

# Patenting Trends at Ivy League Universities

1980  
to  
2010

IP Checkups Patent Landscape Overview Report

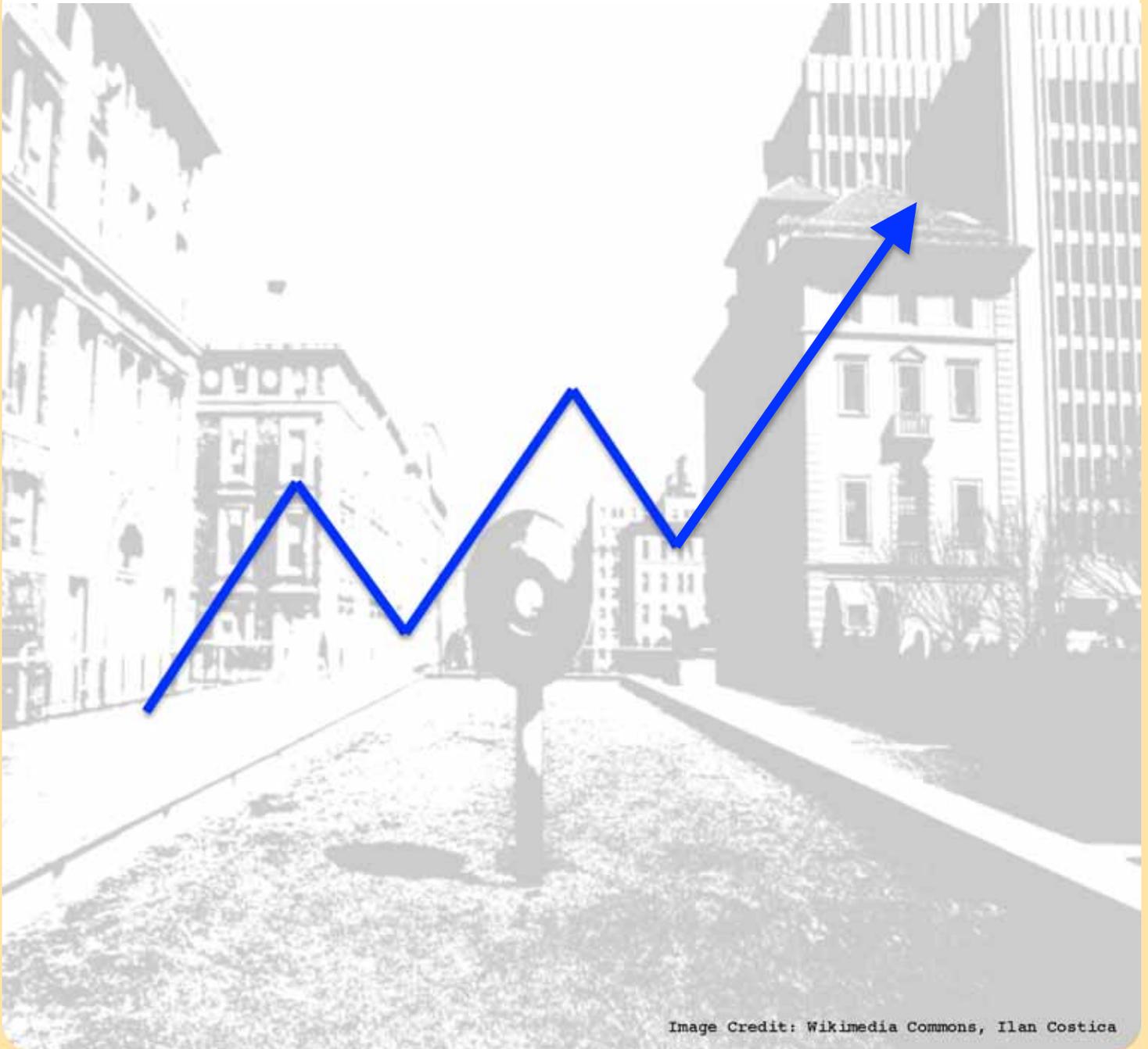


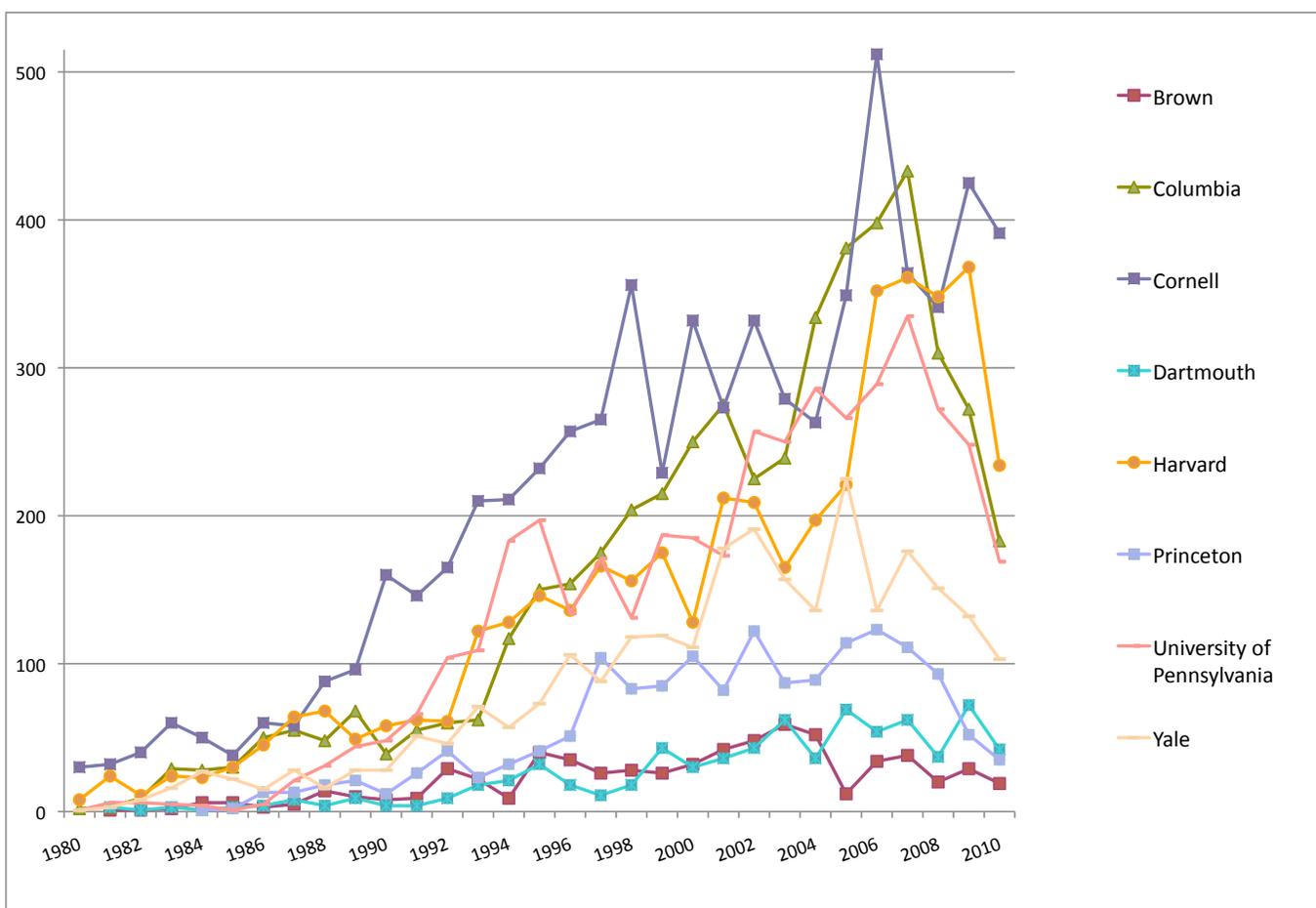
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## Abstract

Ivy League universities are world-famous for their academics, but how do they stack up in the tech transfer department? In this report, IPC explores patenting trends at the eight Ivy League schools (Brown, Columbia, Cornell, Dartmouth, Harvard, Princeton, University of Pennsylvania, and Yale), including data on top inventors, annual filing rates, overall issuance rates, and the most heavily-patented areas of research.

