

**Reputation and Profit:
Drug Patenting and Academic Science
in the United States, 1917-1942**

**Joseph M. Gabriel
Florida State University**

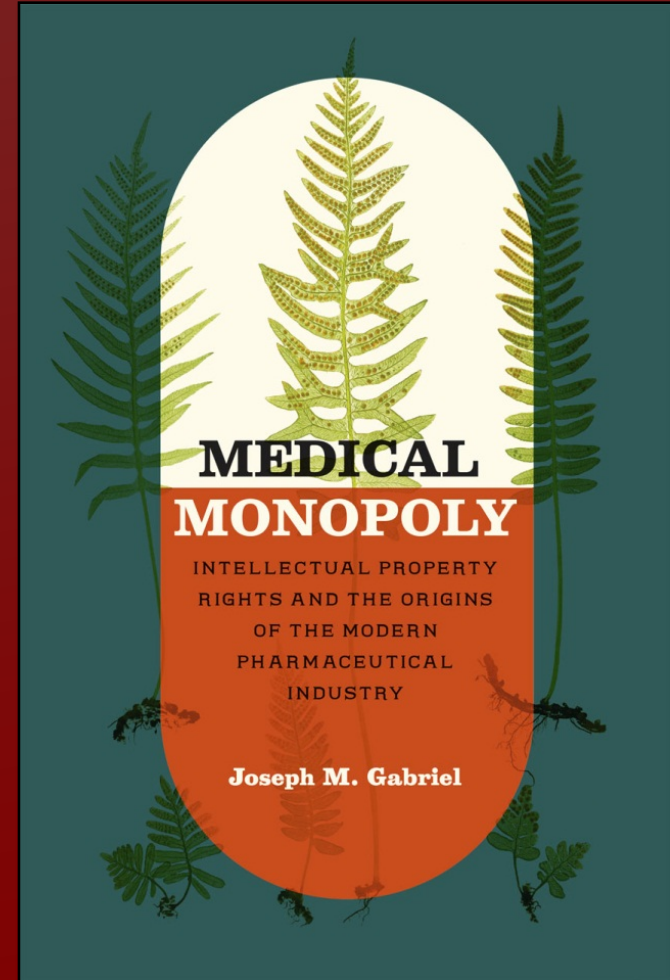
joseph.gabriel@med.fsu.edu

@jmgabriel72

Background

Background

- During 19th century, drug patents were widely considered an unethical and unscientific form of monopoly
 - Physicians
 - Pharmacists
 - Reputable drug manufacturers



Background

- During 19th century, drug patents were widely considered an unethical and unscientific form of monopoly
 - Physicians
 - Pharmacists
 - Reputable drug manufacturers

“It is derogatory to professional character...for a physician to hold a patent for any surgical instrument, or medicine; or to dispense a secret nostrum, whether it be the composition or exclusive property of himself, or of others.”

- *Code of Ethics*, American Medical Association (1847)

Background

- During 19th century, drug patents were widely considered an unethical and unscientific form of monopoly
 - Physicians
 - Pharmacists
 - Reputable drug manufacturers

PARKE, DAVIS & CO.,
Manufacturing Chemists,

Laboratory, McDougall Avenue, Guoin and Atwater Streets,
 Business Office, No. 53 Larned Street West,
DETROIT, - - - MICH.

MANUFACTURERS OF

AQUA AMMONIÆ, CHEM. PURE CHLOROFORM,
SPIRITS NITRE DULC., TINC. MUR. IRON, &c.

We make a speciality of the above Chemicals, and can offer them as low as any manufacturer in the country. Western buyers will save time and freight charges by purchasing of us. Send for quotations.

PARKE, DAVIS & CO.'S
Standard Medicinal Fluid and Solid Extracts.
SOLUBLE SUGAR COATED PILLS,
CONCENTRATIONS, ELIXIRS, WINES AND SYRUPS, &c., &c.

We call special attention to the following articles, lately added to our list:

FLUID EXTRACT GUARANA.
FLUID EXTRACT EUCALYPTUS GLOBULES.
FLUID EXTRACT BEARSFOOT.
FLUID EXTRACT CALENDULA.
FLUID EXTRACT CHESTNUT LEAVES.
FLUID EXTRACT CONIUM SEED.
FLUID EXTRACT COTTON ROOT BARK, (from the fresh root.)
FLUID EXTRACT GELSEMINUM, (from the fresh root.)
FLUID EXTRACT STAVESACRE SEED.
PILLS OF PICRATE AMMONIUM, (Sugar Coated.)
BRUNDAGE'S ANTI-CONSTIPATION PILLS, (Sugar Coated.)

