

Twenty Seven Years On – Could There Be an Intellectual Property Anticommons in Genome Editing?

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AABHL 2025



We need to talk more about patents!



The power of patents

- By granting patents, governments devolve to patentees considerable decision-making power
 - They can decide to share broadly, or not
 - They can decide to work collaboratively or not
 - They can even decide what types of uses are ethical or unethical
- These choices are particularly important for innovative health technologies
 - Incentives for innovation and translation
 - Collaboration and cumulative innovation
 - Consumer access



Contrasting concerns about patents in innovative health technology

- Perceived concerns about having patents
 - Morality
 - Access to research tools
 - Blocking or slowing downstream innovation
 - Slowing, increasing cost, reducing choice of consumer access
- Perceived concerns about not having patents
 - Lack of incentive to develop products
 - Free riding
 - Lack of attractiveness for venture capital



The anticommons problem

Can Patents Deter Innovation? The Anticommons in Biomedical Research

Michael A. Heller and Rebecca S. Eisenberg

The “tragedy of the commons” metaphor helps explain why people overuse shared resources. However, the recent proliferation of intellectual property rights in biomedical research suggests a different tragedy, an “anticommons” in which people underuse scarce resources because too many owners can block each other. Privatization of biomedical research must be more carefully deployed to sustain both upstream research and downstream product development. Otherwise, more intellectual property rights may lead paradoxically to fewer useful products for improving human health.

could set up shop without first collecting rights from each of the other owners.

Privatization of upstream biomedical research in the United States may create anticommons property that is less visible than empty storefronts but even more economically and socially costly. In this setting, privatization takes the form of intel-

SCIENCE • VOL. 280 • 1 MAY 1998 • www.sciencemag.org

- Multiple patents on the road to product development
- Expected manifestations
 - Project abandonment
 - Multiple licences
 - Redirection of research
 - ‘Tollbooths on the road to product discovery’



Regulatory and policy responses

- Tightening patent criteria
- Research exceptions
- Licensing guidelines

User, owner and collaborative responses

- Ignoring patents
- Licensing in
- Litigating
- Open access
- Non-exclusive licensing
- Open research uses
- Non-assertion covenants
- Humanitarian use reservations
- Revenue sharing
- Cross licensing
- Open source licensing
- Clearing houses
- Aggregation of rights
- Traditional patent pools sanctioned by competition authorities
- FTO platforms

POLICY FORUM

BIOMEDICAL RESEARCH

The anticommons at 20: Concerns for research continue

Emerging trends in exclusionary rights may affect research

By **Jorge L. Contreras**

receptors or basic DNA sequencing techniques could impede research on a broad

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Is there still an
anticommons
risk in the
development
of innovative
health
technologies?

The genome editing experience (focus
on CRISPR)