## PART I. Patent Filing Rates

All Ivy League universities filed more patents in 2010 than in 1980; however, most of this growth in patent filing occurred prior to 2008. The two leaders in patenting, over this period, were Cornell and Columbia, with Harvard and the University of Pennsylvania vying for a close second place. With the exception of Cornell, all of these schools filed far fewer patents in 2010 than they did in 2007; Cornell's peak filing year was 2006. Patent filings at most Ivy League schools either decreased or remained static, post-2007: only Princeton and Cornell showed an upward trend in patent filings, over this period.

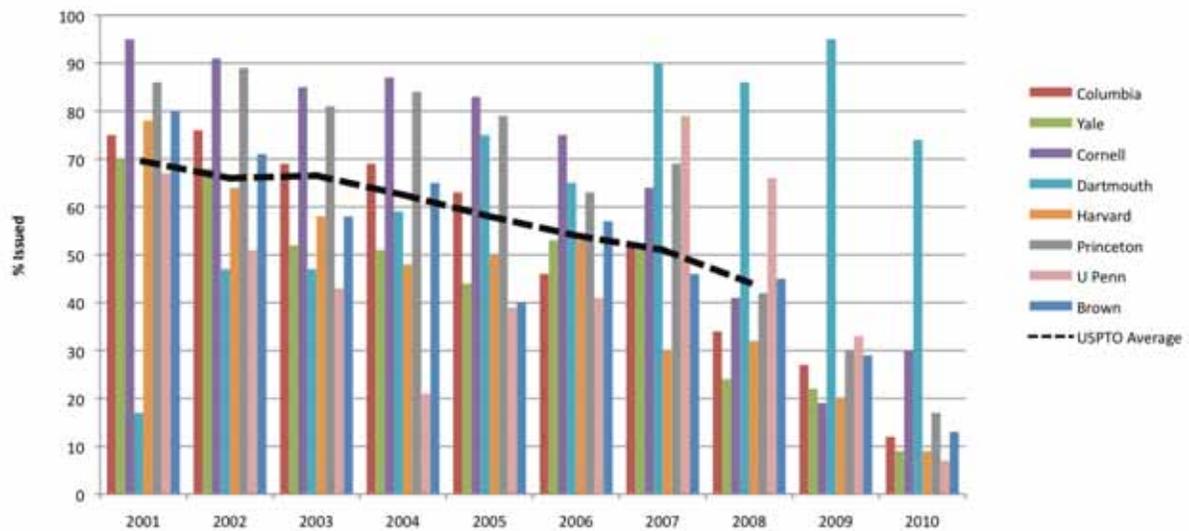


Patent filing velocity by year, across WIPO, US, Japanese abstracts in English, and European patent publications

## PART II. Patent Issuance Rates

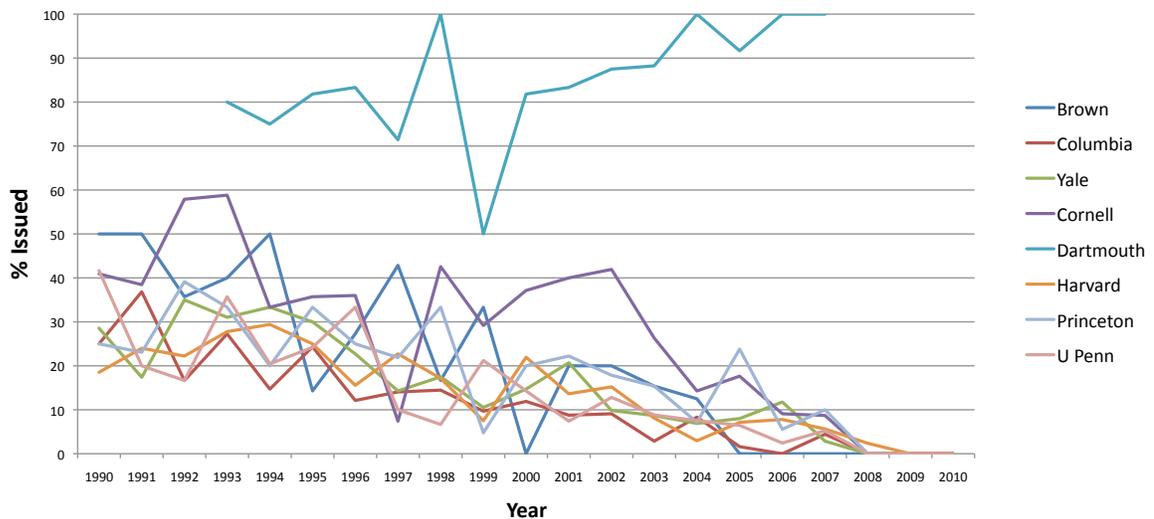
In general, Ivy League universities enjoyed above-average patent issuance rates—at least in the United States—from 2001-2008. Although not a leader in overall patent filing, Princeton University exhibited a consistently high rate of patent issuance, over this period. The chart shown below details the issuance rate of U.S. patent applications filed by Ivy League schools post-2001. Because the USPTO did not publish patent applications before 2001, it was not possible to calculate pre-2001 issuance rates. The [average patent issuance rate](#) is provided, for comparison. Data from 2001-2010 are shown; however, because patent prosecution can take years, it is highly likely that many of the patents filed post-2007 (and especially those filed in 2009 and 2010) will issue at a later date.

