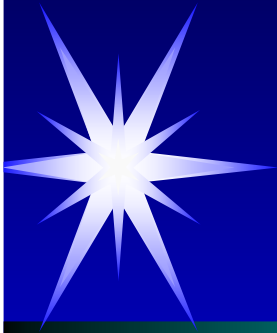


Università degli Studi di Ferrara

Clinica Oculistica “Antonio Rossi”

Direttore Prof. Adolfo Sebastiani



SMC 4 MAGGIO 2013

*La chirurgia refrattiva
con laser ad eccimeri*

Adolfo Sebastiani

BULBO OCULARE

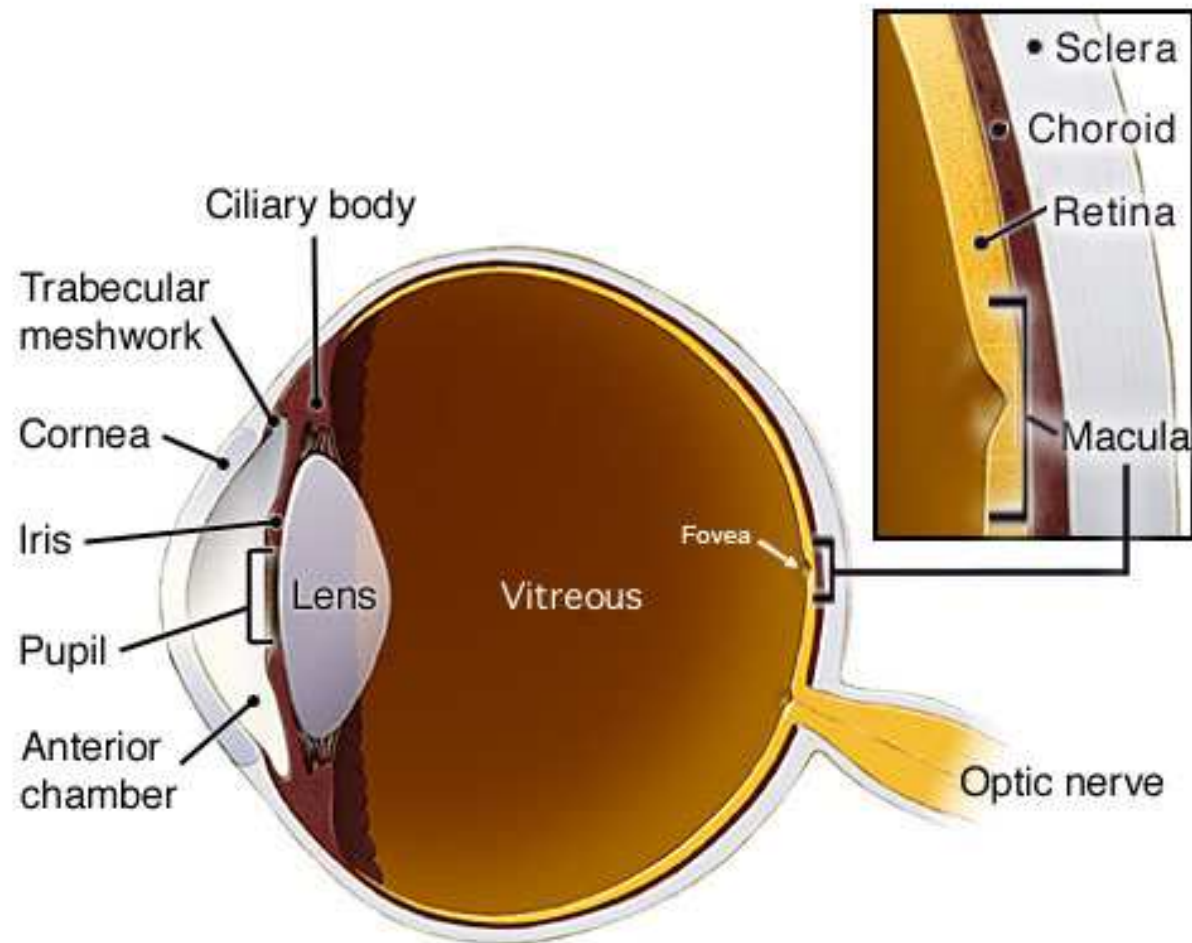
∅ 22 mm
vol.: 6 cm³
peso: 7 g

TONACHE OCULARI:

- cornea-sclera
- uvea
- retina



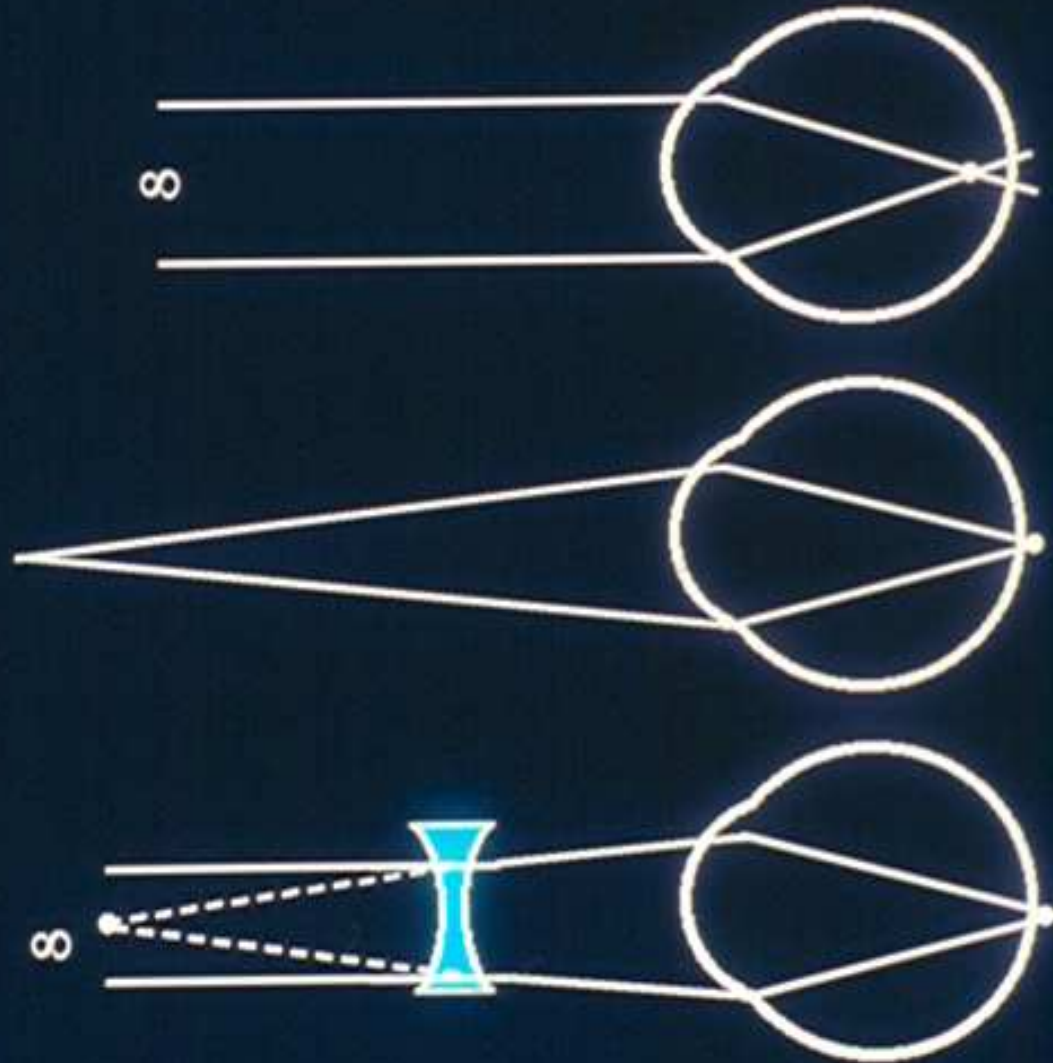
Anatomy of the Eye



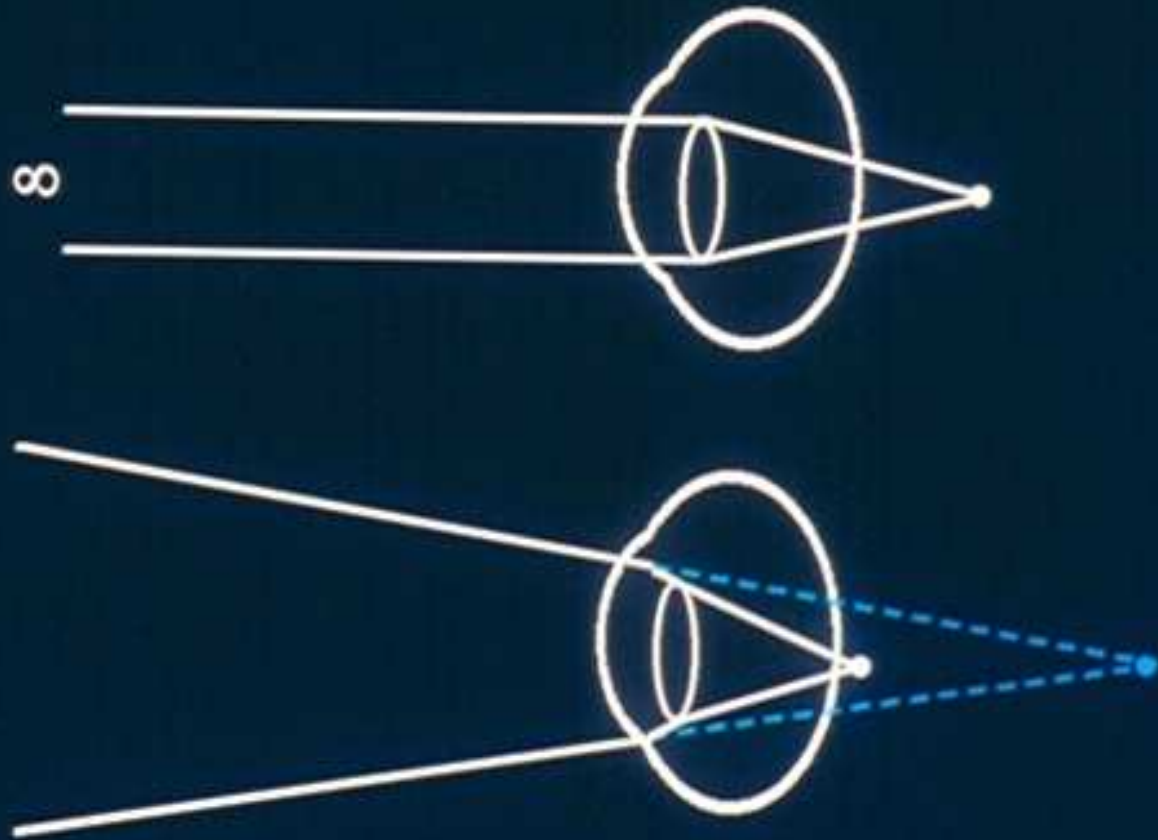
EMMETROPIA



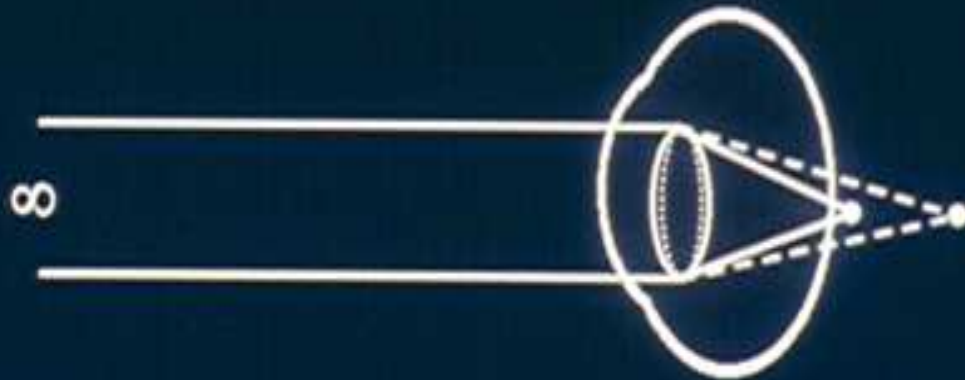
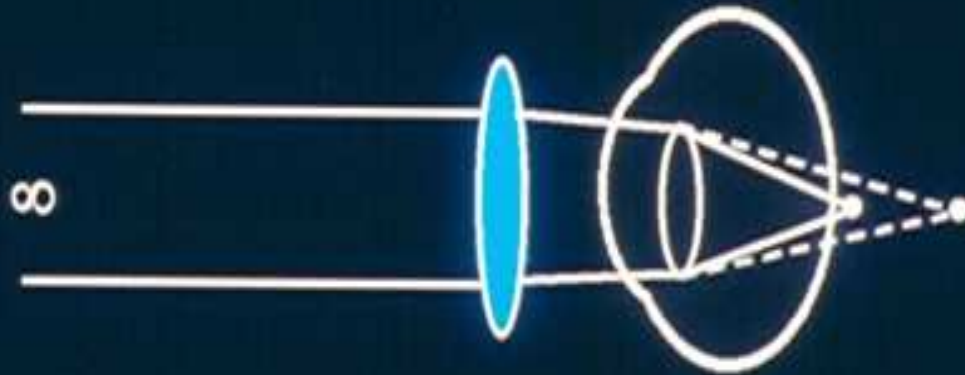
MIOPIA