Send for dose, descriptive list and circulars, which will be forwarded on application.
 Physicians who desire our preparations will please specify P. D. & Co. on their prescriptions.
 Our list of manufacturers can be obtained of the following Wholesale Druggists, or Manufacturer's agents

H. Macready & Co.	Cincinnati, O.
Kenyon, Potter & Co.	Syracuse, N. Y.
Jno. A. Kelly & Co.	Pittsburg, Pa.
Hendon, Myers & Osfield,	Cleveland, O.
Geo. M. Dixon	Dayton, O.
A. Peter & Co.	Louisville, Ky.
E. Burnham, Son & Co.	St. Louis, Mo.
A. A. Moller,	Chicago, Ill.
Colburn, Hires & Co.	Peoria, Ill.
Geo. A. Eddy,	Lawrence, Kan.
Godde & Co.	Salt Lake City, Utah.
Plain, Williams & Co.	Toledo, O.
Shrewsbury Bros.	Farkersburg, W. Va.
Farread, Williams & Co.	Detroit, Mich.
Switt & Dedda	Detroit, Mich.

DEPOT IN CHICAGO,
E. BURNHAM, SON & CO.

Background

- During 19th century, drug patents were widely considered an unethical and unscientific form of monopoly
 - Physicians
 - Pharmacists
 - Reputable drug manufacturers
- By early 20th c., drug patents had been re-conceptualized as both ethical and as a valuable part of commercial drug manufacturing

PARKE, DAVIS & CO.,
Manufacturing Chemists,
Laboratory, McDougall Avenue, Guoin and Atwater Streets,
Business Office, No. 53 Larned Street West,
DETROIT, - - - MICH.

MANUFACTURERS OF
AQUA AMMONIÆ, CHEM. PURE CHLOROFORM,
SPIRITS NITRE DULC., TINC. MUR. IRON, &c.

We make a speciality of the above Chemicals, and can offer them as low as any manufacturer in the country. Western buyers will save time and freight charges by purchasing of us. Send for quotations.

PARKE, DAVIS & CO.'S
Standard Medicinal Fluid and Solid Extracts.
SOLUBLE SUGAR COATED PILLS,
CONCENTRATIONS, ELIXIRS, WINES AND SYRUPS, &c., &c.

We call special attention to the following articles, lately added to our list:

FLUID EXTRACT GUARANA.
FLUID EXTRACT EUCALYPTUS GLOBULES.
FLUID EXTRACT BEARSFOOT.
FLUID EXTRACT CALENDULA.
FLUID EXTRACT CHESTNUT LEAVES.
FLUID EXTRACT CANTHARID SEED.
FLUID EXTRACT COTTON ROOT BARK, (from the fresh root.)
FLUID EXTRACT GELSEMINUM, (from the fresh root.)
FLUID EXTRACT STAVESACRE SEED.
PILLS OF PICRATE AMMONIUM, (Sugar Coated.)
BRUNDAGE'S ANTI-CONSTIPATION PILLS, (Sugar Coated.)

Send for dose, descriptive list and circulars, which will be forwarded on application.
Physicians who desire our preparations will please specify P. D. & Co. on their prescriptions.
Our list of manufacturers can be obtained of the following Wholesale Druggists, or Manufacturer's agents

