

# APIOC™: Shaking Up the Status Quo for Presbyopes

AN ENTIRELY NEW GENERATION OF SOFT, SUSPENDED CONTACT LENSES DESIGNED TO DELIVER GLASSES-LIKE VISION™

Even the most robust contact lens practices see an alarming decrease in the number of lens wearers as patients begin to experience the effects of presbyopia. Several factors are driving this trend away from contact lenses toward glasses as people age.

While most people who stop wearing contact lenses cite discomfort as their primary reason for doing so, presbyopes move unsatisfactory vision to the top of the list.<sup>1,2</sup> Certainly, discomfort associated with dry eye tends to increase with age, but presbyopes also must adopt new vision correction modalities to maintain their range of vision.<sup>3-5</sup> For people who want to wear contact lenses, this often involves wearing reading glasses over their lenses, trying monovision, or switching to simultaneous-vision soft multifocals, which, by their design, induce blur and alter depth of focus.<sup>6</sup>

These compromises likely explain the relatively small number of presbyopes who continue to wear contact lenses.<sup>7-9</sup> Yet most adults who need vision correction, including presbyopes, would rather wear contact lenses as long as they are comfortable and provide good vision.<sup>10</sup>

## Insights From Practitioners

Market research by a new company in the contact lens space polled 205 optometrists who fit multifocal contact lenses on more than 10% of their patients and who consider themselves among the first of their peers to innovate.<sup>11</sup>

Eighty-two percent of these practi-

tioners reported that finding suitable presbyopia-correcting contact lenses that don't compromise on vision is challenging. Only 3% of respondents feel they can provide all of what patients want in a multifocal lens. Moreover, 81% of those surveyed are concerned that an inability to provide what patients really want has a negative impact on how patients perceive their care.



There's no question presbyopia-correcting soft contact lenses have come a long way over the years, with numerous design and material combinations available in a broad range of parameters. Yet, in this recent study, clinicians reported that only 14% of presbyopes in their practices wear contact lenses as their primary mode of correction.<sup>11</sup> This is likely because almost all of the designs cause either peripheral or near blur with center-near or center-distance designs no matter how sophisticated the design.

Two optometrists from The Ohio State University have invented a novel presbyopia-correcting soft contact lens they believe is a reliable option for patients seeking a lens that delivers on vision.

## Unique Design for a Unique Vision Experience

The APIOC™ lens (pronounced

ap•ee•ock) employs a mechanism of action like no other soft contact lens. It is the result of a long-term collaboration between Melissa D. Bailey, OD, PhD, and Joseph T. Barr, OD, MS, two of the founders of Lentechs, LLC.

While APIOC™ lenses will eventually be available as spheres and torics, Drs. Bailey and Barr have focused on two specific designs—presbyopia-correcting and presbyopia with astigmatism-correcting lenses—to address what they feel is an urgent need in the marketplace.

Inspired by the on-eye performance of lid-attached, translating gas permeable contact lenses, they set out to produce a soft lens that would deliver similar benefits: a comfortable lens that allows free movement of the eye behind it. Their commitment to this goal required abandoning some long-held principles.

“When describing translating gas permeable lenses, the textbooks tell us the lower eyelid is doing all of the work, pushing up on the lens, but that’s not been my experience,” Dr. Bailey says. “Initially, we thought the upper and lower eyelids were working together to make the lenses translate, but as we continued our work, we realized the upper eyelid plays a pivotal role by holding the lens in place and allowing the eye to move freely behind it.”

Informed by this knowledge, the pair redesigned every part of the lens—the front surface, the back surface, and the optics. “All of these features had to be novel in order for this contact lens to do its job,” says Dr. Bailey, who has been granted two

patents related to this lens and has four more pending.

The APIOC™ lens is suspended from the inside of the upper eyelid above the lid wiper via a Stabilizing Crest™, which anchors it in Kessing's space (Figure 1).

“This feature of our lens is surprisingly thin, similar in thickness to what allows toric soft lenses to stay in place,” Dr. Barr explains, noting that investigators report the lens orients consistently and is rotationally stable.

The presbyopia-correcting version of the lens currently in clinical trials is designed to provide discrete vision correction at distance, intermediate, and near, as well as enhanced tear exchange behind the lens (Figure 2).

“The lens is designed to work like a translating gas permeable lens,” Dr. Barr says. “With the lens suspended from the upper eyelid, the patient looks through the center in straight-ahead gaze for distance, and then, as the eye turns down for intermediate or near, the lens stays up.”

Investigators continue to work with the lens to develop a comprehensive fitting guide. “We want to fully develop our fitting guide to ensure that practitioners are successful with our lens very quickly for the vast majority of their patients,” Dr. Bailey says.

