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A Purdue University School
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Dear Editors:

We would like you to consider the following manuscript for publication in *JMO:* "A Theoretical Investigation of the Increase in Venous Oxygen Saturation Levels in Advanced Glaucoma Patients", by Lucia Carichino, Alon Harris, Giovanna Guidoboni, Brent A. Siesky, Luis Abegão Pinto, Evelien Vandewalle, Olof B. Olafsdottir, Sveinn H. Hardarson, Karel Van Keer, Ingeborg Stalmans, Einar Stefansson and Julia C. Arciero.

Retinal hemodynamics, oxygen saturation and metabolic demand play a role in the pathophysiology of glaucoma. However, it is unknown whether vascular changes occur primary or secondary to glaucomatous damage. Several clinical studies have investigated the correlations between changes in retinal oxygen saturation and the progression of the disease. In this study, a theoretical mathematical model of the retina is applied to a set of oximetry data obtained from healthy individuals and glaucoma patients to propose possible explanations for the clinically observed increases in venous oxygen saturation in advanced glaucoma patients.

The predictions derived from our computational study would be of great interest to the medical community, since the mathematical model is used to estimate patient specific levels of tissue oxygen demand or retinal capillary density that would yield the measured values of venous oxygen saturation given measured values of mean arterial pressure, intraocular pressure and arterial oxygen saturation of each patient. The model uncovers possible mechanisms that give rise to the clinically observed increased venous saturation in glaucoma patients and suggests that these mechanisms differ between primary open angle glaucoma patients and normal tension glaucoma patients. We greatly value the opportunity to communicate the predictive potential of our model to clinicians, experimentalists, and theoreticians, and *JMO* provides an excellent environment for reaching these communities.

There are no relationships, conditions or circumstances that present potential conflict of interest except for ES. ES is involved in the development of the instrument (oximeter) used to gather the oximetry data and has a financial interest in the company Oxymap ehf, which makes the instrument.

We greatly appreciate your interest in our research efforts and we thank you for your consideration.

Sincerely,

Julia Arciero
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