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Modeling Condensation, Hydro- and Pepto-affinity of Surfaces in Medical Implant Devices and Surgical Lenses: Effect of Blood Proteins ROSS BENNETT-KENNETT, NICOLE HERBOTS, ASHLEE MURPHY, DAVID SELL, TYLER KUTZ, SOPHIA BENITEZ, AJJYA ACHARYA, BRETT HUGHES, CLARIZZA WATSON, Arizona State University, ERIC CULBERTSON, University of Michigan, CLIVE SELL, H. KWONG, Arizona Vitro-retinal consultants — Surgical lenses in laparoscopes and arthroscopes "fog" during surgery. Fogging increases by up to 40% surgery duration, infection rates, and scarring due to exposure from repeated scopes withdrawal for cleaning. Modeling nucleation on surfaces shows that 2-D layer-by-layer condensation maintains transparency while 3-D droplets refract at gas/fluid interfaces leading to opacity or "fogging." This ProteinKnox^{TM}model for lenses made from bio-compatible polymers, and silica led us to a nano-scale molecular mesh applied as a bio-identical emulsion. ProteinKnox^{TM}[1-5] meets a 100% success rate in eliminating fogging for up to 240 minutes over 300 experiments. Twenty surgical trials in the OR yield a success rate of 90%, with loss of vision due to the presence of blood or blood proteins, not fogging. We studied the common blood protein, heparin, which prevents coagulation, with the ProteinKnox^{TM}model. Heparin behaves like H2O on hydrophobic surfaces. It does not prevent fogging nor interferes with 2-D condensatio. Next, we investigated fibrinogen as agonist agent because it causes coagulation. Fibrinogen applied to various surfaces in emulsions prepared in accordance with the ProteinKnox^{TM}model can prevent not only

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