

Statement



Competition in the Pharmaceutical Marketplace

Gregory J. Glover, M.D., J.D.

for the

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On behalf of the Pharmaceutical Research and Manufacturers of America (“PhRMA”), I am pleased to appear before you today to present testimony on Issues of Competition in the Pharmaceutical Industry. I am a physician and an attorney with the law firm of Ropes & Gray, specializing in representing the research-based industry at the intersection of intellectual property and FDA regulatory law. PhRMA represents the country’s leading research-based pharmaceutical and biotechnology companies, which are devoted to inventing medicines that allow patients to lead longer, healthier and more productive lives. Having invested over \$30 billion in 2001 alone in discovering and developing new medicines, PhRMA companies lead the way in the search for cures.

Today, I will speak on the drug development cycle and the fundamental role intellectual property rights play in this cycle; the importance of maintaining incentives for pharmaceutical research and development; and the compatibility of competition and intellectual property rights.

Achieving the promise of pharmaceutical innovation requires the maintenance of strong and predictable intellectual property rights. The social value of the pharmaceutical industry is apparent and profound. Not only is it the source of cost-effective treatments that continue to increase life expectancy and bring better lives, it is also a significant contributor to the strength of the United States economy.

The private sector research performed by the research-based pharmaceutical companies is essential to the innovation that has supported the health care revolution in America. The research-based pharmaceutical sector is the single largest source of research and development funding in the world. As a result, the American pharmaceutical industry now leads the world in pharmaceutical innovation.

Strong intellectual property protection is essential to a vital innovative pharmaceutical industry. The strength of intellectual property rights protection profoundly impacts investment decisions. This investment is essential to enable further pharmaceutical innovation, as it now supports the extraordinary progress from which this and future generations all benefit.

The incentives for innovation that are secured by intellectual property rights are also essential to promote competition, both among research-based companies and between research-based and generic companies. This investment supports the constant efforts of research-based companies to develop innovative products to compete with the products of other research-based companies in a given therapeutic class. This investment also promotes competition between research-based companies and generic companies. And this is a crucial point to understand. Simply stated, generic companies are in the business of copying products developed by research-based companies. To the extent investment does not occur to fund the development of these innovations, research-based companies and generics alike will have fewer new products, and less competition will occur.

The pharmaceutical industry depends upon a cycle of innovation that is supported by strong and predictable intellectual property rights. Intellectual property rights protect early stage innovation that is essential to the development of new treatments and cures. These rights enable development of government-approved, marketable drug products. By providing research-based manufacturers an opportunity to benefit financially from the innovations they develop, these rights also provide the necessary incentive to promote further investment to support the research, development

and refinement needed to discover future treatments and cures and provide them to the public.

Robust patent rights for initial and sequential product development are needed to promote innovation and related competition. Sequential product innovation is an important feature of the innovative process for the pharmaceutical industry. As you can well imagine, innovation does not occur in a predictable, consistent manner. It comes as it will, sometimes quite serendipitously. The full range of patent protection is critical to achieving the full benefits of sequential innovation. In addition, innovation and competition in the pharmaceutical industry requires the ability to make economically efficient decisions regarding intellectual property transactions and disputes, whether with regard to licensing or settlement of infringement claims. Good faith efforts to protect internal innovations and to make economically sound decisions regarding their use should not be subject to extraordinary antitrust scrutiny that discourages such conduct.

The current system of patent rights provides predictability and protects against abuses. Should abuses arise, ample remedies exist. The FTC, for example, continues to exercise its authority in a manner that makes clear abuses will not go unchecked.

I would now like to describe the drug development process, the vast commitment in time and money it demands, and the magnitude of risk inherent to it.

The key to the pharmaceutical industry's innovation is its ever-growing investment in research and development. Pharmaceutical companies are investing more in research and development than ever before. Enormous investments are necessary to support this time-intensive, extremely expensive, and risky effort.

On average, economists estimate that it takes 10-15 years to develop a new drug. Most drugs do not survive the rigorous development process – only 20 in 5,000 compounds that are screened enter preclinical testing, and only 1 drug in 5 that enters human clinical trials is approved by the FDA as being both safe and effective.

