Synthetic Biology: Caught between Property Rights, the Public Domain, and the Commons

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PLoS Biology – March 2007

Presented by Holly Chamberlain
20.385 – May 1, 2013
Background

- Synthetic biology outputs are valuable products
- Existing part registries
- Law needs to be defined as soon as possible
Uncharted Territory

• How do current IP rights laws keep up with rapidly advancing technology?
• What’s the best way to define and create “openness”? 
• Is this “The Perfect Storm”? 
  • Biotechnology and Patent Law 
  • Computers, Copyrights, and Patent Law
Specific Issues

- US Dept. of Health and Human Services - “Molecular Computing Elements, Gates and Flip-Flops”
  - Broad patents on foundations = stifling to research

- Monoclonal antibodies and recombination techniques
  - What if similar foundational tools are developed now?

- Patent thickets vs. patent pools
End Goal

- A perfect Synthetic Biology commons would...
  - Encourage innovation
  - Encourage collaboration
  - Not discourage competition
  - Be inexpensive
  - Have a solid legal basis
## Possible Commons Bases

<table>
<thead>
<tr>
<th>Method</th>
<th>Protection</th>
<th>Pros</th>
<th>Cons</th>
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</thead>
<tbody>
<tr>
<td>Patents</td>
<td>20 years of invention protection</td>
<td>- Clear basis for copyleft licenses</td>
<td>- Expensive</td>
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<td></td>
<td></td>
<td></td>
<td>- Rely on non-assertion</td>
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<tr>
<td>Copyrights</td>
<td>Exclusive right to copy and improve</td>
<td>- Clear basis for copyleft licenses</td>
<td>- US legal basis unclear</td>
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<tr>
<td></td>
<td></td>
<td>- Inexpensive</td>
<td>- Theoretical arguments</td>
</tr>
<tr>
<td>Contracts</td>
<td>Varying</td>
<td>- Inexpensive</td>
<td>- Copyleft license requirements strict</td>
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<td></td>
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<td>- Leaks possible</td>
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<tr>
<td>Sui generis</td>
<td>“custom made” legislation</td>
<td>- Problem specific</td>
<td>- Legislation slow and difficult</td>
</tr>
</tbody>
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Conclusions and Significance

- Commons can’t get in the way of “patented therapy development”
  - Pharmaceutical development and clinical trial costs
    - Property rights necessary to foot the bill
- A public domain strategy is a good start
  - Reduces patentability of foundational technology and parts
Limitations

- Never chose a final position on commons design
- How do you obtain consent from all parties involved?
- Whose responsibility is it to design this commons?
Discussion Questions

- Would the presence or lack of a commons influence your decision to participate in synthetic biology research?
- Do you think biotech companies would support the idea of a synthetic biology commons?