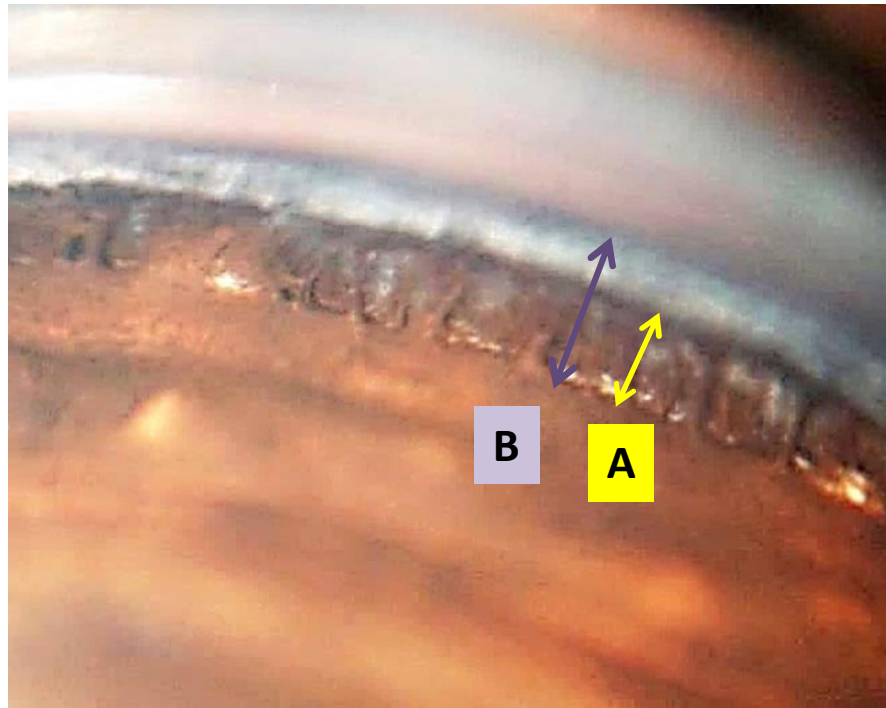
LA: plates or sheets of continuous tissue, with or without flow holes

ICAW: open-narrow-closed

Comment: FL (< 5 fibers)

PLA: 0-50% FL around 360°= unaffected

A = length of PL
B = distance from the origin of the PL to the anterior surface of the cornea

PLA: 0-50% FL around 360°= **unaffected**
ICAW: open

Fig 84

Terminology:	closed	narrow	open
Ratio A/B:	PL not visible	A < 1/3 of B	A ≥ 1/3 of B

You can still use the present Certificate:

Eye disease no. …………………….…….. ☐ mild   ☐ moderate   ☐ severe

	* UNAFFECTED	** UNDETERMINED	* AFFECTED	
8. Lig. Pectinate abnormality (only after gonioscopy)	☒	▭	☐	☐ fibrae latae ☐ laminae ☐ occlusio

NEW:

8. ICAA: PLA	☐ mild ☐ moderate ☐ severe
ICA (width)	☐ narrow (= moderate) ☐ closed (= severe)

Eye disease no. …………………….……… ☐ mild   ☐ severe

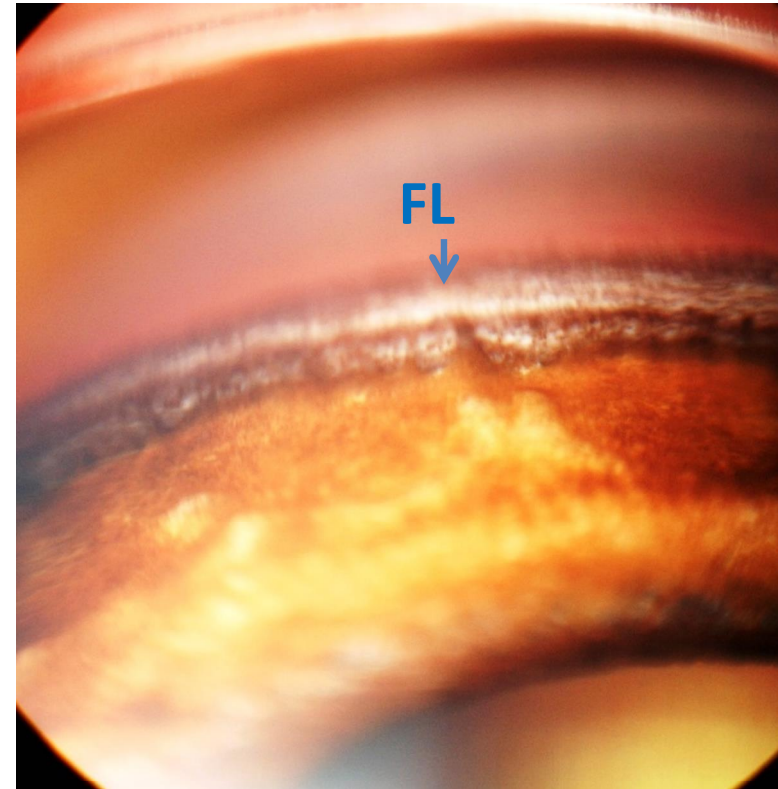|	* UNAFFECTED	** UNDETERMINED	* AFFECTED	
8. Iridocorneal angle abnormality (ICAA): (only after gonioscopy)	☒		☐	☐ mild ☐ moderate ☐ severe

