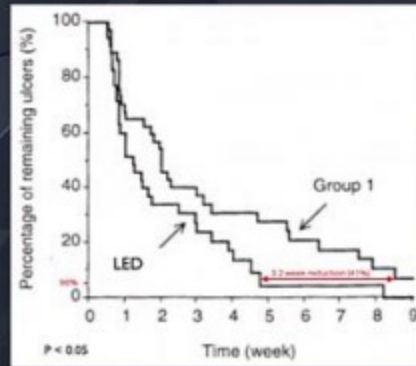


Pressure Sores

LED Therapy
 Stage 2 pressure ulcers
 n = 62
 RCT.
 > 64 years
 Differences were statistically significant
 to 50% healing $P = 0.001$
 to 90% healing $p < 0.01$
 complete healing $p = 0.01$



Effects of phototherapy on pressure ulcer healing in elderly patients after a falling trauma.
 A prospective, randomized, controlled study.
 Schubert V.
 Karolinska Institutet, Department of Clinical Neuroscience, Occupational Therapy and
 Elderly Care Research, Huddinge University Hospital, Stockholm, Sweden.
 Photodermatol Photoimmunol Photomed 2001 Feb;17(1):32-8

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Age related macular degeneration



- "It is a **degenerative disease of the macula causing irreversible loss of vision**"
- It is the most common cause of irreversible visual loss and blindness worldwide
- It mostly effect people after 50years of age.
- Incidence ranges from 9-25% at ages between 65 and 75 years .
- Macular area comprise only about 2.1% of the retina and the remaining 97.9% (peripheral field)remains unaffected by the disease.

Beaver Dam study 43-86 age – 11.1% of intermediate macular degeneration

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Who is at Risk for AMD?

AMD is the leading cause of irreversible vision loss and blindness in persons over 65 years of age, the fastest growing segment of the United States population

Over a 5-year time span, it is estimated that 1 in 3 people over the age of 70 years will develop signs of AMD

Caucasians > African Americans
Women > Men



What are the Risk Factors for AMD?

There are currently 5 specific risk factors that are strongly associated with the development of AMD:

1. Caucasian Ancestry
2. Genetic Component
3. Hypertension
4. Aging
5. Smoking
(SO QUIT NOW!!!!)

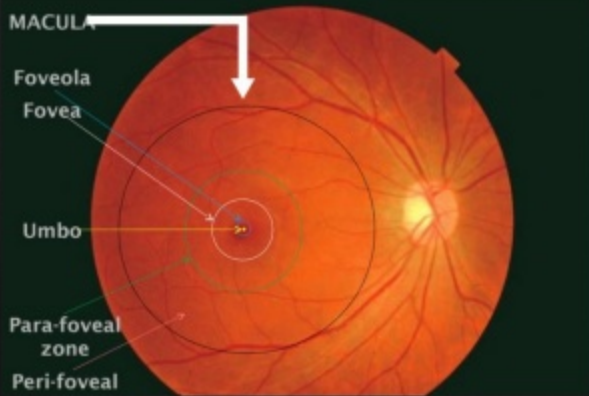


Lower risk in Black or African Americans and Asian decent have a much lower risk of AMD generally.

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Due to the high metabolic activity in the small macular region –
Accumulation of waste products,
Oxidative stress, High blood flow, genetic mutations, ageing

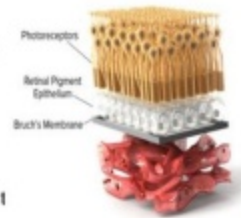
MACULA: ANATOMY



RETINAL PIGMENT EPITHELIUM

The retinal pigment epithelium (RPE) is a single layer of hexagonally shaped cells & attached to the photoreceptor layer.

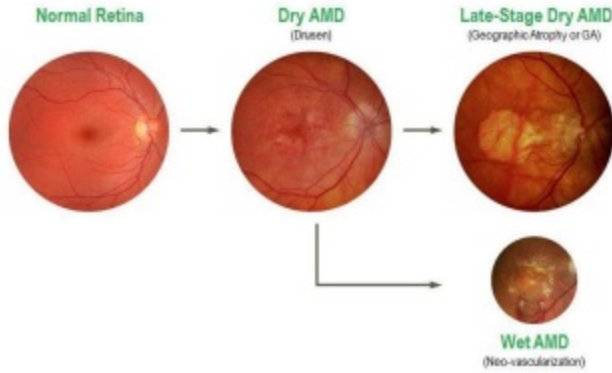
- Functions -
1. Maintain the photoreceptors
 2. Absorption of stray light
 3. Formation of the outer blood retinal barrier
 4. Phagocytosis and regeneration of visual pigment



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Types of ARMD

- Atrophic (dry, non vascular) • Exudative (wet, neovascular)



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DRY AMD

Insufficient oxygen and nutrients damages photoreceptor molecules

With ageing, the ability of RPE cells to digest these molecules decreases

Excessive accumulation of residual metabolic debris and hyaline material (*drusen*)

RPE membrane and cells degenerate and atrophy sets in and central vision is lost

DRY AMD

Drusen:

- Drusen are aggregation of hyaline material located between Bruch's membrane and RPE.
- Drusen are composed of metabolic waste products from photoreceptors.
- Hypo/hyper pigmentation of RPE may be present.

