**Citation:**

Andrew W. Torrance, *Open and Proprietary Biological Innovation in Human Genetic Enhancement*, 30 WASH. U. J. L. & POL’Y 93 (2009).

**Other Sources:**

[http://ssrn.com/abstract=1543884](http://ssrn.com/abstract%3D1543884)

**Key Words:**

Patent, Open Source, Biology, Biotechnology, Enhancement, Gene, Innovation, Patent Law, Gene Patent, Human Enhancement, Genetic Enhancement, Genetic Engineering, Open Source Biology, Human Evolution

**Abstract:**

Open source has been championed by many scholars as a superior system for promoting innovation, not only in software but latterly in biology. Though software code and genes appear superficially similar in the sense that they both serve as algorithms for the production of specified results, the former may be more conducive to the open source model of innovation than the latter. Nevertheless, if an open source model of genetics were adopted, the model could have significant effects on the future of human genetic enhancement. If open source genetics were unsuccessful or counterproductive in promoting genetic innovation, the result would be slowed discovery and development of genetic enhancements. Yet, if open source genetics were successful in spurring genetic innovation, at least two results would be likely: (1) acceleration in the rate of innovation in new genetic enhancements, and (2) acceleration of the widespread adoption of genetic enhancements. By contrast, proprietary patent protection for genetic enhancements would tend to spur genetic innovation, but would tend to limit access to those genetic enhancements through discriminatory mechanisms such as price and favoritism. Open source genetics likely would offer different societal outcomes for genetic enhancement than would proprietary patent systems. Furthermore, the societal implications of an open source genetics approach to genetic enhancement likely would not have the simple, salutary effects many in the open biology movement tend to assume. Rather, open source genetics might lead to more widespread genetic enhancement than would proprietary patent approaches, though the potential pool of available genetic enhancements likely would be smaller. A proprietary patent approach would likely ensure high rates of genetic enhancement innovation, research, and development, and efficiently mediate access to genetic enhancements, but likely would allow access to genetic enhancements to fewer members of society. With both open source genetics and proprietary patent approaches, there remains the prospect that genetic enhancement might lead to human evolutionary change. Public policy and the law must grapple with the implications of genetic enhancement before current technological possibilities become societal realities. Open source genetics offers a significant alternative to the prospect of the patent system as a substantial arbiter of parental decisions regarding genetic enhancement of their offspring. Open source genetics holds the potential to democratize accessibility of genetic enhancements, while discouraging high rates of genetic enhancement innovation. However, the implications that open source genetics has for the future of human society - and even human evolution - are not clearly more beneficial than the implications the patent system would have. It is certain that the implications that open source genetics and proprietary patent systems have for future human genetic enhancement should be subjected to thorough analysis and debate prior to the imminent arrival of human genetic enhancement technologies.