**Supplementary Material**

**Literature Review Process**

To provide our perspectives on the clinical application of glaucoma personalized therapy, a comprehensive literature search on PubMed and Embase with the search terms “glaucoma,” “pharmacogenetics,” “pharmacogenomics,” “drug therapy,” and “precision medicine” for studies published from conception to May 1, 2022 was conducted independently by two authors (LSY and WLX). Associated studies in the reference list were also hand-searched and reviewed. Any clinical studies involving pharmacogenetics and pharmacogenomics findings on glaucoma medications were included. Studies were excluded if it is an animal study, a basic research study, a case report, or a review article, or if it included no parallel controls. Clinical studies with no reports of trial results were also excluded. Studies about genetic associations with glaucoma risk and progression were searched with terms such as “risk factors” and “progression” with the same inclusion and exclusion criteria. Disagreement in study selection was settled by discussion with the corresponding author (WX), who decided the final selection of included literature. The brief process of literature selection is demonstrated in Supplementary Figure 1.

**Supplementary Figure 1:** Summary of literature selection process. IOP: Intraocular pressure.

**Supplementary Table 1:** Common functional genetic polymorphisms related to drug-mediated IOP-lowering effect in candidate genes.

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| **Drugs** | **Genes** | **Function of genes** | **Genetic polymorphisms** | **Results** | **References** |
| β-Adrenergic antagonists (e.g., timolol and betaxolol) | *ADRB1* | Receptor | rs1801252 | No significant association between genotype and response to betaxolol. | [1–3] |
| rs1801253 | Patients with CC homozygotes had a greater hypotensive response to betaxolol than CG/GG heterozygotes. |
| *ADRB2* | Receptor | rs1042713 | No significant association between genotype and response to betaxolol. | [2–5] |
| rs1042714 | Patients with CC homozygotes had a greater hypotensive response to betaxolol than CG/GG heterozygotes. |
| *CYP2D6* | Enzyme | rs16947 | No significant association between genotype and response to timolol. | [6] |
| rs1135840 | No significant association between genotype and response to timolol. |
| *MLIP* | Protein | CNVs | The more copies of the MLIP variant, the weaker the capacity of timolol to reduce IOP. | [7] |
| Prostaglandin analogs (e.g., latanoprost) | *PTGFR* | Receptor | rs3753380 | Patients with CC genotype had an increased response to latanoprost than CT + TT genotypes. | [8–13] |
| rs3766355 | Patients with CC genotype had an increased response to latanoprost than AA + AC genotypes. |
| *SLCO2A1* | Transporter | rs4241366 | Patients with GG genotype had a better response to latanoprost than GC + CC genotypes. | [9, 12] |
| rs34550074 | No significant association between genotype and IOP response to prostaglandin analogs. |
| *PTGS1* | Enzyme | rs10306114 | Patients with AA homozygous had significantly higher %ΔIOP than those of AG heterozygous. | [14] |
| *ABCC4* | Transporter | rs11568658 | Patients with GG homozygous had significantly higher %ΔIOP than those of GT heterozygous. | [14] |
| *ABCB1* | Transporter | rs1045642 | Patients with TT genotype had a more remarkably reduced IOP and an improved visual acuity than CC + CT genotypes. | [15] |
| *GMDS* | Enzyme | rs9503012 | Patients with TT genotype had a better response to latanoprost than CC + CT genotypes. | [13] |
| *MLIP* | Protein | CNVs | The more copies of the MLIP variant, the greater the capacity of latanoprost to reduce IOP. | [7] |

ABCB1: ATP-binding cassette subfamily B member 1; ABCC4: ATP-binding cassette subfamily C member 4; ADRB1: Adrenoceptor beta 1; ADRB2: Adrenoceptor beta 2; CNVs: Copy number variations; CYP2D6: Cytochrome P450 family 2 subfamily D member 6; GMDS: GDP-mannose 4,6-dehydratase; IOP: Intraocular pressure; PTGFR: Prostaglandin F receptor; PTGS1: Prostaglandin-endoperoxide synthase 1; MLIP: Muscular LMNA-interacting protein; SLCO2A1: Solute carrier organic anion transporter family member 2A1.

**References**

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