

ethnic backgrounds.<sup>1</sup> The culprit is a single faulty gene on chromosome number 4. Children of a parent who has the gene stand a 50–50 chance of inheriting it. Those who have not inherited the gene cannot pass it (and the disease) on to their children; those who have it will inevitably develop the disease, usually in adulthood. The first symptoms generally appear in 30- to 40-year-old adults and the disease claims its victims within 15 to 20 years. There is no cure, only treatment aimed at alleviating the patient's symptoms; that treatment includes drugs and life adaptations (changing a person's physical environment to accommodate his or her physical deterioration). In some cases, HD strikes victims in their late teens or early 20s. In 2004, an estimated 30,000 people in the United States had HD, and 75,000 carried the abnormal gene that would cause them to develop the disease.<sup>2</sup>

In most cases, HD's onset is slow and gradual, and the first symptoms are mild: muscle twitches and slight memory loss. In a small percentage of cases—fewer than 3%—the initial onset is more severe and dramatic and results in significant impairment of motor skills. That type of onset could prove extremely hazardous if a person were driving or operating heavy machinery at the time.

In 1993, as part of the Human Genome Project,<sup>3</sup> U.S. and British scientists identified the gene that causes Huntington's disease, making early detection possible. HD was then added to a growing list of illnesses such as amyotrophic lateral sclerosis (ALS, or Lou Gehrig's disease), sickle cell anemia, myotonic dystrophy, and cystic fibrosis that can be identified through genetic testing. Unfortunately, like some other diseases, including ALS and sickle cell anemia, HD is not one that can be prevented or avoided through early detection.

### **Reiger, Risks and Redundancies**

As a Danville pilot, David Reiger flew four to five times a week, with a weekly average of eight to 10 hours in the air. None of his routes was long, and each required no more than two and a half hours at the controls. Taylor knew that all Danville flights had various backup plans and mechanisms, including a copilot and an autopilot, should the primary pilot on a flight become incapacitated. Aeronautical and airline engineers had calculated that those redundancies would be effective in preventing an in-flight crash 99% of the time should the pilot lose control on a flight. During the critical periods of taking off and landing (roughly two minutes each),

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<sup>1</sup> Probably one of the best-known people to succumb to Huntington's disease was the American folk singer Woody Guthrie, who died in 1967. Before he was diagnosed, his slurred words and jerky movements were interpreted as drunkenness. His son, folk singer Arlo Guthrie, does not have the gene and consequently is not at risk for developing the disease.

<sup>2</sup> "Learning About Huntington's Disease," <http://www.genome.gov/page/cfm?pageID=10001215> (accessed 11 February 2006)

<sup>3</sup> The Human Genome Project, which ran from 1990 through 2003, was a project coordinated by the U.S. Department of Energy and the National Institutes of Health. The project's goals were to identify the approximately 20,000 to 25,000 genes in human DNA, determine the sequence of the three billion chemical base pairs making up DNA, create databases of that information, improve data analysis, and transfer many of the specific technologies it used to the private sector.