WESLEY M. COHEN

Wesley Cohen (American) received his Ph.D. in Economics at the Economics, Yale University in 1981. He is Professor of Economics and Social Science in the Department of Social and Decision Science at Carnegie Mellon University (CMU) and is a Research Associate of the National Bureau of Economic Research. He also holds faculty appointments in CMU's Department of Engineering and Public Policy and its Heinz School of Policy and Management.

Focusing on the economics of technological change, Wesley's research examines the links between firm size, market structure and innovation, firms' abilities to exploit outside knowledge, the determinants of innovative activity across industries and firms, the knowledge flows affecting innovation, the means that firms use to protect their intellectual property, and the links between university research and industrial R&D, among other related subjects. Recently, he co-ordinated a major comparative survey research study in the United States and Japan on the nature and determinants of industrial R&D, and is currently engaged in a multi-year, NSF-funded research project on patenting and its impact on innovation.

He has published in numerous scholarly journals, including the American Economic Review, the Economic Journal, The Review of Economics and Statistics, the Journal of Industrial Economics, the Administrative Science Quarterly, Management Science and the Strategic Management Journal, and served for five years as a Main Editor for Research Policy. He is also currently serving on the National Academies' Committee on Intellectual Property Rights in the Knowledge-Based Economy.

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THE PATENTING OF RESEARCH TOOLS AND BIOMEDICAL INNOVATION

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Over the last two decades changes in technology and policy have altered the landscape of drug discovery. These changes have led to concerns that the patent system may be creating difficulties for those trying to do research in biomedical fields. Based on interviews and archival data, we examine the changes in patenting in recent years and how these have affected innovation in pharmaceuticals and related biotech industries.

We find that there has in fact been an increase in patents on the inputs to drug discover ("research tools"). However, we find drug discovery has not been substantially impeded by these changes. There is some evidence of delays associated with negotiating access to patented research tools, and there are areas where patents over targets limit access. There are also cases where research is redirected to areas with more IP freedom. However, the vast majority of respondents say that there are no cases where valuable research projects were stopped due to IP problems.

We do not observe as much breakdown as one might expect because firms have been able to develop "working solutions" that allows their research to proceed. These working solutions combine taking licenses, inventing around patents, infringement (often informally invoking a research exemption), developing and using public databases and challenging patents in court. In addition, changes in the institutional environment, particularly new PTO guidelines and some shift in the courts' views toward research tool patents, appear to have further reduced the threat of breakdown. Finally, the very high technological opportunity in this industry means that firms have a surplus of potential targets for drug development, so that the walling off of some by patent holders, while shifting the focus, does not prevent firms from discovering drugs.

We conclude with a discussion of the potential social welfare effects of these changes in the industry and the adoption of these working solutions for dealing with a complex patent landscape. While there are social costs associated with these changes, there are also important benefits. Overall, we are optimistic about the industry's ability to accommodate the increased complexity of intellectual property.