**U.S. Patent Issuance at Ivy League Universities  
2001-2010**



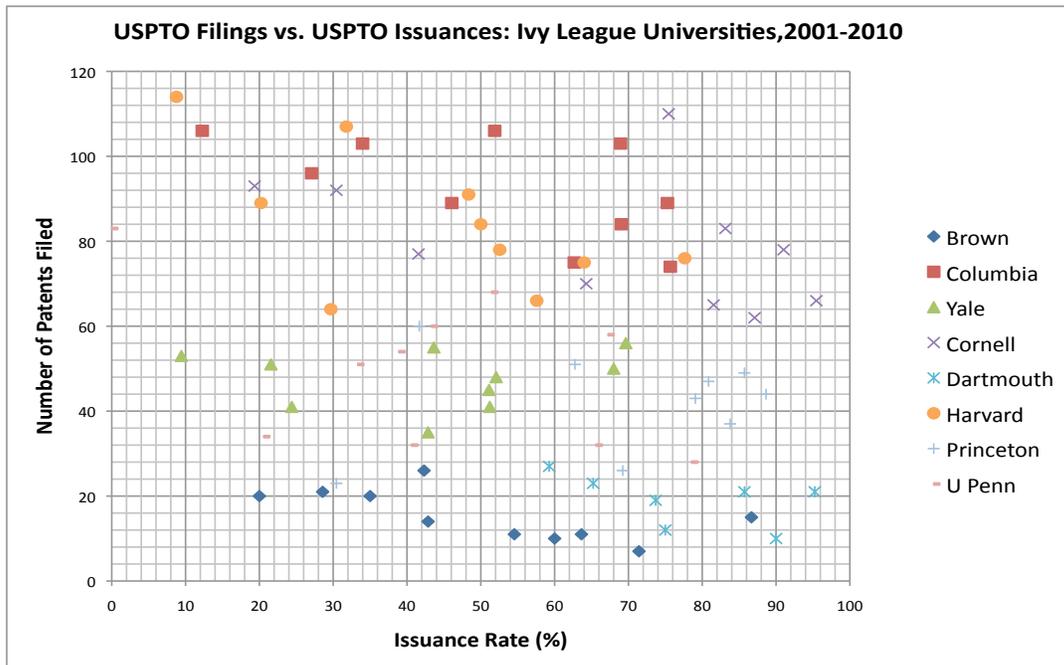
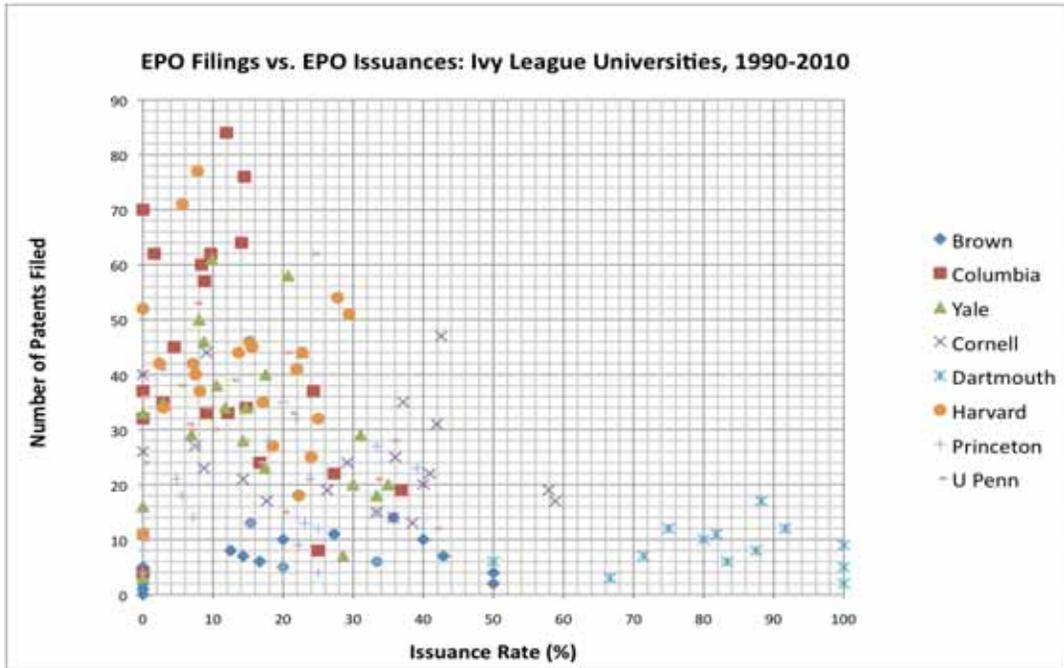
Ivy League patents were much more likely to issue in the United States than they were in Europe. This is interesting, because, in most cases, the patent applications filed in Europe were identical to those filed in the U.S.

**European Patent Issuance Rates: Ivy League Schools, 1990-2010**



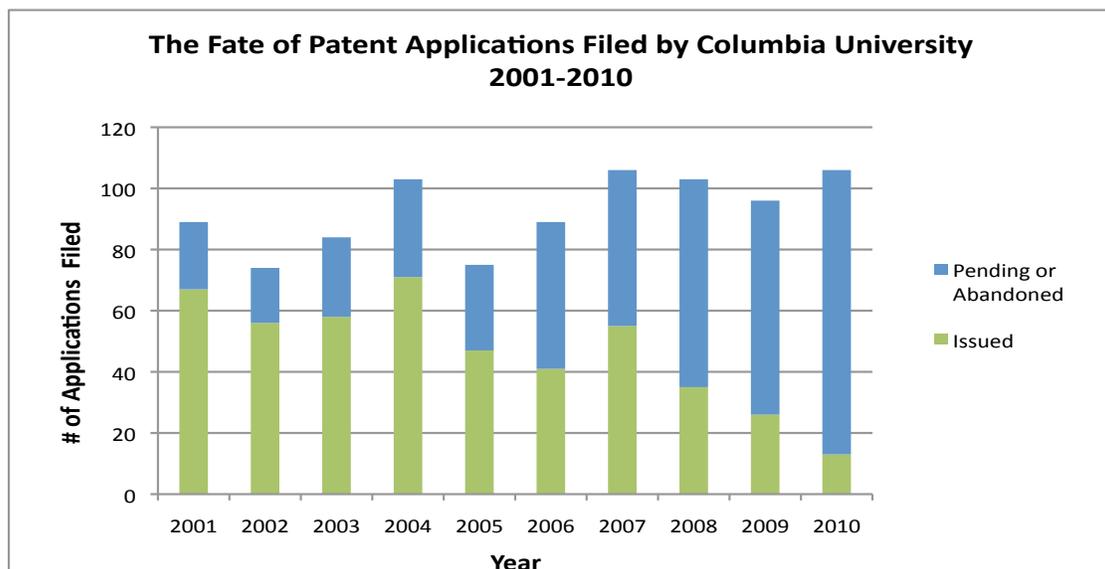
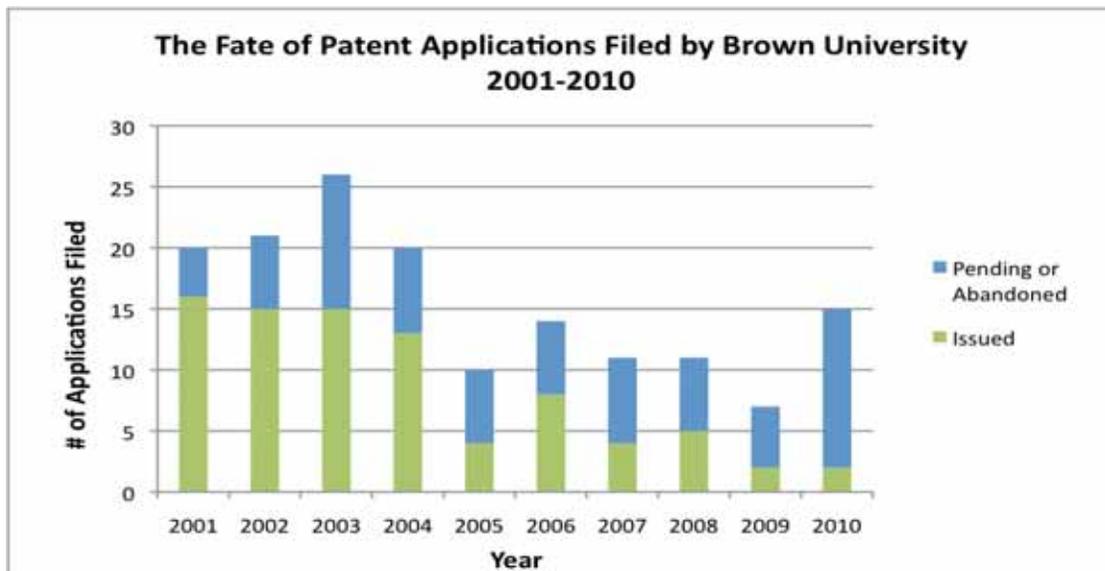
## European Filing v. Issuance Rates

