

Treating Macular Degeneration

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Eye Care Center of Northern Colorado

303-502-5365



Outline

- Introduction to Eye Care Center of Northern Colorado
- How the eye works
- What is macular degeneration
- How is macular degeneration treated
- Questions



Eye Care Center of Northern Colorado

- Region's Leading Eye Care Group
- Diagnosis, Management, Medical and Surgical care of all eye care problems including:

- | | |
|------------------------|---------------------------------|
| ■ Cataracts | ■ LASIK / Refractive |
| ■ Glaucoma | ■ Eyelid and facial surgery |
| ■ Diabetes | ■ Dry Eye Management |
| ■ Macular Degeneration | ■ Comprehensive Eye Evaluations |



Retina Consultants of Northern Colorado

- Practice and based in Boulder County
- Perform surgeries locally
- All emergency care local
- Easy access to care



William L. Benedict, M.D.
Surgical and Medical Retinal Specialist



Elisha Tilton, M.D.
Surgical and Medical Retinal Specialist



Justin Kanoff, M.D.
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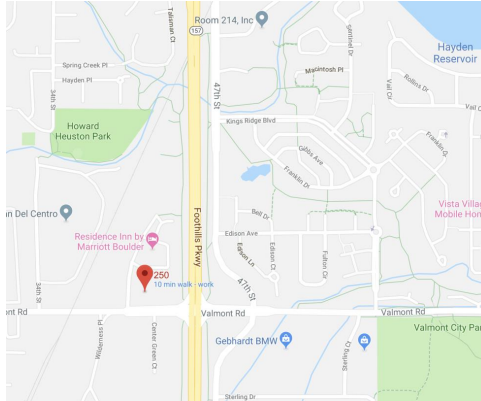


Matthew Manry, M.D.
Surgical and Medical Retinal Specialist



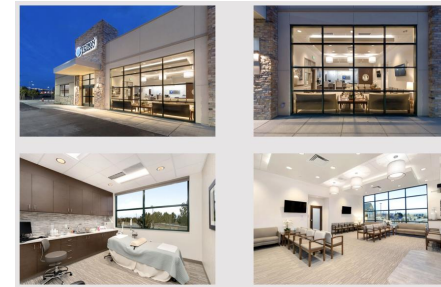
Eye Care Center of Northern Colorado

- Boulder Office
 - 3000 Center Green Drive
 - Suite 250
- Longmont Office
 - 1400 Dry Creek Drive
- Lafayette Office
 - 300 Exempla Circle
 - Suite 120
- 303-502-5365
- www.eyecaresite.com



Advanced Vision Surgery Center

- Brand new surgery center exclusively for eyes
- Two state of the art operating rooms and specially trained nurses and staff only for eyes

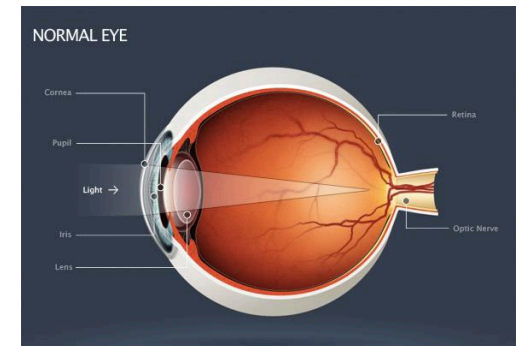


Justin Kanoff, MD

- B.A. from University of Pennsylvania
- M.D. from University of Texas Southwestern Medical School
- Internship, Residency, Chief Residency and Retina Fellowship at Harvard Medical School
- Specializes in treatment of all medical and surgical retinal conditions

How the Eye Works

- Light enters the eye through the cornea, pupil and lens.
- Light is focused onto the retina, the light-sensitive tissue lining the back of the eye.



Retina

The retina, made of many layers sandwiched together into a smooth surface, consists of two areas, the *macula* and *peripheral retina*.

Macula

- Small area in center of retina that allows you to see fine details clearly.
- Allows activities like reading small print and recognizing a face.