The average cost to develop a new drug has been estimated to be \$802 million, according to a recent study conducted at Tufts University, independently corroborated by a study conducted by the Boston Consulting Group. New drug development is also a lengthy process, and total drug development time has grown significantly. Average total drug development time has gone from 8.1 years in 1960, to 11.6 years in the 1970s, to

14.2 years in the 1980s and 1990s. Since 1980, the average number of clinical trials conducted prior to filing a new drug application (NDA) has more than doubled, and the number of patients in clinical trials has tripled.

At the same time, average returns from marketing a new drug have dropped. A 1998 Congressional Budget Office report estimated that, for a variety of reasons, average returns to a pioneer from marketing a new drug had declined by approximately 12% since 1984. Despite popular misconceptions about the invariable profitability of pharmaceutical companies, most marketed drugs fail to cover their research and development costs.

Even the largest pharmaceutical companies cannot diversify the underlying research and development-based investment risk. They must rely upon a handful of flagship products for the majority of their sales, and the commercial life of a drug – from market launch to patent expiration – is generally less than seven years. Consequently, even major companies must develop a block-buster every two to three years, or face massive financial contraction. The frequency of mergers of research-based companies is a direct consequence of this basic market dynamic. As market conditions have become increasingly competitive, this dynamic has become even more significant.

According to a 1994 study of drugs introduced between 1980 and 1984, for every ten drugs that came to market, only three covered the average development costs. This period is prior to the enactment of the abbreviated proceeding to facilitate generic drug competition. The same study showed that the top 20% of products with the highest revenues generated 70% of the returns. Increasing development time and costs, and decreasing average returns suggest that even fewer new drugs now cover their development costs than did in the period of 1980 to 1984.

In contrast, the costs to develop generic drugs are, in both relative and absolute terms, extremely low, allowing generics to enter the market at dramatically reduced prices, as they have done at increasingly high rates. In 1984, generics accounted for 19% of the prescription drug market; by 2000, generics accounted for 47% of the prescription drug market. Statistical research shows that the first generic entrant will come in at a dramatically reduced price from the pioneer, (with the exception of generics that receive a half year's relative exclusivity under Hatch-Waxman for challenging a pioneer's patent), and subsequent generic entrants will lower the price even further. Pioneers lose more than 40% of their market on average to generics soon

after patent expiration.

While costs have increased in inflation-adjusted terms for all R&D phases, the increases have been particularly acute for clinical trials. The inflation-adjusted annual growth rate for capitalized clinical costs (11.8 percent) has been more than 5 times greater than that for pre-clinical work. Clinical costs have risen largely due to increasingly demanding FDA regulatory requirements accompanied by the complexity of designing clinical trials.

Formal clinical trials occur in three phases. In Phase I, drugs are evaluated for safety in healthy volunteers in small initial trials. The first trial is conducted with a single dose of the drug. If the drug is shown to be safe, multiple doses of the product are evaluated for safety in other clinical trials. In Phase II, the primary focus is to evaluate the safety further and obtain preliminary data on the efficacy of the drug. Second-stage trials are conducted with patients instead of healthy volunteers. A phase III trial requires the participation of many patients, and is the last stage before a new therapy can be considered safe and effective for general use. A phase III trial will often compare the new therapy with a more standard or traditional therapy, and is designed to determine if the treatment is an improvement over previous therapy.

Cumulatively, several thousand patients may be studied during the clinical phase. Numerous medical procedures are performed on the patients to acquire the necessary safety and efficacy data to support the marketing application. Beyond these pre-approval requirements, sponsors often take additional post-marketing steps to ensure that their products can be used safely. FDA usually completes its review of a “standard” drug in 10 to 12 months although longer review periods are common.

With the scale of the investment and risk research-based pharmaceutical companies must face to develop new treatments, strong intellectual-property protection is essential for the preservation and growth of the research-based pharmaceutical industry – and thus for the continuing development of new and better medicines for patients. (For additional information on pharmaceutical innovation, please see <http://innovation.phrma.org>.)

I would like to turn to the importance of intellectual property rights protection both for innovation and competition in the pharmaceutical industry.