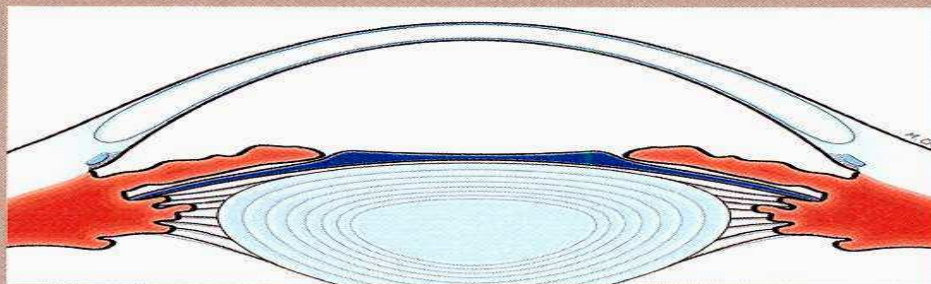
IPERMETROPIA



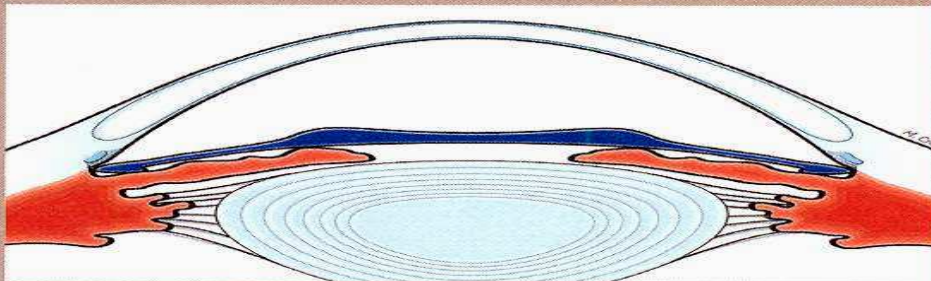
IPERMETROPIA



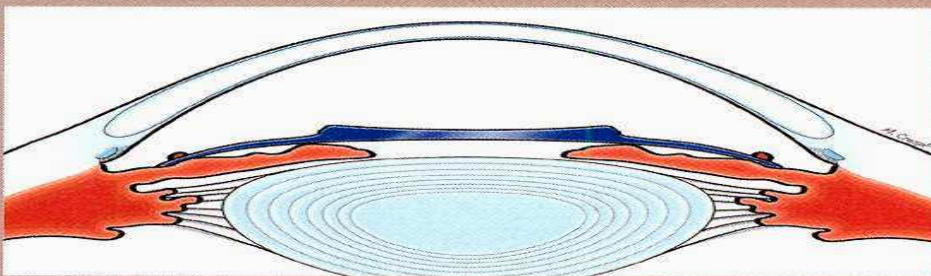
LE TRE TECNICHE DI INSERIMENTO



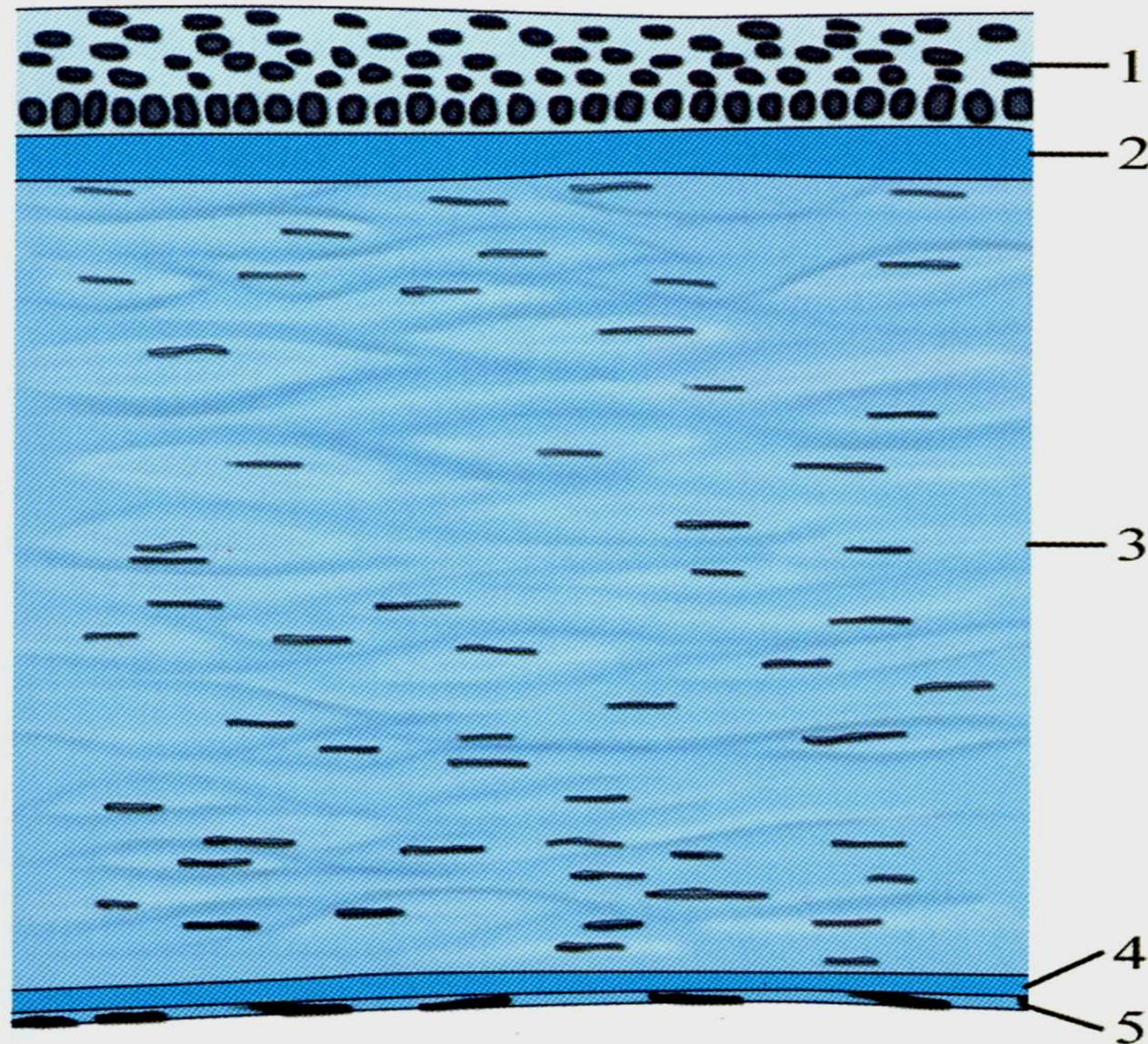
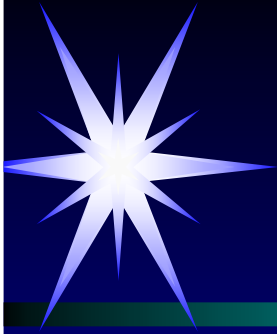
Lente intraoculare (o cristallino fochico) posizionata nella camera posteriore, dietro l'iride.



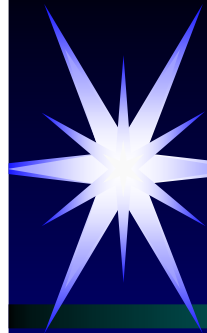
Lente intraoculare nella camera anteriore ad appoggio angolare.



Lente intraoculare posizionata nella camera anteriore, fissata all'iride.



– In sezione i diversi strati che compongono la cornea (dall'esterno all'interno): **1**) epitelio; **2**) membrana di Bowman; **3**) stroma; **4**) membrana di Descemet; **5**) endotelio.

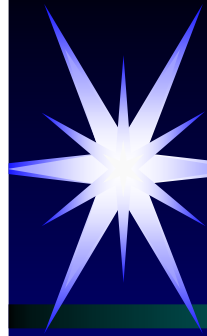


EFFETTI BIOLOGICI DEL LASER AD ECCIMERI

❖ Il laser a eccimeri ArF emette una radiazione luminosa di 193 nm:

- monocromatica
- coerente
- collimata
- ad elevata energia

ideale per intervenire sul tessuto corneale.