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Fig 41

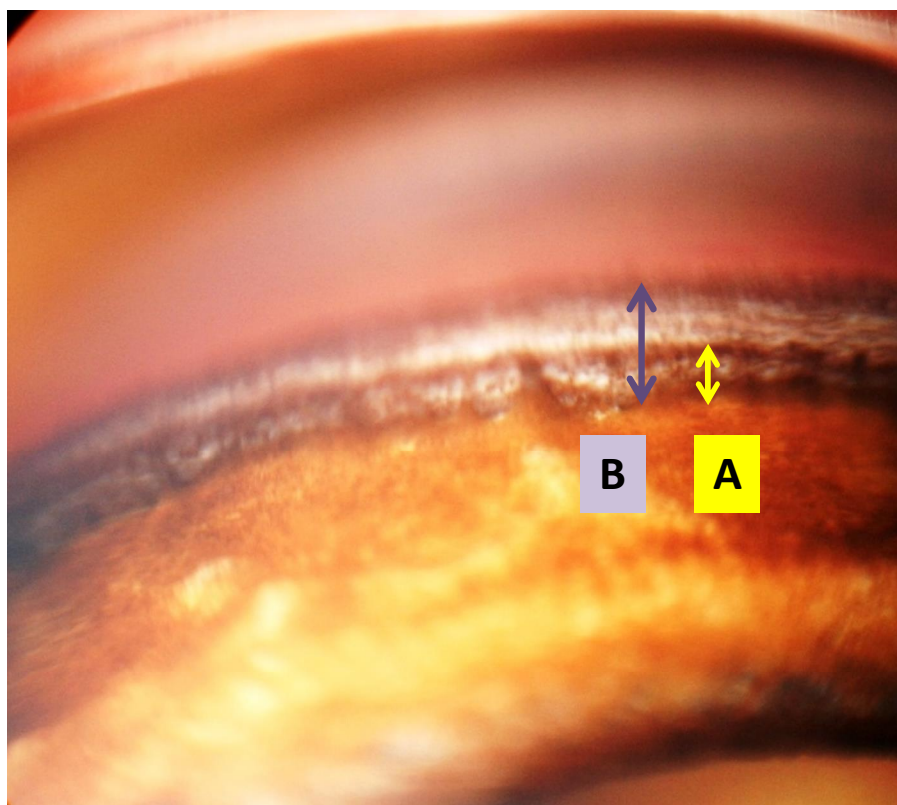**Normal PL:** thin fibres from iris base to its insertion at the cornea

FL : fibres with a confluent (broad) base and shortened thin insertions at the cornea or thick fibres (< 5 fibres)

LA: plates or sheets of continuous tissue, with or without flow holes

ICAW: open-narrow-closed

PLA: 0-50% FL around 360°= **unaffected**

A = length of PL
B = distance from the origin of the PL to the anterior surface of the cornea

PLA: 0-50% FL around 360°=
unaffected
ICAW: narrow = **affected (moderate)?**
or
ICAW: open = **unaffected**
Comment: check position of gonio lens, "borderline" cases!

Fig 41

Terminology:	closed	narrow	open
Ratio A/B:	PL not visible	A < 1/3 of B	A ≥ 1/3 of B

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You can still use the present Certificate: Descriptive comments: ICAW = narrow

Eye disease no. ....**8**................ ☐ mild   ☒ moderate   ☐ severe

	* UNAFFECTED	** UNDETERMINED	* AFFECTED

8. Lig. Pectinate abnormality (only after gonioscopy)   ☒   ▭   ☒ ⟨ fibrae latae / laminae / occlusio ⟩ ✗

NEW:

8. ICAA: PLA ⟨ ☐ mild / ☐ moderate / ☐ severe ⟩

ICA (width) ⟨ ☒ narrow (= moderate) / ☐ closed (= severe) ⟩

Eye disease no. .... ☐ mild   ☐ severe

	* UNAFFECTED	** UNDETERMINED	* AFFECTED

8. Iridocorneal angle abnormality (ICAA): (only after gonioscopy)   ☒   ☒ ⟨ ☐ mild / ☒ moderate / ☐ severe ⟩

Comment: check position of gonio lens !
If ICA = open: tick "unaffected"
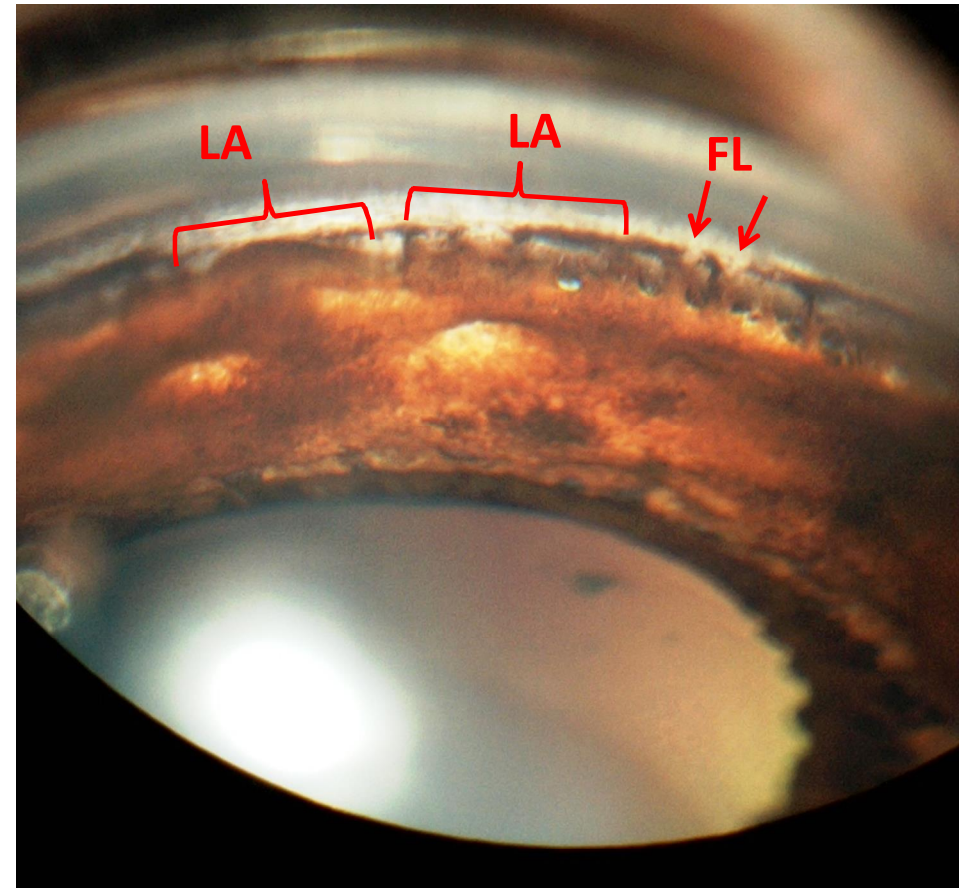**If ICA = narrow: tick "affected – ICAW narrow"**

