

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte J. PAUL BURNETT, NANCY G. MAYNE,  
ROBERT L. SHARP, and YVONNE M. SNYDER

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Appeal No. 1997-0791  
Application 08/172,332

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ON BRIEF

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Before WILLIAM F. SMITH, ADAMS and MILLS Administrative Patent Judges.

MILLS , Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claim 5, which is the only claim pending in this application.

Claim 5 is the only claim on appeal and reads as follows:

5. An isolated DNA compound encoding a glutamate receptor having a sequence as defined by SEQ ID NO:2.

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The prior art references of record relied upon by the examiner in rejecting the appealed claim is:

Berger, "Guide to Molecular Cloning Techniques," Method in Enzymology, Vol. 152, pp 393-99, 415-23, 432-49 and 663-04 (1987).

Gerard, et al. (Gerard), "The Human Neurokinin A (Substance K) Receptor," The Journal of Biological Chemistry, Vol. 265, No. 33, pp 20455-62 (1990).

Grandy et al. (Grandy), "Cloning of the cDNA and gene for a human D2 dopamine receptor," Proc. Natl. Acad. Sci. USA, Vol. 86, pp 9762-66 (1989).

Sommer et al. (Sommer), "Flip and Flop: A Cell-Specific Functional Switch in Glutamate-Operated Channels of the CNS," Science, Vol. 246, pp 1580-85 (1990).

Qun-Yong Zhou et al. (Zhou), "Cloning and expression of human and rat D<sub>1</sub> dopamine receptors," Nature, Vol. 347, pp 76-80 (1990).

Puckett, et al. (Puckett), "Molecular cloning and chromosomal localization of one of the human glutamate receptor genes," Proc. Natl. Acad. Sci. USA, Vol. 88, pp 7557-61 (1991).

Heinemann, et al. (Heinemann)

WO 91/06648

May 16, 1991

### OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellants' specification and claims, to the applied prior art references, and to the respective positions articulated by the appellants and the examiner.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellants regarding the above-noted rejection, we make reference to the Examiner's

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Answer (Paper No. 19, mailed September 4, 1996) for the examiner's complete reasoning in support of the rejection, and to the appellants' Brief (Paper No. 18, filed February 20, 1996) and Reply Brief (Paper No. 20, filed November 6, 1996) for the appellants' arguments thereagainst. As a consequence of our review, we make the determinations which follow.

### BACKGROUND

The claimed invention relates to a specific DNA compound encoding a glutamate receptor having a DNA sequence as defined by SEQ ID NO:2. L-glutamate serves as a major excitatory neurotransmitter. The interaction of glutamate with its membrane-bound receptor is believed to play a role in many important neuronal processes, including fast synaptic transmission, synaptic plasticity and long-term potentiation, which are fundamental to the maintenance of life and normal human abilities such as learning and memory. Specification, page 1, lines 5-13. L-glutamate and its receptors is believed to play a role in many neurological disorders such as stroke, epilepsy, and head trauma, as well as neurodegenerative processes such as Alzheimer's disease. Specification page 2, lines 34-38.

It is well understood that DNAs consist of four different nucleotides containing the nitrogenous bases adenine, guanine, cytosine, and thymine. A sequential grouping of three such nucleotides (a "codon") codes for one amino acid. A DNA's sequence of

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codons thus determines the sequence of amino acids assembled during protein synthesis. Since there are 64 possible codons, but only 20 natural amino acids, most amino acids are coded for by more than one codon, i.e., the genetic code is "redundant" or "degenerate."

### Issues

Claim 5 stands rejected under 35 U.S.C. § 103 as obvious over Heinemann in view of Grandy, Gerard, Zhou and Berger. Claim 5 also stands rejected under 35 U.S.C. § 103 as obvious over Puckett, in view of Heinemann and Sommer. We Reverse.

### Rejections under 35 U.S.C. § 103

Claim 5 stands rejected under 35 U.S.C. § 103 as obvious over Heinemann in view of Grandy, Gerard, Zhou and Berger.

This decision is controlled by In re Deuel, 51 F.3d 1552, 1557, 34 USPQ2d 1210, 1214 (Fed. Cir. 1995). To reject claims in an application under section 103, an examiner must show an un rebutted prima facie case of obviousness. Id.

It is the examiner's position that Heinemann teaches "a clone of the gene for GluR1, the rat homolog of the HSGluR1 gene of SEQ ID NO:2 and expression of the gene in an oocyte expression system." Examiner's Answer, page 3. Heinemann discloses an amino

acid sequence and a DNA sequence encoding GluR1 (Fig. 1). Heinemann does not describe the specific human glutamate receptor DNA sequence claimed.

Grandy, Gerard and Zhou are relied on by the examiner for their disclosure of the isolation of human neuroreceptor genes (D2 dopamine receptor, neurokinin A receptor and D1 dopamine receptor, respectively), allegedly showing that isolated human genes have a high nucleotide sequence identity to mammalian species homologs, thus providing a reasonable expectation of success of isolating the human homolog of the rat glutamate receptor gene. Berger is relied on generally for its disclosure of recombinant DNA methods for the isolation and expression of genes for a protein of interest.