Eye as a Camera

- Cornea is the clear window in the front of the eye that you look through
- Lens is in the middle of the eye and focuses the light
- Retina is a thin tissue that lines the back of the eye like wallpaper and functions like film in a camera
- Optic nerve carries information to the brain like a cable links a digital camera to a computer



Common causes of vision loss

- Many kinds of eye disease can affect your sight; vision changes are not always evident right away.
- Cataracts
- Diabetic Eye Disease
- Macular Degeneration
- Glaucoma



Age Related Macular Degeneration

Macular Degeneration

- A leading cause of severe vision loss in people over 65 years of age.
- Not a part of the natural aging process
- Almost always in both eyes, but only one may have symptoms



With AMD, dark areas may appear in your central vision.

How big is the problem?

- Prevalence
 - Age 65 => 2.5%
 - Age 70 => 6.7%
 - Age 75 => 10.8%
- Patients often feel its their biggest health problem

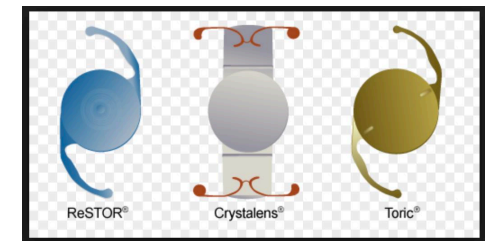


Risk Factors

Established Risk Factors	Possible Risk Factors
• Older age (> 60 years)	• Female sex
• Family history	• Light-colored iris
• Cigarette smoking	• Cardiovascular disease
• Low dietary intake or plasma concentrations of anti-oxidant vitamins and zinc	• Obesity, High Cholesterol and Lipids, Hypertension
	• Sun exposure

AMD and Cataract Surgery

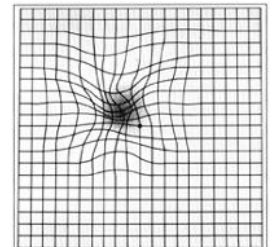
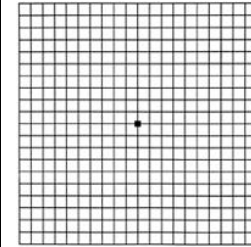
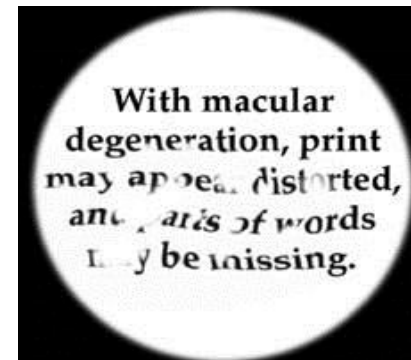
- Cataract surgery is not a risk factor
- Cataract surgery is beneficial for patients with macular degeneration
- Be careful of “premium” or “presbyopia correcting lenses”



Symptoms of AMD

- Initially asymptomatic
- Decreased acuity
- Metamorphopsia (wavy lines in vision)
- Central or pericentral scotoma
- Loss of color vision
- Loss of contrast sensitivity
- "I need more light to read"

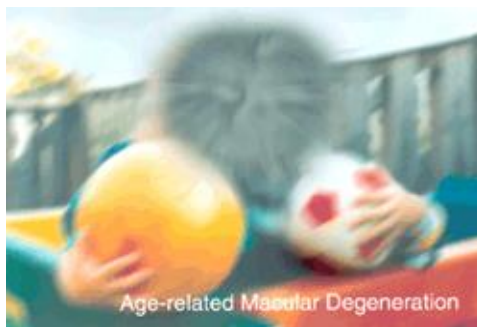
Distortions in Vision



Difficulty in Recognizing Faces



Normal Vision



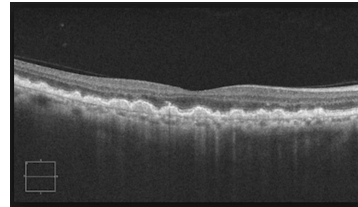
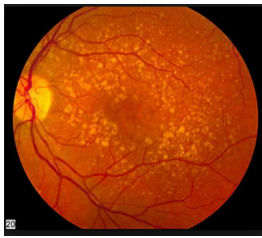
Age-related Macular Degeneration

Diagnosing AMD

- Regular eye exams very important
- Dilated examination of back of eye
 - Do not blame vision loss on cataract without looking at the back of the eye
- Visits with retina specialist
 - Treatment and monitoring by a retina specialist
- Genetic Testing

