THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 34

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HIROSHI KAWASHIMA, KENGO AKIMOTO,
HIDEAKI YAMADA and SAKAYU SHIMIZU

Appeal No. 1996-0833
Application No. 08/230,879[1]

HEARD: January 11, 2000

Before WILLIAM F. SMITH, LORIN, and SPIEGEL, *Administrative Patent Judges*.

SPIEGEL, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner finally rejecting claims 1 through 16 and refusing to allow claims 17 through 28 as amended subsequent to the final rejection, which are all of the claims pending in this application.[2] Claim 1 is illustrative:

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[1] Application for patent filed April 20, 1994. According to appellants, this application is a continuation of Application 07/953,096, filed September 29, 1992, now abandoned.

[2]The amendment filed August 22, 1995 (Paper No. 24), amending claims 17-28, was entered by the examiner in the communication mailed October 5, 1995 (Paper No. 25).

1. A process for the production of a dihomo-(-linolenic acid (DGLA) comprising the steps of:

culturing a microorganism of the genus *Mortierella* having an ability to produce arachidonic acid (ARA) and having reduced or lost)5 desaturation activity, so that the microorganism produces DGLA and ARA at a ratio of at least 2.5 (DGLA/ARA) in the absence of)5 desaturase inhibitor, in a medium to produce DGLA or a lipid containing DGLA, and

recovering the DGLA.

The references relied on by the examiner are:

Akimoto et al. (Akimoto)	4,916,066	Apr. 10, 1990
Idemitsu Petrochemical Co. (Idemitsu '494) (European Patent Application)	0 399 494	Nov. 28, 1990
Idemitsu Petrochemical Co. (Idemitsu '690)[3] (Japanese Patent Application)	2-268690	Nov. 02, 1990

Crueger and Crueguer (Crueger), BIOTECHNOLOGY: A TEXTBOOK OF INDUSTRIAL MICROBIOLOGY, second edition, English translation by Science Tech Publishers, Sinauer Associates, Inc., Sunderland, MA, page 26 (1989).

Claims 1-28 stand rejected under 35 U.S.C. § 103 as being unpatentable over Akimoto or Idemitsu '494 or Idemitsu '690 each taken in view of Crueger.[4] We REVERSE.

In reaching our decision in this appeal, we have given careful consideration to the appellants' specification and claims and to the respective positions articulated by the appellants and the examiner. We make reference to the examiner's answer (Paper No. 25, mailed

[3]We refer in our opinion to the translation of Idemitsu '690 prepared for the PTO by Diplomatic Language Services, Inc., a copy of which is attached to this decision.

[4]According to the examiner's answer (page 2), the final rejection of claims 1-28 under 35 U.S.C. § 103 over Akimoto or Idemitsu '494 or Idemitsu '690 "are withdrawn in view of the new grounds" of rejection *supra*, which adds Crueger to the previous rejection.

October 5, 1995) and to the examiner's supplemental answer (Paper No. 28, mailed May 15, 1996) for the examiner's reasoning in support of the rejection and to the appellants' brief (Paper No. 23, filed August 22, 1995) and to the appellants' reply brief (Paper No. 26, filed December 5, 1995) for the appellants' arguments thereagainst.

THE INVENTION

Appellants' claimed invention is directed to a process for producing dihomo-(-linolenic acid (DGLA) or a lipid containing the same, using a mutated microorganism of the genus *Mortierella* having an ability to produce arachidonic acid (ARA) and having reduced or lost)5 desaturation activity, such that DGLA and ARA are produced at a ratio of at least 2.5 (DGLA/ARA) in the absence of a)5 desaturase inhibitor (brief, pages 2-3 and 8).

OPINION

Akimoto produces DGLA by culturing an ARA-producing microorganism, e.g., one belonging to the genus *Mortierella*, in a medium containing sesame oil or peanut oil or an extract thereof, which suppresses the production of ARA and increases the production of DGLA (abstract; col. 3, lines 55-62). Idemitsu '494 produces DGLA by culturing a microorganism, e.g., one belonging to the genus *Mortierella*, in a medium containing an alkoxy aromatic compound described in formula 1 or curcumine, which inhibits the unsaturation reaction at a)5-position in a conversion reaction of DGLA into ARA (abstract; page 2, lines 34-38; page 3, lines 49-50). Idemitsu '690 produces DGLA by culturing a microorganism of the genus *Conidiobolus* in a medium containing sesame oil (page 3, first

full para.). Crueger describes using empirical selection after mutagenesis to increase the yield of a desired product obtained with industrial microorganisms.

According to the examiner, the claimed process is an obvious optimization of the process of Akimoto, Idemitsu '494 and/or Idemitsu '690 using old and well known techniques in the art, specifically those described by Crueger, to mutate, screen and select mutants of a known genus to obtain strains or mutants which have a higher yield of the desired product.

In order for a *prima facie* case obviousness of appellants' claimed invention to be established, the prior art must be such that it would have provided one of ordinary skill in the art with both a suggestion to carry out appellants' claimed process and a reasonable expectation of success in doing so. *See In re Dow Chemical Co*., 837 F.2d 469, 473, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988). "Both the suggestion and the expectation of success must be founded in the prior art, not in the applicant's disclosure." *Id.* The mere possibility that the prior art could be modified such that appellants' process is carried out is not a sufficient basis for a *prima facie* case of obviousness. *See In re Brouwer*, 77 F.3d 422, 425, 37 USPQ2d 1663, 1666 (Fed. Cir. 1996); *In re Ochiai*, 71 F.3d 1565, 1570, 37 USPQ2d 1127, 1131 (Fed. Cir. 1995).

Here, all of the appealed claims require using a *Mortierella* microorganism having an ability to produce arachidonic acid (ARA) and having a reduced or lost)5 desaturation activity, so that the microorganism produces DGLA and ARA at a ratio of at least 2.5 (DGLA/ARA) in the absence of)5 desaturase inhibitor. While random screening, empirical selection and mutation techniques may be

routine and well known in the art, the examiner has not established on this record that there is a **reasonable expectation of success** of obtaining the required *Mortierella* microorganism mutant. Thus, the examiner has not established a *prima facie* case of obviousness. Having concluded that the examiner has not established a *prima facie* case of obviousness, we do not reach the rebuttal evidence of unexpected results discussed on pages 12-15 of the brief and on pages 11-13 of the reply brief.

The rejection of claims 1-28 under 35 U.S.C. § 103 as being unpatentable over Akimoto or Idemitsu ‘494 or Idemitsu ‘690 each taken in view of Crueger is reversed.

OTHER MATTERS

The examiner’s attention is directed to the Information Disclosure Statement filed November 24, 1999 (Paper No. 33) for appropriate action taking.

CONCLUSION

To summarize, the decision of the examiner to reject claims 1-28 under 35 U.S.C. § 103 as being unpatentable over Akimoto or Idemitsu ‘494 or Idemitsu ‘690 each taken in view of Crueger is REVERSED.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

REVERSED

WILLIAM F. SMITH Administrative Patent Judge	)))))) BOARD OF PATENT
HUBERT C. LORIN Administrative Patent Judge	) APPEALS) AND) INTERFERENCES
CAROL A. SPIEGEL Administrative Patent Judge	))))

CAS/kis

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