The examiner surmises that “one of ordinary skill in the art would have a reasonable expectation of success of isolating the human homolog of the rat gene of Heinemann et al. by using the GluR1 clone [of Heinemann] as a probe to isolate a full length clone of HSGluR1 by recombinant DNA methods such as those taught by Berger, et al.” Examiner’s Answer, page 4.

Likewise, Claim 5 stands rejected under 35 U.S.C. § 103 as obvious over Puckett in view of Heinemann and Sommer.

Puckett describes the isolation of human cDNA’s encoding a human glutamate receptor using oligonucleotide probes derived from rat brain GluR1. Puckett states that the DNA sequence of the human glutamate receptor (GluH1) would encode a 907-amino

acid protein that has a 97% identity to one of the rodent kainate receptor subunits.

Puckett, Abstract. Puckett compares the human glutamate receptor amino acid sequence with the rat GluR1 amino acid sequence, but does not disclose any DNA sequence encoding the amino acid sequence of the rat or human glutamate receptor or the specific DNA sequence claimed.

Heinemann, discussed above, discloses a rat glutamate receptor amino acid and DNA sequence for GluR1. Sommer is relied on for the disclosure that rat and mouse glutamate receptor genes, including GluR1, produce alternatively spliced mRNAs (“flip” and “flop”) which exhibit functional differences in their response to various ligands. The examiner argues that one of ordinary skill in the art would be able to isolate a cDNA clone of the human “flop” splice variant of the GluR1 receptor taught by Puckett, and would have a reasonable expectation of success of isolating the “flip” variant using the HGluR1 clone as a probe in view of the high degree of homology of the two variant cDNAs taught by Sommer. Examiner’s Answer, paragraph bridging pages 5 and 6.

The genetic code relationship between the disclosed amino acid sequence for human glutamate receptor and nucleic acids does not overcome the deficiencies of the cited references. In Deuel it was determined that “[a] prior art disclosure of the amino acid sequence of a protein does not necessarily render particular DNA molecules encoding the protein obvious because the redundancy of the genetic code permits one to hypothesize

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an enormous number of DNA sequences coding for the protein. No particular one of these DNAs can be obvious unless there is something in the prior art to lead to the particular DNA and indicate that it should be prepared.” In re Deuel, 51 F.3d 1552, 1559, 34 USPQ2d 1210, 1215 (Fed. Cir. 1995).

Moreover, the court in Deuel found that the existence of a general method of isolating cDNA or DNA molecules is essentially irrelevant to the question whether the specific molecules themselves would have been obvious, in the absence of other prior art that suggests the claimed DNAs. Thus, even if, as the examiner stated, the existence of general cloning techniques, coupled with knowledge of a protein's structure, might have provided motivation to prepare a DNA or made it obvious to prepare a DNA, that does not necessarily make obvious a particular claimed DNA. "Obvious to try" has long been held not to constitute obviousness. In re O'Farrell, 853 F.2d 894, 903, 7 USPQ2d 1673, 1680-81 (Fed. Cir. 1988). A general incentive, as indicated by the examiner, does not make obvious a particular result, nor does the existence of techniques by which those efforts can be carried out. In re Deuel, 51 F.3d 1552, 1559, 34 USPQ2d 1210, 1215-16 (Fed. Cir. 1995). The Deuel court also stated: “The fact that one can conceive a general process in advance for preparing an undefined compound does not mean that a claimed specific compound was precisely envisioned and therefore obvious.” In re Deuel, 51 F.3d 1552, 1559, 34 USPQ2d 1210, 1216 (Fed. Cir. 1995).

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Appellants argue that the examiner is not using the proper standard for obviousness but is instead using the obvious to try standard which the Federal Circuit has rejected. Reply Brief, page 11. The appellants also argue that the examiner merely speculates that “one of ordinary skill in the art would have a reasonable expectation of success of isolating the flop variant of the cDNA of Pucket et al. by using the flip variant of Pucket et al. as a probe in view of the high degree of homology of the two variants of Sommer et al.” Reply Brief, pages 11-12. Thus appellants ultimately argue that their specifically claimed DNA sequence is neither taught in nor suggested by the prior art. We agree.

As set forth in Pro-Mold & Tool Co v. Great Lakes Plastics, Inc., 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1629 (Fed. Cir. 1996):

It is well-established that before a conclusion of obviousness may be made based on a combination of references, there must have been a reason, suggestion, or motivation to lead an inventor to combine those references.

Absent a fact-based explanation from the examiner as to why the specific DNA sequence of SEQ ID NO:2 would have been obvious to one of ordinary skill in the art as required by claim 5 on appeal, we find that the examiner has not properly established the initial burden of providing reasons of unpatentability. In re Oetiker, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). We find no reason, suggestion or motivation in the references of record for obtaining the specific DNA sequence claimed.

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CONCLUSION

The rejections of claim 5 under 35 U.S.C. § 103 are reversed.

REVERSED

WILLIAM F. SMITH	)	
Administrative Patent Judge	)	
	)	
	)	
	)	BOARD OF PATENT
DONALD E. ADAMS	)	
Administrative Patent Judge	)	APPEALS AND
	)	
	)	INTERFERENCES
	)	
DEMETRA J. MILLS	)	
Administrative Patent Judge	)	

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