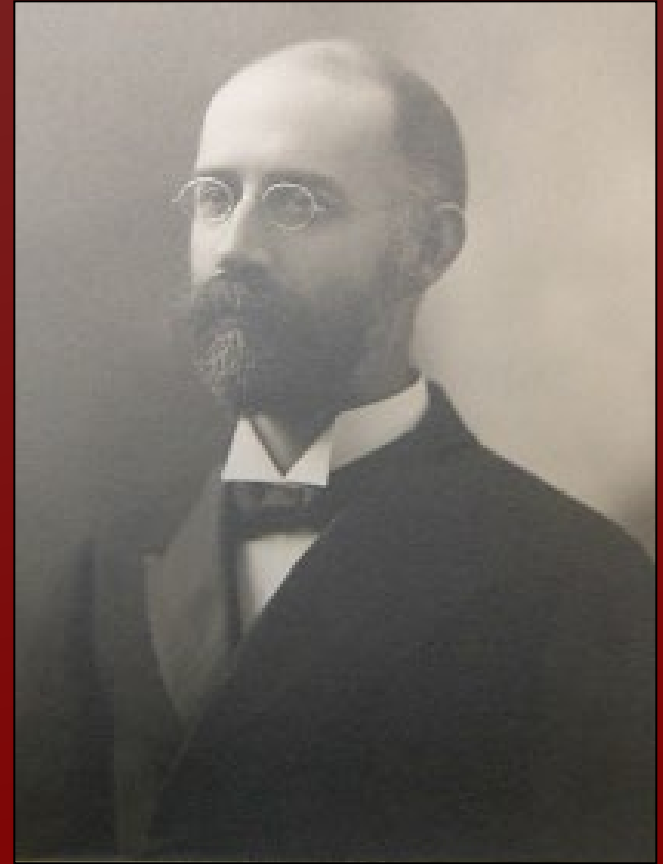
H. Macready & Co.	Cincinnati, O.
Kenyon, Potter & Co.	Syracuse, N. Y.
Jno. A. Kelly & Co.	Pittsburg, Pa.
Hendon, Myers & Osfield,	Cleveland, O.
Geo. M. Dixon	Dayton, O.
A. Peter & Co.	Louisville, Ky.
E. Burnham, Son & Co.	St. Louis, Mo.
A. A. Mellier,	Chicago, Ill.
Colburn, Hires & Co.	Peoria, Ill.
Geo. A. Eddy,	Lawrenceville, Kan.
Godke & Co.	Salt Lake City, Utah.
Plain, Williams & Co.	Toledo, O.
Shrewsbury Bros.	Farkersburg, W. Va.
Farrand, Williams & Co.	Detroit, Mich.
Switt & Dedds	Detroit, Mich.

DEPOT IN CHICAGO,
E. BURNHAM, SON & CO.

1875

Background

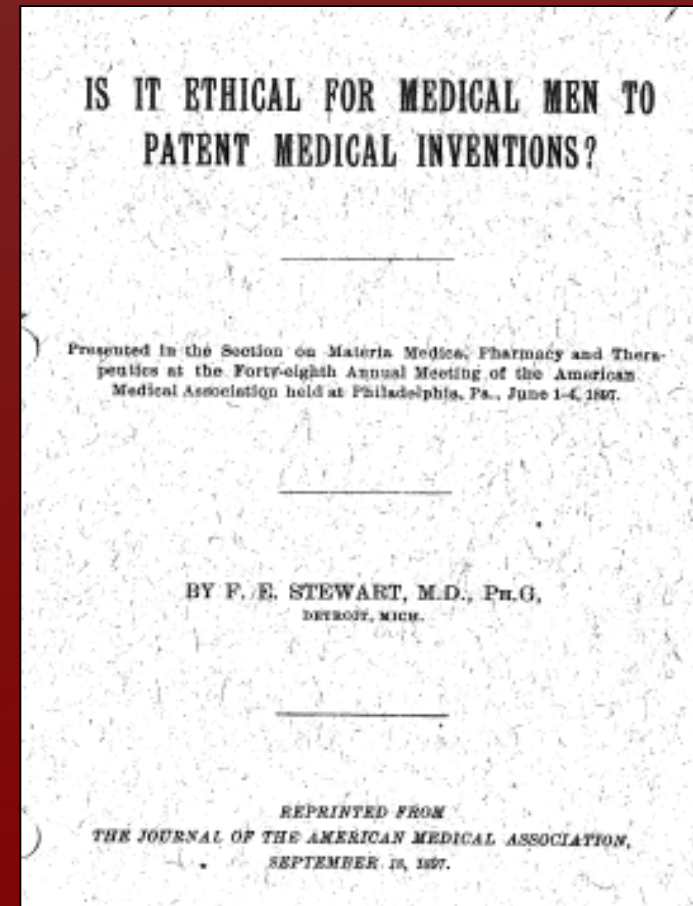
- During 19th century, drug patents were widely considered an unethical and unscientific form of monopoly
 - Physicians
 - Pharmacists
 - Reputable drug manufacturers
- By early 20th c., drug patents had been re-conceptualized as both ethical and as a valuable part of commercial drug manufacturing



Francis E. Stewart (1853-1941)

