In this chapter we explore creativity in research organizations. A major problem facing managers is how to structure organizations to conduct research that is effective for the company. Machine-like organizations with their rigid hierarchical structures, tightly specified roles, elaborate decision-making rules and standard operating procedures (SOPS) are highly efficient at performing standard tasks. But they do not do well when it comes to tasks like research, where inputs cannot be standardized, where processes require frequent adaptation, and where outputs must be dynamically tailored for acceptance in fast changing environments. Many researchers on organizations and the psychology of creativity conclude that the best organizational form to carry out non-routine objectives is one that allows maximum flexibility and gives almost unlimited discretion to organization members. Some scholars call this an “organic” form of organization and contrast it with the “mechanical” form associated with traditional bureaucracies. In this chapter we draw on some of our own research to suggest that while the mechanical organizational form is not suited to research, the pure organic form also has its problems. We propose a third model.

Problems with “organic” structures for R&D

While the organic structure would intuitively seem highly conducive to creativity, many business firms have encountered serious problem trying to use organic organizational forms for R&D. As was mentioned above, a well-known example is that of PARC, the Palo Alto Research Center of Xerox. This organization was unstructured, emphasizing the encouragement and support of individual initiative by researchers. One of PARC’s major technological successes was a
new computer operating system. The technological success, however, did not help Xerox, which was unable to exploit it as part of its corporate strategy. Later this operating system was used by Apple in Macintosh computers. Now research at PARC is more tightly constrained to follow corporate strategy. In the 1990s Eizai, a major Japanese pharmaceutical company, established a research facility in London. In an effort to maximize creativity Eizai hired top researchers from the U.S., UK and other countries. As at PARC, the researchers were encouraged to pursue their own research interests with little regard for corporate strategy. Nothing useful to Eizai came out of this organization, and it was dissolved.

The challenge of finding ways to harness the creativity of research organizations is widespread. Each year the Industrial Research Institute in the U.S. sends out a survey asking company representatives about problems facing technology leaders. For several years running the “biggest” problem has been “Managing R&D for business growth.” Competitive success today requires a focus on generating technologies in the lab that can rapidly be commercialized.

Based on our surveys of R&D managers, as well as numerous company visits and published case studies of technological development, we believe that successful organizations are moving to a new model of organization for R&D, a model that is very different from the mechanical form, yet also differs in significant ways from the organic organization.

A survey of R&D managers

In 2004 we sent a survey to senior R&D managers at 461 Japanese companies in a wide range of industries. To identify the factors important to success, we compared the responses of R&D managers from highly successful with those from less successful companies. Our measure of success included both financial and new product development indicators. Table 7.1 reports our findings on the characteristics of high-performing companies. Table 7.2 gives information about our sample.

Five points stood out. We found that in the more successful companies:

1. Top management exercises strong control over research. It sets clear long-term strategies and strives to encourage researchers.
2. Researchers are encouraged to communicate freely with academic researchers and to attend academic conferences.
3. There is a freer atmosphere for researchers.