

## **From Dyes to Blockbuster Drugs: Database and Visualization of Pharmaceutical Industry Value Creation from early roots to 2020**

**Faculty Member:** [Gregory Raskin](#)  
[Yashodhara Dash](#)

### **Proposal Description:**

The modern pharmaceutical industry had its beginnings in the major European, American and Japanese chemical companies of the late 19th century. Over time, increasing understanding of biology drove these companies to produce chemical medicines instead of just chemicals for industrial purposes. For example, Swiss dye producers Ciba, Geigy and Sandoz were founded in the 1880s, and over time increased their pharmaceutical production (and decreased or sold off their other chemical production), culminating in a merger in 1995 that created Novartis – today one of the largest pharma companies in the world.

Starting in the 1970s, understanding of molecular biology began to be used to produce “biologic” drugs – larger molecules produced by living organisms rather than by chemical synthesis. Many of these early “biotech” companies have been acquired or merged so that they are part of much larger consolidated companies. Genentech, the most famous biotech company of the 1970s/1980s, was purchased by the Swiss pharma company Roche in 2009.

Indeed, nearly all of the top 50 global drug companies have a history of growth by merger and acquisition.

This research project starts from both ends: (a) tracing the top early chemical companies of Europe, America and Japan through >100 years of mergers and acquisitions to their successor companies today; and (b) looking at today’s top 50 global pharma companies to see where value has been created, and which companies they acquired, along the way.

The key outputs of the project would be a database of company creation and M&A activity in the pharmaceutical industry over the course of >140 years; a dynamic, animated visualization of the data; and eventually a paper on the topic.

### **Requisite Skills and Qualifications:**

The hired fellow will work with literature, company histories and applicable financial and market databases to create a startup and M&A database for the major drug companies in the market today. Applicants also should have the ability to program data visualizations (e.g., charts, tables, graphs and a video) to show the timeline of the M&A activity over the 100+ years of development of the pharmaceutical industry.

**Award:** Ivana Prstic  
Daniel Lee

**Tobin Application Link:** [Tobin Application](#)

**Project Type:** Tobin RA

**Project Year:** 2020

**Term:** Spring 2020

**Source URL:** <https://economics.yale.edu/undergraduate/tobin-ra/spring-2020/dyes-blockbuster-drugs-database-and->

[visualization-pharmaceutical](#)