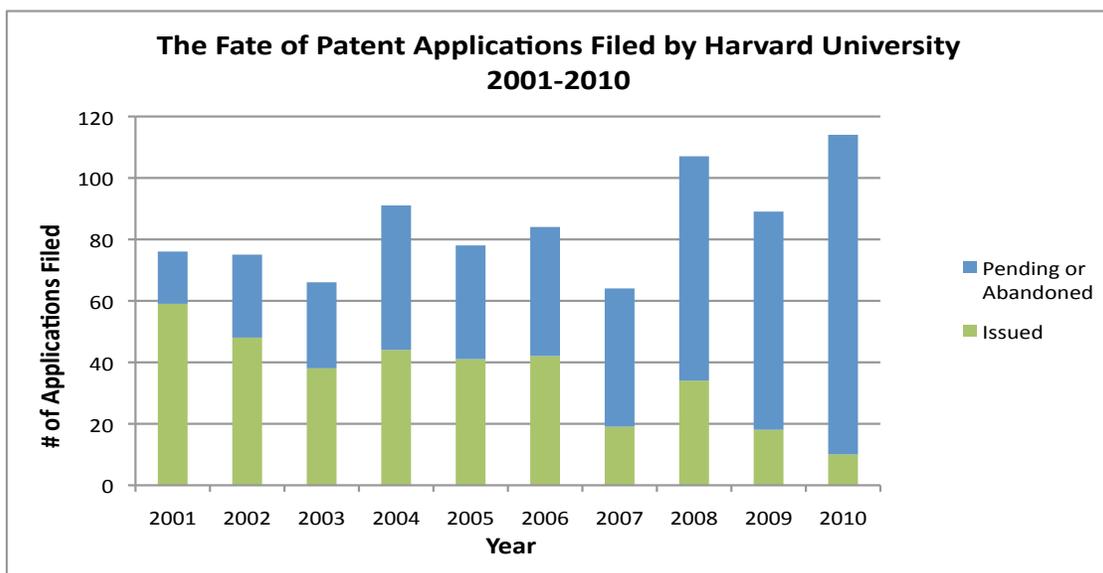
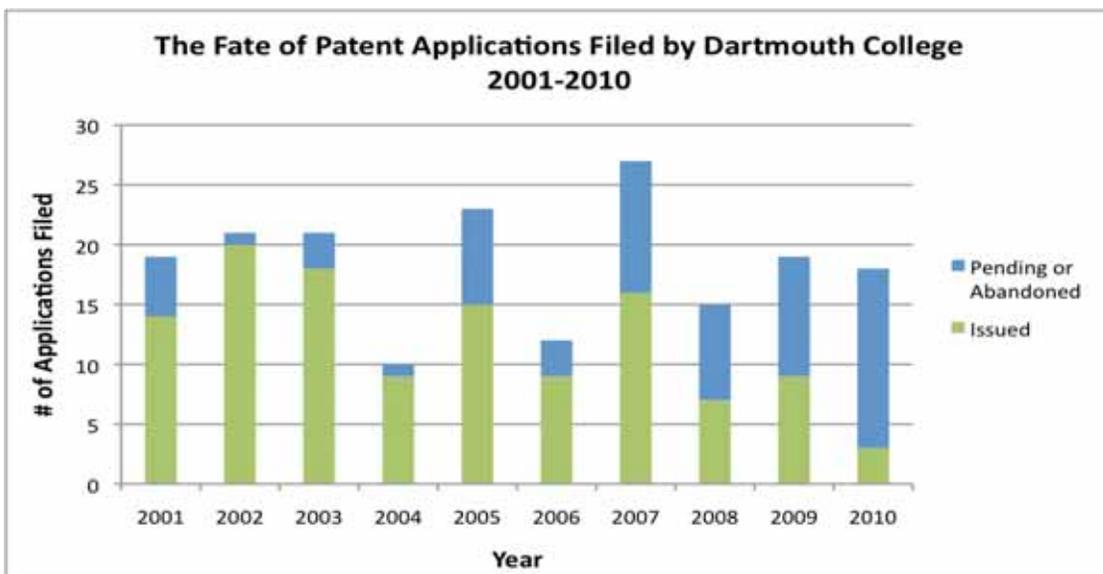
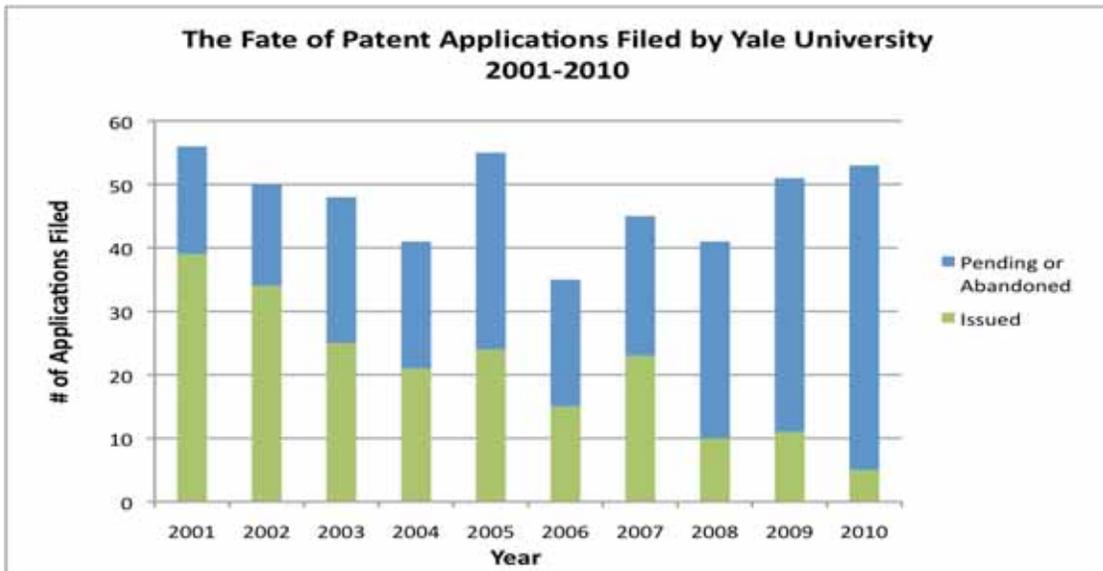
Particularly in Europe, higher patent filing rates corresponded with lower patent issuance rates, although this trend varied on a school-to-school basis. Dartmouth, for example, consistently achieved high issuance rates (60-100%) while filing relatively few patents (0-27); however, there was no significant correlation between Dartmouth's patent filing rate and its patent issuance rate, at least on a year-to-year basis. Conversely, at Columbia, Cornell, and Harvard—the three top-filing Ivy League universities in both U.S. and European patent offices—there was a strong-to-moderate, negative correlation between filing and issuance. For Columbia and Harvard, this correlation was less pronounced in the U.S. than it was in Europe; for Cornell, the inverse was true.