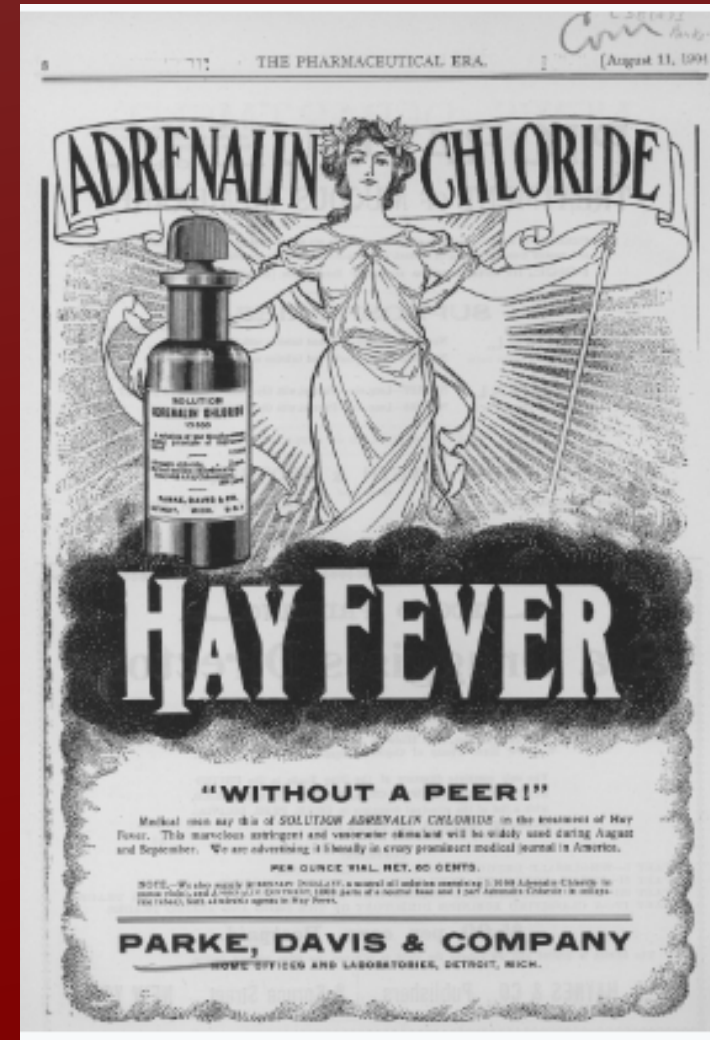
Background

- During 19th century, drug patents were widely considered an unethical and unscientific form of monopoly
 - Physicians
 - Pharmacists
 - Reputable drug manufacturers
- By early 20th c., drug patents had been re-conceptualized as both ethical and as a valuable part of commercial drug manufacturing