Fig 1

Normal PL: thin fibres from iris base to its insertion at the cornea

FL : fibres with a confluent (broad) base and shortened thin insertions at the cornea or thick fibres (< 5 fibres)

LA: plates or sheets of continuous tissue, with or without flow holes

ICAW: open-narrow-closed

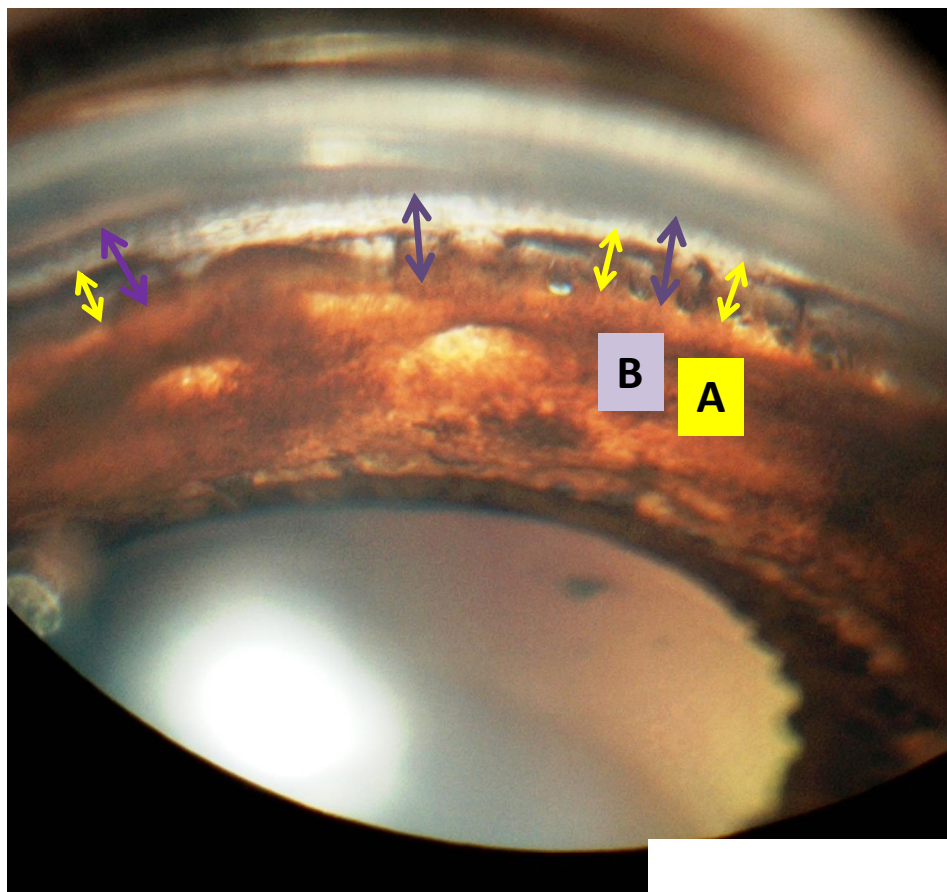**PLA:** 25-50% LA (around 360°) = affected – moderate

A = length of PL
B = distance from the origin of the PL to the anterior surface of the cornea

PLA: 25-50% LA (around 360°) =
affected – moderate
ICAW: open

Comment: in areas of LA the ICAW may be narrow… however, we judge 360 degrees!...according to PLA the grading would be «affected-moderate» anyway!

Fig 1

Terminology:	closed	narrow	open
Ratio A/B:	PL not visible	A < 1/3 of B	A ≥ 1/3 of B

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You can still use the present Certificate:

Eye disease no. ....8.............. ▭ mild ☒ moderate ▭ severe

	* UNAFFECTED	** UNDETERMINED	* AFFECTED	

8. Lig. Pectinate abnormality (only after gonioscopy)

UNAFFECTED ▭   UNDETERMINED ▬▭▬   AFFECTED ☒

fibrae latae
laminae
occlusio

NEW:

8. ICAA: PLA
- ▭ mild
- ☒ moderate
- ▭ severe

ICA (width)
- ▭ narrow (= moderate)
- ▭ closed (= severe)

Eye disease no. …………....…………… ▭ mild ▭ severe

	* UNAFFECTED	** UNDETERMINED	* AFFECTED	

8. Iridocorneal angle abnormality (ICAA): (only after gonioscopy)

UNAFFECTED ▭   AFFECTED ☒

- ▭ mild
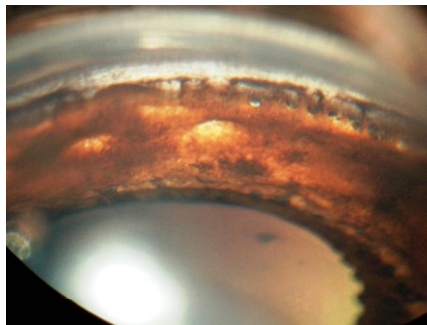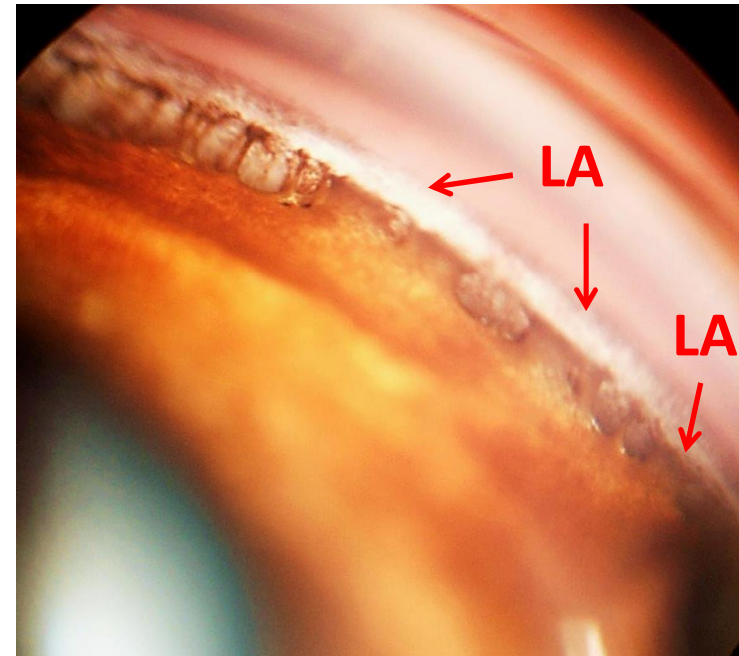- ☒ moderate
- ▭ severe