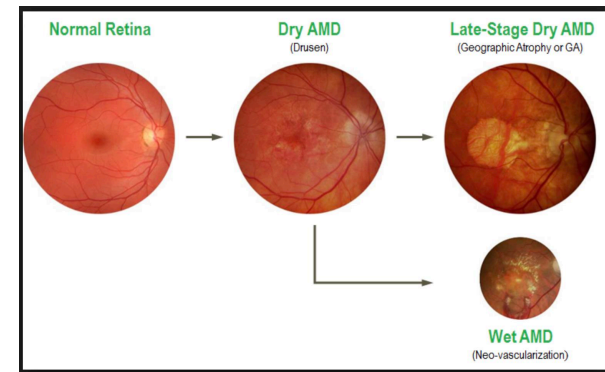
Office testing

- Photos
- OCT
- Angiograms

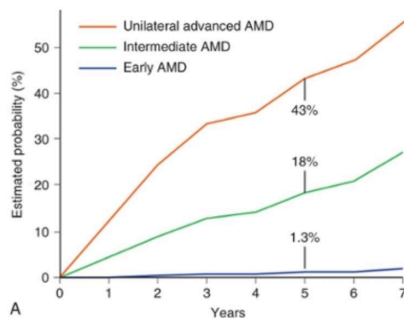


Types of AMD

- Dry (atrophic) Macular Degeneration
- Wet (exudative/neovascular) Macular Degeneration



Who will get worse?



Simple Scale Score	Year									
	1	2	3	4	5	6	7	8	9	10
0	0.1	0.1	0.4	0.5	0.5	0.6	0.8	0.8	1.2	1.5
1	0.5	1.7	2.4	3.1	4.1	4.7	5.1	6.3	7.2	8.4
2	1.1	3.2	5.8	7.5	9.4	14.0	17.1	21.5	23.6	27.6
3	2.7	8.8	15.8	21.9	26.2	30.4	36.2	42.1	46.9	52.7
4	2.8	14.2	27.6	35.6	44.5	49.3	54.1	62.0	67.5	71.4

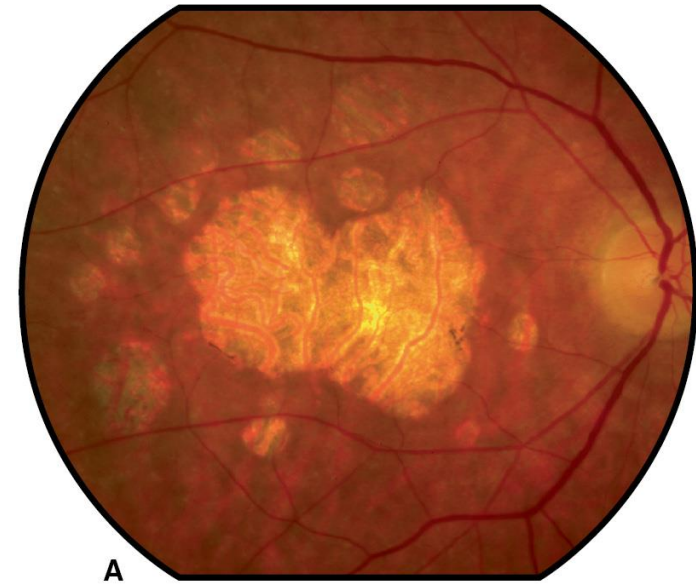
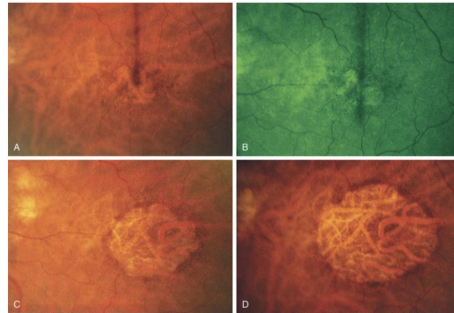
Dry Macular Degeneration

- Most common form
- Vision loss is gradual
- Thinning and atrophy of tissues



Dry Macular Degeneration

- Early vs. Intermediate vs. Late



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Treating Dry AMD

- Vitamin Supplements
 - AREDS 2
 - Vitamin C and E
 - Lutein
 - Zeaxanthin
 - Minerals Zinc and Copper
- Can vitamins make me worse?
 - Genetic Testing



Doctor's Suggested Use: Take 4 capsules once daily with a meal.

