Upstream Inventions

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Key Takeaways

• Patent law has difficulties with inventions that are upstream in the research process

• Cases have developed an unwritten requirement of “completeness” to police patents on some upstream inventions

• Understanding this requirement could lead to a more rational framework of patent rights and remedies for upstream inventions
What Are Upstream Inventions?

• Research tools and research intermediates
• Wish, plan, or hypothesis ("research project")
• Inventions that center on laws of nature, natural phenomena, and scientific truths
Pros and Cons of Upstream Patents

• Pro: They incentivize foundational inventions and promote disclosure
  – Existence of a patent right also aids in coordination and commercialization

• Con: They inhibit future innovation and lead to anticommmons problems
  – Functional concern is undue preemption of downstream applications, particularly further research
The Current Law

• The “completeness” requirement
  – An unwritten validity requirement focused on the developmental stage of the invention
  – Derived from three separate statutory sources
Three Lines of Completeness Cases

• Utility (*Brenner v. Manson, In re Fisher*)
  – “A patent is not a hunting license”

• Written Description (*Rochester, Ariad v. Lilly*)
  – “Attempt to preempt the future before it has arrived”

• Patentable subject matter (*Mayo, Myriad*)
  – Certain patents “tie up too much future use of laws of nature”
Problems with the Requirement

- Subjective, inconsistent, ad hoc – likely underinclusive and overinclusive
- In tension with doctrines promoting early patenting
- Complete invalidation is too harsh a remedy for undue preemption
Other Proposals to Deal with Upstream Patents that Survive Completenessness

• Infringement exemptions and remedies
  – Invigorated experimental use defense, patent misuse, reverse DOE
  – Lower damages, no injunctions
  – Problem: costly, unpredictable litigation (status known only ex post)

• Sui generis solutions
  – Problem: limited coverage
Roadmap for Proposed Improvements

• Make the requirement less ad hoc and more in line with concerns about undue preemption
• Balance pros and cons of upstream patents by providing some type of a limited patent right
• Ex ante solution to reduce litigation costs
Proposed Statutory Ex Ante Solution

• 1. Create new statutory home for completeness as a standalone patentability requirement
• 2. Abrogate controversial completeness cases
• 3. Patents that meet extant requirements but fail completeness would qualify for a Research Patent (RP) – limited bundle of rights
1. Statutory Test of Completeness

• Whether, according to a person of ordinary skill in the art, the claims would cover many significant downstream applications, many of which are yet to be discovered, at the time of patent filing

• Whether a person of ordinary skill in the art would recognize that the claimed invention has features of a hypothesis or a conjecture
# Possible Examples of Research Patents

<table>
<thead>
<tr>
<th>Currently unpatentable</th>
<th>Currently patentable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expressed Sequence Tags</td>
<td>Polymerase Chain Reaction</td>
</tr>
<tr>
<td>gDNA</td>
<td>cDNA</td>
</tr>
<tr>
<td>chemical methods and products with only research utility</td>
<td>Other broadly applicable tools: electron microscopes, scintillation counters, etc.</td>
</tr>
<tr>
<td>Treatment claims based on a newly identified biological target (but no drug)</td>
<td>Functionally drafted software claims</td>
</tr>
</tbody>
</table>
2. Abrogation

- Research utility satisfies Section 101
- No *Rochester-Ariad* written description
- No *Mayo* “conventional activity” test
  - Complete ineligibility reserved for nonstatutory categories and “manifest” claims to natural phenomena and ideas, *cf. CLS v. Alice* panel opinion
  - Enablement would still police claims that are scientifically invalid or require undue experimentation to practice; also 102/103
3. Enforcement of Research Patents

• No district court litigation
• Scheduled/capped damages – pre-set variation based on entity size and/or extent of patent use
• Defenses limited to prior art invalidity; no DOE, willfulness claims
  – If PTO erroneously grants a full patent that should have been an RP, that can be an invalidity defense or basis for inter partes review
Thank You

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