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Fig 31

Normal PL: thin fibres from iris base to its insertion at the cornea
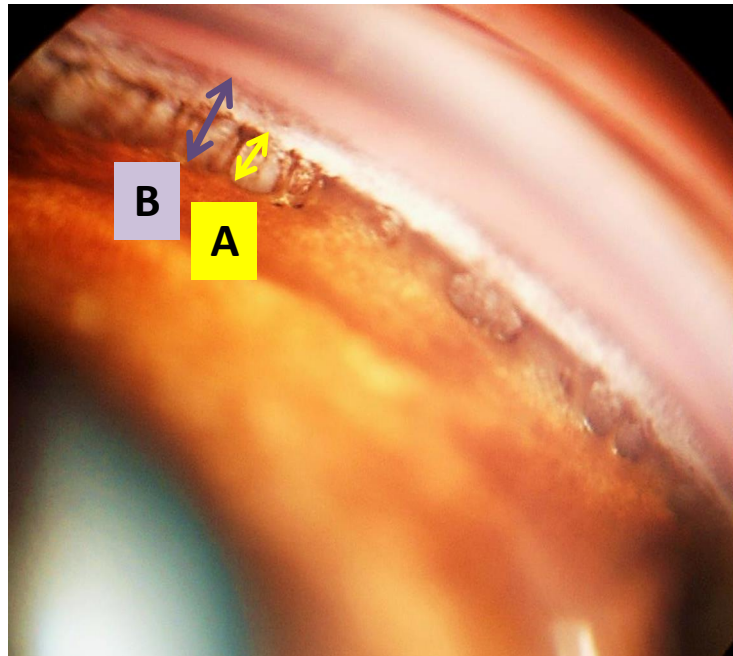
FL : fibres with a confluent (broad) base and shortened thin insertions at the cornea or thick fibres (< 5 fibres)

LA: plates or sheets of continuous tissue, with or without flow holes

ICAW: open-narrow-closed

PLA: 25-50% LA =
affected – moderate

A = length of PL
B = distance from the origin of the PL to the anterior surface of the cornea

PLA: 25-50% LA (around 360°) =
affected – moderate
ICAW: open

Fig 31

Terminology:	closed	narrow	open
Ratio A/B:	PL not visible	A < 1/3 of B	A ≥ 1/3 of B

You can still use the present Certificate:

Eye disease no. …………8…………….. ▭ mild ☒ moderate ▭ severe

	*UNAFFECTED	**UNDETERMINED	*AFFECTED	
8. Lig. Pectinate abnormality (only after gonioscopy)	▭	▬▭▬	☒	~~fibrae latae~~ ~~laminae~~ ~~occlusio~~

NEW:

8. ICAA: PLA ▭ mild ☒ moderate ▭ severe

ICA (width) ▭ narrow (= moderate) ▭ closed (= severe)

Eye disease no. …………….................… ▭ mild ▭ severe

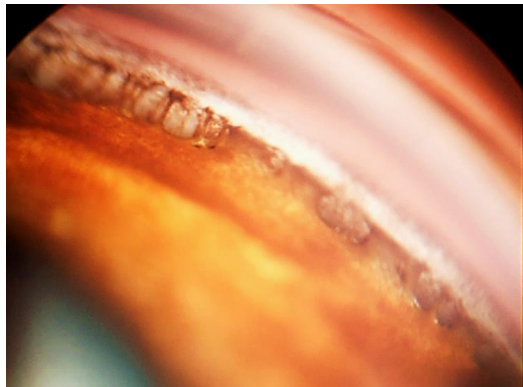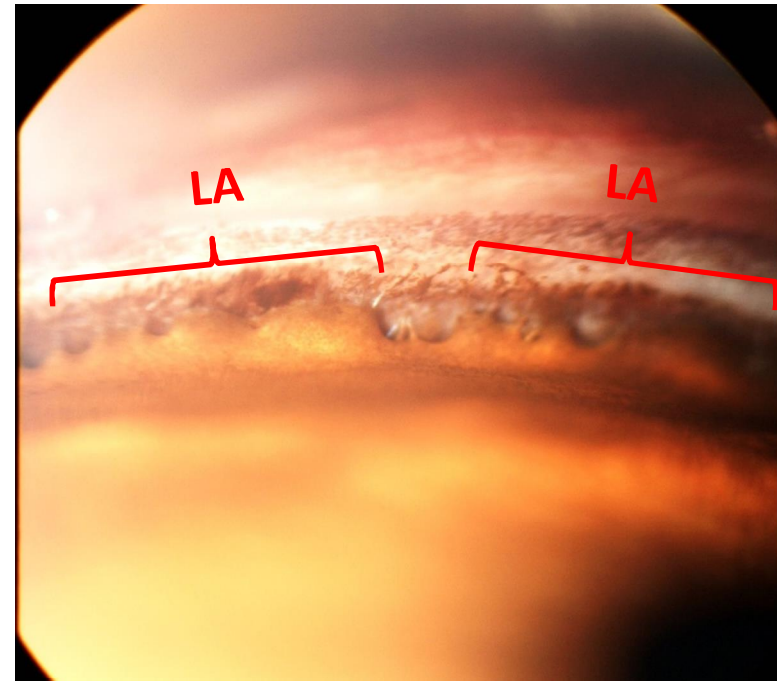|	*UNAFFECTED	**UNDETERMINED	*AFFECTED	
8. Iridocorneal angle abnormality (ICAA): (only after gonioscopy)	▭		☒ ▭ mild ☒ moderate ▭ severe	

