Innovation as overlapping scientific and technological trajectories: exploring biomaterials

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In November 2000 the New England Journal of Medicine declared its support of stringent rules on equity ownership by clinical research scientists and physicians. Less than a year later, on February 13th 2001, the prestigious journal Science published a paper by scientists at the company Celera Genomics that laid out their findings of the reference sequence of the human genome. In an unprecedented step, the journal did not make the underlying data available directly to any journal reader; but rather, the data was available through Celera's web site subject to some restrictions.

These vignettes illustrate the growing (and often problematic) overlap between science and scientific institutions on the one hand and technology and economic institutions on the other. There is substantial evidence that the social networks and practices of scientists are increasingly overlapping and shaped by the networks, practices and interests that drive technological change. In a major research initiative, we examine these overlapping social networks and ask two questions: First how do the two networks overlap and inter-link and second, how do these overlaps shape, influence and hinder the scientific and technological trajectories? In this paper we present out preliminary evidence in relation to these two issues, and lay out a series of propositions related to the influence of overlapping scientific and technological trajectories on the rate and direction of technological innovation. Our methodology for this paper is largely qualitative; we explore three examples of significant technological progress in the field of biomaterials. For each example we described the technology, the contribution from science and the separate networks that shape the two distinctive trajectories. We then outline the points of contact for the two networks and the range of different ways in which the two settings overlap. Here we use both qualitative interview-based information as well as quantitative data on paper citations in patents, Scientific Advisory Board membership etc. In this way we explore the range