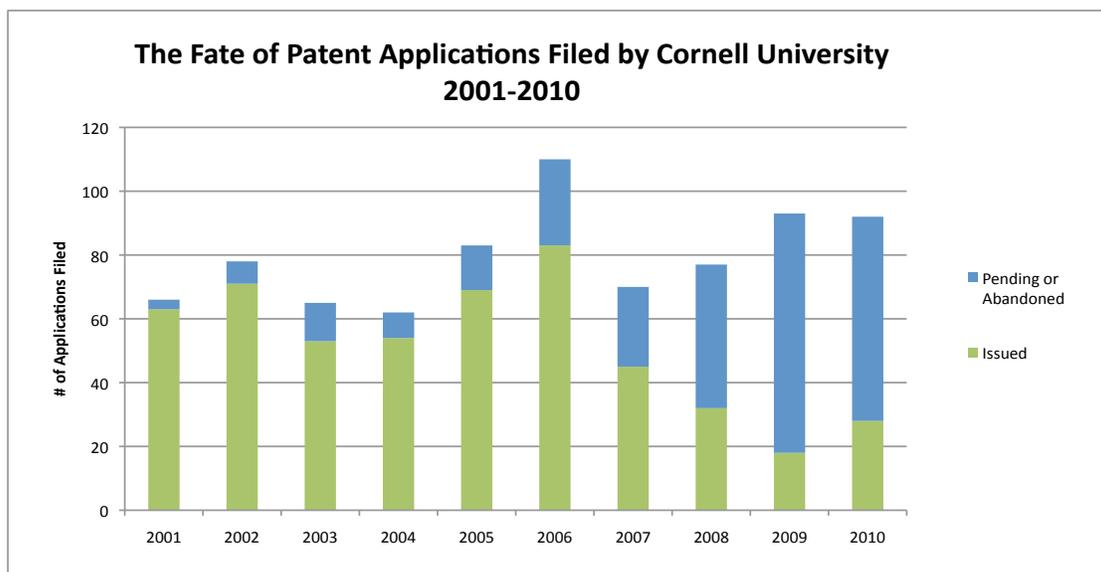
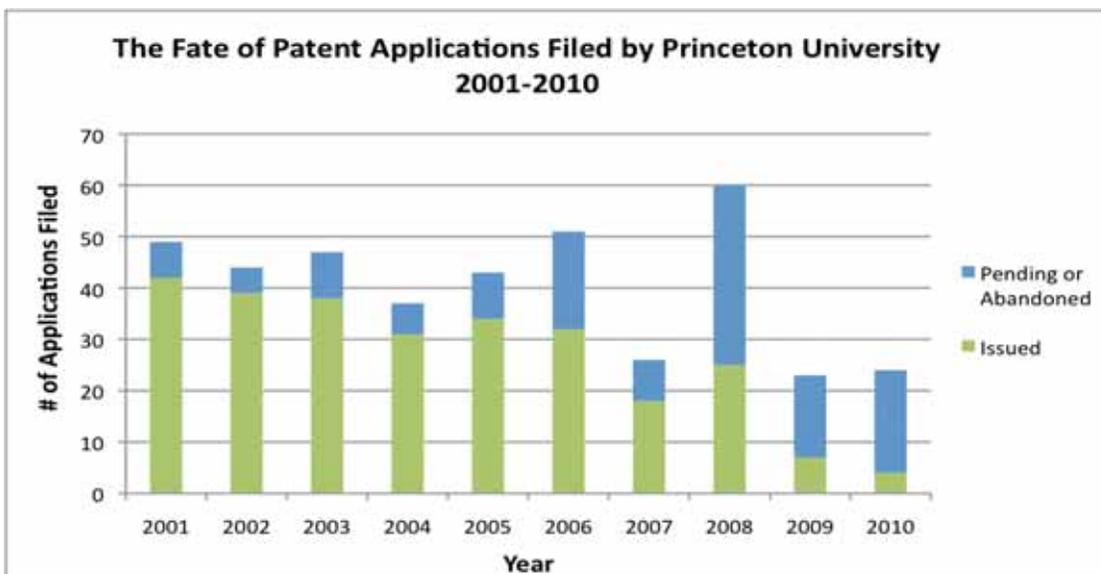
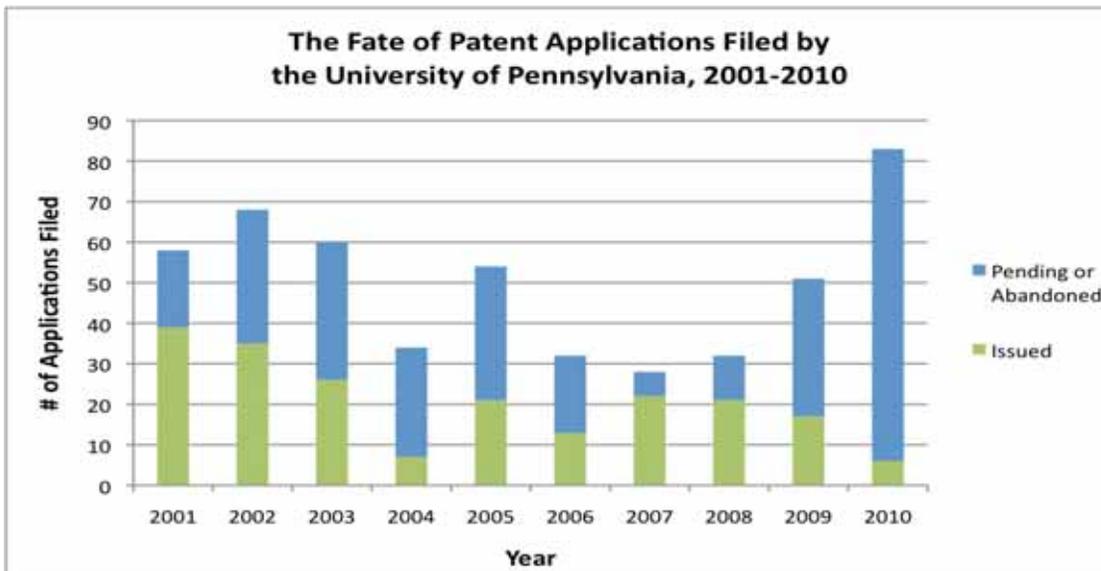


## United States Filing v. Issuance Rates

The following charts show the total number of patent applications filed in the U.S. by each Ivy League school—and the total number of these applications that eventually issued—over the years 2001-2010. Please note that, as the patent prosecution process generally requires an average of 3 years to complete, it is likely that many of the patent applications filed in recent years (e.g. post-2008) will eventually issue, sometime in the future.



