



## The American Society of Human Genetics

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March 22, 2000

Box Comments  
Assistant Commissioner for Patents  
Washington, D.C. 20231

Attention: Linda S. Therkom

**RE: Revised Interim Utilities Examination Guidelines and Revised Interim Guidelines for Examination of Patent Applications**

Dear Assistant Commissioner:

The American Society of Human Genetics (ASHG) is the primary professional organization for human geneticists in North America. The ASHG represents over 6,700 researchers, physicians, academicians, laboratory practice professionals, genetic counselors, nurses, students and others involved in the field of human genetics. Members play a central role in various areas of genetics research, including study of the human genome, and in the delivery of health care services derived from that research. On behalf of the ASHG Board of Directors, I am writing in response to the above guidelines that appeared in the December 21, 1999 *Federal Register*.

A major concern of the ASHG over the last several years has been the patenting of genetic information and the implications of that as it relates to the delivery of genetic health care services. In 1991 the Society developed a position paper on patenting of genetic material, in which it expressed support for the patenting of genes and genetic information with specific utility, but vigorously opposed the patenting of DNA sequences, including expressed sequence tags (ESTs), with no demonstrated utility. (American Society of Human Genetics (Human Genome Committee). Untitled [Letter] *Science* 1991 Dec 20; 254 (5039):1710-2.)

We argued at the time that any proposed use of anonymous DNA fragments or ESTs for "real world" applications in forensics, gene mapping, or other areas almost always requires significant further research to enable a person of "ordinary skill in the art" to use such invention. Moreover, since an EST represents only a part of a gene, we argued that the patenting of multiple ESTs derived from a single gene would result in a tangled web of patent claims that would greatly complicate licensing agreements and discourage downstream research to further characterize the gene and its product.

Based on these and other arguments we still believe that patenting of ESTs and other sequences for which specific utility has not been established will impede the progress of genetics research and undermine the motivation behind the Human Genome Project. This view is consistent with the message delivered on March 14 by President Clinton and British Prime Minister Tony Blair in London. To quote President Clinton "to realize the full promise of research, raw fundamental data on the human genome including the human DNA sequence and its variations, should be made freely available to scientists everywhere."

We, therefore, commend the Patent and Trademark Office (PTO) for its wisdom and foresight in taking the initial steps to "raise the bar" for patent eligibility of nucleic acid sequences. Our specific comments on the guidelines follow.

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### REVISED UTILITY GUIDELINES

The ASHG commends the PTO for establishing a standard of "specific, substantial and credible" utility in its revised guidelines. This will ensure that applicants submitting claims for expressed sequence tags, single nucleotide polymorphisms, and other DNA fragments must demonstrate such utility within their claim. We would suggest that this standard be extended to include completely sequenced genes and their RNA and protein products, since in the near future the availability of the human genome and protein sequences in public databases will make it a simple matter for anyone who has identified a DNA or protein fragment to find this sequence in the data base and use readily available software to determine the full sequence of the gene or protein from which it was derived.

The ASHG also commends the PTO for clearly stating that the applicant bears the burden of rebutting a claim when it has been shown to be of no specific, substantial and credible utility.

The challenge for the PTO is to decide what criteria will be used to determine whether or not a DNA sequence meets this standard. In this regard, the ASHG agrees with the Association of American Medical Colleges (AAMC) and the NIH (as expressed in a letter of December 21, 1999 from Harold Varmus and Francis Collins to Commissioner Dickinson) that the revised standard should not be interpreted to embrace claims of a "predicted" function for a gene or its encoded protein, based simply on sequence homology with other genes or proteins.

We submit that while sequence homology is a useful predictor of gene function in many cases, it does not constitute definitive evidence for the true function of the encoded protein. Nor does sequence information, by itself, provide assurance that it will be useful as a diagnostic tool for a genetic disease, without detailed studies of DNA from many affected and normal individuals. Demonstration of "specific, substantial, and credible" utility, therefore, must rely on specific, often substantial and credible experimental evidence in addition to or instead of the basic information gleaned from the sequence itself.

The Guidelines also provide that an examiner should not reject an application that is judged to have a "well established" utility, regardless of the quality of the assertion made by the applicant. We suggest that it should be made clear in the Guidelines that a utility determined to be "well established" should also meet the standard of "specific and substantial". The ASHG believes that, in instances where the examiner perceives an invention to have a well established utility not explicitly asserted by the applicant, the written record should be amended to identify this utility and the rationale for considering it specific and substantial. Again, we would argue that presumed utility based solely on sequence homology does not satisfy the criteria of being specific and substantial.

### REVISED WRITTEN DESCRIPTION GUIDELINES FOR EXAMINATION OF PATENT APPLICATIONS

Another challenge for the PTO is to determine the breadth of the *claim* that it will allow based on a DNA sequence of specific and substantial utility. In this regard the ASHG opposes the inclusion in the "revised interim written description guidelines" of open claim language for partial gene sequences. We oppose any wording that would allow a claim on a short anonymous sequence or EST to be expanded into a claim on the full sequence of a gene, or further to include other members of the gene

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family. It is our understanding that the only way this could be prevented is by the use of the phrase "consisting of" as the transition phrase. Once again, we wholeheartedly endorse the AAMC and NIH positions on this matter.

The ASHG recognizes that the Patent and Trademark Office has an enormous role and responsibility in ensuring intellectual property protection for gene-based inventions. The American culture demands that in order to maintain an open and competitive market, and to enjoy the fruits of a free society, patents play a major role. We, therefore, applaud the work of the PTO on behalf of the scientific community and the public.

We are especially pleased that the PTO has initiated changes to its guidelines, and we hope that the feedback from the scientific community will intelligently inform the process of establishing new guidelines. If the ASHG or its members can be of any further assistance to the PTO by providing a more detailed explanation of its views expressed here, please do not hesitate to call upon us.

Sincerely yours,



Ronald Worton, PhD, President

American Society of Human Genetics.