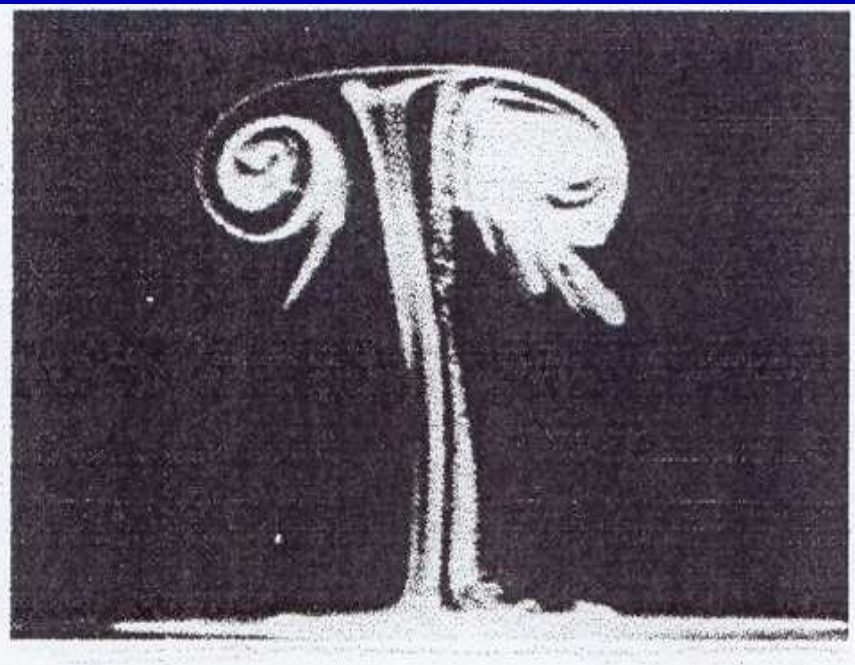
EFFETTI BIOLOGICI DEL LASER AD ECCIMERI

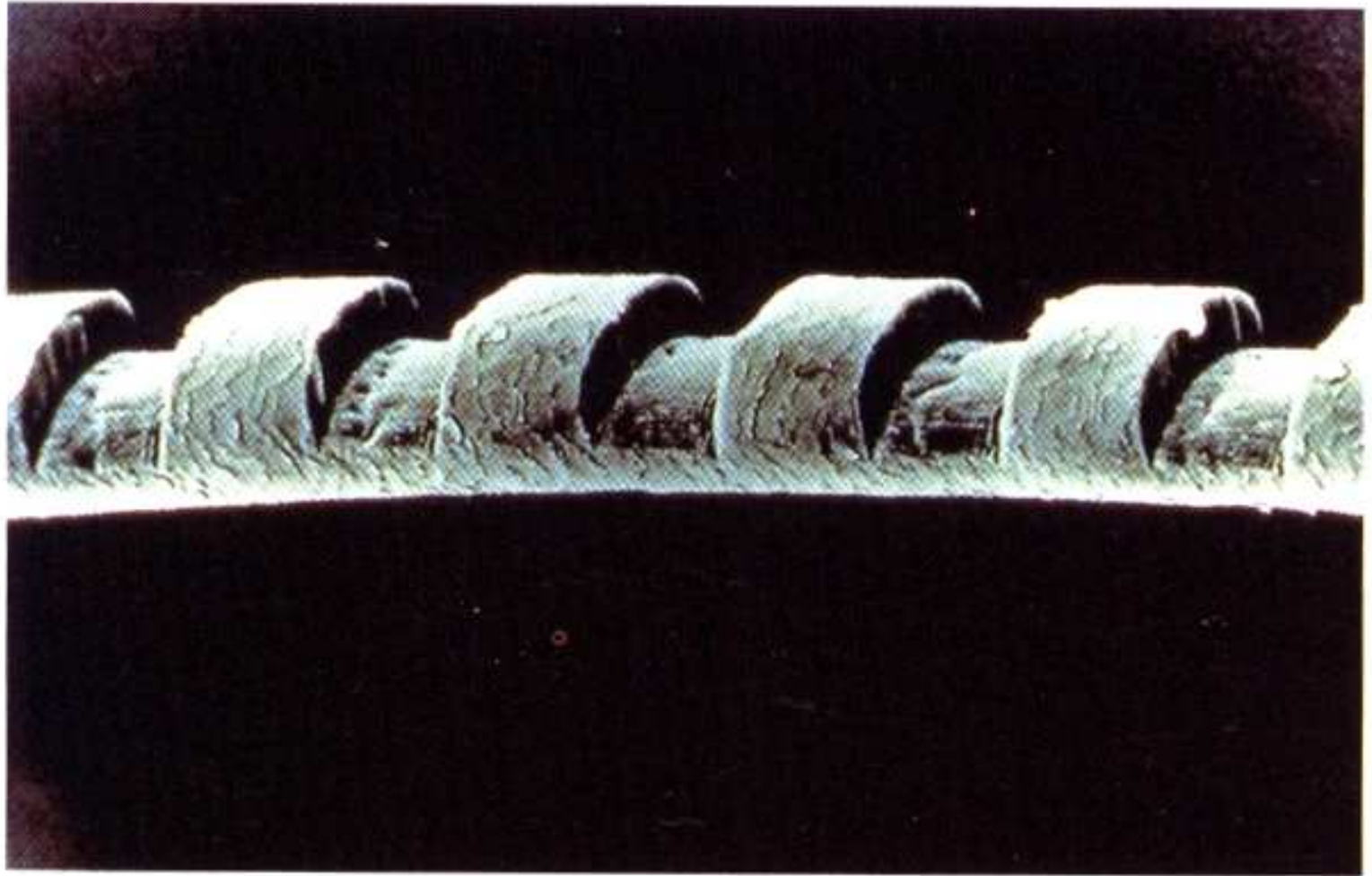
- ❖ I legami peptidici C-N e C-C delle macrocomponenti stromali solide del tessuto corneale vengono scissi, con formazione di fotoframmenti espulsi ad altissima velocità (2000 m/sec), dando luogo alla cosiddetta *fotoablazione*.
- ❖ La superficie corneale anteriore viene rimodellata attraverso una vera e propria exeresi tessutale, attuando cioè una *cheratectomia*.



LA FOTOABLAZIONE

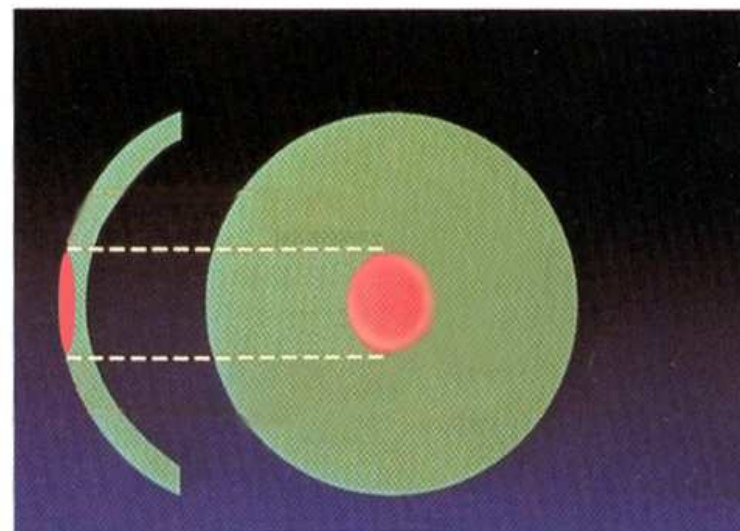
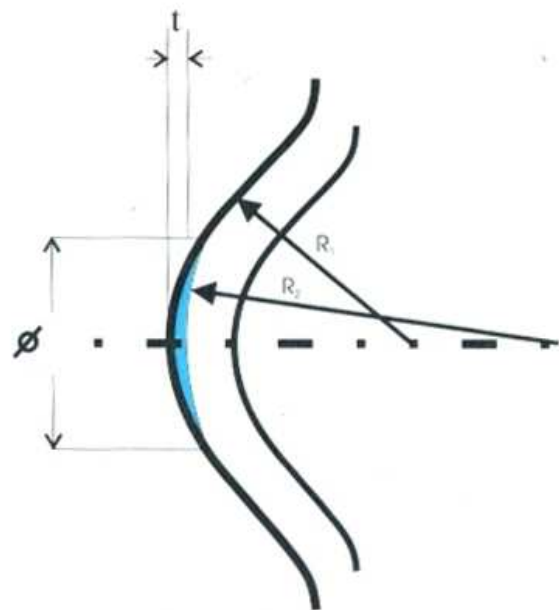
La FOTOABLAZIONE si verifica in seguito all'interazione tra il fascio di luce del raggio laser e lo stroma corneale con una VAPORIZZAZIONE del tessuto e rilascio di fumi e gas



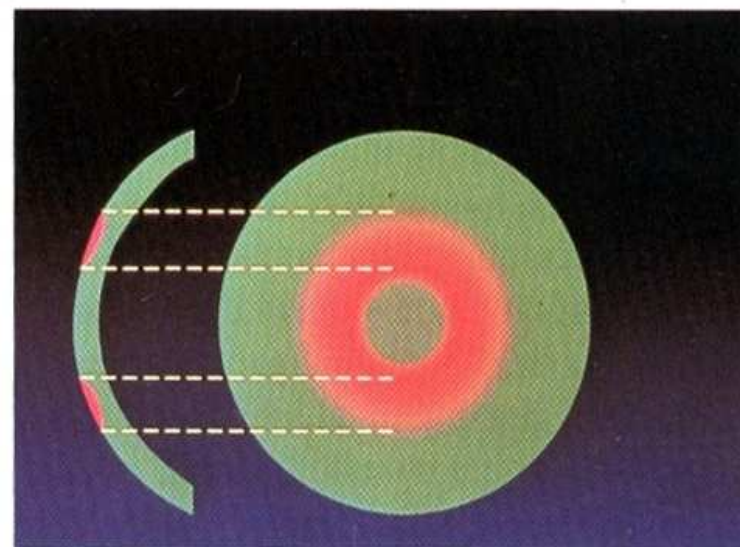
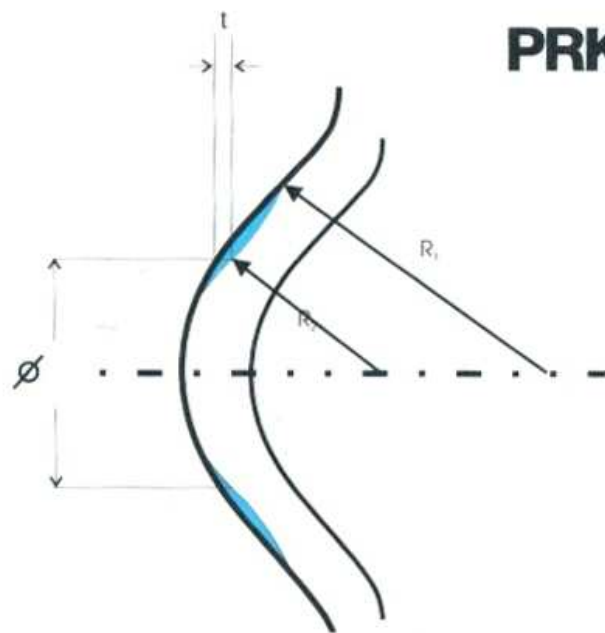


- Il famoso capello ablato da Srinivasan nei laboratori newyorkesi della IBM (1983) (cortesia di Alcon-Italia)

PRK MIOPICA



PRK IPERMETROPICA



- Visualizzazione del concetto di modificazione della superficie corneale anteriore a scopi refrattivi