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Fig 58

Normal PL: thin fibres from iris base to its insertion at the cornea
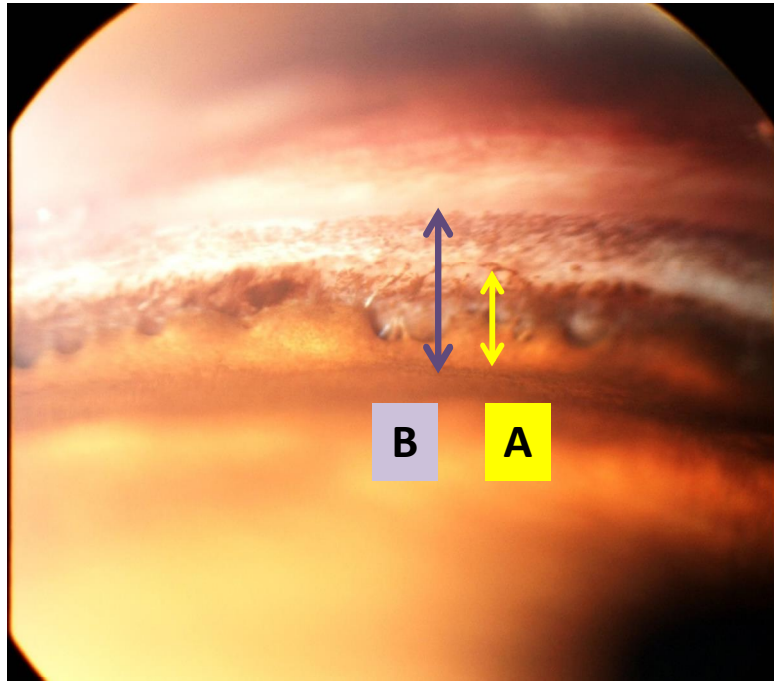
FL : fibres with a confluent (broad) base and shortened thin insertions at the cornea or thick fibres (< 5 fibres)

LA: plates or sheets of continuous tissue, with or without flow holes

ICAW: open-narrow-closed

PLA: >50% LA = **affected – severe**

Fig 58

A = length of PL

B = distance from the origin of the PL to the anterior surface of the cornea

PLA: >50% LA (around 360°) = **affected – severe**
ICAW: open

Terminology:	closed	narrow	open
Ratio A/B:	PL not visible	A < 1/3 of B	A ≥ 1/3 of B

You can still use the present Certificate:

Eye disease no. ....**8**............. ▭ mild   ▭ moderate   ❎ severe

	* UNAFFECTED	** UNDETERMINED	* AFFECTED

8. Lig. Pectinate abnormality (only after gonioscopy)   ▭   ▭   ❎ — fibrae latae / laminae / occlusio

~~(crossed out)~~

NEW:

8. ICAA: PLA — ▭ mild / ▭ moderate / ❎ severe

ICA (width) — ▭ narrow (= moderate) / ▭ closed (= severe)

Eye disease no. …………..….............…… ▭ mild   ▭ severe

	* UNAFFECTED	** UNDETERMINED	* AFFECTED

8. Iridocorneal angle abnormality (ICAA): (only after gonioscopy)   ▭   ❎ — ▭ mild / ❎ moderate / ❎ severe
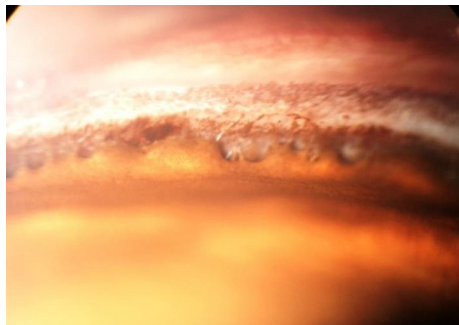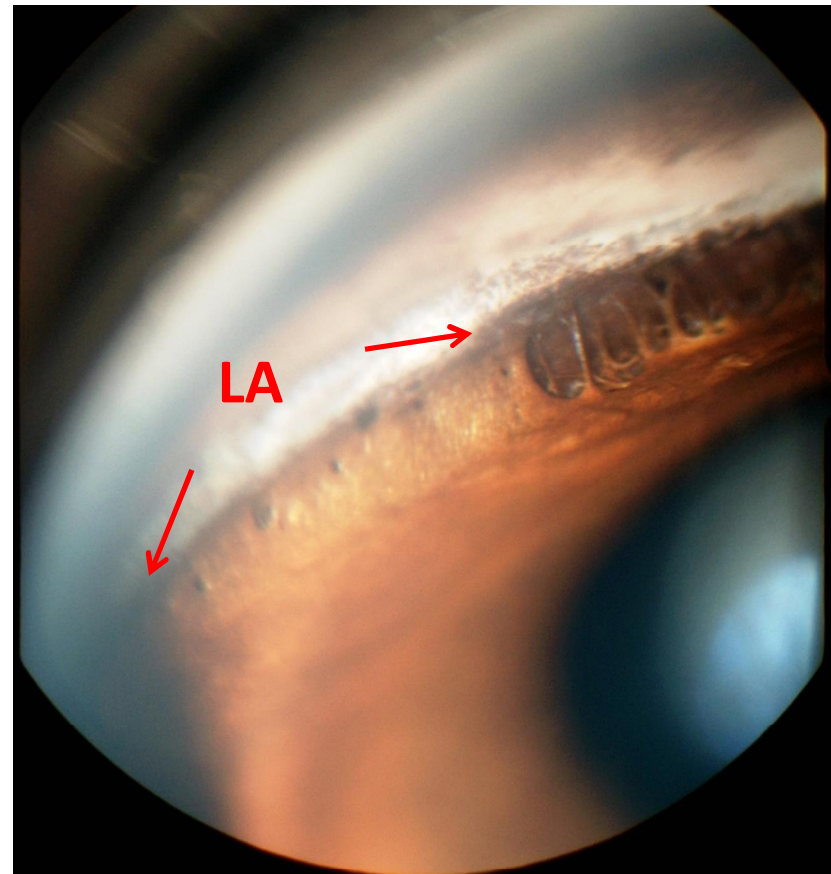
Fig 10

Normal PL: thin fibres from iris base to its insertion at the cornea

FL : fibres with a confluent (broad) base and shortened thin insertions at the cornea or thick fibres (< 5 fibres)