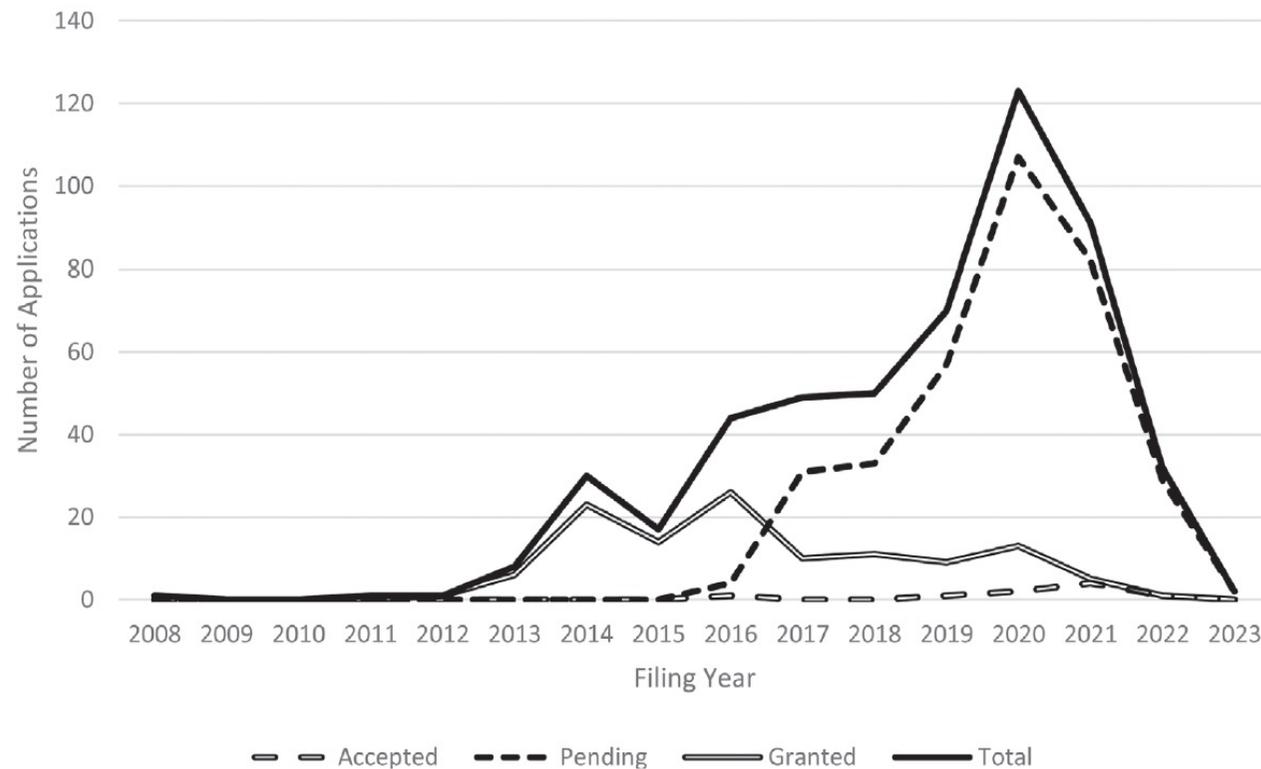
Exponential rise in patent filings: 20,000
from 2012 to 2021 (Jefferson et al 2021)