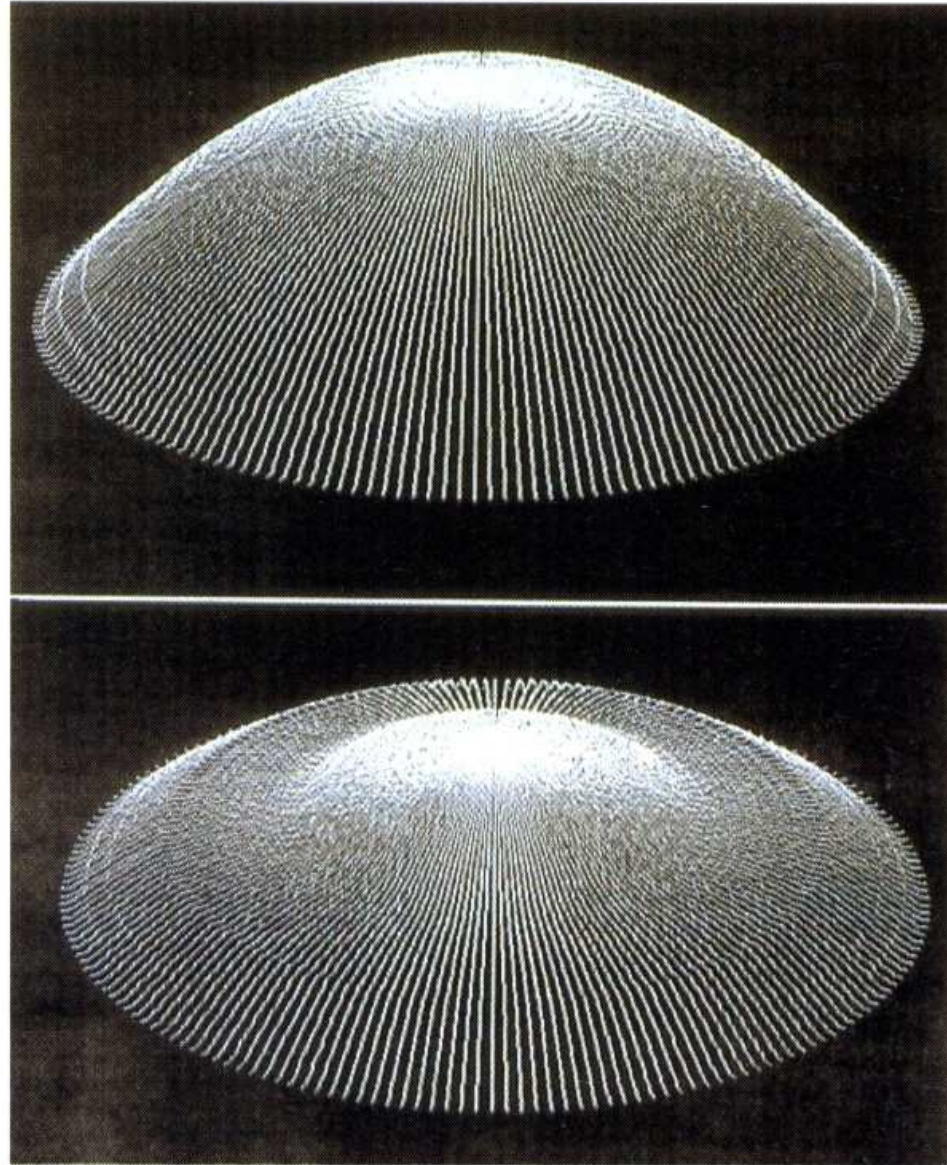
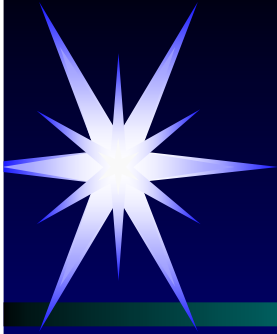
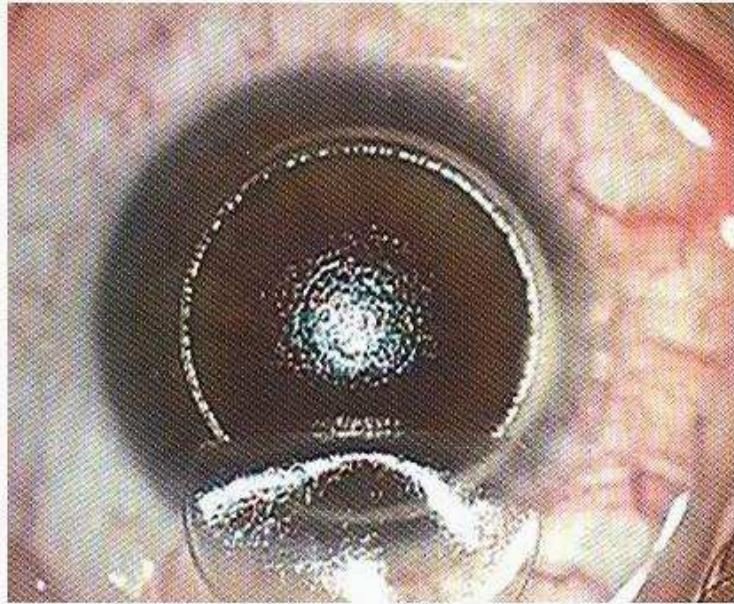
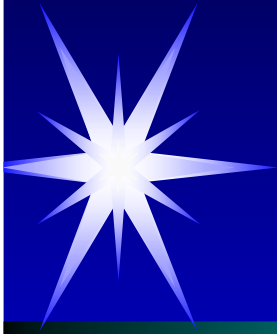


Fig. 25 - Simulazione al computer del trattamento ipermetropico: in alto la cornea prima, in basso dopo il trattamento (cortesia di Meditec)

Aberrometro:
"customized ablation"

MEL 80





ASTIGMATISMO



UGUALE
CURVATURA

**CORNEA
SFERICA**

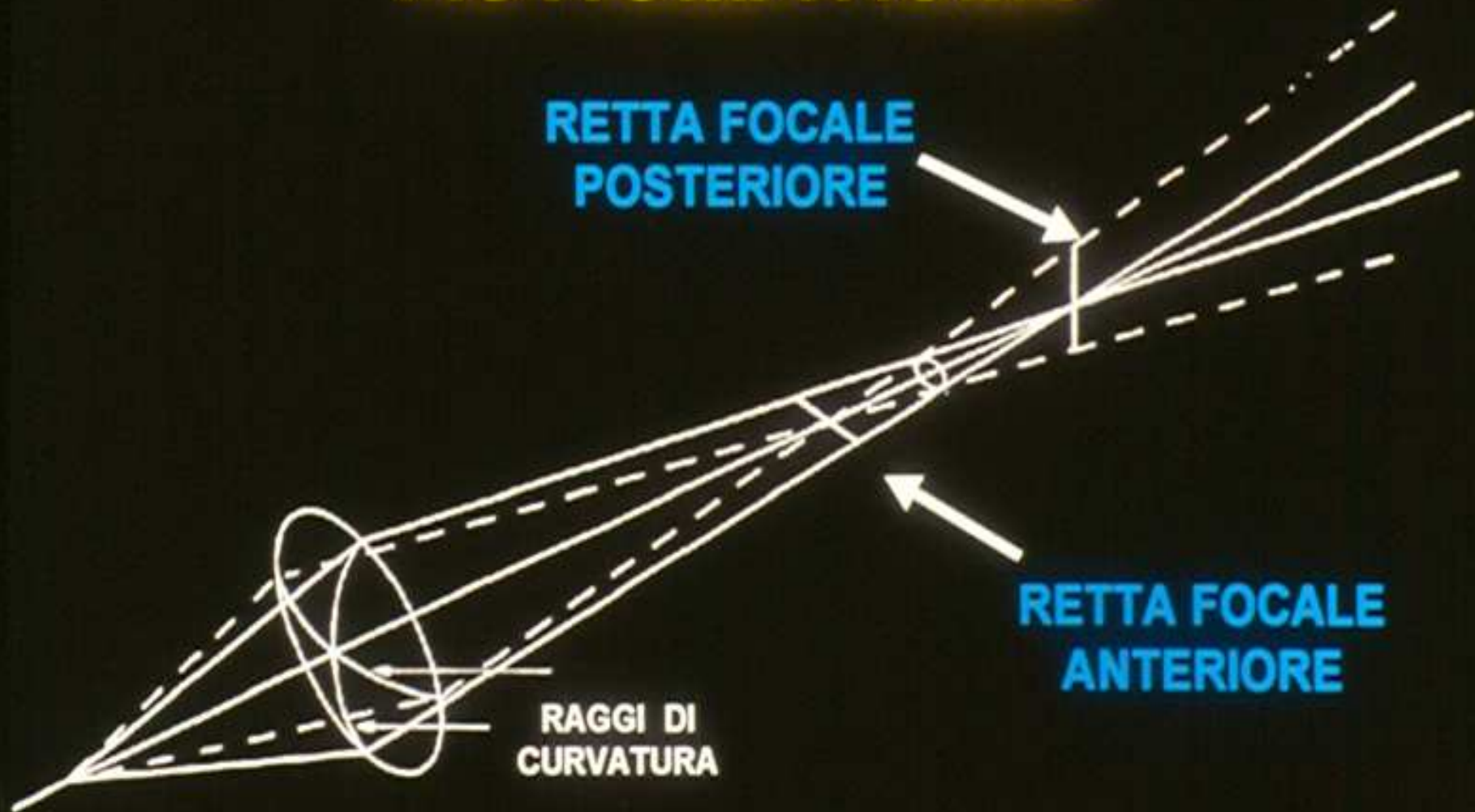


MASSIMA
CURVATURA

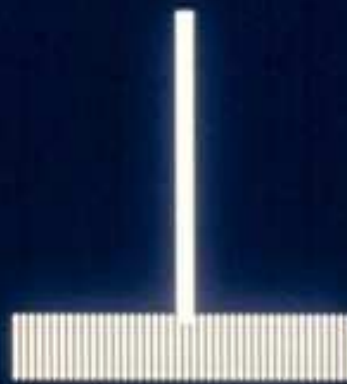
MINIMA
CURVATURA

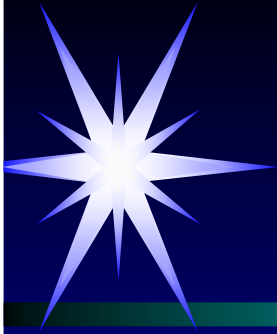
**CORNEA
ASTIGMATICA**

ASTIGMATISMO



ASTIGMATISMO





A. A N P U F Z

TYPE IN FOCUS.

B. A N P U F Z

WITH SPH. +0.50D. ADDED.

C. A N P U F Z

WITH SPH. +0.50. ADDED, AND
CROSSED CYL. ($\pm 0.50D$) + AXIS \rightarrow

D. A N P U F Z

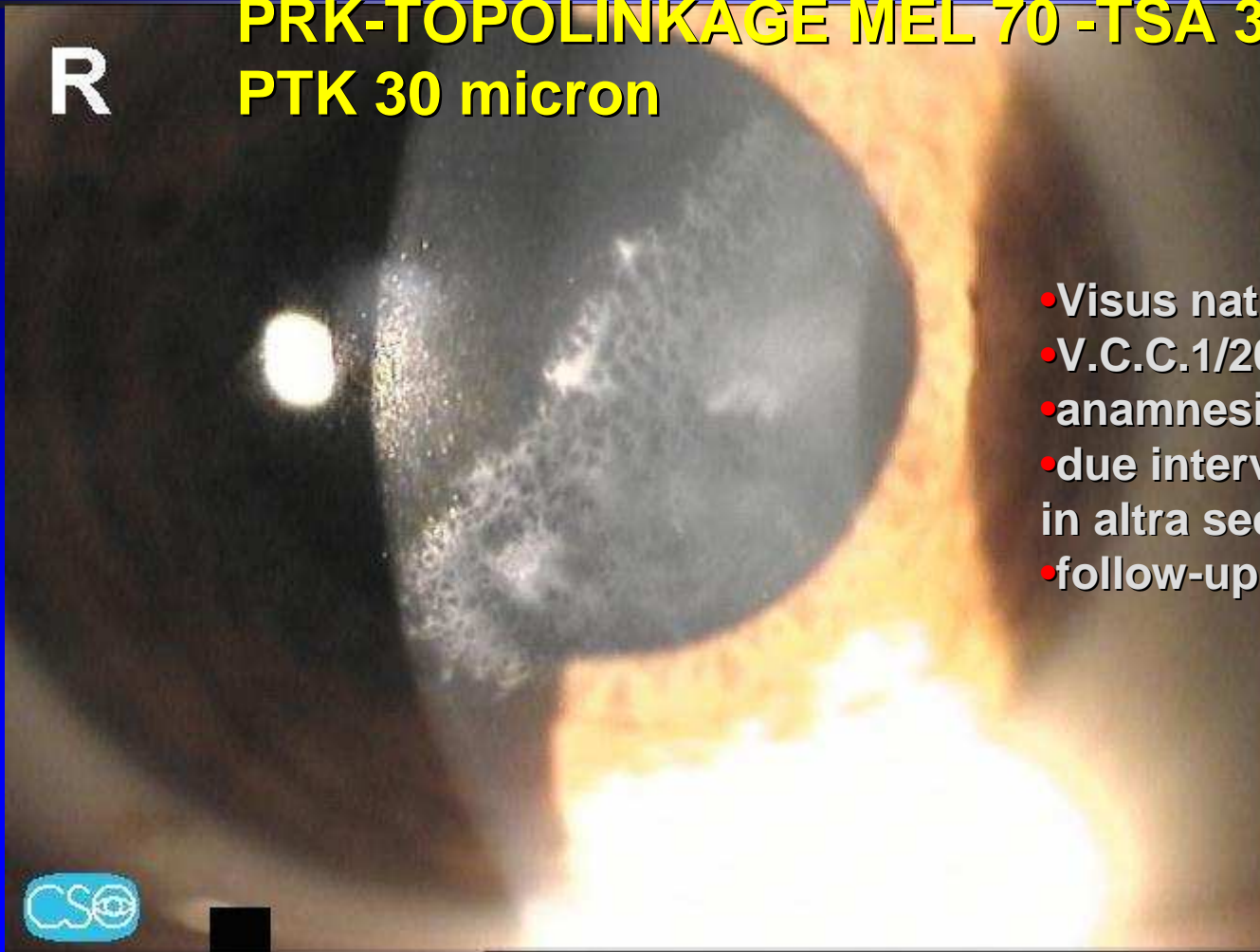
WITH SPH. +0.50 D. ADDED, AND
CROSSED CYL. ($\pm 0.50D$) + AXIS \downarrow