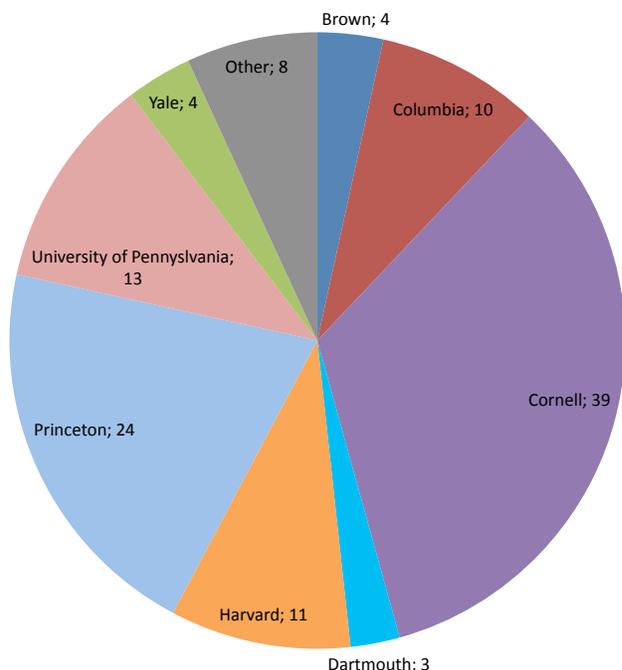




## PART III. Top Inventors

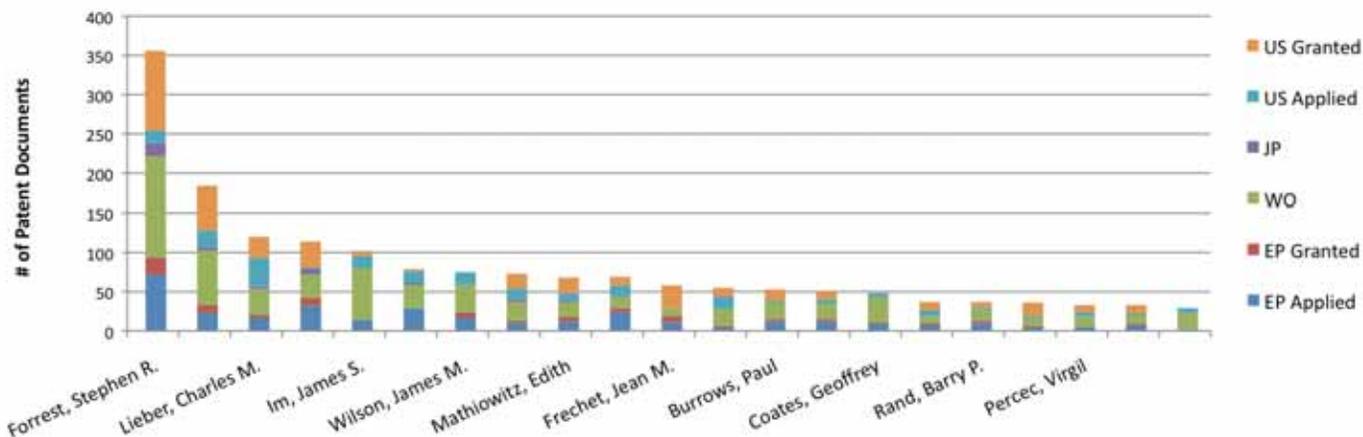
One hundred and sixteen inventors appeared on ten or more patents assigned to Ivy League Schools. The distribution of these top inventors was fairly uneven: more than one-third were associated with Cornell, one-fifth were associated with Princeton, and less than one-tenth, respectively, were associated with the three other top-filing universities (Harvard, Columbia, and the University of Pennsylvania). Interestingly, the relative proportion of top inventors associated with each school did not appear to correlate with the total number of patents filed by that school.

**Distribution of Top Inventors at Ivy League Schools**

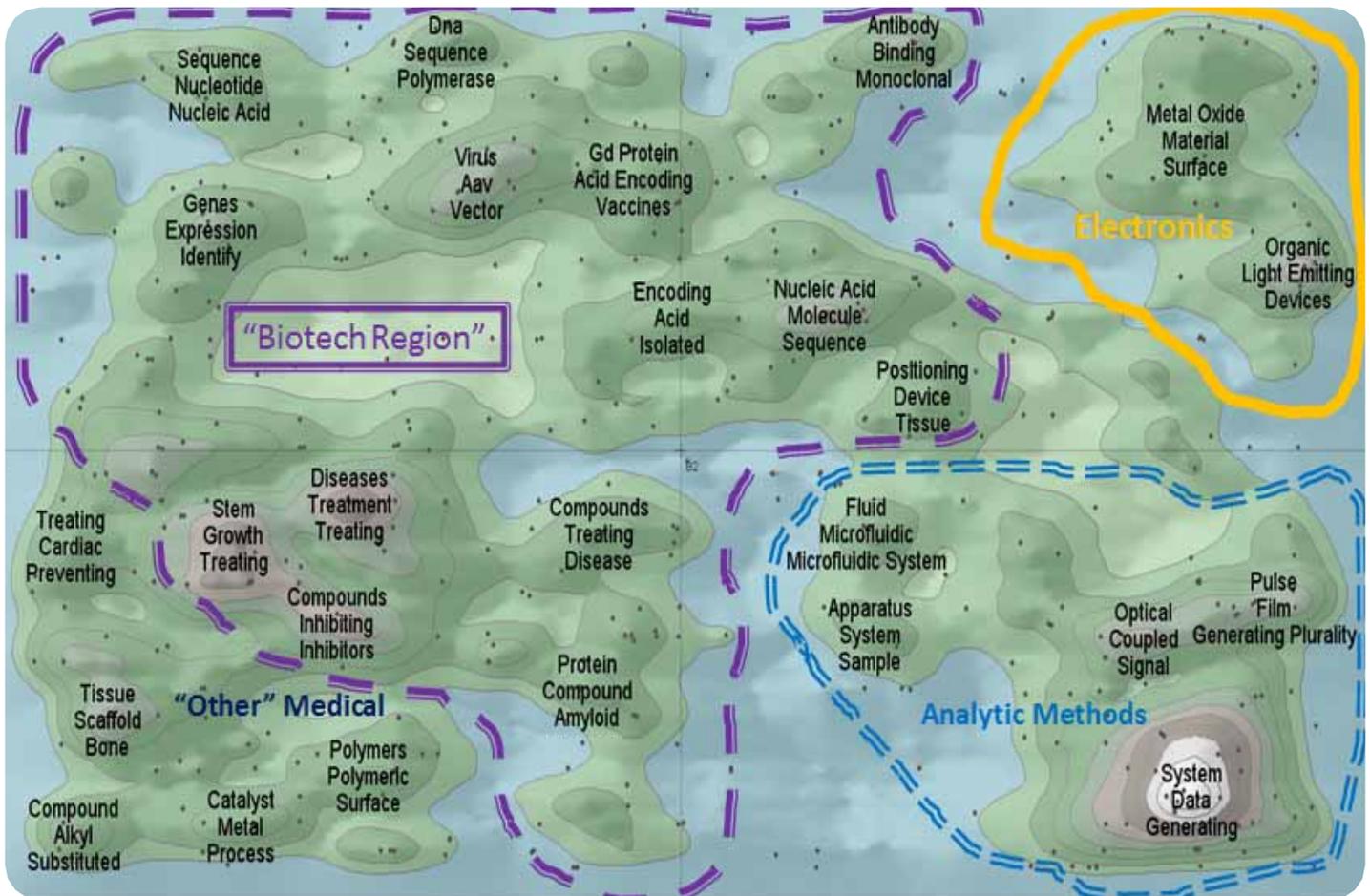


The most prolific inventor, among all Ivy League inventors, was Stephen R. Forrest, a former Princeton University professor of Physics, Electrical Engineering, and Materials Science. Professor Forrest, who is currently affiliated with the University of Michigan, is listed as an inventor on more than 350 Princeton University patent documents. Héctor D. Abruña Professor of Chemistry and Chemical Biology at Cornell University and listed on more than 180 patent documents, was the second most prolific Ivy League inventor.

**Top Inventors at All Ivy League Schools, 1980-2010**



## PART IV: Core Research Areas



*Thescape landscape map of Ivy League patent publications. Map provided by Thomson Reuters.*

Four core technology areas appear to describe the vast majority of patent applications filed by Ivy League Schools. As is evident from the map shown above, biotech-related inventions comprise the vast majority of patent applications filed at these schools. Other significant areas of innovation are “other” (i.e. non-biotech) medical technologies, electronics, and analytic methods.