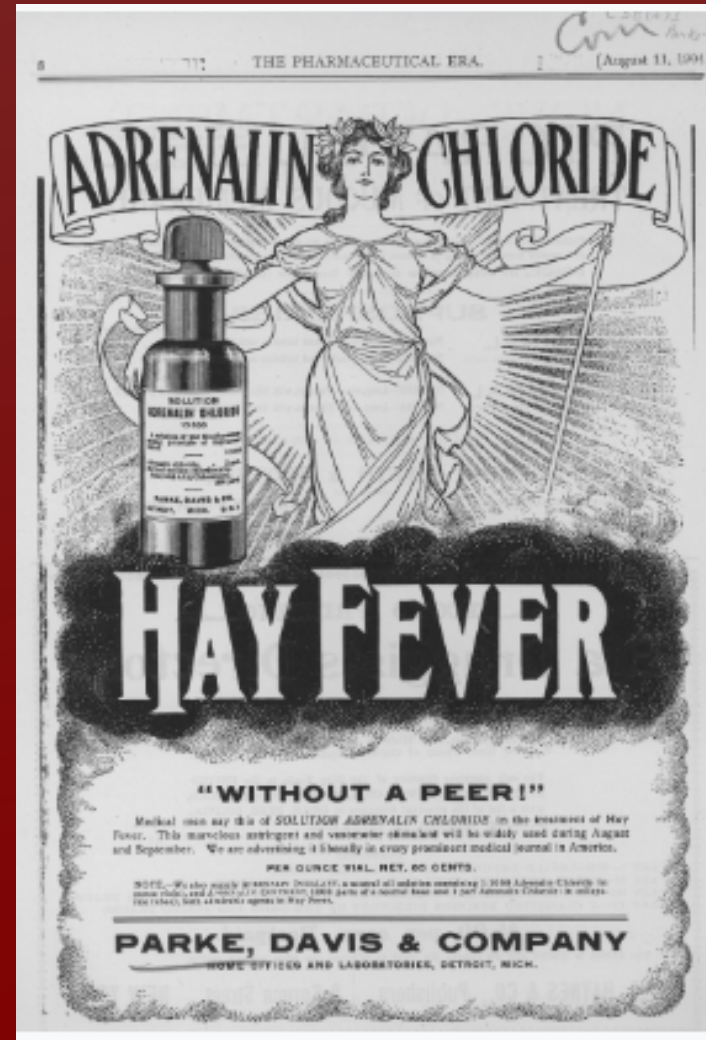
Background

- During 19th century, drug patents were widely considered an unethical and unscientific form of monopoly
 - Physicians
 - Pharmacists
 - Reputable drug manufacturers
- By early 20th c., drug patents had been re-conceptualized as both ethical and as a valuable part of commercial drug manufacturing



Background

- During 19th century, drug patents were widely considered an unethical and unscientific form of monopoly
 - Physicians
 - Pharmacists
 - Reputable drug manufacturers
- By early 20th c., drug patents had been re-conceptualized as both ethical and as a valuable part of commercial drug manufacturing
- Significant suspicion and concern about drug patenting remained
 - Drug prices
 - Foreign influence on therapeutic markets
 - Distortion of medical and pharmacy science / practice



Reputation and Profit, 1917 - 1942

- Before WWI: pharmaceutical patenting rare among academic life scientists

Reputation and Profit, 1917 - 1942

- Before WWI: pharmaceutical patenting rare among academic life scientists
- Life scientists operated in a “moral economy” that prioritized cooperation, sharing of information, truth-telling, disinterestedness, and similar norms (Rasmussen 2004)

Reputation and Profit, 1917 - 1942

- Before WWI: pharmaceutical patenting rare among academic life scientists
- Life scientists operated in a “moral economy” that prioritized cooperation, sharing of information, truth-telling, disinterestedness, and similar norms (Rasmussen 2004)
- Scientists opposed to drug patenting to the extent to which they upheld traditional norms of the medical, pharmacy, and related communities

Reputation and Profit, 1917 - 1942

- Before WWI: pharmaceutical patenting rare among academic life scientists
- Life scientists operated in a “moral economy” that prioritized cooperation, sharing of information, truth-telling, disinterestedness, and similar norms (Rasmussen 2004)
- Scientists opposed to drug patenting to the extent to which they upheld traditional norms of the medical, pharmacy, and related communities
- Reputation was of central importance to academic life scientists
 - Credit for work, including discovery
 - Reputation for impartiality, quality of scientific practice, etc.
 - Upholding community social norms – the “right kind of person”
 - Vague but real dedication to “public good”

Reputation and Profit, 1917 - 1942

1917 – 1925: series of influential patents by academic researchers

Reputation and Profit, 1917 - 1942

1917 – 1925: series of influential patents by academic researchers

- Tethelin (1917), T.B. Robertson, University of California, H.K. Mulford.
- Thyroxin (1918), Edward Kendall, University of Minnesota, Squibb.
- Tryparsamide (1918), Walter Jacobs et. al., Rockefeller Institute, P-W-R
- Insulin (1921), Frederick Banting, et. al., University of Toronto, Eli Lilly
- Vitamin D irradiation (1924), Harry Steenbock, University of Wisconsin
- Scarlet Fever antitoxin (1925), Gladys and George Dick, various manufacturers

Reputation and Profit, 1917 - 1942

1917 – 1925: series of influential patents by academic researchers

- Tethelin (1917), T.B. Robertson, University of California, H.K. Mulford.
- Thyroxin (1918), Edward Kendall, University of Minnesota, Squibb.
- Tryparsamide (1918), Walter Jacobs et. al., Rockefeller Institute, P-W-R
- Insulin (1921), Frederick Banting, et. al., University of Toronto, Eli Lilly
- Vitamin D irradiation (1924), Harry Steenbock, University of Wisconsin
- Scarlet Fever antitoxin (1925), Gladys and George Dick, various manufacturers

Reputation and Profit, 1917 - 1942

In these early academic patents:

- Patenting as a source of revenue for institutions

Reputation and Profit, 1917 - 1942

In these early academic patents:

- Patenting as a source of revenue for institutions
- “Patenting in the public interest” (Cassier and Sinding, 2008)
 - used to limit manufacturing to reputable companies, enforce manufacturing standards, and control product advertising

Reputation and Profit, 1917 - 1942

In these early academic patents:

- Patenting as a source of revenue for institutions
- “Patenting in the public interest” (Cassier and Sinding, 2008)
 - used to limit manufacturing to reputable companies, enforce manufacturing standards, and control product advertising

“The Institute’s policy is to control such inventions to the extent of being able to prevent its exploitation in an unfortunate way.”

