

Tom Brady: The Reason Designer Babies Won't Exist

By *Nicholas Staropoli* — December 14, 2015

New England Patriots quarterback Tom Brady poses a significant problem for those who want to claim using genetic engineering on human embryos could make "super babies."

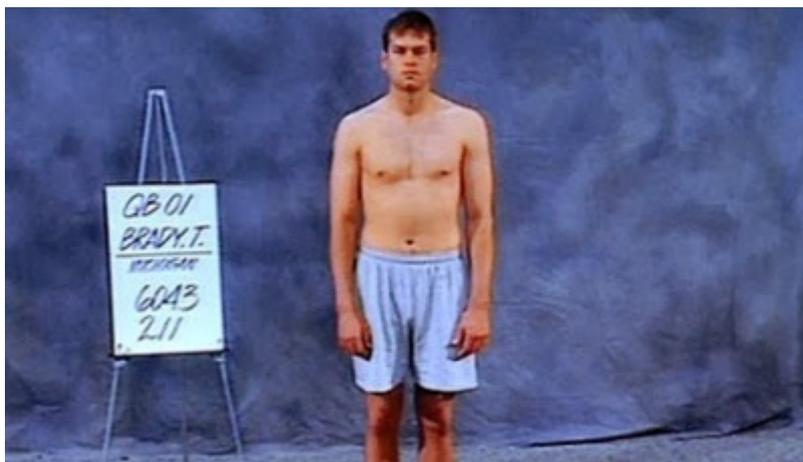
It would be hard to compile a list of the greatest football players on the planet and not include Brady. His list of accomplishments in a physically grueling sport are considerable. But if you watch him play, any thoughts that he is a great *athlete* are dispelled.

Yet who wouldn't want their football-playing son to end up like Brady? What would parents pay if such genetic optimization was within reach?

That is the concern behind a technology for gene editing called CRISPR/Cas9, a way to make precise, targeted changes to the genome of living cells which has become cheap, quick and easy to use, meaning it could be used to adjust human genes to eliminate diseases -- or create the next Tom Brady.

Yet genetics are not a magic bullet, and to see how Brady defies those who think turning a few knobs in DNA will produce a Hall-of-Fame quarterback, we need look no further back than his performance 15 years ago at the National Football League's scouting combine, an event that basically serves as a mass tryout for the nation's best college players.

[At the 2000 combine](#) ^[1], Brady ran slower than most linemen, those giant men who protect the quarterback. He has the slowest 40-yard-dash time (the speed standard for NFL athletes) of any starting QB. Pictures of him shirtless at the event suggested his physique was closer to Joe Six-Pack than six-pack.



^[2] Credit: NFL

Even after his successes, pundits still criticize his arm strength, an attribute that is considered necessary for any quarterback at the professional level. But despite those genetic shortcomings he has earned his place on the short list of greatest football players.

That is because it takes more than A, G, C, and T.

The fear of designer babies, at least to critics, is that scientists will create a human with superior traits through manipulation of the embryonic genome. Scientists could design a superior athlete at birth.

If you want a great football quarterback, Brady is the way to go. But what would mimicking his genome really accomplish? Certainly not genes for superior speed or strength because Brady has neither. If success was just about superior speed and strength, Jamaricus Russell or Brian Bosworth would be in the Hall of Fame. Both were gifted athletes forever known by followers of football for being unable to meet expectations at the pro level.

This is why fears of a science-fiction future, where designer babies lead to a perfect human, will be impossible to achieve. Success requires so much more than a genome. There is no "QB intelligence" gene or "athletic anticipation" gene that a biologist could edit into an embryo, like there is for eye color.

Claims of human germline editing to create so-called "Supermen" and "designer babies" serves only to derail the real conversation about the promise of our biological future. It appears extremely unlikely that we will ever get to that level of complexity, but what we can do is use human genome editing to end the human suffering associated with inherited genetic diseases. CRISPR/Cas9 could easily be customized to edit embryos, to fix or remove the harmful sequences that cause cystic fibrosis, sickle cell disease or Huntington's disease.

Designing the next Tom Brady, though? No, his characteristics cannot be reduced to a one-gene-one-trait style of Mendelian genetics. He is also the product of both his environment and an unreal level of personal initiative.

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[1] <http://www.nfl.com/videos/nfl-videos/0ap3000000470265/2000-NFL-Scouting-Combine-Tom-Brady>

[2] <http://acsh.org/wp-content/uploads/2015/12/tom-brady-2000-combine.jpg>