LA: plates or sheets of continuous tissue, with or without flow holes

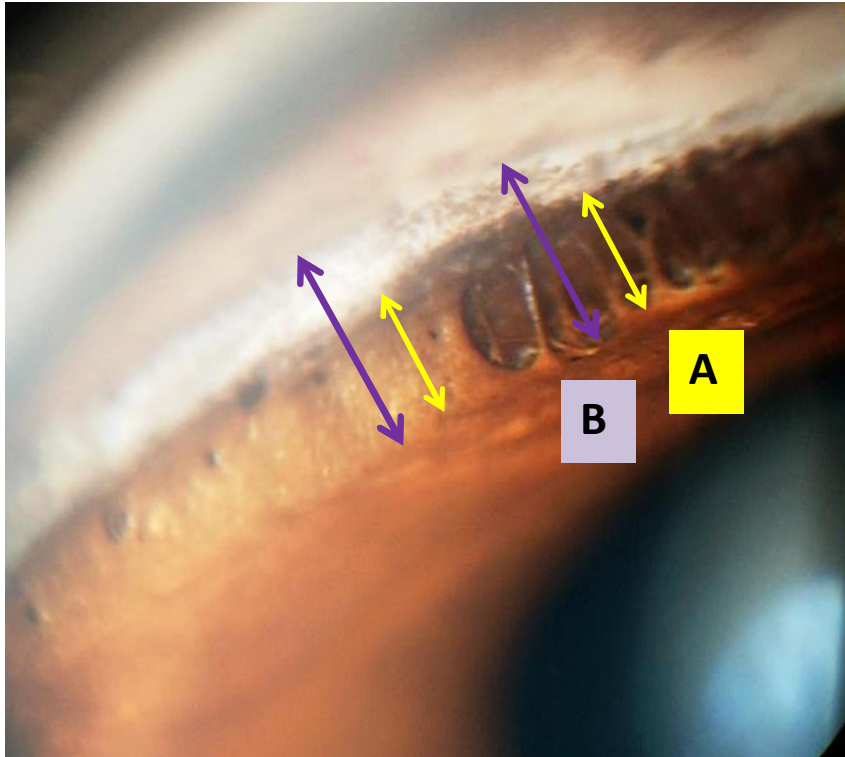**ICAW:** open-narrow-closed

PLA: >50% LA = affected – severe

A = length of PL
B = distance from the origin of the PL to the anterior surface of the cornea

PLA: > 50% LA (around 360°) =
affected – severe
ICAW: open
Comment: ICAW = open but occluded by LA (note the difference between the terms "closed" and "occluded");
If PLA or ICAW is graded "affected-severe" its meaning is comprehensible to the breeder

Fig 10

Terminology:	closed	narrow	open
Ratio A/B:	PL not visible	A < 1/3 of B	A ≥ 1/3 of B

You can still use the present Certificate:

Eye disease no. ....**8.**.............. .. ▭ mild   ▭ moderate   ✖ severe

	* UNAFFECTED	** UNDETERMINED	* AFFECTED	
8. Lig. Pectinate abnormality (only after gonioscopy)	▭	▬▭▬	✖	▭ fibrae latae ▭ laminae ▭ occlusio

NEW:

8. ICAA: PLA	▭	mild
	▭	moderate
	✖	severe
ICA (width)	▭	narrow (= moderate)
	▭	closed (= severe)

Eye disease no. ....… ▭ mild   ▭ severe

	* UNAFFECTED	** UNDETERMINED	* AFFECTED	
8. Iridocorneal angle abnormality (ICAA): (only after gonioscopy)	▭		✖	▭ mild ▭ moderate ✖ severe

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A = length of PL
B = distance from the origin of the PL to the
anterior surface of the cornea

PLA: > 50% LA (around 360°) =
affected – severe
ICAW: closed? or open but occluded by
extensive LA? (see next page)

Fig 83

Terminology:	closed	narrow	open
Ratio A/B:	PL not visible	A < 1/3 of B	A ≥ 1/3 of B
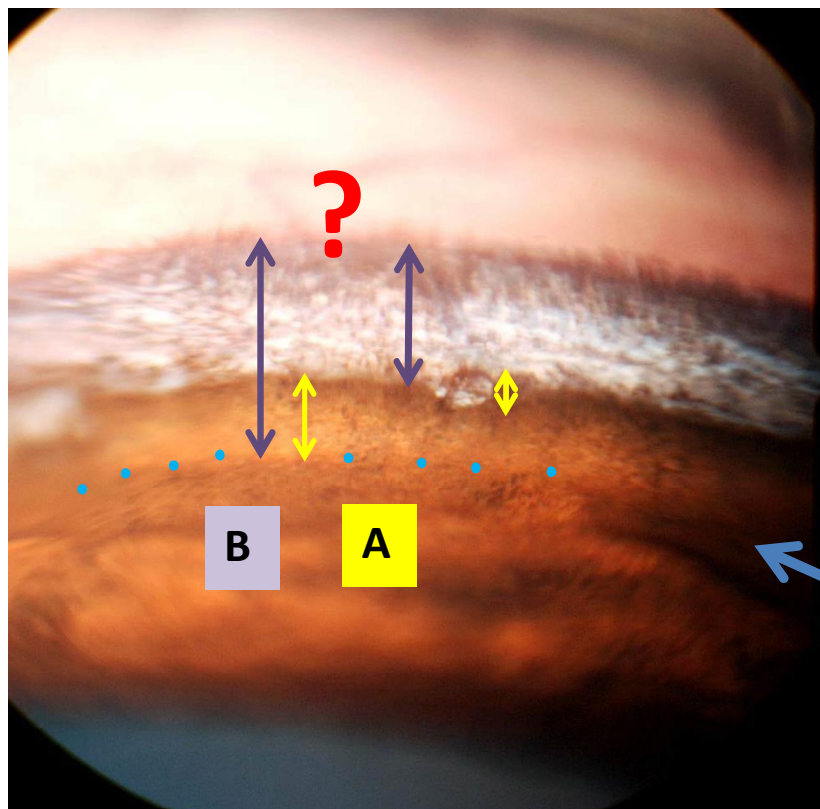
Fig 83
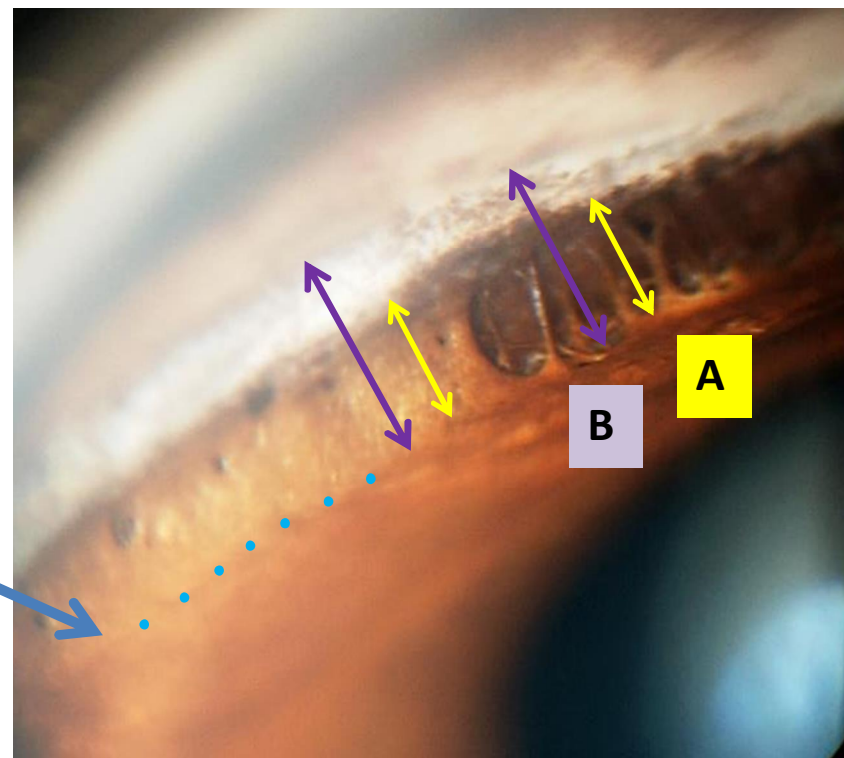
Fig 10

