Supplementary Information

Supplementary Table S-1: Literature summary of cholinergic antagonists which inhibit the development of myopia.

| Compound  | Target                  | Species       | References                                                                 |
|-----------|-------------------------|---------------|-----------------------------------------------------------------------------|
| Atropine  | Muscarinic antagonist   | Chicken       | (Stone et al., 1991)                                                        |
|           |                         |               | For review see (Troilo et al., 2019)                                        |
|           |                         | Primate       | (Tigges et al., 1999)                                                       |
|           |                         | Human         | (Bedrossian, 1971)                                                          |
|           |                         |               | For review see (Wildsoet et al., 2019)                                      |
| Pirenzepine | Muscarinic antagonist | Chicken       | (Stone et al., 1991)                                                        |
|           |                         |               | For review see (Troilo et al., 2019)                                        |
|           |                         | Guinea Pig    | (Qian et al., 2015)                                                         |
|           |                         | Tree Shrew    | (Cottriall & McBrien, 1996)                                                 |
|           |                         | Primate       | (Tigges et al., 1999)                                                       |
|           |                         | Human         | (Siatkowski et al., 2004)                                                   |
|           |                         |               | For review see (Wildsoet et al., 2019)                                      |
| MT-3      | Muscarinic antagonist   | Chicken       | (McBrien et al., 2011)                                                      |
|           |                         | Tree Shrew    | (Arumugam & McBrien, 2012)                                                  |
| Himbacine | Muscarinic antagonist   | Chicken       | (Cottriall, Truong, et al., 2001)                                           |
| MT-7      | Muscarinic antagonist   | Tree Shrew    | (Arumugam & McBrien, 2012)                                                  |
| Scopolamine |                     | Chicken       | (Luft et al., 2003)                                                         |
| Tropicamide |                   |               |                                                                             |
| Dextamide | Muscarinic antagonists | Chicken       |                                                                             |
| Oxyphenonium |                   |               |                                                                             |
| Propanetheline |                 |               |                                                                             |
| Benztropine |                   |               |                                                                             |
| Chloriondamine |                 |               |                                                                             |
| Mecamylamine |                 |               |                                                                             |
| Dihydro-β-erythroidine |                 |               |                                                                             |
| Methyllycaconitine |             |               |                                                                             |

MT-3: muscarinic toxin 3, MT-7: muscarinic toxin 7.
Supplementary Table S-2: MRM transitions (precursor and product ion(s), with corresponding collision energies, and dwell times for each analyte and internal standard).

| Analyte/Internal Standard | Precursor Ion (m/z) | Quantifier transition product ion (m/z) | Collision Energy (volts) | Qualifier transition product ion(s) (m/z) | Collision Energy (volts) | Dwell time (ms) |
|---------------------------|---------------------|----------------------------------------|--------------------------|-------------------------------------------|--------------------------|----------------|
| **Time Segment 1** (positive ion mode) | | | | | | |
| Dopamine                  | 154.1               | 137.1                                  | 8                        | 91.0                                      | 28                       | 150            |
|              |                   |                                        |                          |                                           |                          |                |
| Dopamine-d₄              | 158.1               | 141.1                                  | 8                        | 95.1                                      | 28                       | 100            |
|              |                   |                                        |                          |                                           |                          |                |
| **Time Segment 2** (negative ion mode) | | | | | | |
| DOPAC                    | 167.0               | 123.1                                  | 4                        | -                                         | -                        | 200            |
|              |                   |                                        |                          |                                           |                          |                |
| DOPAC-d₅                 | 172.1               | 128.1                                  | 4                        | -                                         | -                        | 200            |

Fragmentor voltage of 380 V applied for all MRM transitions. DOPAC: 3,4-dihydroxyphenylacetic acid.
Supplementary Figure S-1: Correlations between changes in refraction and changes in axial length during diffuser-wear. Black dots represent individual animals from: (A) Cholinergic agonist experiments (experiment 1), and (B) dopaminergic antagonist co-administration experiments (experiment 3).