

## A MULTIDISCIPLINARY APPROACH TO PD SCIENCE

Andy Grove, co-founder of Intel and senior advisor to MJFF discusses the need for a multidisciplinary approach to Parkinson's science with KQED's Dave Iverson. Mr. Grove talks about how this approach can help overcome challenges in developing therapies using neurotrophic factors, specialized proteins that nourish and protect neurons in the brain.

A transcript of the interview follows. To listen to a podcast version, visit [http://www.michaeljfox.org/newsEvents\\_podcasts.cfm](http://www.michaeljfox.org/newsEvents_podcasts.cfm)

**Opening Narration:** This is Dave Iverson. Welcome to our continuing series of reports about new developments in Parkinson's disease research. Andy Grove may not be a household name but he's changed just about every household and every business. Grove is the co-founder of the micro-processing giant Intel. In 1997 *Time Magazine* named him its Man of the Year for his role in fostering the innovative potential of microchips. But three years after receiving that honor Andy Grove's priorities changed from silicon to something more.

**Andy Grove:** My priorities were a little redefined when I got a diagnosis of Parkinson's.

**Dave Iverson:** Having your priorities suddenly change is an experience every Parkinson's patient knows. But when Andy Grove got his Parkinson's diagnosis in 2000 he also knew that he was in a position to make a difference in Parkinson's research. And what intrigued him wasn't research success but failure.

**Andy Grove:** Because what happens with failure in the medical field is people run for the nearest exit. So you can really make a difference with what's left after they run.

**Dave Iverson:** The failure that fascinated Grove involved a field known as trophic factors. Trophic factors are proteins which enhance the performance of certain brain cells, including the dopamine cells that die in Parkinson's. And researchers think that getting a trophic factor boost would help enhance dopamine production in Parkinson's patients. But early surgical attempts to deliver extra trophic factors in clinical trials didn't go well.

**Todd Sherer:** The interpretation is that, from basically the entire scientific community, is that the delivery was inadequate.

**Dave Iverson:** Todd Sherer is the vice president for research programs at The Michael J. Fox Foundation.

**Todd Sherer:** We didn't get enough of the factor to the correct regions of the brain. And we just need to figure out better ways to deliver them to the appropriate brain regions at the appropriate doses.

**Dave Iverson:** You can think of trophic factors as assets that benefit certain properties of the brain. And just like property in a real estate transaction, what matters most is location.

**Todd Sherer:** And what we're trying to do with these therapies is to deliver the factors exactly to the brain regions that are damaged in the disease. Some of them for Parkinson's for example are fairly deep within the brain. So we have to optimize how we go about using surgical procedures to deliver these factors to the brain.

**Dave Iverson:** And this is where Andy Grove thought he could make a difference. Grove is an engineer by training and delivering growth factors to the right location and keeping them there requires engineering skills. He says it's a bit like the challenge confronting engineers in the gulf.

**Andy Grove:** Consider the gulf situation. The scale of the problems involved are a million fold or more different but the problems are similar. You're trying to get an elusive fluid through a pipe to the right place and keep it there. So the problem solving instincts that a career of engineering has developed in me rises much more so when the problem is important.

**Dave Sherer:** In fact Grove thinks the more complex the medical problem the more it's useful to draw upon other disciplines.

**Andy Grove:** It is a little like your gestalt, your take on the situation is completely different if you come at it from a physics standpoint, an engineering standpoint or a biological standpoint. You may be looking at the same brain or the same part of the brain but you see completely different things.

**Dave Iverson:** That's why Grove is supporting several new multidisciplinary research efforts, including several at the Fox Foundation. And he also thinks that in order for treatments like trophic factors to become more affordable, medical science is going to have to learn something else from Silicon Valley...the famous mantra: simpler, faster, cheaper.

**Andy Grove:** And where the real payoff is gonna come is by engineers involving in this project and other projects, the engineering socialization, the training kicks in. The treatment I talk about is a million dollars a unit and there are a million Parkinson's people, that's a trillion dollars. Even in today's bailout days that's a lot of money. So if you want to make it more accessible to a larger portion of the million patients, you have to lower the cost. This is how electronics became what it is, how the automobile industry became what it is.

**Dave Iverson:** But it's not so much how science became what it is, right? I mean the better faster cheaper idea...

**Andy Grove:** Is an engineering. An engineering and a business idea. So I believe if you make it cheap, you mass produce it, it is gonna be available to a larger and larger number of people. And you can't argue that it doesn't work in medicine until we try it. And other than over the counter drugs, we have not.

**Dave Iverson:** How do you go about getting scientists, biologists, neurobiologists, whoever, to think that way?

**Andy Grove:** I will tell you that after I have some success stories. (laughs) It's very hard.

**Dave Iverson:** But the Fox Foundation's Todd Sherer says this is an approach to scientific research whose time has come.

**Todd Sherer:** Broadly, this multidisciplinary approach is really critical to develop therapies for patients and it is not typically part of the kind of normal mode of operations for how science is done. So you need to have this multidisciplinary approach at the earliest stages so that the various technologies can develop in parallel so that when you're ready to go to the clinic you've answered a lot of these questions along the way.

**Dave Iverson:** Meanwhile, Andy Grove, the man who helped revolutionize the computer industry is not about to give up trying to revolutionize how research gets done.

**Dave Iverson:** You've been at this now for a few years, trying to promote this way of thinking. Are you optimistic?

**Andy Grove:** No. I have absolutely no reason to be optimistic. (laughs)

**Dave Iverson:** But if you're not optimistic, you're also clearly not...

**Andy Grove:** I'm obstinate. What I lack in optimism, I try to make up by being an ornery bastard.

**Dave Iverson:** It's a useful attribute.

**Andy Grove:** It has been.

**Dave Iverson:** Besides, it's always nice to have a man of the year on your side. For more information on trophic factor research and on Parkinson's disease visit [www.michaeljfox.org](http://www.michaeljfox.org). I'm Dave Iverson.