While patents are more or less significant to innovators in all industries, they are absolutely crucial to the pharmaceutical industry. Without current levels of intellectual property protection, there would be no significant pharmaceutical industry – at least not in its current form. And neither would there be a significant generic industry – because few new drugs would be developed for generic companies to copy.

The reason is simple: companies would not be able to invest the huge amount of time and money it takes to discover and develop a new medicine if they did not have a sufficient opportunity to make a sufficient return before generic competitors copy and market the drug at greatly reduced cost.

It is important to underscore that pharmaceutical inventions rarely reap the benefits of the full statutorily-mandated patent term. The full patent term in the U.S. is 20 years from the date a patent application is filed. Due to the basic requirements of patent law and the obvious market incentives to file a patent early, drug firms have a strong inducement to apply for patents early in the development process. However, the lengthening development and FDA review times mean reduced effective patent lives – that is, time on the market following FDA approval.

The average period of effective patent life for new medicines introduced in the early to mid-1990s with patent-term restoration is only 11-12 years. Innovators in other industries, who do not need regulatory approval before going to market, typically receive up to 18.5 years of effective patent life.

I understand that you are also interested in understanding better how intellectual property rights impact competition, both between research-based companies and between research-based and generic companies. Let me begin with competition between research-based companies.

Pharmaceutical patents confer exclusive rights to market a specific product for a limited amount of time. Pharmaceutical patents do not grant the manufacturer a monopoly on the treatment of any specific disease. Other manufacturers are free to produce and offer different medicines to treat the same disease, and there is strong competition between products within therapeutic classes. For example, different patented medicines to reduce cholesterol and limit blood pressure compete vigorously against each other.

Thus, contrary to the assertions of some, rapid recent growth of the generic drug industry is not the only source of increased competition in the pharmaceutical market. The competition among research-based pharmaceutical companies continues to increase. One company's patent on a specific drug does not preclude other innovator companies from making rival medicines to treat the same disease.

Increased competition in the rush to find new and better cures for diseases has resulted in a shortening period during which a new breakthrough medicine can hope to be alone on the market. For example, Tagamet[®], an ulcer drug introduced in 1977, had 6 years on the market before another drug in the same class, Zantac[®], was introduced. In contrast, Invirase[®], the first of a new class of anti-viral drugs known as protease inhibitors, was on the market only 3 months before a second protease inhibitor, Norvir[®], was approved. Patients and the American health care system benefit from this robust innovator competition.

With respect to competition between research-based and generic companies, first it is important to understand that the 1984 Hatch-Waxman law stimulated the development of a generic pharmaceutical industry in the United States. Since the law's passage, the generic industry's share of the prescription drug market has jumped from less than 20 percent to almost 50 percent today. The economic realities of non-innovator commodity production allow generics to enter the market at a significant discount, and for prices to decrease with increased generic entry.

Before the 1984 law, it took 3-5 years for a generic copy to enter the market after the expiration of an innovator's patent. Today, generic copies often come to market as soon as the patent on an innovator product expires. Prior to the Hatch-Waxman law, only 35 percent of top-selling innovator medicines had generic competition after their patents expired. Today, almost all innovator medicines face such competition. Competition from generic products generally occurs as a pioneers' patents in major markets expire.

These market developments, carefully balanced with protections for pioneer intellectual property, have spurred additional innovation and competition. Brand-name manufacturers have introduced new dosage formulations that provide superior therapeutic properties than the original formulation (e.g., calcium channel blockers), and introduced over-the counter versions of products (e.g., anti-inflammatories, H₂ blockers). These competitive innovations have been effective for selective drug products and

categories in those cases where physicians and patients find these incremental innovations sufficiently attractive to forego use of less expensive generic alternatives.

Another area of interest to the FTC, as evidenced by the speech of Chairman Muris, is the possible existence of “patent thickets” and the relationship between sequential innovation and patent protection.

First, the development of “Patent Thickets,” while a recognized occurrence in other industries and a possible issue in the biotechnology industry with respect to research tools, is not a major factor for therapeutic products in the pharmaceutical industry. In contrast to the discrete nature of chemical and pharmaceutical innovation, progress in other key technologies – such as microelectronics, telecommunications, and computers – has been cumulative. Virtually any advance required access to a bundle of prior patents. In contrast, value and effective patents in the pharmaceutical industry give exclusive rights to a particular chemical compound, a specific molecule, or particular methods, to use such compounds or molecules.

