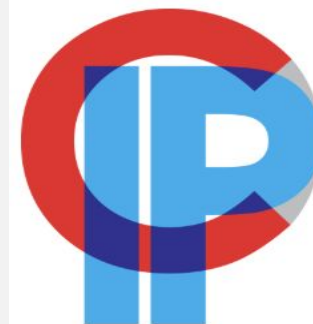


# AI Challenges to Patent Law: Obviousness & Disclosure (& Inventorship)

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**INNOVATION POLICY**  
*at* **DUKE LAW**

# The Reliability Response to Patent Law's AI Challenges

*Arti K. Rai\**

[https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=5247266](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5247266)

## Is Everything Obvious?

- Not if non-obviousness can encompass human role in promoting *reliability*
- Reliability *ex ante* (in designing models) *and ex post* (in assessing output)

# Reliability (& Cursory Utility) a Longstanding Issue

- Early Filing; Misallocation of Rights

INSIGHTS

POLICY FORUM

INTELLECTUAL PROPERTY

## *Science fiction: Fictitious experiments in patents*

Prophetic examples may unnecessarily distort understanding

## The Folly of Early Filing in Patent Law

CHRISTOPHER A. COTROPIA\*

## Reliability of patent-invalidating prior art

Articles

Unpatentable Drugs and the Standards of Patentability

Benjamin N. Roin

RETHINKING NOVELTY IN PATENT LAW

SEAN B. SEYMORE†

ABSTRACT

# AI Could Make Challenge More Acute

Science

Current Issue

First re


HOME > SCIENCE > VOL. 388, NO. 6750 > WHAT PATENTS ON AI-DERIVED DRUGS REVEAL

 | POLICY ARTICLE | DRUG DEVELOPMENT

## What patents on AI-derived drugs reveal

JANET FREILICH AND ARTI K. RAI [Authors Info & Affiliations](#)

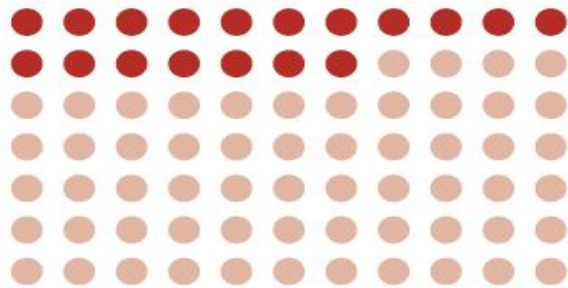
SCIENCE • 29 May 2025 • Vol 388, Issue 6750 • pp. 924-926 • [DOI: 10.1126/science.adw1972](https://doi.org/10.1126/science.adw1972)

 3,165

## More AI, less *in vivo* experimentation

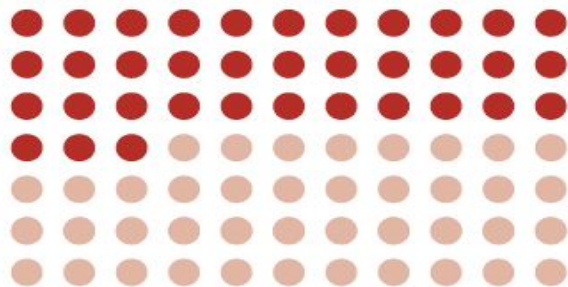
In total, 77 compound patents for small-molecule drugs granted to AI-native firms were analyzed. Compared with 77 matched control firms, AI-native firms obtained patents without *in vivo* experiments at a higher rate.

### AI-native firms



**23%**  
were tested  
**in vivo.**

### Control firms



**47%**  
were tested  
**in vivo.**

- Answer is not necessarily more *in vivo* work
- But patents show no evidence of rigorous alternatives to animal testing (including AI-based alternatives)