Supplement Facts

Amount Per Serving	% DV
Vitamin A (as beta-carotene)	1,500 mcg RAE 187%
Vitamin C (as ascorbic acid)	100 mg 111%
Zinc (as oxide)	25 mg 227%
Copper (as chelate)	2 mg 222%
Taurine	600 mg *
Berry Vision Complex	300 mg *
Black Currant Extract (fruit), Maqui Berry Powder (Aristotelia chilensis, fruit), Goji Berry Extract (Lycium barbarum, fruit), Bilberry Extract (fruit)	
Carrot Powder (root)	260 mg *
N-Acetyl L-Cysteine	260 mg *
Schisandra Extract (berry)	160 mg *
Luteinmax® 2020 ¹ Lutein (from marigold flower)	20 mg *
Setria™ L-Glutathione (from fermentation)	20 mg *
Luteinmax® 2020 ¹ Zeaxanthin isomers (from marigold flower; containing a minimum of 1 mg of meso-zeaxanthin)	4 mg *
Lycopene (from tomato fruit)	3 mg *

*Daily Value (DV) not established.

Other ingredients: Microcrystalline cellulose, gelatin, magnesium stearate, silica.

Note: Pregnant or lactating women should consult a health care professional before taking this product.

Keep out of reach of children.

Setria® is a registered trademark of KYOWA HAKKO BIO Co., Ltd.
Luteinmax® is a trademark of OmniaActive Health Technologies, Ltd.
This product contains nutraceutical ingredients; therefore, some color variations may occur.

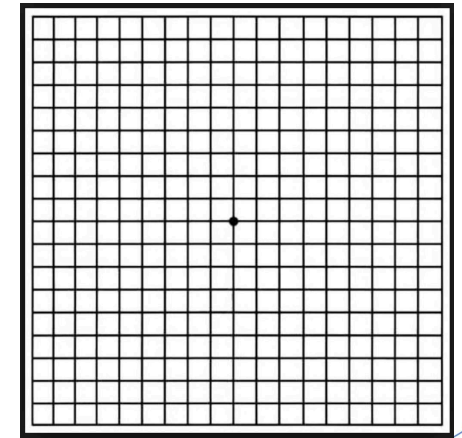


Treating Dry AMD

- Atorvastatin is medication used for high cholesterol
- Some early data suggest it can help make large drusen resolve
- Need more study

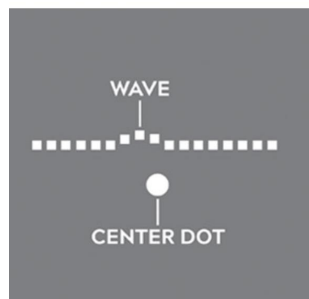
Treating Dry AMD

- Use Amsler Grid
- Low vision referrals to Ensignt

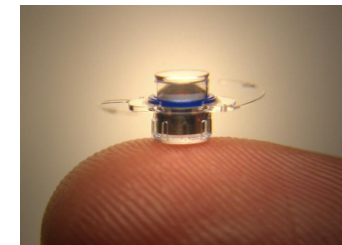
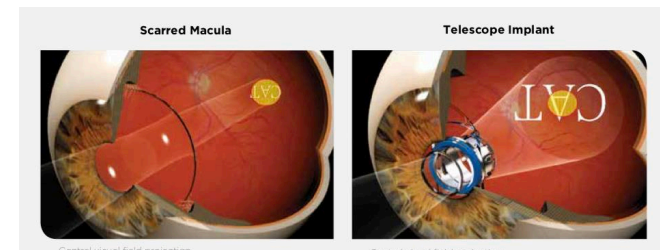


Home Monitoring

- Foresee Home

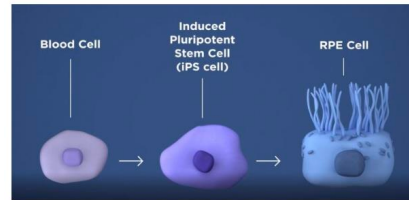


Implantable Telescope



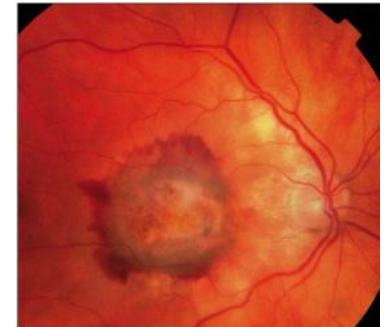
Future Directions

- Multiple drugs in clinical trials
 - None approved and many have failed
- Stem Cell Transplants
 - RPE cells vs. Photoreceptors
 - Dangers of unregulated clinics
 - London trial with 2 patients