Rise in patent disputes – particularly
between public research organisations

Complex web of exclusive licensing, spin
offs, collaborations, joint ventures



An Australian case study: filing year trends for CRISPR patents



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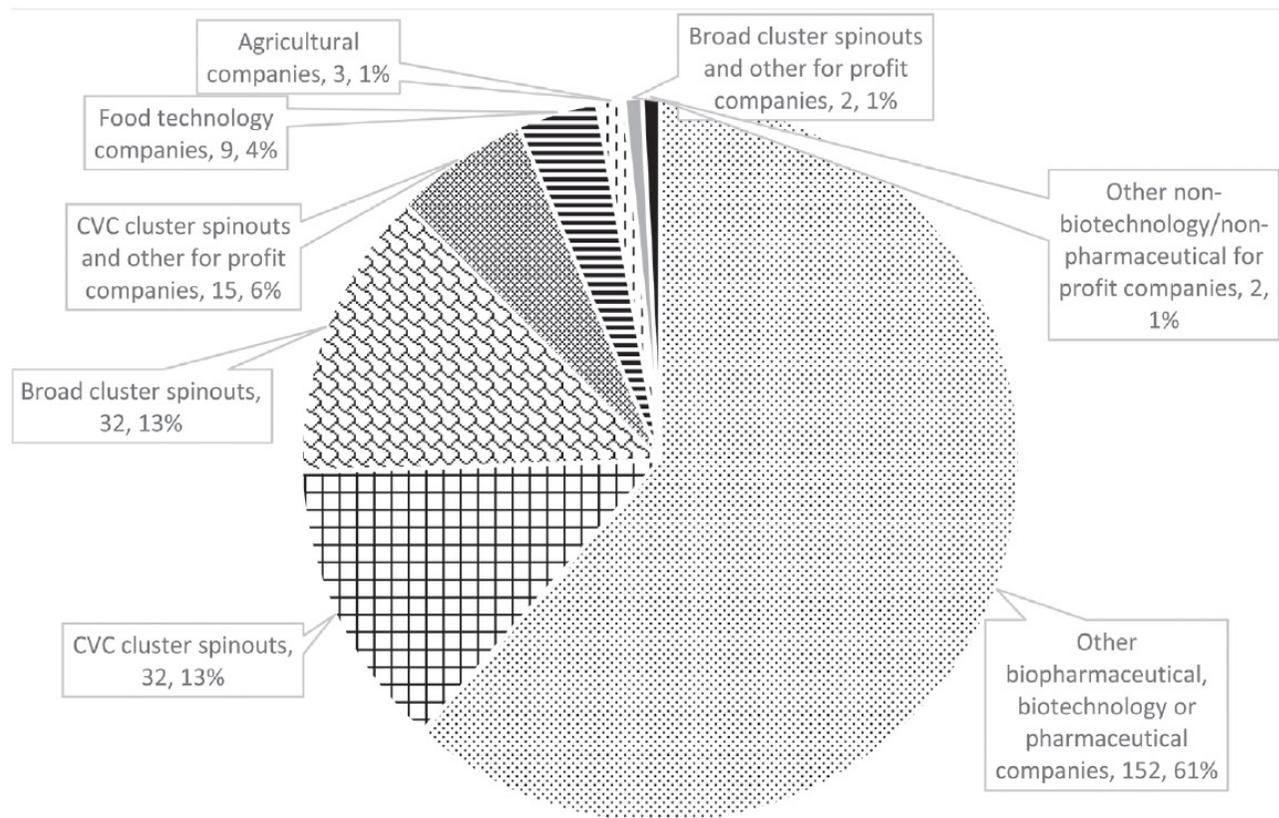


Dominant filers

- The CRISPR pioneers
 - Broad, MIT, Harvard, University of California
- CRISPR pioneer spinouts
 - CRISPR Therapeutics, Caribou Biosciences (the California Vienna Charpentier (CVC) cluster)
 - General Hospital Corp, Beam Therapeutics, Arbor Biotechnologies, Editas (the Broad cluster)
- Other universities and many other small and large biotech and pharma companies



Segmentation of for-profit company patent filings



Key findings

- Continued strong growth in patent filings
- General CRISPR method and composition patents continue to be filed, together with applications for specific diseases
- CRISPR pioneer clusters dominate
- BUT: largest category of applicants is for-profit companies not connected with the CRISPR pioneers



Final thoughts

- Preconditions for an anticommons in genome editing appear to exist
- Can we leave it to the market to resolve?
- Should governments intervene?
 - Develop licensing guidelines and other strategies
 - Voice support for ethical licensing
 - Incentivise collaborative approaches to research and translation
 - Use march in rights
 - Mandate pooling of patents
 - ...?
- We urgently need to have this conversation



Acknowledgements

- Funding from the Australian Research Council and the Medical Research Futures Fund
- My wonderful colleagues and students throughout the world, particularly at the Centre for Law and Genetics (CLG) and Enabling Openness in Australian Stem Cell Research (EOAR)

Key publications

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- Naomi Foo, Olumayowa Adesanya, Jane Nielsen and Dianne Nicol, 'The Patent Landscape for CRISPR Genome Editing in Australia' (2023) 30 *Journal of Law and Medicine* 286-309
- Jane Nielsen, Dianne Nicol and Cameron Stewart, 'The Australian "Valley of Death"? Australian Research and Patenting Practices in Bioprinting and Genome Editing' in Estelle Derclaye (ed), *Research Handbook on Empirical Studies in IP Law* (Edward Elgar; 2023), 47-73
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