Simon Flexner (1919),
regarding Tryparsamide patent



Reputation and Profit, 1917 - 1942

In these early academic patents:

- Patenting as a source of revenue for institutions
- “Patenting in the public interest” (Cassier and Sinding, 2008)
 - used to limit manufacturing to reputable companies, enforce manufacturing standards, and control product advertising
- Licensing arrangements designed to protect researchers reputation
 - For example, royalties sometimes declined, sometimes accrue to the university, or to quasi-public holding company, or to lab

“The Institute’s policy is to control such inventions to the extent of being able to prevent its exploitation in an unfortunate way.”

Simon Flexner (1919),
regarding Tryparsamide patent



Reputation and Profit, 1917 - 1942

mid 1920s – 1930s:

Reputation and Profit, 1917 - 1942

mid 1920s – 1930s:

- Collaboration with becomes industry common:
grants, fellowships, supply of materials, etc.

Reputation and Profit, 1917 - 1942

mid 1920s – 1930s:

- Collaboration with industry becomes common:
grants, fellowships, supply of materials, etc.
- Conceptualization of pharmaceutical science and collaboration with industry as a source of potential profit:
 - Financial – royalties, funding, materials, etc.
 - Reputational – publications, credit, etc.
 - “Greater good”

Reputation and Profit, 1917 - 1942

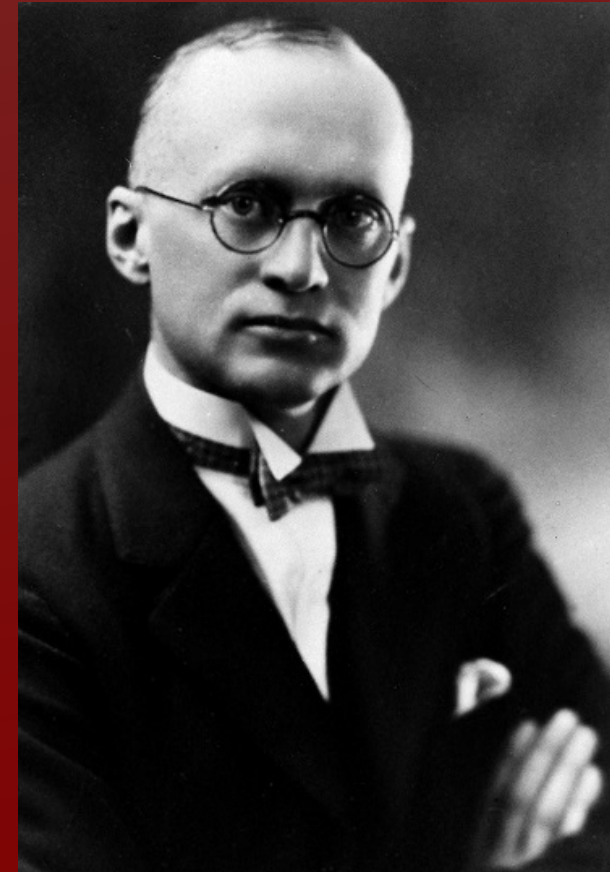
mid 1920s – 1930s:

- Collaboration with industry becomes common:
grants, fellowships, supply of materials, etc.
- Conceptualization of pharmaceutical science and collaboration with industry as a source of potential profit:
 - Financial – royalties, funding, materials, etc.
 - Reputational – publications, credit, etc.
 - “Greater good”
- Relationship needs to be managed carefully:
Science / reputation can be harmed by
‘commercialism’

Reputation and Profit, 1917 - 1942

mid 1920s – 1930s:

- Collaboration with industry becomes common: grants, fellowships, supply of materials, etc.
- Conceptualization of pharmaceutical science and collaboration with industry as a source of potential profit:
 - Financial – royalties, funding, materials, etc.
 - Reputational – publications, credit, etc.
 - “Greater good”
- Relationship needs to be managed carefully: Science / reputation can be harmed by ‘commercialism’