# Improving Reliability: Humans plus AI



HUMAN + AI IMPROVEMENT OF  
AI-GENERATED COMPOUND



NEW NEURAL NETWORK  
(HUMAN-DESIGNED) THAT  
OPTIMIZES ADMET PROPERTIES

# Proliferation of AI-Generated Prior Art?

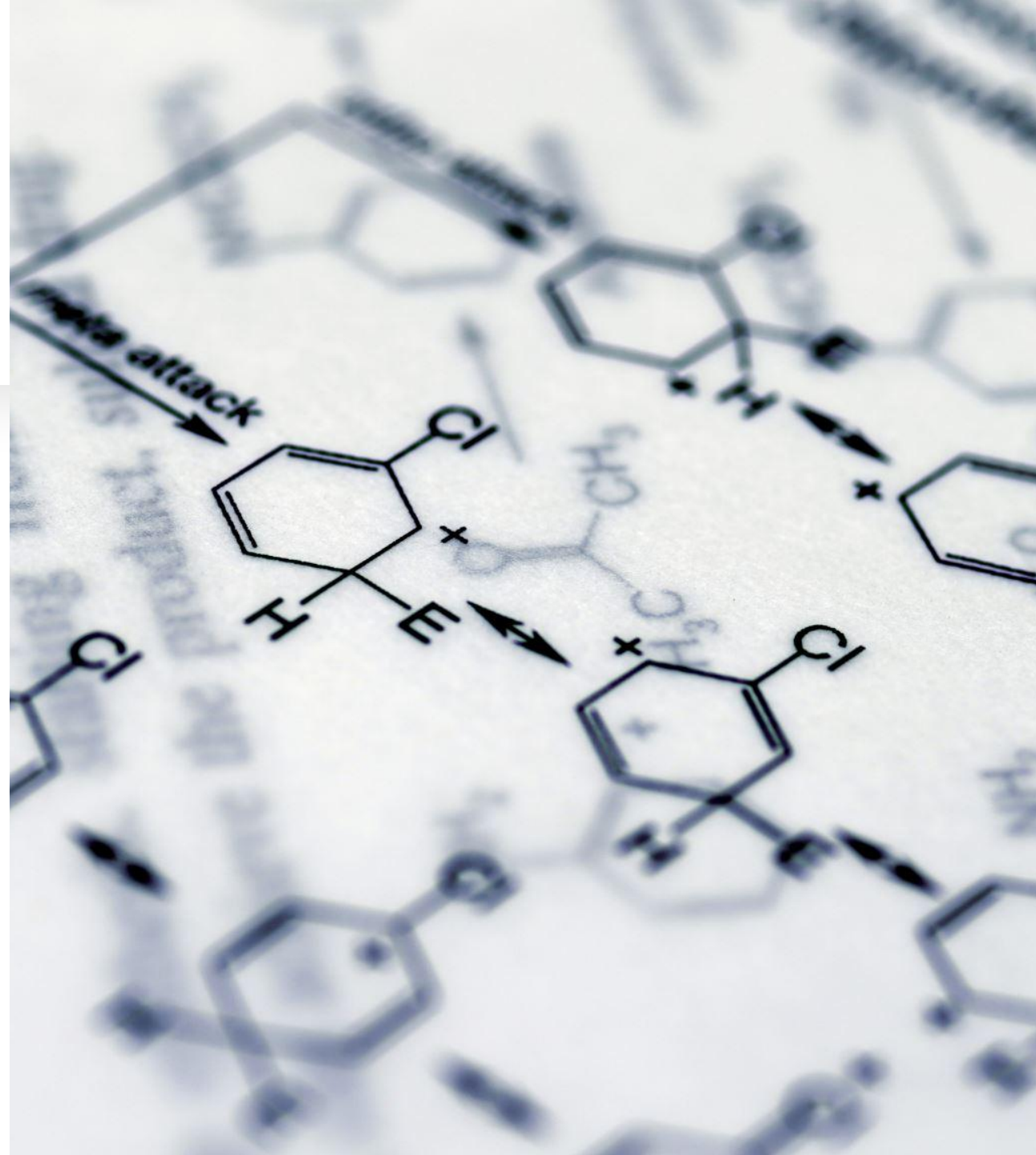
Request for Comments Regarding the Impact of the Proliferation of Artificial Intelligence on Prior Art, the Knowledge of a Person Having Ordinary Skill in the Art, and Determinations of Patentability in View of the Foregoing, 89 Fed. Reg. 324217, 34219 (2024)

- Should AI-generated disclosures that have not been reviewed by a human “be afforded the same presumption that they are operative and enabled” as