Terminology:	closed	narrow	open
Ratio A/B:	PL not visible	A < 1/3 of B	A ≥ 1/3 of B
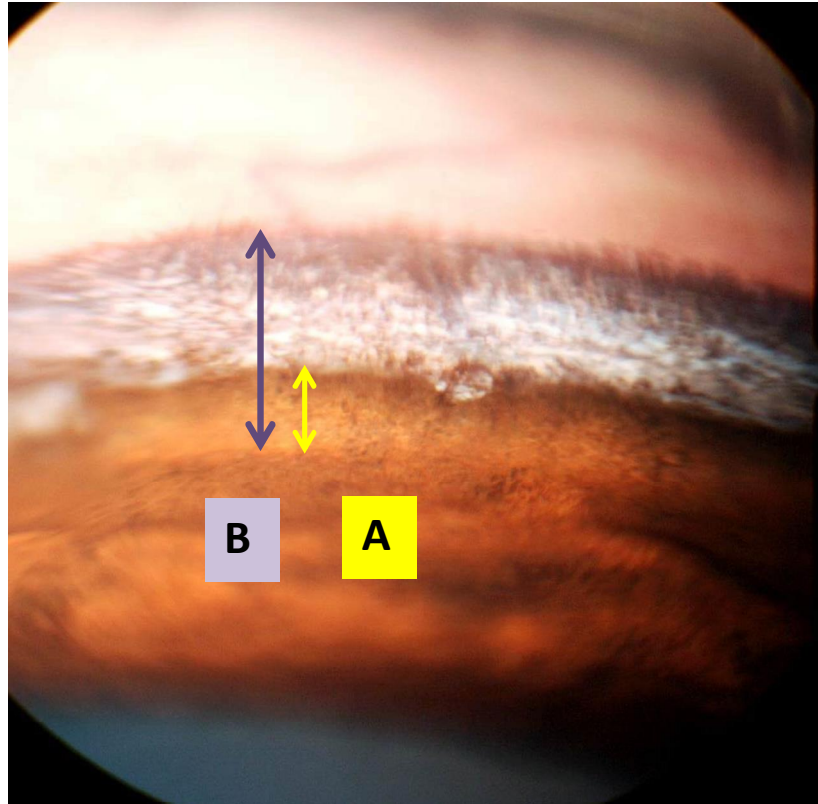
A = length of PL

B = distance from the origin of the PL to the anterior surface of the cornea

Authors interpretation: ICA occluded by a sheet of pigmented tissue spanning the angle from the base of the iris to the inner-pigmented band with one flow hole visible. >90% affected or grade 3.

"Progression of pectinate ligament dysplasia over time in two populations of Flat-Coated Retrievers" R.Pearl, D.Gould, B.Spiess
Veterinary Ophthalmology, Vol18, Issue 1, p 6-12, Sep 2013

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You can still use the present Certificate:

Eye disease no. ....**8.**.............. .. ☐ mild   ☐ moderate   ☒ severe

	* UNAFFECTED	** UNDETERMINED	* AFFECTED	
8. Lig. Pectinate abnormality (only after gonioscopy)	☐	~~☐~~	☒	☐ fibrae latae ☐ laminae ☐ occlusio

NEW:

8. ICAA: PLA ☐ mild ☐ moderate ☒ severe

ICA (width) ☐ narrow (= moderate) ☒ closed (= severe)

Eye disease no. ....…....................... ☐ mild   ☐ severe

	* UNAFFECTED	** UNDETERMINED	* AFFECTED	
8. Iridocorneal angle abnormality (ICAA): (only after gonioscopy)	☐		☒	☐ mild ☒ moderate ☐ severe