Some universities, such as Harvard, Yale, Columbia, and the University of Pennsylvania, show significant innovation across all identified technology areas. Other universities, such as Brown and Princeton, show focused innovation in a few specific technology areas. Particularly in the case of Princeton, this trend appears to reflect the work of a few, very prolific inventors—and, in any case, trends in patenting vis-à-vis these identified technology areas is not (and should not be interpreted as) a statement on the breadth of research efforts at these schools.

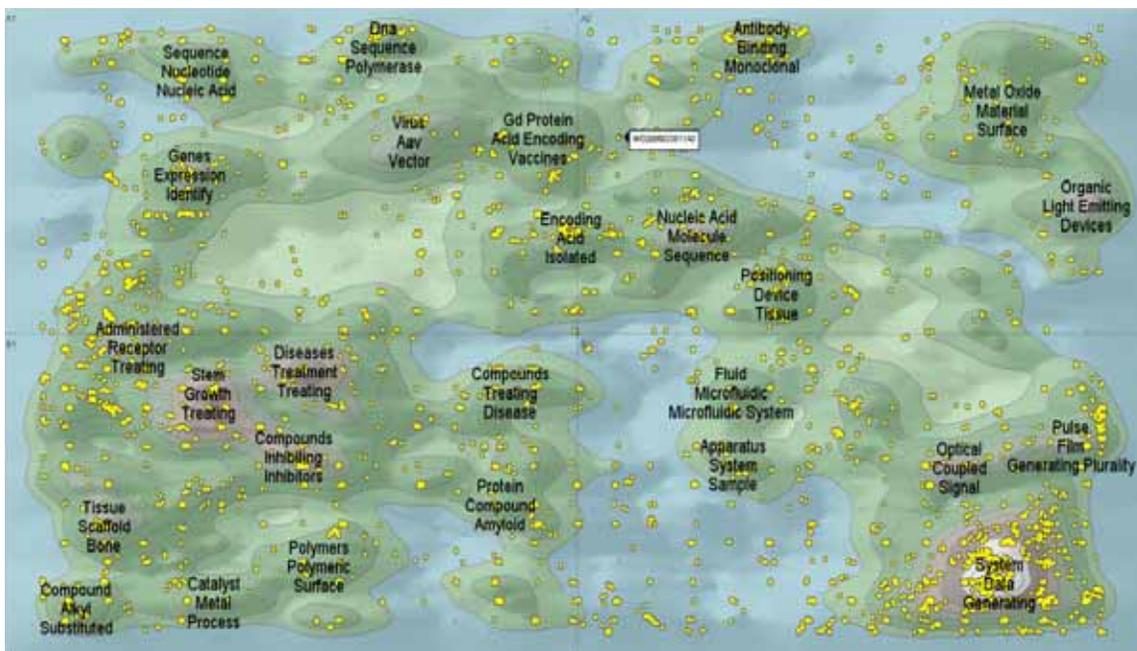
## Ivy League Breakdown:

Concept maps for all Ivy League universities are shown below. Colored dots represent individual patent documents; terms represent words that are common in each group of patent documents. Maps were generated with Thomson-Reuters' Aureka Themescape software.