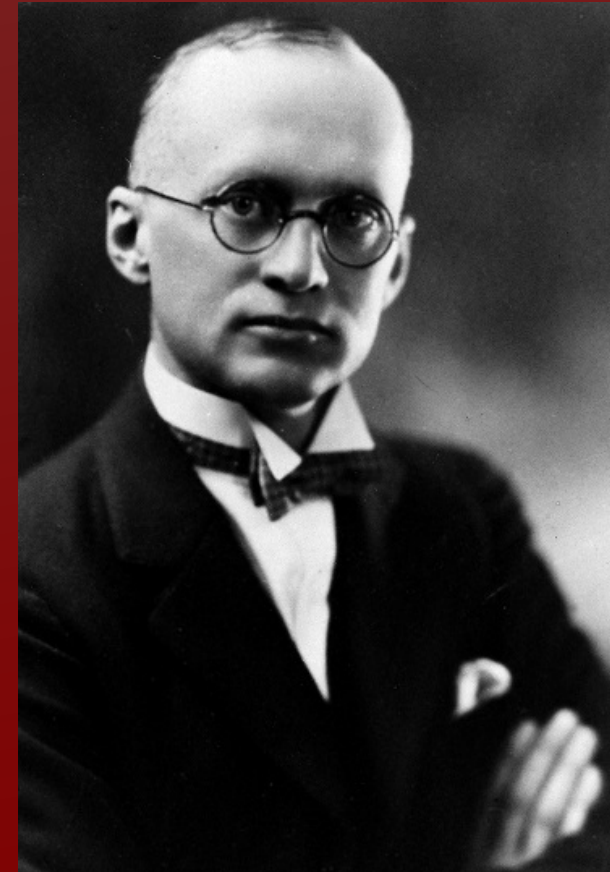


Harry Steenbock

Reputation and Profit, 1917 - 1942

“I have always made it a particular point to keep myself in the background in these commercial developments because it would hardly be seemly for me to enter the commercial field with its propaganda and still try to maintain the respect and confidence of not only myself but also others who are inclined to evaluate accomplishments from the pure scientific standpoint.”

Harry Steenbock, 1930



Harry Steenbock

“I have always made it a particular point to keep myself in the background in these commercial developments because it would hardly be seemly for me to enter commercial field with its propaganda and still try to maintain the respect and confidence of not only myself but also others who are inclined to evaluate accomplishments from the pure scientific standpoint.”

Harry Steenbock, 1930

“I have the highest opinion of you personally...The fact that you have assigned to a Foundation any profits which might have accrued to you, makes your position clear.”

Jerome Alexander to Steenbock

Reputation and Profit, 1917 - 1942

Turn toward academic patenting intertwined with:

Reputation and Profit, 1917 - 1942

Turn toward academic patenting intertwined with:

- Drug development as site of investment with costs and potential rewards

Reputation and Profit, 1917 - 1942

Turn toward academic patenting intertwined with:

- Drug development as site of investment with costs and potential rewards
- Science as collaborative, but patenting / recouping investment as zero-sum

Reputation and Profit, 1917 - 1942

Turn toward academic patenting intertwined with:

- Drug development as site of investment with costs and potential rewards
- Science as collaborative, but patenting / recouping investment as zero-sum
- Tension between science as collaboration and science as race to discovery

Reputation and Profit, 1917 - 1942

Turn toward academic patenting intertwined with:

- Drug development as site of investment with costs and potential rewards
- Science as collaborative, but patenting / recouping investment as zero-sum
- Tension between science as collaboration and science as race to discovery
- Academic pharmaceutical research increasingly characterized by
 - Competition
 - Pressure towards acceleration
 - Secrecy, subterfuge, etc.

Reputation and Profit, 1917 - 1942

Turn toward academic patenting intertwined with:

- Drug development as site of investment with costs and potential rewards
- Science as collaborative, but patenting / recouping investment as zero-sum
- Tension between science as collaboration and science as race to discovery
- Academic pharmaceutical research increasingly characterized by
 - Competition
 - Pressure towards acceleration
 - Secrecy, subterfuge, etc.



Arthur Loevenhart

Reputation and Profit, 1917 - 1942

“We shall have to ‘soft pedal’ all our work on 73 and 74...Do not tell anyone that you will study these substances, for reasons which I can explain to you when you come here.”