*All prior art should be held to higher standard*

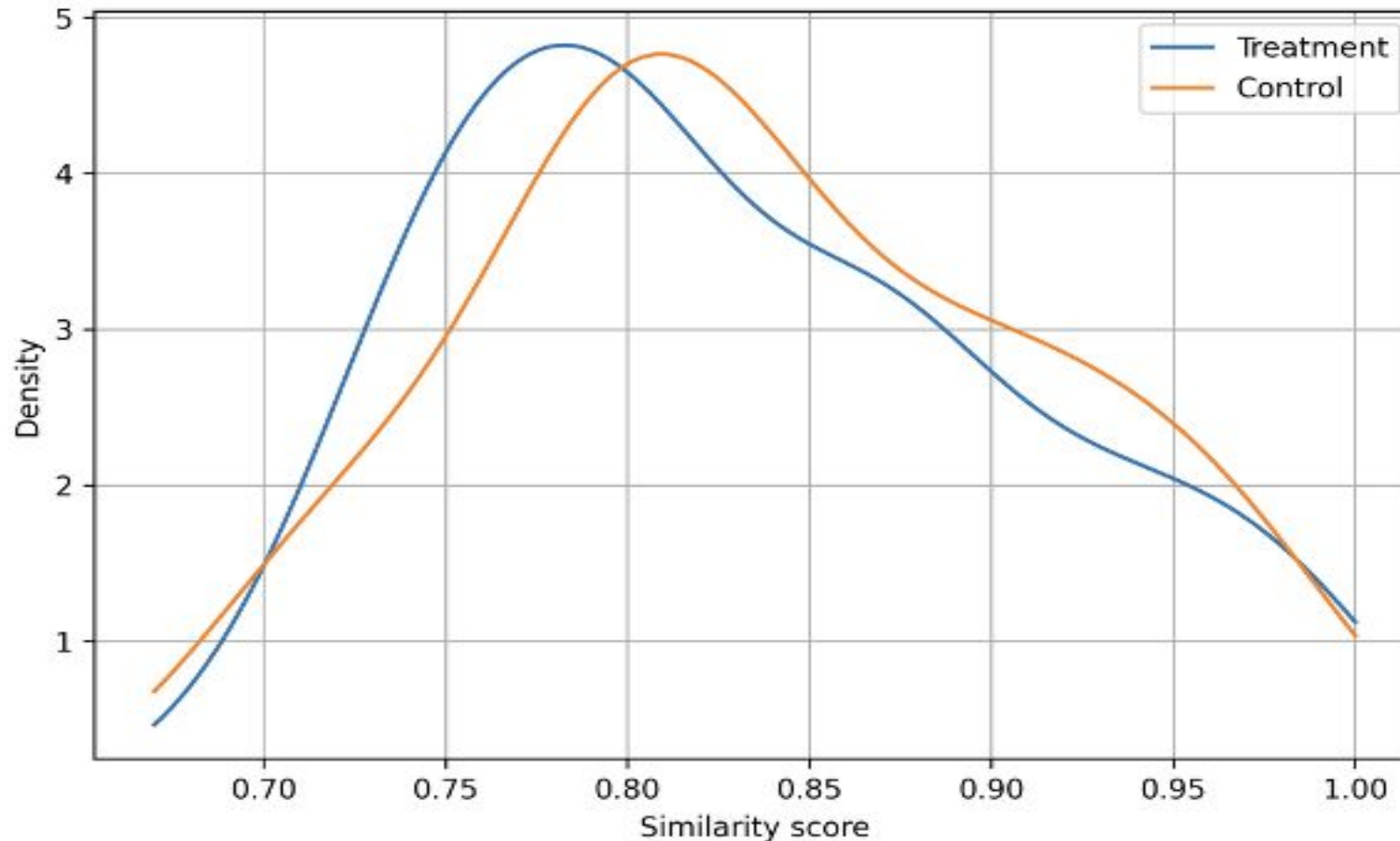
# One data point from *Science* study

- Specs of AI-native and traditional firms disclose similar numbers of molecules
- AI-native median = **101**; control median = **90**
- No explosion of prior-art molecules in spec
- But sample concludes with priority filing date of 2022 (before LLM-assisted drafting)



# Another data point. AI-derived compounds (so far) *not* more structurally innovative than controls

(a) Smoothed density plot of similarity of treatment and control compounds: CAS SciFinder & Tanimoto



Treatment  
median  
(IQR)=82  
(77-89);

Control  
median  
(IQR) = 83  
(78-90)

Forthcoming  
*Nature*  
*Biotechnology*  
(with Freilich)

N=153;  
sample  
extended to  
2023

# Disclosure of *AI Use*

- 
- Arguments against disclosure
    - Patents don't need disclosure of discovery process
    - Concerns about showing obviousness
    - Challenges to inventorship
  - Policy arguments for incentivizing disclosure
    - “the process is the product”?
  - With disclosure, get safe harbor against litigation challenges

# The (Near?) Future . . .

Broadly available AI models that produce reliable output across all domains?

On utilitarian grounds, will IP be necessary?

Thanks!  
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