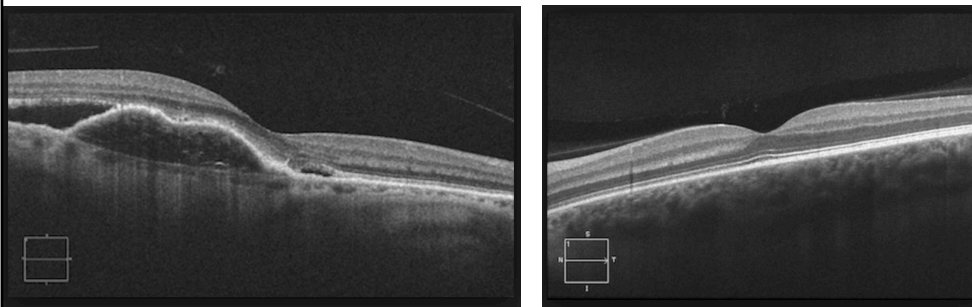


Wet Macular Degeneration

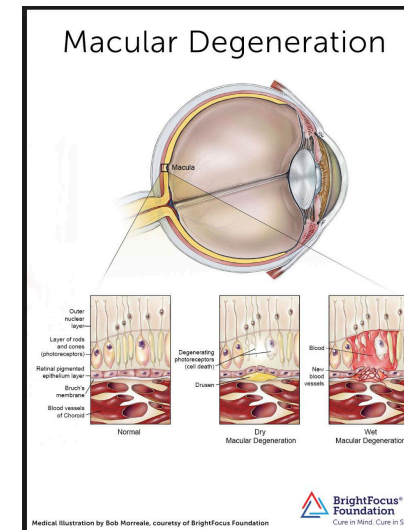
- Caused by abnormal blood vessels that grow under the retina
- Leaking of blood and fluid lead to loss of central vision
- Sudden, severe and rapid vision loss
- 10% of macular degeneration patients will convert to the wet form



Wet Macular Degeneration



Wet Macular Degeneration



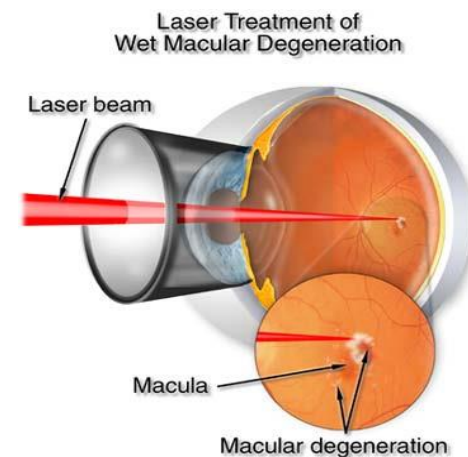
Will it spread to my other eye?

- 35% of people with Wet AMD in one eye will get Wet AMD in the other eye
- Higher risk with high blood pressure

Treatment

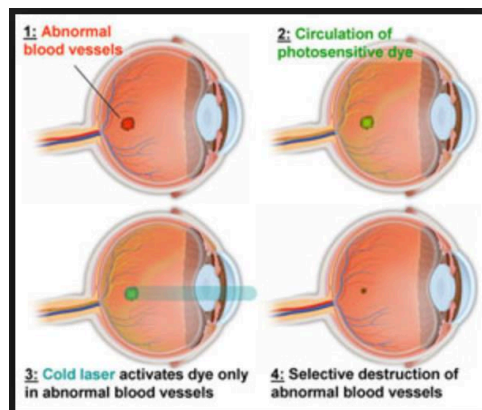
Thermal laser therapy

- High-energy, focused light beam treats tiny area of retina by “burning” it; destroys abnormal underlying blood vessels.
- Rarely, if ever, used anymore



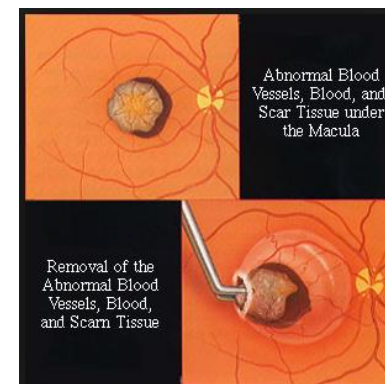
Treatment

- Photodynamic Therapy (PDT)
- Currently used only in selected cases
- Light sensitive dye injected into veins
- “Cold laser” activates medicine and destroys abnormal blood vessels