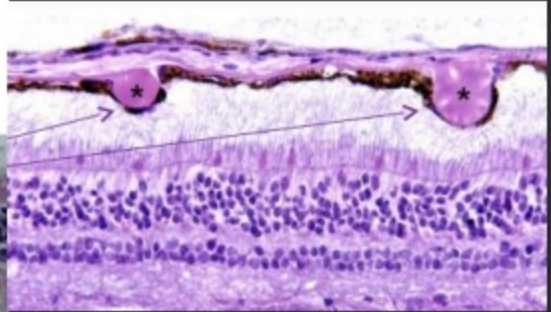
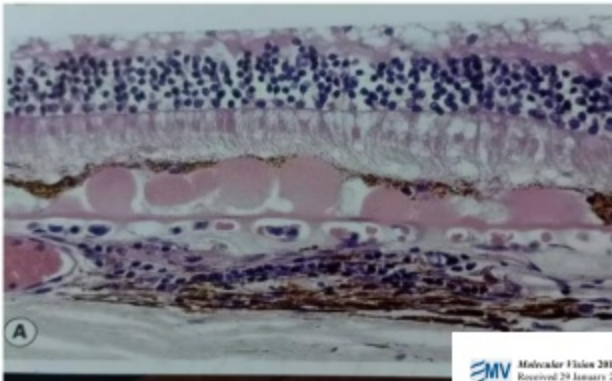
DRY AMD



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HISTOLOGICAL LOCATION OF DRUSEN

INL →
ONL →
IS →
OS →
RPE →
CC →



EMV Molecular Vision 2015; 21:883-892 • <http://www.mvvis.org/web/vis/21/883>
Received 29 January 2015 | Accepted 29 August 2015 | Published 21 August 2015

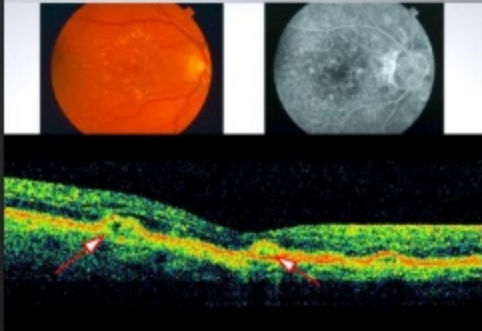
© 2015 Molecular Vision

Photobiomodulation with 670 nm light increased phagocytosis in human retinal pigment epithelial cells

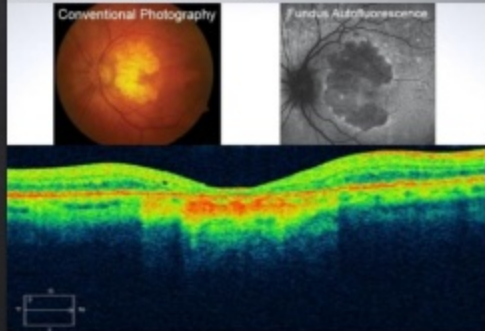
Shinichiro Fuma, Hiroshi Murase, Yoshiki Kuse, Kazuhiro Tsuruma, Masamitsu Shimazawa, Hideaki Hara

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DRUSEN



GEOGRAPHIC ATROPHY



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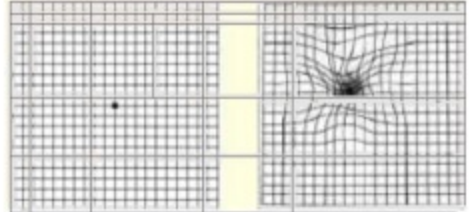
Preventative Approaches for AMD

The AREDS formulation should only be taken when prescribed by a physician or a P.A.

AREDS is the treatment of choice for “dry” AMD

Eating fresh fruits and dark green, leafy vegetables

- Maintaining a low fat & low cholesterol diet
- Exercising regularly
- Wearing sunglasses with UV protection
- Avoiding exposure to second-hand smoke
- Getting an eye exam regularly

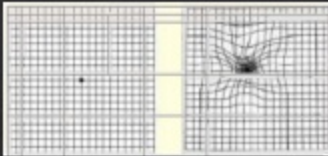


Supplements and Topicals that Enhance Red Light Therapy



Combination Therapy

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What to do

Traditional Treatment

- ◆ Dietary Advice – rich in antioxidants, omega-3 fatty acids, and lutein, such as leafy greens, fatty fish, and colourful fruits
- ◆ Stop Smoking
- ◆ Protect eyes from bright sunlight “shades for the day – Children”
- ◆ AREDS 2 Vitamin supplementation
- ◆ Amsler distortion chart
Near vision test – Macular test.
- ◆ 6 Monthly or yearly Eye test with OCT

New Treatment

- ◆ PhotoBioModulation with 3 long wavelengths of light
- ◆ 2008 paper
- ◆ 2018 Launched Product – Germany Europe
- ◆ 670nm, 760nm and 810nm
- ◆ Repeated 4 monthly
- ◆ Continue with vitamin Supplementation



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