STRATEGIE CORRETTIVE

HAZE asimmetrico RR+ (pseudodecentramento)

PRK-TOPOLINKAGE MEL 70 -TSA 33micron
PTK 30 micron

R



- Visus nat1/120
- V.C.C.1/20 cil +1ax145
- anamnesi positiva LAC+RR
- due interventi già effettuati in altra sede
- follow-up inadeguato

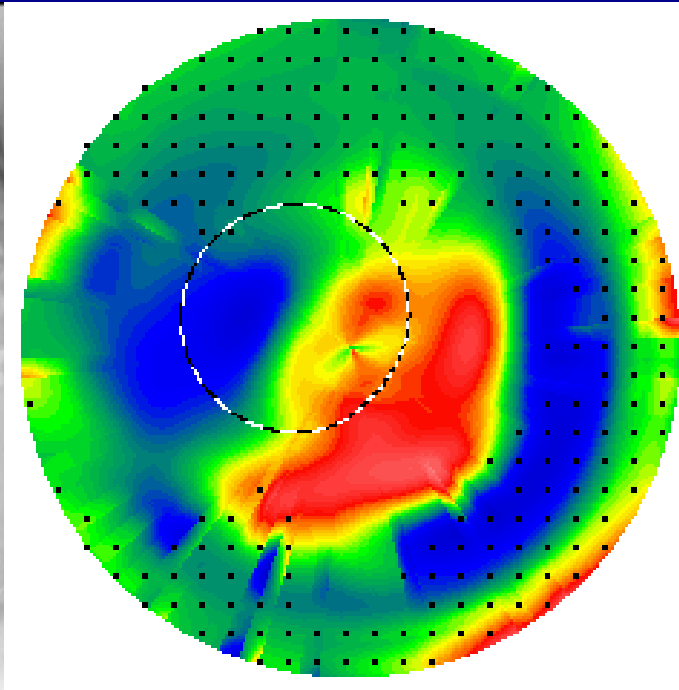
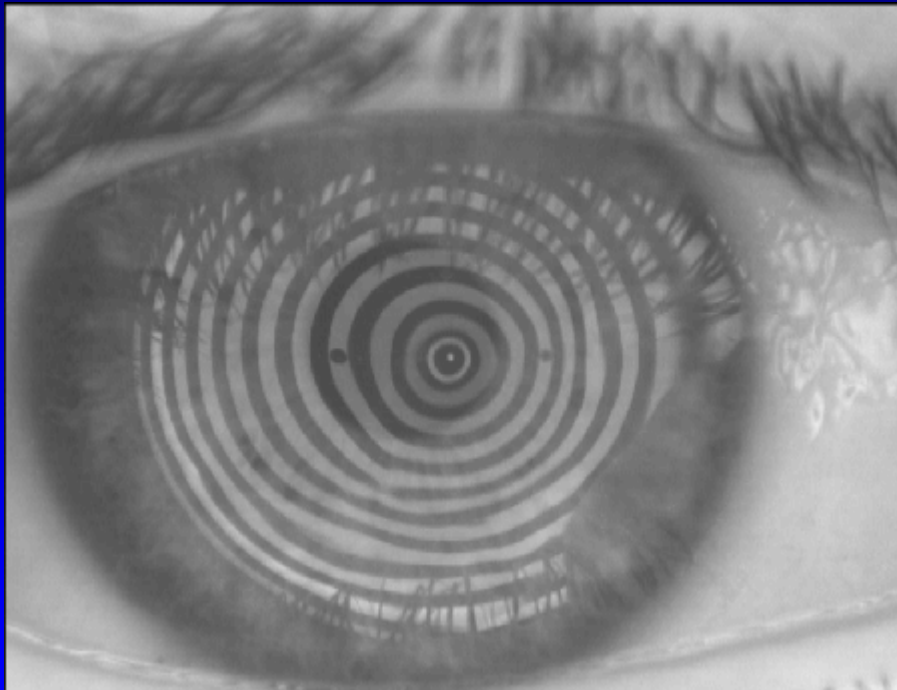


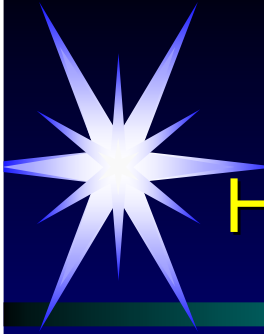


STRATEGIE CORRETTIVE

HAZE asimmetrico RR+ (pseudodecentramento)

PRK-TOPOLINKAGE MEL 70 -TSA 33micron
PTK 30 micron

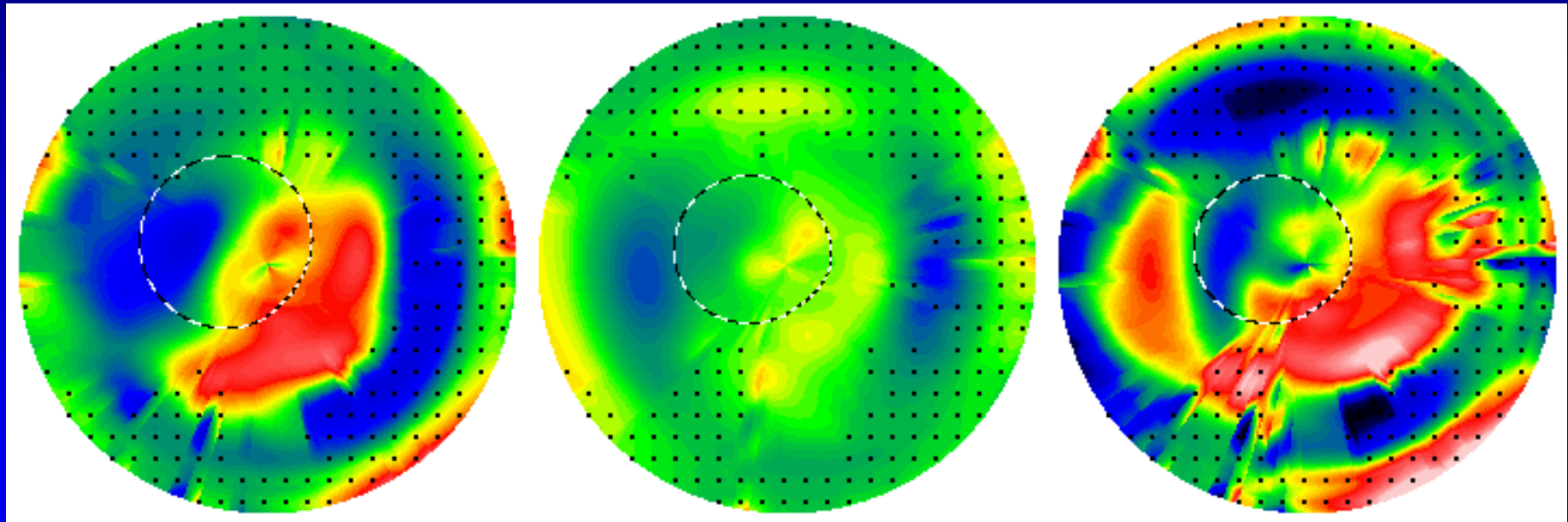




STRATEGIE CORRETTIVE

HAZE asimmetrico RR+ (pseudodecentramento)

PRK-TOPOLINKAGE MEL 70 -TSA 33micron
PTK 30 micron



Mappa tangenziale
pre-op.

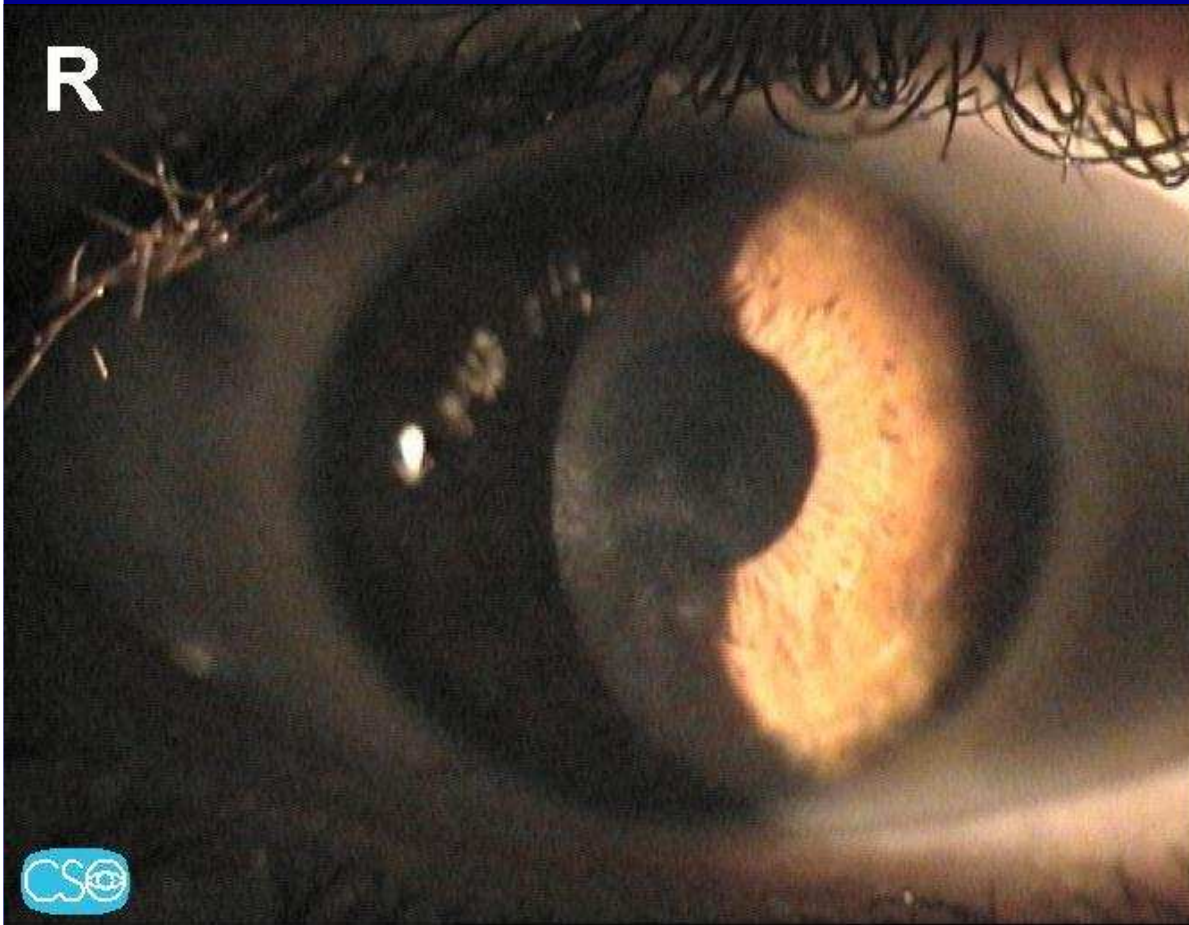
Mappa tangenziale
post-op.