### Brown University



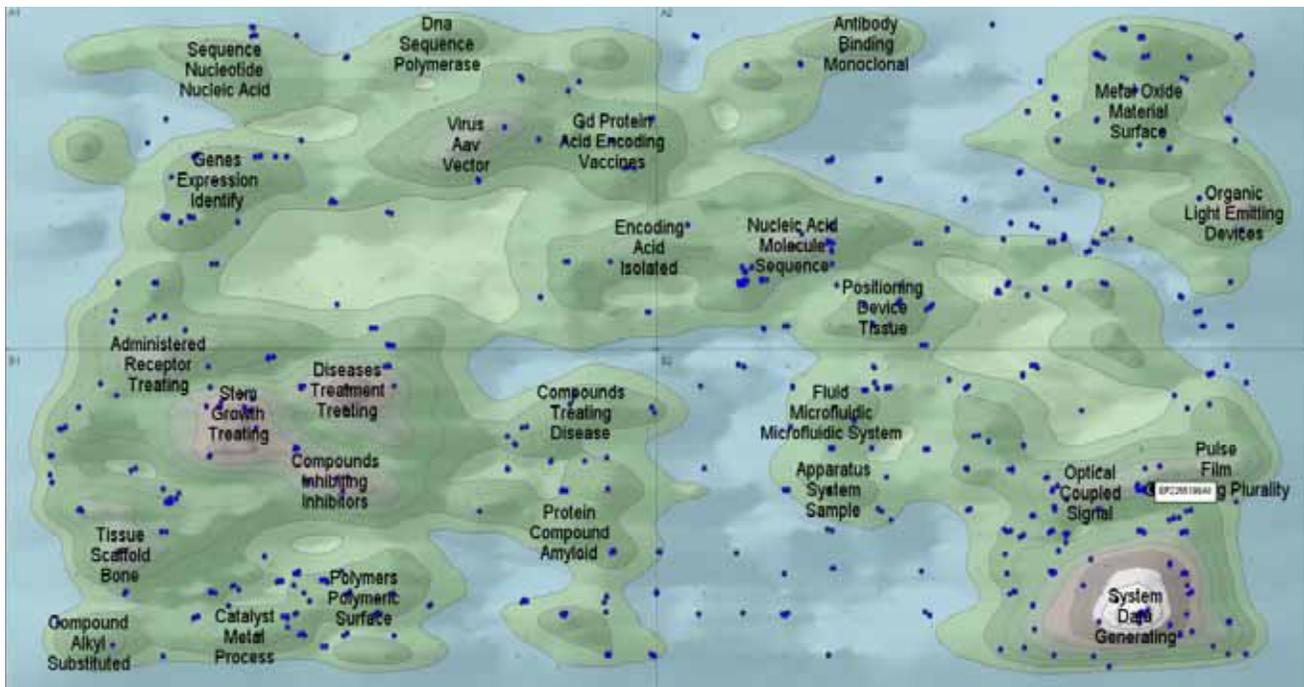
### Columbia University



## Yale University



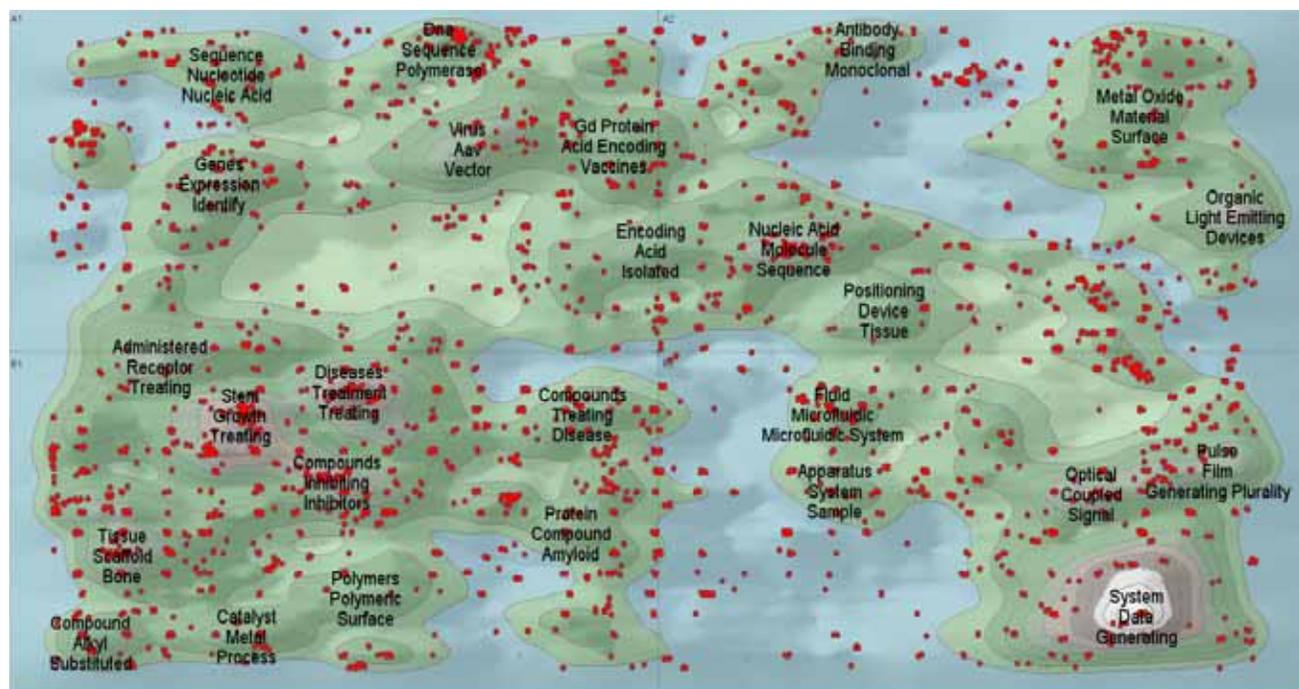
## Cornell University



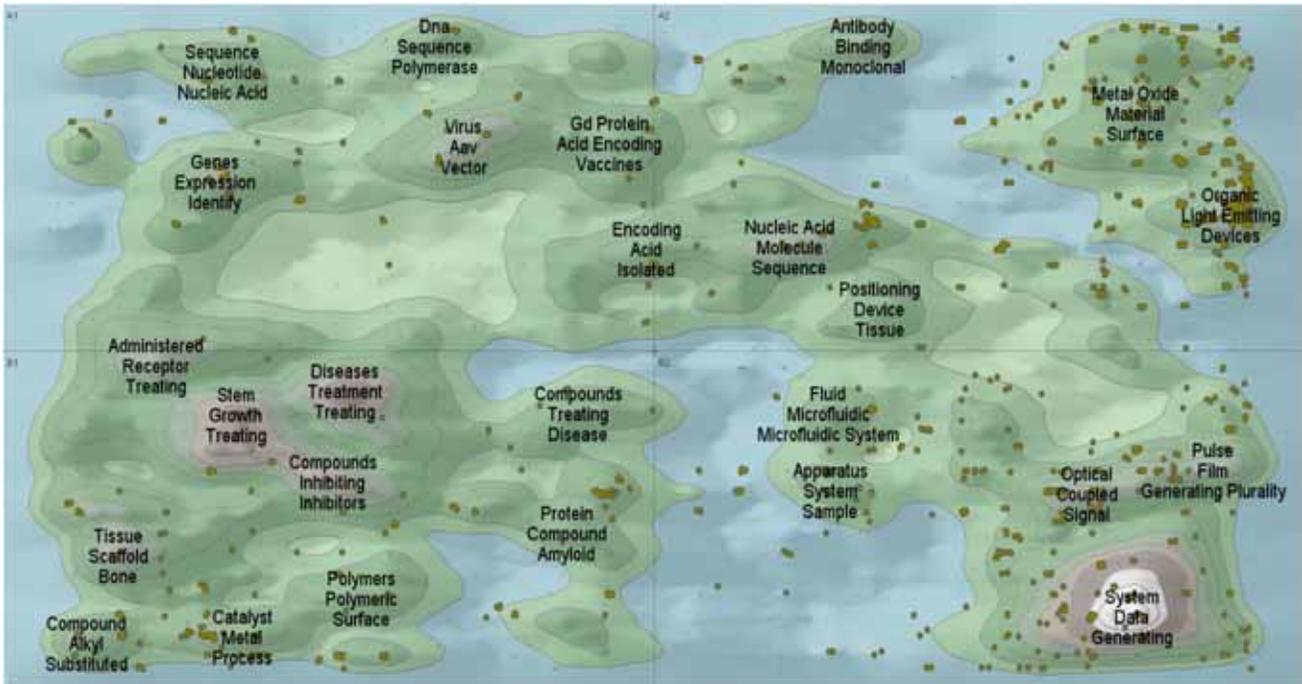
## Dartmouth College



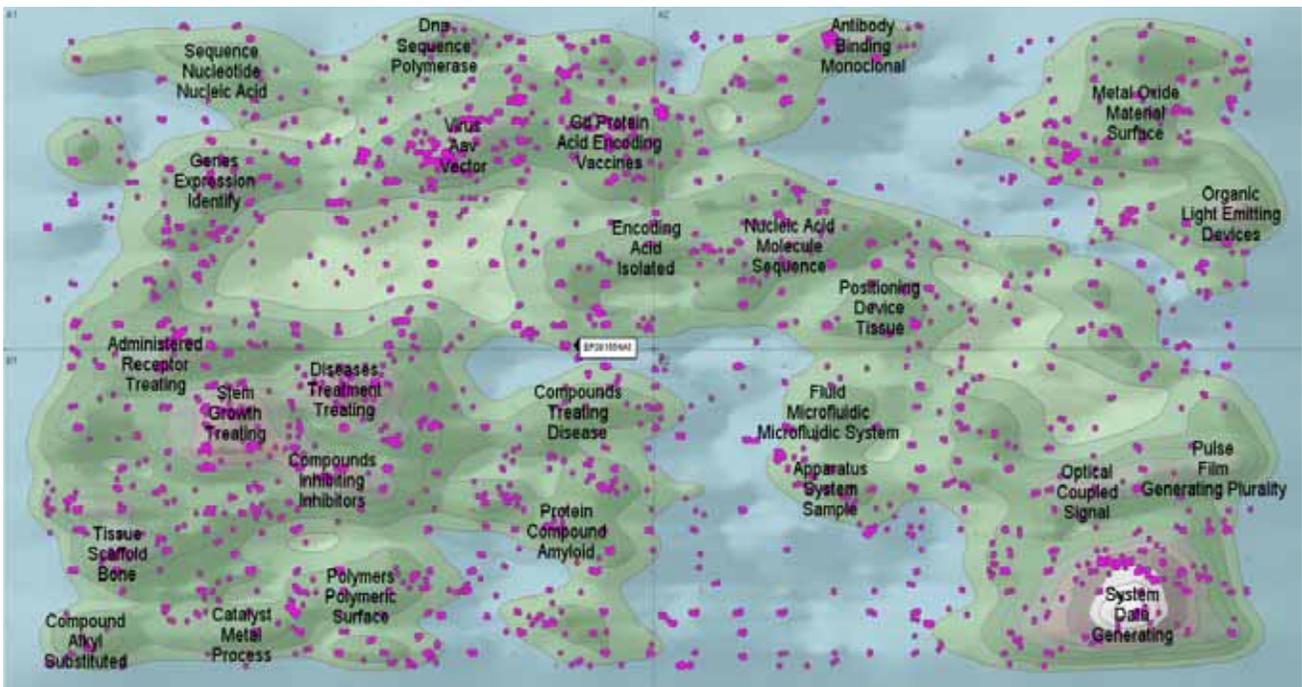
## Harvard University



# Princeton University



# University of Pennsylvania



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