Comment: 2 opinions of 2 examiners but same result !
1. PLA «affected» «severe»
2. ICAW: «affected» «closed» ; PL not visible – no judgement possible
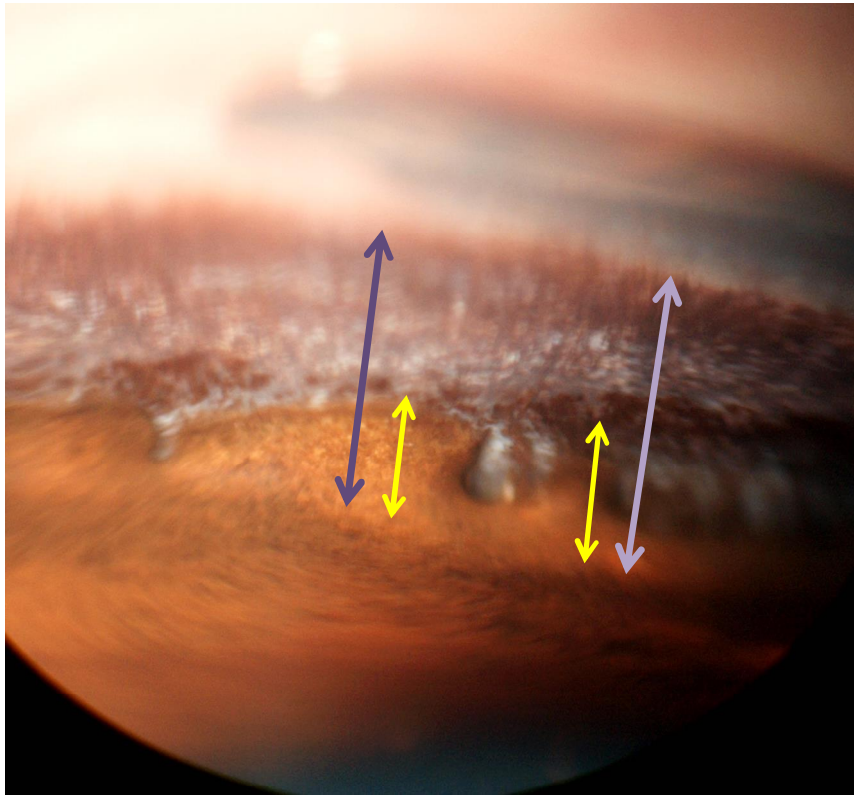
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Fig 36

A = length of PL
B = distance from the origin of the PL to the anterior surface of the cornea

Authors interpretation: ICA occluded by a sheet of pigmented tissue spanning the angle from the base of the iris to the inner-pigmented band with several flow holes visible. 70% affected or grade 2.

"Progression of pectinate ligament dysplasia over time in two populations of Flat-Coated Retrievers" R.Pearl, D.Gould, B.Spiess
Veterinary Ophthalmology, Vol18, Issue 1, p 6-12, Sep 2013

You can still use the present Certificate:

Eye disease no. ....**8.**............. .. ▭ mild ▭ moderate ✖ severe

	* UNAFFECTED	** UNDETERMINED	* AFFECTED

8. Lig. Pectinate abnormality (only after gonioscopy) — ▭ UNAFFECTED — ▬▭▬ UNDETERMINED — ✖ AFFECTED

✖ → ▭ fibrae latae
▭ laminae
▭ occlusio
(crossed out)

NEW:

8. ICAA: PLA
▭ mild
▭ moderate
✖ severe

ICA (width)
▭ narrow (= moderate)
▭ closed (= severe)

Eye disease no. .... ▭ mild ▭ severe

	* UNAFFECTED	** UNDETERMINED	* AFFECTED

8. Iridocorneal angle abnormality (ICAA): (only after gonioscopy)

▭ UNAFFECTED   ✖ AFFECTED → ▭ mild
▭ moderate
✖ severe

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NEW (Chapter 8 Vet Advice):

˝ **Gonioscopy every 3 years /at age 1, 4 & 7** (Chapter 7 Recommendations regarding age and frequency)

˝ **Breeding advice** (ICA = iridocorneal angle abnormality):

. Mild-moderate: **OPTIONAL** (according to present scientific information available: if these dogs are used, it is recommended to breed these dogs to unaffected graded dogs)

. Severe: **NO BREEDING** (+ risk to develop glaucoma)

Advantage of the new grading:

˝ Grading on the certificate is more comprehensible to the breeder (unaffected, affected mild/moderate/severe)

˝ Grading of abnormalitites of PL and ICAwidth (in the descriptive comment area)

˝ Clinically relevant grading (360 degrees)

Many thanks

˝ to the gonioscopy subcommittee members:
Björn Ekesten, Peter Bedford, Claus
Bundgaard, Gilles Chaudieu, Adolfo Guandalini

˝ for the slides: Bernhard Spiess

Anmerkungen:

Eye disease no   8   ○ mild   ● mod.   ○ severe

Erbliche und vermutlich erbliche Augenerkrankungen

1. Membrana Pupillaris Persistens (MPP):
● Frei ○ Zweifelhaft ○ Nicht frei   ☐ Iris ☐ Kornea ☐ Linse ☐ Lamina

2. Persistierende hyperpl. Tunica vasculosa lentis/primärer Glaskörper (PHTVL/PHPV):
● Frei ○ Zweifelhaft ○ Nicht frei   ☐ Grad 1 ☐ Grad 2-6

3. Katarakt (kongenital):
● Frei ○ Zweifelhaft ○ Nicht frei

4. Retinadysplasie (RD):
● Frei ○ Zweifelhaft ○ Nicht frei   ☐ (Multi)fokal ☐ Geografisch ☐ Total

5. Hypoplasie-/Mikropapille:
● Frei ○ Zweifelhaft ○ Nicht frei

6. Collie Augenanomalie (CEA):
● Frei ○ Zweifelhaft ○ Nicht frei   ☐ Choroid. Hypoplasie ☐ Kolobom ☐ Sonstige:

7. Sonstige:
● Frei ○ Zweifelhaft ○ Nicht frei

● Frei ○ Zweifelhaft ○ Nicht frei

8. Dyspl. L. pectinatum Abnormalität (nur nach Gonioskopie):
○ Frei ○ Zweifelhaft ● affect.   ☐ Fibrae latae ☑ Laminae ☐ Occlusio

˝ 0 – 50% FL = **unaffected**

˝ >50-100% FL **and/or** < 25% LA = **affected (mild)**

˝ 25-50% LA = **affected (moderate)**

˝ > 50% LA = **affected (severe)**

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