Mappa differenziale

STRATEGIE CORRETTIVE

HAZE asimmetrico RR+ (pseudodecentramento)

PRK-TOPOLINKAGE MEL 70 -TSA 33micron
PTK 30 micron



- Visus nat 5/10
- V.C.C.6/10 cil +0.50ax85
- RN < 4g.



STRATEGIE CORRETTIVE

HAZE focale RR+ dopo blefarocongiuntivite batterica

Wavefront Spectacle Refraction

SPH: 0.73 CYL: 0.30 AXIS: 166.14

Analysis Diameter : 6.78 mm

Applied SCA Correction VD 12.50 mm

SPH: 0.50 CYL: 0.25 AXIS: 166.00

Treatment Diameter : 6.10 mm

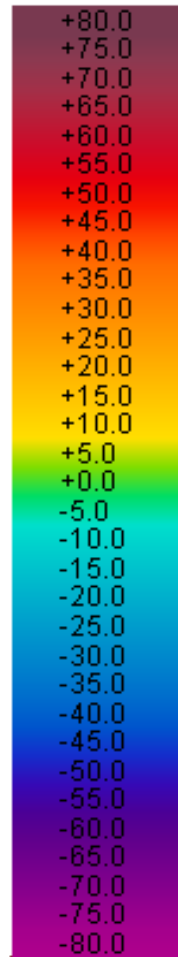
Profile

Aberration Smart Ablation

Wavefront Correction

User Selected Coefficients	
Z(1,-1)	-4.798
Z(1, 1)	-1.293
Z(2,-2)	-0.025
Z(2, 0)	4.453
Z(2, 2)	1.614
Z(3,-3)	0.347
Z(3,-1)	0.221
Z(3, 1)	-0.058
Z(3, 3)	-0.280
Z(4,-4)	0.104
Z(4,-2)	-0.118
Z(4, 0)	0.798
Z(4, 2)	0.329
Z(4, 4)	-0.258

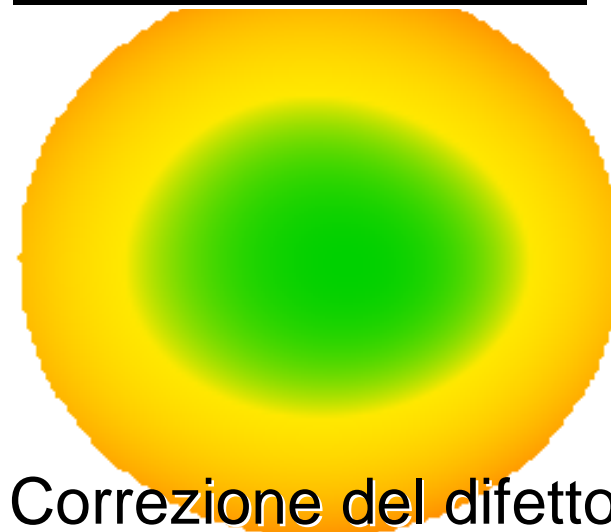
Ablation



Si programma una fotoablazione

“customizzata”

Aberrolinkage



Correzione del difetto sferocilindrico + i difetti di III e IV ordine

Wavefront Data: Single Measurement: 5/6/08 2:41:43 PM



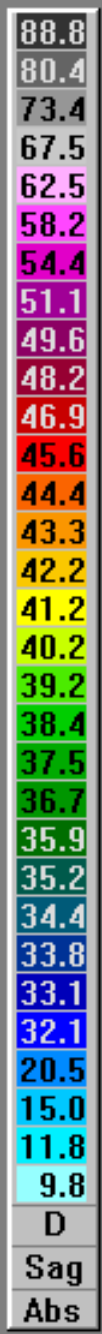
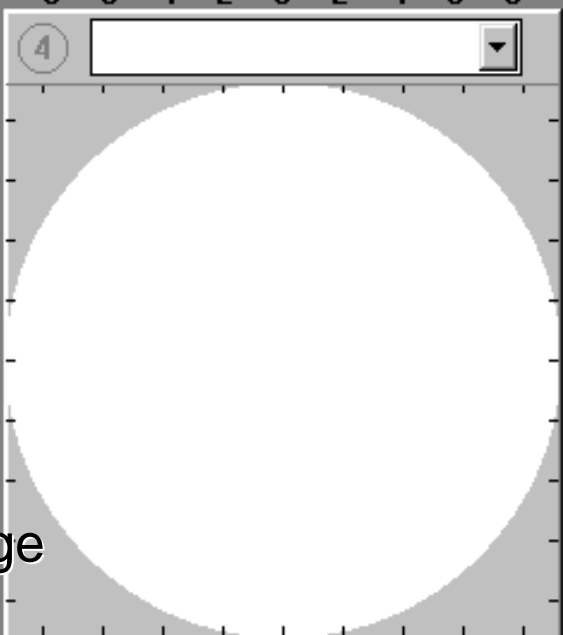
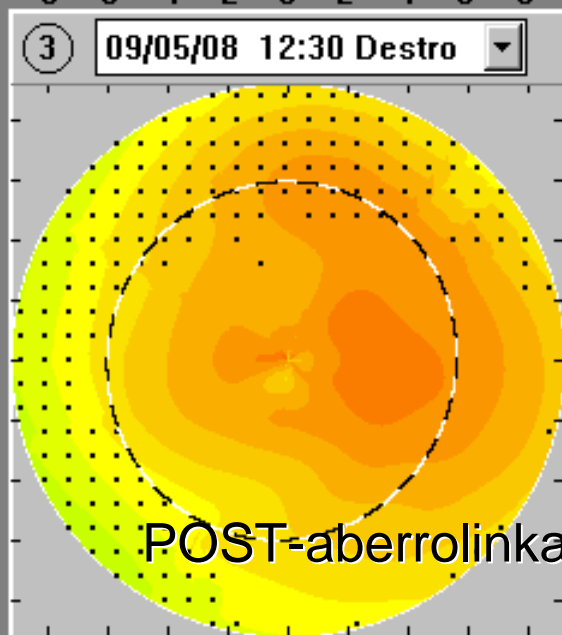
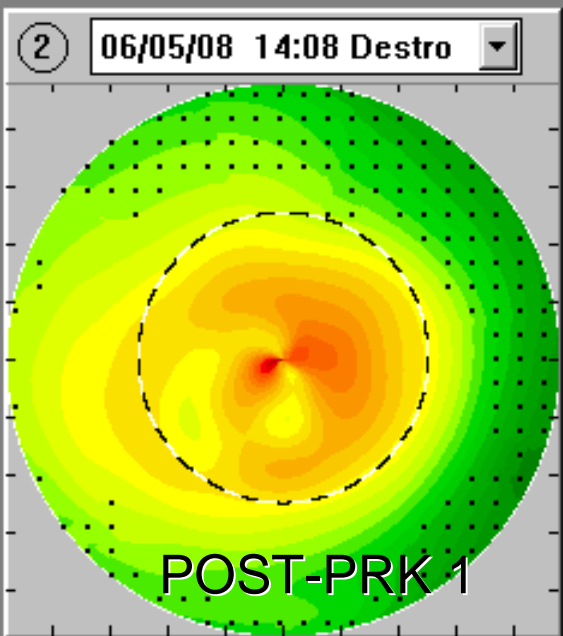
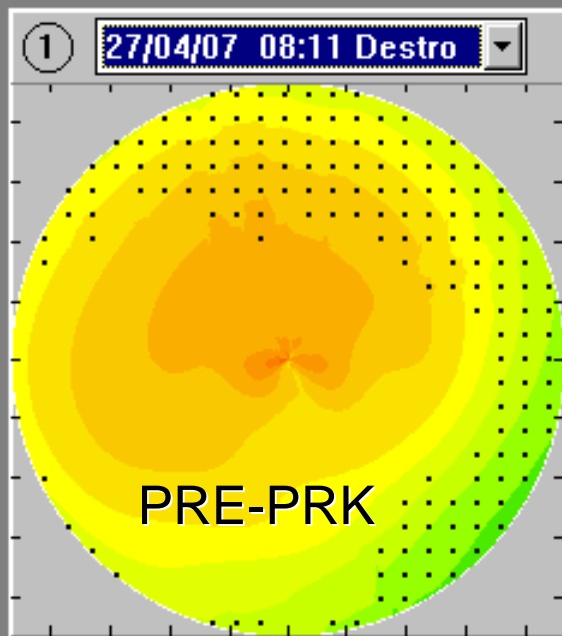
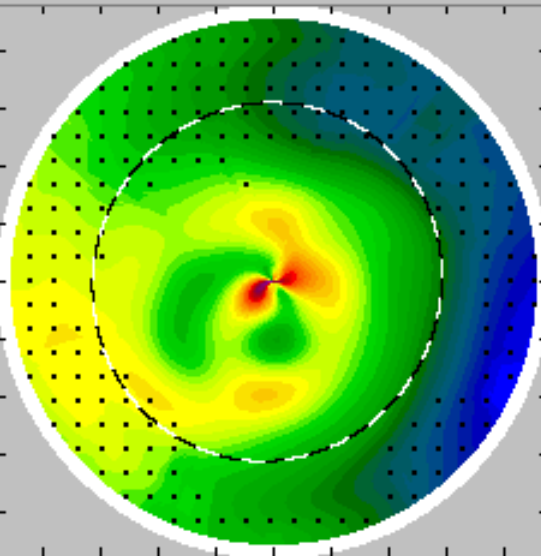
Differenza (D)

