The FOUNDATION FIGHTING BLINDNESS

FROM THE DESK OF
DR. MARY SUNDERLAND

At the Foundation Fighting Blindness (FFB) our mission is clear and simple: develop new sight-saving treatments for vision loss.

To realize this mission, the FFB funds research.

Each year, we take a critical look at the FFB's research portfolio and evaluate its impact.

2016 was a highly productive year. For a snapshot of how FFB-funded research is fueling the race to restore sight, please review the foldout where I've highlighted some of the best discoveries that are accelerating the development of new treatments.

There are four top contenders in the race to restore sight:

- Gene therapies
- Stem cell therapies
- Drug therapies
- Artificial vision

Who will win the race to restore sight? In my role as the Director of Research and Education, I've asked this question to many experts. Although not everyone agrees, I predict that the winning treatment will be a combination therapy that draws on advances from each of the above fields of study.

This may sound like I'm just hedging my bets; in contrast, my prediction is undergirded by tangible research results, which are highlighted here.

If you have any questions about how FFB is impacting the race to restore sight, please feel free to contact me directly.

Thank you for your support.

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THE *RACE* TO RESTORE SIGHT

At the Foundation Fighting Blindness (FFB) we are motivated by a singular goal: develop new treatments for vision loss.

This goal fuels all of the research that we fund. This goal drives everything that we do. We believe that funding research is the best way to lead the fight against blindness. FFB-funded research teams are racing together to develop new sight-saving treatments. Thanks to your donations, the pace is accelerating.

There are four top contenders in the race to restore sight.

Who will win? In 2016, discoveries by FFB-funded researchers brought us closer to the finish line. We predict that the first successful restoration of sight will be a combination therapy that draws on advances from gene therapy, stem cell therapy, drug therapy and artificial vision.

When will it happen? Specific timelines are controversial because nobody wants to overpromise. There is one thing, however, that everyone agrees: funding is the key rate-limiting factor. This is where you can make a difference. With your support, we will get there faster.

The FOUNDATION FIGHTING BLINDNESS

GENE THERAPIES

Some experts predict gene therapy and CRISPR gene editing approaches will win the race because clinical trials are underway, and industry is poised to bring gene therapies to market.

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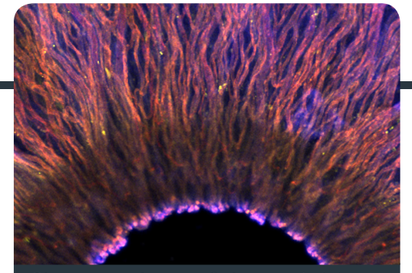
BLINDNESS-CAUSING GENES DISCOVERED

FIRST GENE THERAPY TRIAL

Dr. Ian MacDonald completed the first year of Canada's first ocular gene therapy clinical trial - paving the path for gene therapies in Canada.

SAFE & EFFECTIVE RESULTS

Dr. Andras Nagy is combining gene therapy with stem cell therapy to treat age-related macular degeneration with a one-dose treatment.



Close-up photo of the eye's iris from Dr. Nagy's laboratory.

STEM CELL THERAPIES

FFB-funded researchers are world leaders in the race to restore sight. Restoring biological vision by replacing damaged cells is one of the greatest ophthalmological challanges of the 21st century, but it will be worth the wait.

NEW TRANSPLANT MODEL

Dr. Valerie Wallace developed a new model to study cone photoreceptors that is game-changer for understanding cell transplantation.

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STEM CELL DISCOVERIES

GOVERNMENT PARTNERSHIP

Dr. Michel Cayouette was awarded $990,000 from the Canadian government to further his stem cell research. The FFB is partnering to fund the clinical portion of this initiative, led by international expert, Dr. Robin Ali.

INNOVATIVE CELL-TRACKING TOOL

Dr. Sarah McFarlane designed a method to track cell movement in the eye in real-time. This tool will provide critical information to identify the best strategies for new transplantation treatments.

DRUG THERAPIES

There are many good reasons to believe that new drug therapies will be the first across the finish line. Why might drugs win? The regulatory processes are well established and existing drugs are now being repurposed as potential treatments for vision loss.

Dr. Joyal's cover story in renowned scientific journal, *Nature Medicine.*

NEW TREATMENT TARGET

Dr. Jean-Sébastien Joyal made a discovery in 2016 that fundamentally changes the way we understand age-related macular degeneration, opening the door to new treatments. His work was featured on the cover of the prestigious medical journal: *Nature Medicine*.

REPURPOSING EXISTING DRUGS

Dr. Cheryl Gregory-Evans is testing if existing drugs can be repurposed to treat a common genetic error in blinding eye diseases. Currently, her focus is on one disease, but encouraging results are inspiring her team to test a similar approach on other genetic eye diseases.

ARTIFICIAL VISION

Artificial vision is a lead contender in the race because of the rapid pace of technological innovation. Future developments could soon provide colour vision and facial recognition.

UNDERSTANDING VISION

The ultimate success of artificial vision relies on acquiring a deep understanding of how the retina functions. In 2016, FFB-funded researchers made 42 significant discoveries that generated critical new knowledge about the many millions of cell types and mechanisms that create the retina's complex neural network.

Bionic Eye recipient, Rozina Issani.

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BIONIC EYE RECIPIENTS

WORLD-LEADING PATIENT ADVOCATE

Patient advocacy is the cornerstone of accessible new treatments - from the bionic eye through to gene therapies. This year, FFB Young Leader, Jack McCormick earned a reputation as a stellar patient advocate on the world stage.

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RACE TO RESTORE SIGHT

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