

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. 23

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* NORBERT HAMPP,  
ANDREAS POPP, DIETER OESTERHELT  
and CHRISTOPH BRAUCHLE

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Appeal No. 1997-1713  
Application 08/381,839

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HEARD: January 11, 2001

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Before WARREN, LIEBERMAN and JEFFREY T. SMITH, *Administrative Patent Judges*.

WARREN, *Administrative Patent Judge*.

*Decision on Appeal and Opinion*

This is an appeal under 35 U.S.C. § 134 from the decision of the examiner refusing to allow claims 3, 5 through 8, 11, 12 and 16 through 18 as amended subsequent to the final rejection.<sup>1</sup>

We have very carefully considered the record before us, and based thereon, find that we cannot sustain any of the four grounds of rejection under 35 U.S.C. § 103 over the applied references.<sup>2,3</sup> It is

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<sup>1</sup> See the amendments of August 21, 1995 (Paper No. 6) and March 25, 1996 (Paper No. 10).

<sup>2</sup> The grounds of rejection and applied references are set forth at pages 2 through 9 of the answer.

<sup>3</sup> The examiner withdrew the ground of rejection under 35 U.S.C. § 112, second paragraph, in the advisory action of April 9, 1996 (Paper No. 11).

well settled that the initial inquiry in considering the patentability of the claimed invention as encompassed by claims is the determination of the scope of the claimed invention by giving the broadest reasonable interpretation to the claim terms consistent with appellants' specification as it would be interpreted by one of ordinary skill in this art. *See generally, In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997). It is readily apparent from the definitions of the claim terms "purple membrane variant" and "bacteriorhodopsin variant" provided in appellants' specification (page 7, lines 11-18) that the composition of claim 17<sup>4</sup> must contain at least one purple membrane having at least one bacteriorhodopsin that differs from "wild-type" bacteriorhodopsin by one or more modifications in the protein and/or chromophore moieties. It is further readily apparent from the plain language of the claim that the "bacteriorhodopsin variant" must be capable of being "converted" at "room temperature" into a "photoproduct" which has the specified properties including *one* of a change in initial configuration or hydrolysis of the Schiff base bond, and *both* the stated "memory time" and the stated "write/erase cycles." It is still further readily apparent from the plain language of the claim that the "auxiliaries" must be selected from the specified Markush group.

The examiner has not pointed out where in the applied prior art all of these claim limitations can be found. Indeed, we fail to find any evidence of a "purple membrane variant" having a "bacteriorhodopsin variant" as specified in the claims in any reference other than Oesterhelt et al. which discloses one such variant in a "purple membrane."<sup>5</sup> We observe that Oesterhelt et al. teaches that this

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<sup>4</sup> We have focused on claim 17 because all of the claims numerically preceding this claim are dependent thereon and the process of claim 18 requires the same composition defined therein.

<sup>5</sup> The "bacteriorhodopsin variant" disclosed in this reference (e.g., col. 2, lines 42-49, col. 8, lines 34-55, and Figs. 4 and 5) is "BR<sub>D85,96N</sub>" that is specified in appealed claim 3. In contrast, we find that the "purple membranes" of Chang et al. (page 617, left column, first full paragraph) and Chen et al. (page 5190, left column, first sentence) are obtained from the same *H. halobium* "S-9" cell line. Appellants have identified the bacteriorhodopsin contained in these membranes as "wild type" (e.g., brief, page 11, first full paragraph, first new sentence). The examiner has not specifically challenged this characterization in the answer or supplemental answer, but states in the answer that "bacteriorhodopsin . . . altered only at the 96 amino acid positions [sic] [are] used in the examples of Chang et al." (first finding in sentence bridging pages 6-7). We can find no evidence in the record, including appellants' specification (e.g., paragraph bridging pages 5-6), which establishes that the "S-9" cell line produces such a bacteriorhodopsin variant.

variant does not display “an M intermediate in the photocycle” (e.g., col. 8, lines 38-47). We further fail to find any evidence in any of Chang et al., Chen et al. and Birge et al., or in any other applied reference, that at least one of the “auxiliaries” specified in claim 17 has ever been used in a composition that contains any form of bacteriorhodopsin and the examiner has not supplied any evidence or explanation that such use would have been within the knowledge of one of ordinary skill in this art.

Based on this record, we find that the combined teachings of Chang et al., Chen et al. and Birge et al. would not have resulted in the claimed invention encompassed by claims 5, 7, 8, 11, 12 and 16.<sup>6</sup> *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1050-54, 5 USPQ2d 1434, 1438-41 (Fed. Cir. 1988).