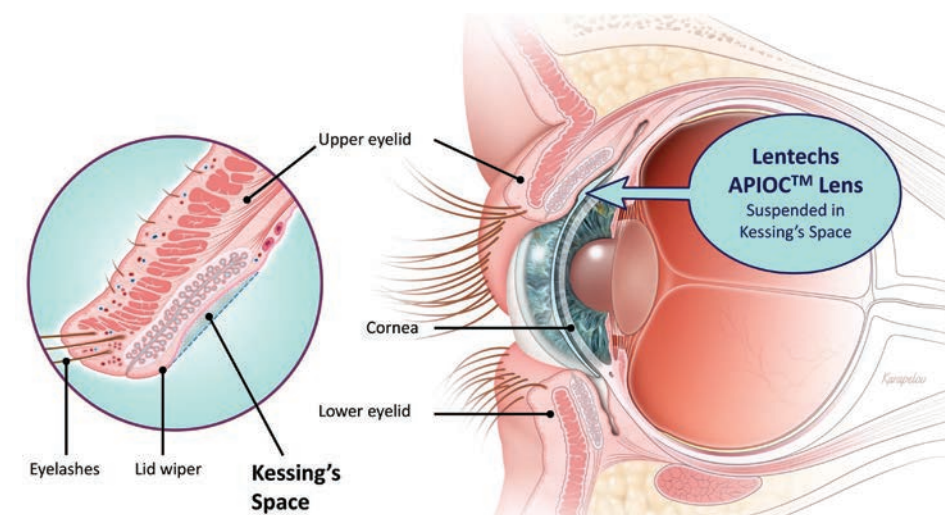


Figure 1. Novel design suspends the APIOC™ lens within Kessing's space.

## Science-Based Innovation

Until now, glasses-like vision in a contact lens designed specifically to correct presbyopia seemed unattainable. Nevertheless, the patented design of the APIOC™ lens allows for a unique vision experience in a soft contact lens without compromising comfort.

One optometrist from the market research put it this way: “If the vision is far superior with good comfort, it would be my go-to lens for presbyopic patients.” In fact, optometrists from research were so compelled by the concept that 88% said they would wear APIOC™ lenses themselves.<sup>11</sup>

This new generation of soft lenses is rooted in science-based innovation

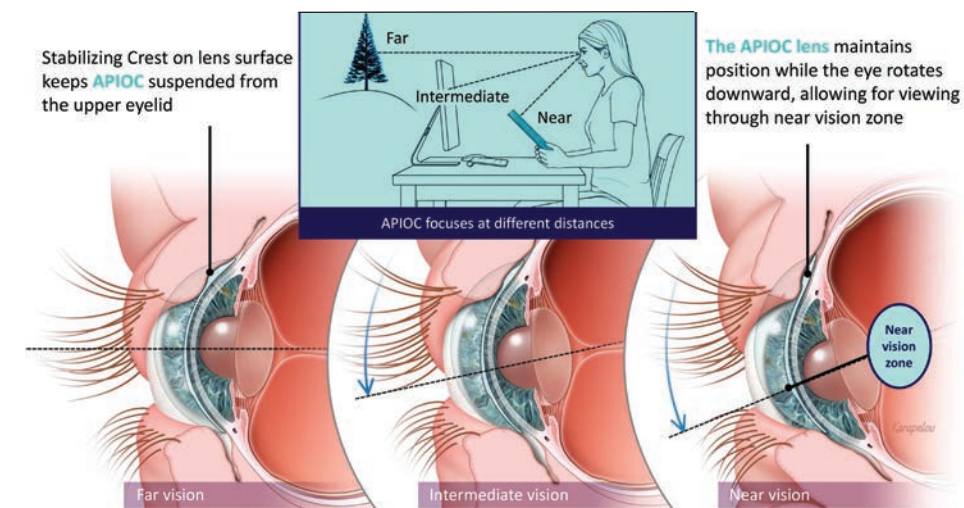


Figure 2. The APIOC™ lens is the first soft, suspended contact lens, designed for a glasses-like vision experience at all distances.

that will advance care. APIOC™ lenses will be available in mid-2021. ■



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## References:

1. Richdale K, Sinnott LT, Skadahl E, Nichols JJ. Frequency of and factors associated with contact lens dissatisfaction and discontinuation. *Cornea*. 2007 Feb;26:168-174.
2. Rueff EM, Varghese RJ, Brack TM, Downard DE, Bailey MD. A survey of presbyopic contact lens wearers in a university setting. *Optom Vis Sci*. 2016 Aug;93:848-854.
3. Sharma A, Hindman HB. Aging: a predisposition to dry eyes. *J Ophthalmol*. 2014;2014:781683.
4. Smith JA, Albeitz J, Begley C, et al. The epidemiology of dry eye disease: report of the Epidemiology Subcommittee of the International Dry Eye WorkShop (2007). *Ocul Surf*. 2007 Apr;5:93-107.
5. Wolffsohn JS, Davies LN. Presbyopia: Effectiveness of correction strategies. *Prog Retin Eye Res*. 2019 Jan;68:124-143.
6. Pérez-Prados R, Piñero DP, Pérez-Cambrodí RJ, Madrid-Costa D. Soft multifocal simultaneous image contact lenses: a review. *Clin Exp Optom*. 2017 Mar;100:107-127.
7. Efron N, Morgan PB, Woods CA. Trends in Australian contact lens prescribing during the first decade of the 21st Century (2000-2009). *Clin Exp Optom*. 2010 Jul;93:243-252.
8. Morgan PB, Efron N. A decade of contact lens prescribing trends in the United Kingdom (1996-2005). *Cont Lens Anterior Eye*. 2006 May;29:59-68.
9. Woods CA, Jones DA, Jones LW, Morgan PB. A seven year survey of the contact lens prescribing habits of Canadian optometrists. *Optom Vis Sci*. 2007 Jun;84: 505-510.
10. Rueff EM, Bailey MD. Presbyopic and non-presbyopic contact lens opinions and vision correction preferences. *Cont Lens Anterior Eye*. 2017 Oct;40:323-328.
11. APIOC Concept Test, Quantitative Research Study, MQD Consulting, June 2020.