EDITOR'S NOTEBOOK/Bernard Rimland, Ph.D.

Genetics, autism and priorities

Few, if any, researchers have argued as long, as consistently, and as ardently as I have that genetics play an important role in the causation of autism.

In the late 1950s, when I started my study of autism, I was virtually alone in arguing not only that autism was a *biological* disorder, not caused by covert maternal rejection, but also that there was a strong *genetic* component in its causation.

In my 1964 book *Infantile Autism: The Syndrome and Its Implications for a Neural Theory of Behavior*, I protested:

> *When dark-haired and dark-eyed parents produce a dark-complexioned child, we are all quick to agree: "Mendel was right!" But when introverted parents produce a child who similarly shows little interest in socialization, the refrain inexplicably changes to "Aha. Freud was right!" (p. 64)*

Long before computerized literature searches made the task easy, I arduously ferreted out every twin set that had been mentioned, even in passing, by reading virtually every autism article in the world literature. Of the 14 sets I found, 11 were identical, and in all of these identical sets, both twins were autistic *(pp. 54-58)*. The dearth of fraternal and discordant twin pairs has since been confirmed in many studies *(see p. 4, this issue)*.

Similarly, my 1964 assertion that where mental illness has occurred in the families of autistic children, it tends strongly to be an affective disorder, and not schizophrenia, has been repeatedly supported by later research. *(pp. 76, 159-163, 171)*

I started autism/genetic research at Stanford and UCLA. In 1964 I collaborated with Luigi Luzzatti at Stanford by providing carefully diagnosed cases of autism for chromosomal analysis, and a few years later did the same with Arnold Mandell and Lewis Judd, then of UCLA.

In 1976, I coauthored a paper with Mary Coleman in which we proposed an autosomal recessive model for autism—a proposal repeated 10 years later by Edward Ritvo. In the 1980's and 90's, I continued to provide genetic research groups at Stanford and UCLA with cases of multiple child families from our large database.

Yes, I have worked long and hard to encourage genetic studies of autism.

Despite these efforts by myself and a few others, the genetics of autism was largely neglected. No more. Within the last few years, the genetics of autism has suddenly become a growth industry. Earlier this year there were active genetics-of-autism research programs at at least seven U.S. universities—but that's not all. On May 30th, the National Institutes of Health announced the start of a five-year, 27-million-dollar international collaborative network of research centers on autism. Research will involve 24 universities in 13 states and four foreign countries. While the research is by no means limited to genetics, genetics are very heavily emphasized.

Am I happy that genetics research is at last being given the attention it deserves? Yes, I certainly am.

Am I disappointed that so much money and resources are being spent on the genetics of autism, at the expense of other projects which might have *surer, faster, and better payoff*? Yes, I certainly am.

Shouldn't at least one million of the many millions of dollars going to basic research be used to investigate, and make more effective, treatments that are here now, and are known to provide major benefit to some autistic children?

There is an old Chinese adage to the effect, "Be careful of what you wish for—your wish may be granted."

Why am I now concerned that genetic research is over-supported? For several reasons. Without question, there are many causes of autism, and many subtypes of autism, only some of which may be expected to be largely caused by genetic abnormalities. In this regard, autism is vastly different from Huntington's disease, cystic fibrosis, phenylketonuria, Tay-Sachs disease, and many other conditions where single genes play powerful roles. Even in those gene-dominated disorders, genetic research has thus far resulted in very few, if any, effective approaches to treatments. An all-out race at this point to find the far more elusive and diverse autism genes seems a bit premature.

On page 2 in this issue of the ARRI is the report of the finding of the first gene associated with autism, by Edwin Cook and associates. That is a very important development, and Dr. Cook and his colleagues are to be commended. The gene relates to the processing of serotonin in the brain. What are the implications of this finding for the near-term prevention and treatment of autism? In a comprehensive review of the neurochemistry of autism, published in 1990, Dr. Cook wrote, "The most consistent finding has been that over 25% of autistic children and adolescents are hyperserotonemic. However, after 29 years of investigation, the mechanism of hyperserotonemia has not been determined." I am concerned that another 29 years may pass before such genetic research bears fruit, in terms of prevention and treatment.

As our readers know all too well, there are many, many autistic children with us here, today. And many more are being born every day. Shouldn't at least one million of those 27 million dollars be used to investigate, and make more effective, treatments that are here now, and are known to provide major benefit to some autistic children?

A prime candidate for such research funding is vitamin B6. This vitamin, along with the mineral magnesium, is used in the production of serotonin. Since 1965, 18 research reports have been published by scientists in six countries showing that about half of all autistic children and adults improve significantly when given large amounts of B6. Unlike drugs, B6 is a safe, natural substance which the brain requires. Why do some autistic persons need extra B6? No one knows. What other nutrients—vitamins, minerals, lipids, amino acids—might be given with the B6 and magnesium to enhance their effectiveness? No one knows. Research to compare blood levels of various enzymes and neurotransmitters, before and after treatment with B6, comparing B6 responders with non-responders, might produce very informative results that could help the autistic persons we live with every day. Such research cries out to be done. It is not being done. No money.

Another area in which a small expenditure of money could make a big difference relates to the use of diets in which certain substances are avoided. Karl Reichelt of Oslo has pioneered in this area for decades, showing the highly significant effects of removing gluten, gliadin and casein from the diets of autistic children. There are now about forty research studies in Norway, the U.K., Italy, and the U.S. supporting this finding. Special diets are hard to implement. The problem might be solved by giving the children special digestive enzymes that would break down the peptides from these foods and permit their assimilation. Like the B6 research, that would help thousands of living, breathing autistic children who are here now. No money for such work, but millions of dollars for the more glamorous search for genes.

Our Defeat Autism Now! project was initiated in 1994 to advance these and other here-and-now, and near-future, approaches to the effective treatment of autism. You can help by donating to the Autism Research Institute. To learn more about the DAN! Project and its upcoming conference, see the insert in this issue.