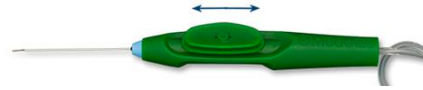
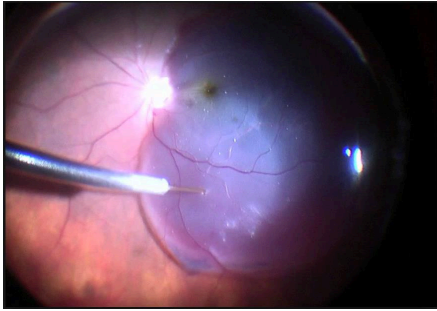
Surgery

- Submacular surgery to remove blood vessels
- Rarely done currently



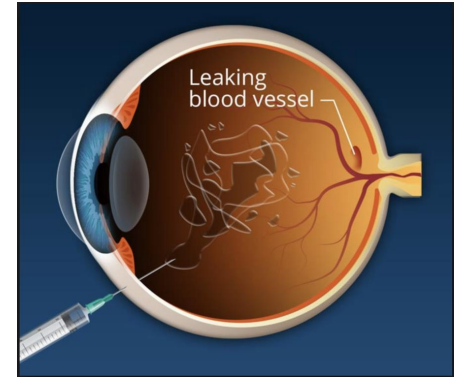
Surgery

- Can successfully do surgery for “massive” bleeding under retina



Treatment

- Injections of “Anti-VEGF”
- Avastin or Lucentis or Eylea
- 95% chance of maintaining vision
- 30-40% chance of improving vision



Treatment

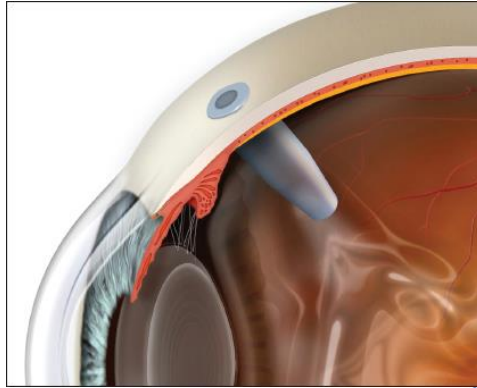
- Which medication should be started?
- How often will I need the medications?
- How long will I need the medications?
- Will the injection hurt?

Future Treatments

- Medications by mouth or eye drops
- Less frequent injections

Future Treatments

- Sustained release system
- Surgically implanted
- Refilled in the clinic

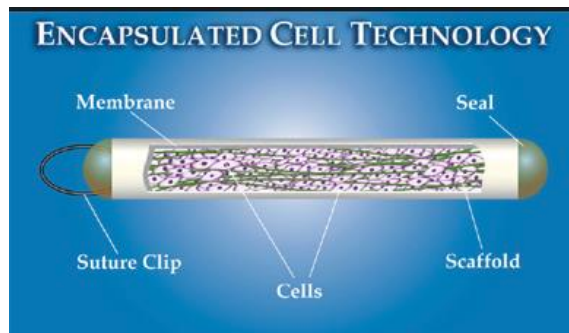


Future Treatments

- Multiple new injections are in clinical trials
- Goal is to give injections less frequently

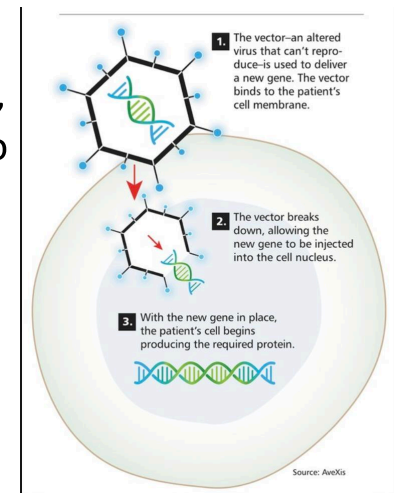
Future Treatments

- Encapsulated Cell Therapy
- Device that “makes the drug” implanted in eye



Future Treatments

- Gene therapy
- Virus injected into eye, new gene inserted into cells and allows eye to make “its own drug”





Thank You!

Justin Kanoff, M.D.

Eye Care Center of Northern Colorado

303-502-5365