Mappa

A: ① ② ③ ④

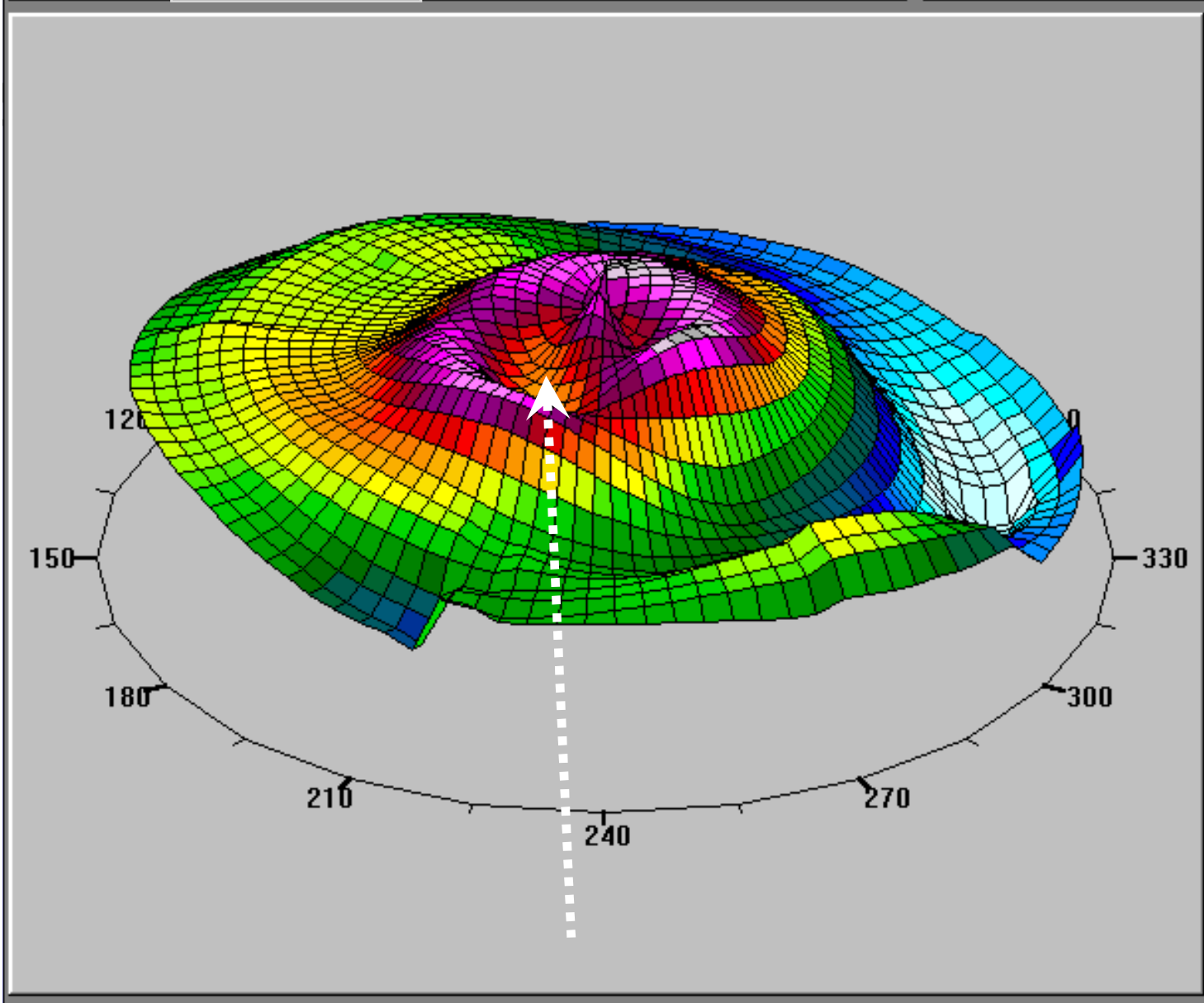
B: ① ② ③ ④

② meno ③



Nome: [Redacted] Data es.: 06/05/08
Data di n.: [Redacted] Destro Data tie.: 14:08

Colorata Realistica
 Rosso/Verde Curvatura



Amplificazione
- [Slider] +

Movimento
Lento Veloce [Slider]
Ampio Stretto [Slider]

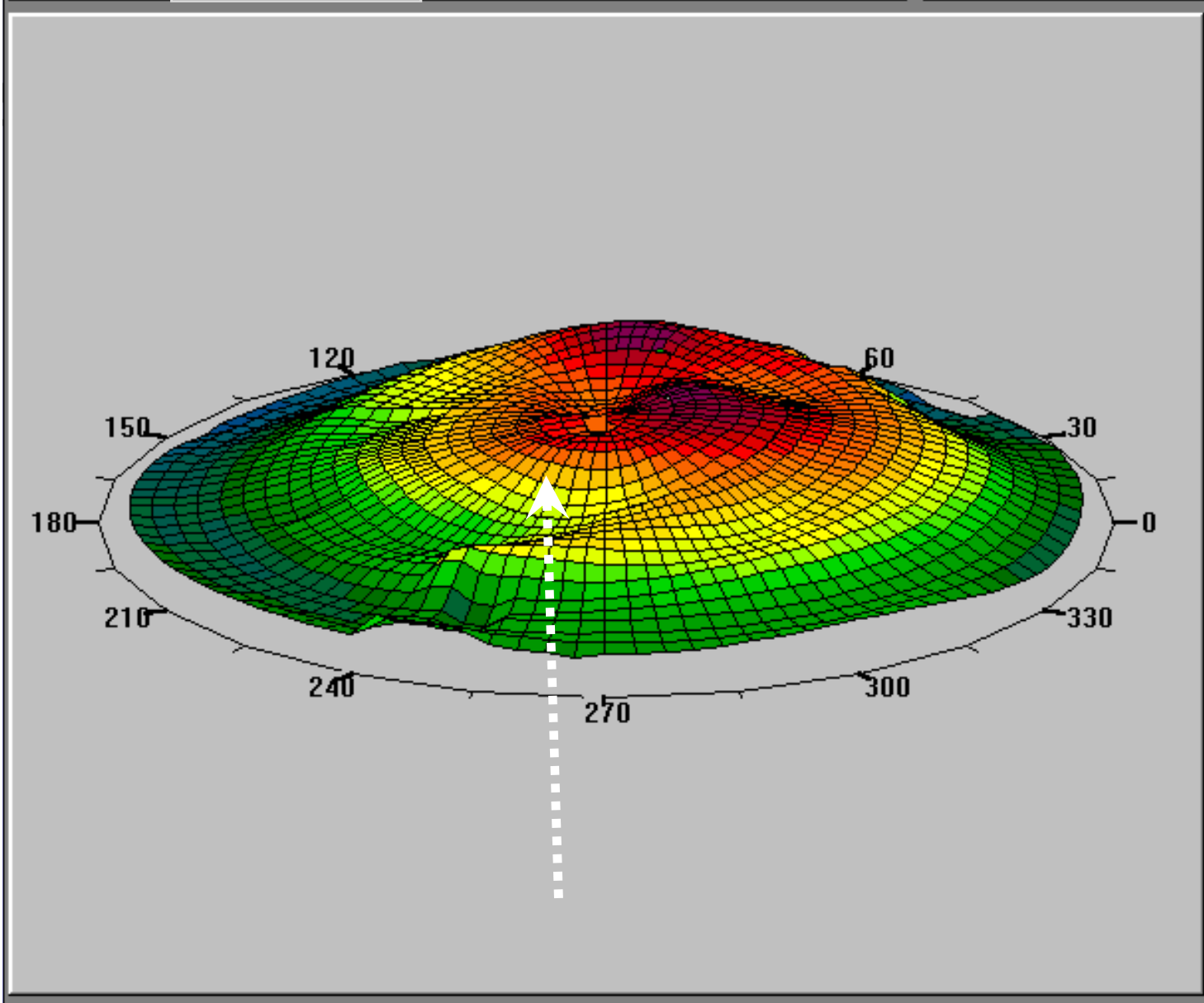
Inclina
Ruota

Rotazione
[Rotation icons]

45.5
45.0
44.5
44.0
43.5
43.0
42.5
42.0
41.5
41.0
40.5
40.0
39.5
39.0
38.5
38.0
37.5
37.0
36.5
36.0
35.5
35.0
34.5
34.0
33.5
33.0
32.5
32.0
31.5
31.0
30.5
0.25D
Tangen.
Relativ

Nome: [Redacted] Data es.: 09/05/08
Data di n.: [Redacted] Destro Data tie.: 12:30

Colorata Realistica
 Rosso/Verde Curvatura

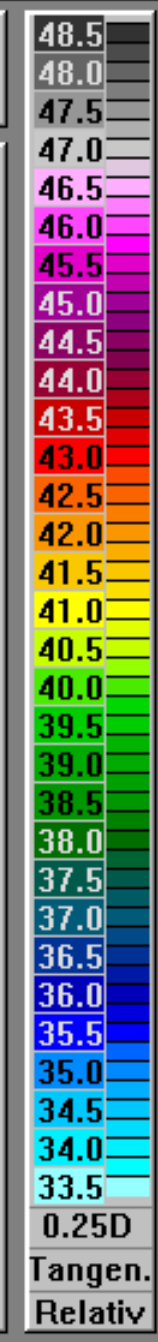


Amplificazione
- [Slider] +

Movimento
Lento Veloce [Slider]
Ampio Stretto [Slider]

Inclina
Ruota

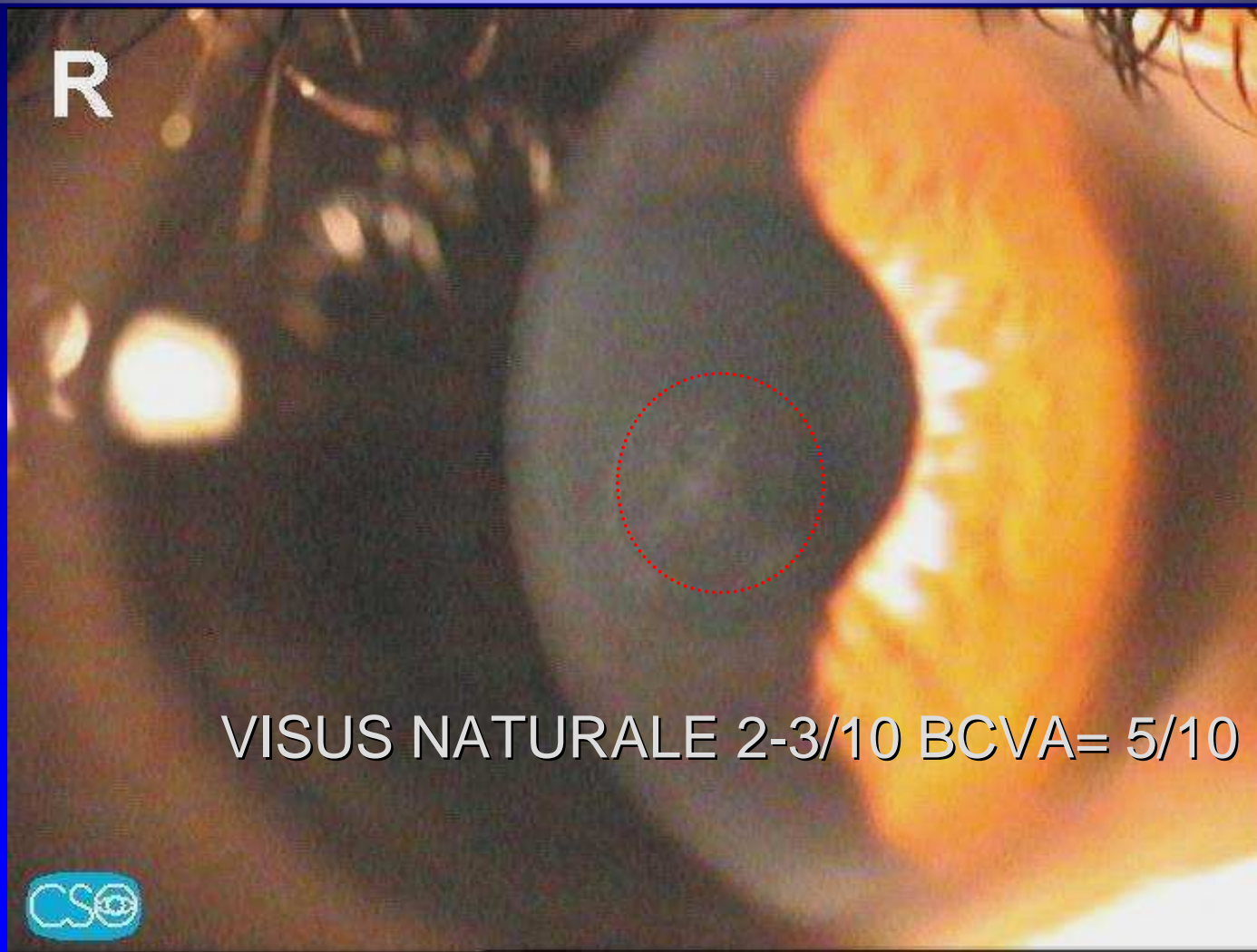
Rotazione
[Up/Down] [Left/Right] [0] [Up/Down]

