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Vincent Calvez and **King-Yeung Lam*** (lam.184@osu.edu), The Ohio State University, 100 Math Tower, 231 W 19th Avenue, Columbus, OH 43210. *Uniqueness in constrained Hamilton-Jacobi equation and the dynamics of adaptation*. Preliminary report.

Viscosity solutions of Hamilton-Jacobi equations appear naturally in the asymptotic limit of selection-mutation models when the population variance vanishes. They have to be solved together with an unknown function $I(t)$ that describes population burden at each time. Although the uniqueness of viscosity solutions is known for many classical variants of Hamilton-Jacobi equations, the uniqueness for this particular type of constrained problem was not resolved, except in a few particular cases. Here, we provide a general answer to the uniqueness problem, based on three main assumptions: convexity of the Hamiltonian function $H(I,x,p)$ with respect to p , monotonicity of H with respect to I , and BV regularity of $I(t)$. We also describe a result illustrating the pessimization principle. (Received September 24, 2018)