In considering the remaining three grounds of rejection which include Oesterhelt et al., we find no teaching or suggestion in Chang et al. that the purple membrane from the “S-9” cell line was used in a composition for any purpose other than to prepare “blue membranes.”<sup>7</sup> We find no reason or evidence in the record before us which establishes that one of ordinary skill in this art would have found in any of the three combinations of references any teaching, suggestion or motivation to use the “purple membrane” containing the bacteriorhodopsin variant disclosed in Oesterhelt et al. in a composition as the starting material for preparing a “blue membrane” in the process of Chang et al. Even if there was such teaching, suggestion or motivation in the three combinations of references to so modify the compositions of Chang et al., and even if it was known in the art to use the “auxiliaries” specified in claim 17 in composition containing bacteriorhodopsin, the examiner has identified no teaching, suggestion or motivation in these combinations of references which would have led one of ordinary skill to use such “auxiliaries” in compositions for preparing “blue membranes” in the process of Chang et al.

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<sup>6</sup> The examiner included in the statement of this (answer, page 3) and the other three grounds of rejection (pages 6, 7 and 8) claim 4 which was canceled in the amendment of March 25, 1996 (Paper No. 10).

<sup>7</sup> We find no reason or evidence in either the answer (page 4) or the supplemental answer which explains why one of ordinary skill in this art would have considered a composition containing a “pink membrane” as disclosed in Chang et al. to be “similar” to a “purple membrane” in any respect other than the relationship in which the “purple membrane” is used as the starting material to make the intermediate “blue membrane” from which the “pink membrane” is prepared.

In similar manner, even if one of ordinary skill in this art would have found in the statements of Chen et al. that “genetic mutants” of bacteriorhodopsin with optimized properties for optical information storage and processing which might be produced with biotechnological processes could be employed in the processes using “purple membranes” disclosed therein (e.g., page 5189, right column, and page 5195, right column), and in the similar statements of Hampp et al. (e.g., col. 1) the teaching, suggestion or motivation to use such “purple membranes” in the compositions of the process of Chen et al., wherein the “M intermediate” is stabilized at “room temperature,”<sup>8</sup> we fail to find any reason or evidence in the record which explains why one of ordinary skill in this art would have been led to so employ the “purple membrane” of Oesterhelt et al., the bacteriorhodopsin variant of which apparently does not exhibit an “M intermediate” (*see above* pp. 2-3). And, even if one of ordinary skill in this art would have found such a teaching, suggestion or motivation in the applied references to employ such a bacteriorhodopsin variant in the compositions of Chen et al., and even if it was known in the art to use the “auxiliaries” specified in claim 17 in composition containing bacteriorhodopsin, the examiner has identified no teaching, suggestion or motivation in these combinations of references which would have led one of ordinary skill to use such “auxiliaries” in compositions of Chen et al. modified to contain the “purple membrane” of Oesterhelt et al..

Accordingly, it is inescapable from the record before us that none of these three combinations of references applied by the examiner taken as a whole would have resulted in the claimed invention. *See In re Rouffet*, 149 F.3d 1350, 1358, 47 USPQ2d 1453, 1458 (Fed. Cir. 1998) (the specific understanding or principal within the knowledge of one of ordinary skill in the art leading to the modification of the prior art in order to arrive at appellants’ claimed invention must be explained); *Uniroyal, supra*.

Therefore, it is abundantly manifest from this record that the examiner has improperly indulged in hindsight by relying on appellants’ disclosed and claimed invention in reaching his conclusion that the invention encompassed by the appealed claims would have been obvious to one of ordinary skill in this

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<sup>8</sup> We observe that Chen et al. does contain such teachings (e.g., page 5190, right column, beginning at line 24, to page 5191, right column, end of section), appellants’ arguments notwithstanding (e.g., brief, page 11).

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art from the combinations of applied references. *See, e.g., In re Dow Chem. Co.*, 837 F.2d 469, 473, 5 USPQ2d 1529, 1531-32 (Fed. Cir. 1988).

The examiner's decision is reversed.

*Reversed*

CHARLES F. WARREN	)	
Administrative Patent Judge	)	
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	)	
PAUL LIEBERMAN	)	BOARD OF PATENT
Administrative Patent Judge	)	APPEALS AND
	)	INTERFERENCES
	)	
	)	
JEFFREY T. SMITH	)	
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