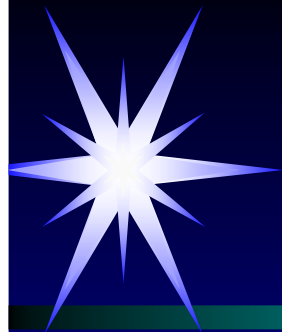




STRATEGIE CORRETTIVE

HAZE focale RR+ dopo blefarocongiuntivite batterica





STRATEGIE CORRETTIVE

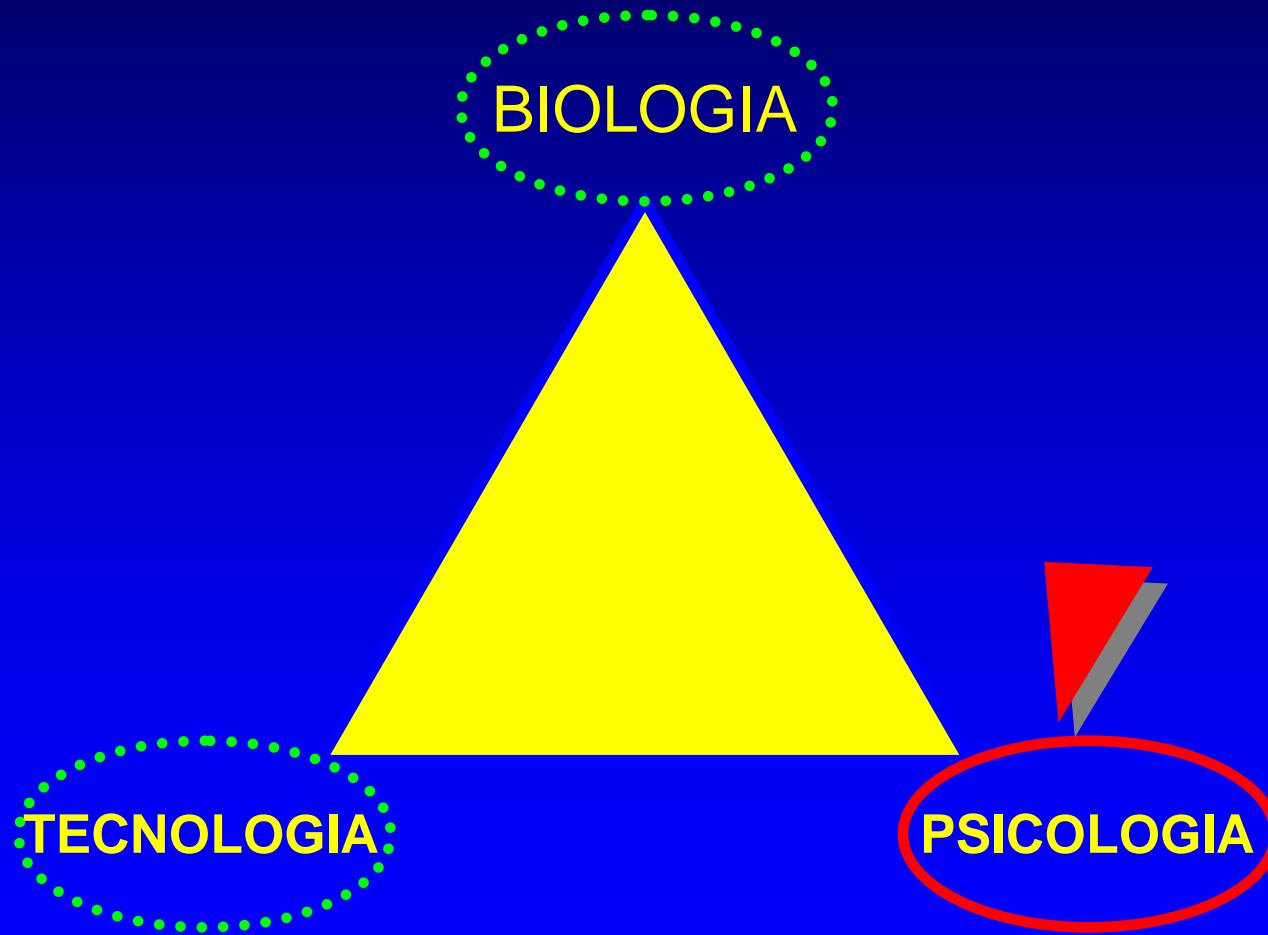
CORREZIONE DOPO ABERROLINKAGE

R

VISUS NATURALE=8 /10; BCVA = 10/10



PRK E RISULTATO





IL COLLOQUIO PRE-OPERATORIO

fase di ascolto attivo

personalità del paziente e messaggio afferente

FRASARIO DELLA PERSONALITA' DI TIPO RELAZIONALE:

- “sarei felice se al mattino non fossi costretto a cercare gli occhiali”
- “ho richiesto l'intervento per praticare liberamente sport”
- “non sopporto di avere gli occhiali sul naso”
- “porto gli occhiali non in tutte le circostanze della mia vita”
- nel caso ci fosse la necessità di aumentare il visus
nel post-operatorio userò occhiali leggeri



IL COLLOQUIO PRE-OPERATORIO

fase di ascolto attivo

personalità del paziente e messaggio afferente

FRASARIO DELLA PERSONALITA' DI TIPO PRESTAZIONALE:

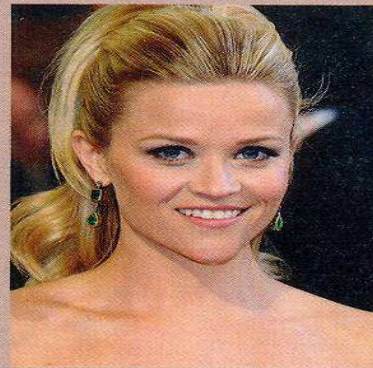
- “sarei felice se riuscissi ad aumentare la mia vista ”
- “ho richiesto l'intervento per eliminare i disturbi visivi notturni”
- “non ho il problema estetico degli occhiali”
- “porto gli occhiali sempre perché ho bisogno di veder bene”
- “dopo l'intervento mi piacerebbe aumentare ancora il visus con l'uso di occhiali o lenti a contatto”



Courteney Cox



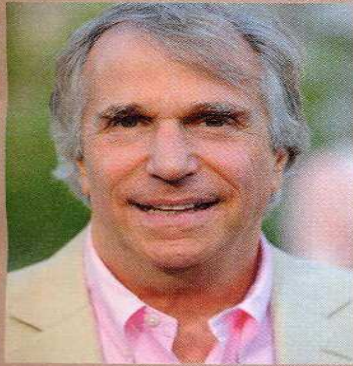
Ewan McGregor



Reese Witherspoon



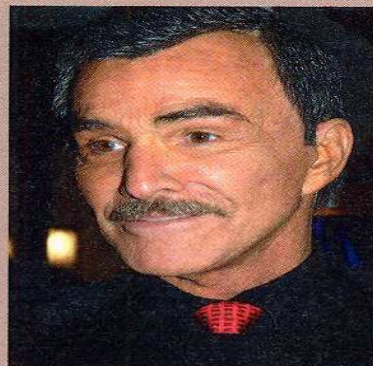
Elton John



Henry Winkler



Donatella Rettore



Burt Reynolds



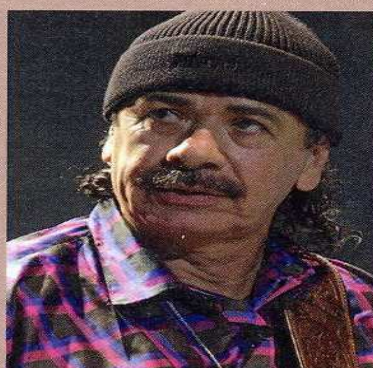
Gaia De Laurentiis



Fabrizio Frizzi



Melanie Brown



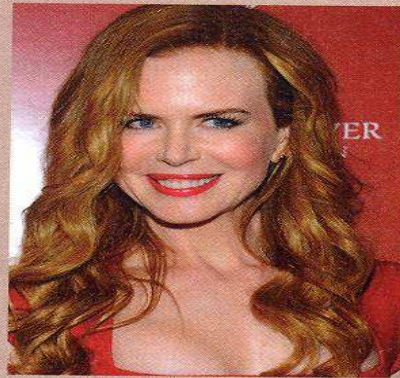
Carlos Santana



Jessica Simpson



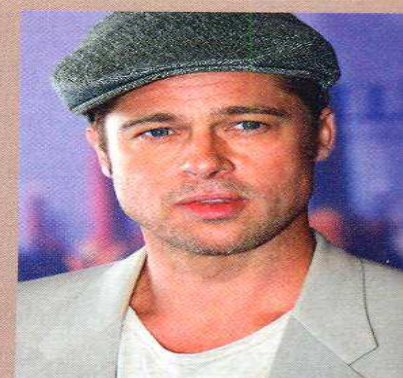
Julianne Moore



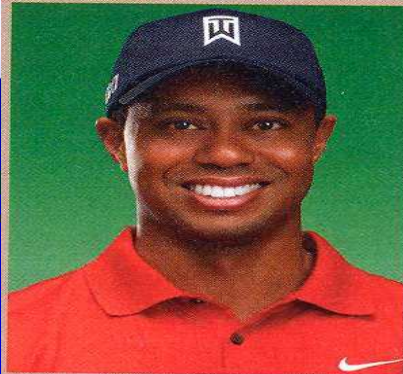
Nicole Kidman



Michelle Hunziker



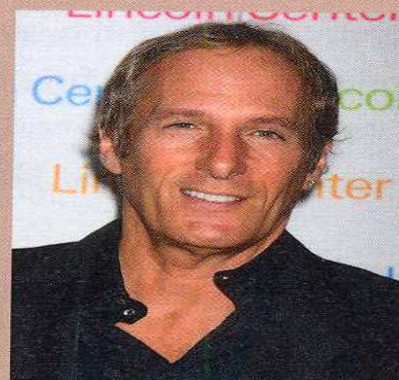
Brad Pitt



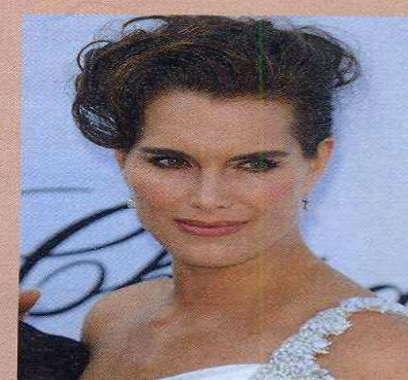
Tiger Woods



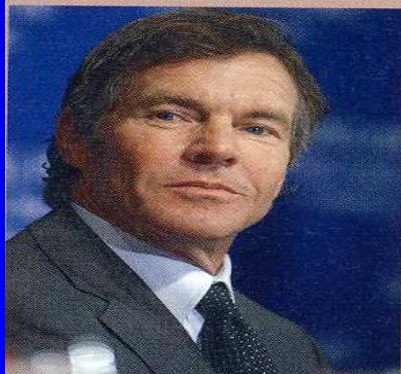
Natasha Stefanenko



Michael Bolton



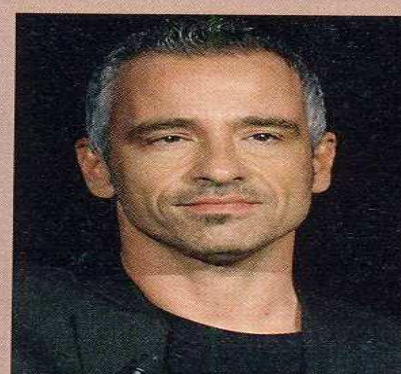
Brooke Shields



Dennis Quaid



Richard Branson



Eros Ramazzotti



Anna Oxa



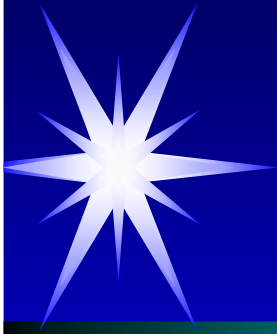
*Il calciatore
brasiliano **Kakà**
si è sottoposto a
un intervento per
correggere miopia
e astigmatismo
elevato.*



*Il centravanti
Marco Borriello ha
beneficiato del laser
per correggere la
sua ipermetropia
elevata.*



*Il rugbista **Denis
Dallan** ha corretto
con il laser il suo
astigmatismo.*



W = 718 L = 351