Arthur Loevenhart to Warren Stratman-Thomas (1930)



Arthur Loevenhart

Reputation and Profit, 1917 - 1942

Turn toward academic patenting
intertwined with:

Reputation and Profit, 1917 - 1942

Turn toward academic patenting
intertwined with:

- Investment / sunk cost + path dependency means researchers increasingly unwilling to abandon research projects

Reputation and Profit, 1917 - 1942

Turn toward academic patenting
intertwined with:

- Investment / sunk cost + path dependency means researchers increasingly unwilling to abandon research projects
- “drugs in search of a disease”

Reputation and Profit, 1917 - 1942

Turn toward academic patenting
intertwined with:

- Investment / sunk cost + path dependency means researchers increasingly unwilling to abandon research projects
- “drugs in search of a disease”
- Increasingly powerful therapeutic objects

Reputation and Profit, 1917 - 1942

Turn toward academic patenting intertwined with:

- Investment / sunk cost + path dependency means researchers increasingly unwilling to abandon research projects
- “drugs in search of a disease”
- Increasingly powerful therapeutic objects
- Increasing risk of harm to research subjects

Reputation and Profit, 1917 - 1942

Turn toward academic patenting intertwined with:

- Investment / sunk cost + path dependency means researchers increasingly unwilling to abandon research projects
- “drugs in search of a disease”
- Increasingly powerful therapeutic objects
- Increasing risk of harm to research subjects



Arthur Tatum

Reputation and Profit, 1917 - 1942

“Through underground channels of communication, I became aware of this case before he had been spoiled for us and, without any difficulty at all, convinced Dr. Middleton that we might give him a trial with Mapharsen... He did not seem to be bothered by the 150mg anymore than by a smaller dose. This we take to mean that even though there may be transient disagreeable symptoms, such as salivation, lacrimation and nausea, the patient won't die at such a dose. At any rate, this one did not.”

Arthur Tatum (1932)



Arthur Tatum

Conclusion

Conclusion

- During early interwar period, academic scientists increasingly turned toward patenting pharmaceuticals

Conclusion

- During early interwar period, academic scientists increasingly turned toward patenting pharmaceuticals
- They did so for multiple reasons
 - To generate revenue
 - To advance the public good
 - To protect their own reputations

Conclusion

- During early interwar period, academic scientists increasingly turned toward patenting pharmaceuticals
- They did so for multiple reasons
 - To generate revenue
 - To advance the public good
 - To protect their own reputations
- Over the course of the interwar period, patenting became a source of profit for academic life scientists – both financial and reputational

Conclusion

- During early interwar period, academic scientists increasingly turned toward patenting pharmaceuticals
- They did so for multiple reasons
 - To generate revenue
 - To advance the public good
 - To protect their own reputations
- Over the course of the interwar period, patenting became a source of profit for academic life scientists – both financial and reputational
- Scientists struggled to reconcile “moral economy” of science with commercial and reputational goals.

Conclusion

- During early interwar period, academic scientists increasingly turned toward patenting pharmaceuticals
- They did so for multiple reasons
 - To generate revenue
 - To advance the public good
 - To protect their own reputations
- Over the course of the interwar period, patenting became a source of profit for academic life scientists – both financial and reputational
- Scientists struggled to reconcile “moral economy” of science with commercial and reputational goals.
- “Underground” norms and behaviors introduced – in part through logic of patenting – secrecy, dishonesty, unethical use of research subjects, etc.

Conclusion

- Today, those of us who study the relationship between the pharmaceutical industry and academic science are faced with a series of key questions that have grown out of these changes:

Conclusion

- Today, those of us who study the relationship between the pharmaceutical industry and academic science are faced with a series of key questions that have grown out of these changes:
 - What is the proper place of pharmaceutical patenting in the academic ecosystem?

Conclusion

- Today, those of us who study the relationship between the pharmaceutical industry and academic science are faced with a series of key questions that have grown out of these changes:
 - What is the proper place of pharmaceutical patenting in the academic ecosystem?
 - For researchers, what is the proper role of patenting and other commercial considerations in scientific deliberation and inquiry?

Conclusion

- Today, those of us who study the relationship between the pharmaceutical industry and academic science are faced with a series of key questions that have grown out of these changes:
 - What is the proper place of pharmaceutical patenting in the academic ecosystem?
 - For researchers, what is the proper role of patenting and other commercial considerations in scientific deliberation and inquiry?
 - How do we protect scientific practice and knowledge from being distorted by commercial imperatives?

Conclusion

- Today, those of us who study the relationship between the pharmaceutical industry and academic science are faced with a series of key questions that have grown out of these changes:
 - What is the proper place of pharmaceutical patenting in the academic ecosystem?
 - For researchers, what is the proper role of patenting and other commercial considerations in scientific deliberation and inquiry?
 - How do we protect scientific practice and knowledge from being distorted by commercial imperatives?
 - How do we shape innovation in the pharmaceutical sector through the choices we make as academics that maximize the public good?