Sequential innovation leading to improved product improvements, however, is an important element of competition in the pharmaceutical industry, and patent protection is an essential precondition for that innovation. Much of this sequential innovation is the result of internally generated research.

Sequential product innovation is an important feature of the pharmaceutical industry. Industry data indicate that of the \$26 billion spent by U.S. firms on pharmaceutical research in 2000, \$5 billion (19 %) was spent on post-launch R&D for new indications, new formulations, and other improvements to existing products. Sequential product innovation is spurred by and fosters competitive pressures. Moreover, sequential product innovation expands the variety of therapeutic choices available to consumers.

The pharmaceutical industry is characterized by significant first-mover advantages. At the same time, breakthrough drugs generally face competition within their initial patent life from other branded drugs of the same therapeutic class. This sets up a competitive environment in which branded rivals rely heavily on product differentiation to achieve competitive advantage over other branded rivals. Further, with eventual generic competition a certainty under the Hatch-Waxman Act, branded manufacturers try to develop improved products to retain sales.

Sequential product innovation also produces substantial consumer benefits. It results in a variety of different drugs within the same therapeutic class that have different clinical and side-effect profiles. This gives physicians more options to fit the drug to the needs of the individual patient. For example, differentiated competition within the selective serotonin reuptake inhibitor and serotonin/norepinephrine reuptake inhibitors (“SSRI/SNRI”) category has produced a wide variety of new therapeutic indications for this class of drugs, including treatment of obsessive-compulsive disorder, panic disorder, social anxiety disorder, post-traumatic stress disorder, and premenstrual dysphoric disorder. The substantial demand for improved variations of pioneer drugs even after the introduction of lower-priced generic competition for the breakthrough version attests to the consumer benefits attributable to this sequential innovation.

Furthermore, antitrust concerns about “switching strategies,” in which branded manufacturers attempt to introduce new patented versions of their products on the eve of generic competition, is misplaced. This concern implies a market failure that does not exist in today’s pharmaceutical marketplace. If the product does not deliver a genuine improvement to patients, doctors simply will not prescribe it. Moreover, pharmacy benefit managers and formulary committees will not pay higher prices for it, and it will lose sales to generic competition. If the product does deliver such benefits, it will gain sales. In neither case should the antitrust laws attempt to override the decision of the marketplace. Commissioner Anthony has herself stated that she is inclined to trust doctors and patients to determine the relative worth of a new product.

Thus, the full range of patent protection is critical to achieving the benefits of sequential innovation. The innovative formulation or method of use itself can be directly patented. In the case of new indications, method-of-use patents can protect the use itself. However, the potential for substantial off-label use can make this form of protection illusory. Where the innovation involves a new version of the compound or a new formulation, the new version can often be separately patented. Similarly, innovators can attempt to obtain additional patents on related discoveries in the field. Collectively, these approaches allow innovators to make it more difficult for competitors to circumvent potentially narrow patents. This available coverage can provide a sufficient degree of patent protection to warrant investment in new indications for existing products and for new dosage forms.

Innovators also need to obtain patent protection to provide freedom to operate. Pharmaceutical companies will often patent around an existing product to increase the

chances that they will not be blocked by the patents of others. Such patenting allows the pioneer innovator greater freedom to develop new indications, new formulations and lower-cost manufacturing processes. It protects against the risk that someone else could patent some aspect of its existing drug and knock that drug off the market or extract an extortionate royalty to keep the product on. Examples would include patenting different molecular structures that could appear in trace amounts in the marketed product or through in vivo conversion.

To conclude, the pharmaceutical industry is alive and well. Innovation continues apace, and competition is robust. The system works. However, it is delicately balanced. It relies ultimately upon enormous investments of time and money, to support an innovative process that is inherently uncertain. Maximizing the certainty that a research-based manufacturer can obtain, inform, defend and make full, legitimate use of intellectual property rights is essential to maintaining the cycle of innovation upon which the industry and public rely.

Thank you.