TEMPLATE FOR COMMENTS

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Title of document reviewed:	The Emergence and Growth of Digital Sequence Information in Research and Development: Implications for the Conservation and Sustainable Use of Biodiversity, and Fair and Equitable Benefit-Sharing – A Fact-Finding and Scoping Study Undertaken for the Secretariat of the Convention on Biological Diversity

Comments on the draft fact-finding and scoping study		
Page #	**Para #**	**Comment**
0	0	In general, this is a well-researched and comprehensive report. Our specific comments mostly focus on ways that our report (Scott & Berry 2017) was used.
23	41-42	It is not quite accurate to say that DSI may be either natural or synthetic – as is discussed earlier in the report, the term points to the information, not something material. Patron's points from the Scott & Berry report might be better captured as follows: "may **correspond** to natural or synthetic sequences, identical to those found in nature, or designed, mutated or degenerated."
25	35-37	It would help to draw attention to the fact that 'nature as an inspiration' is a very particular viewpoint (and not a ubiquitous truth), by just adding the phrase "Nature is often viewed **by some practitioners** as an…"
26	7	The Imperial College foundry is called the "London DNA Foundry" (not SynbiCITE, although it is affiliated with that programme)
26	8	It would be more accurate to say that robotic assembly lines are used to create, test and optimize "genetic constructs, often within single cells or microbes," as they are not creating *de novo* microbes.

34	12-28	BioBricks is a very specific term, basically only used in the iGEM context. Many private standards are used within synthetic biology, and, indeed, not all molecular/synthetic biologists are committed to the pursuit of standardized parts. The second paragraph, in particular, overstates the significance of the Registry of Standard Biological Parts, and the reliability of the information it contains – it's an accurate description of how iGEM publicizes the Registry, but it's not an accurate description of the actual Registry, or how it is used. We would recommend cutting the second half of the second paragraph (24-28). We would also recommend making it clearer in lines 12-23 that this arrangement of working through a registry organised around a single shared standard is still a work in progress, and not necessarily reflective of the greater majority of work in molecular biology that nevertheless relies on synthesised DNA. It would be unfortunate if iGEM came to stand in for how biological science functions, when actually the variety of registries, and the variety of ways of working with registries, is an issue that should be subject to investigation.
34	16	Rather than saying "DNA parts are a mix of natural and synthetic," it might be more accurate to say something like "DNA constructs can be a mixture of naturally discovered DNA sequences and sequences that have been considerably altered, or indeed designed more or less from scratch.**"**
36	14	The term "digital-to-biological converter" is really just used for a specific J. Craig Venter technology. We would recommend calling this section "DNA synthesis technologies." The d-t-b converter is one example of this.
36	17-18	There are a great many reasons one might turn to a synthesis company for DNA, and a corresponding variety of kinds of synthesis company. The list you have here, Ginkgo, Gen9, SGI-DNA, is rather an odd one. First, because Gen9 is now owned by Ginkgo, and second, because all of these companies have been established within the synthetic biology industrial space. There are many companies that people habitually rely on to get synthetic DNA, many of them far older. Our recommendation would be not to insert a random list at all.
36	19-24	The quote that you are using is not specifically about DNA synthesis, but rather about the whole organism reconstruction work that Ginkgo are known for. It is strange to go from 'companies that synthesise DNA' – which is a very broad category – immediately into the example of Ginkgo, especially as synthesis is only one part of the activity which this quote describes. The quote would be better used to evidence the kinds of ways of working found in synbio, rather than allowing it to stand in for all of synthesis. Your section 3.1.1 or 3.1.2 would be a good place to transfer this quote to, because it evidences work in synthetic biology and industrial biotechnology.
36	35-36	This is an area awash in hype, and so it is worth being very careful about how such claims are repeated and reported on. In this case, the article actually makes this point as a quote from Jay Keasling, not a fact, and it is couched somewhat differently: "However, Jay Keasling of the University of California, Berkeley, thinks that even this will soon become a thing of the past. "It will come to a point where you can just inexpensively synthesize the DNA you need, whether it's 10,000 or a million base pairs."" …. "It will come to a point" is not the same as "it will soon be possible." We strongly recommend replacing this with language that explains the growing ubiquity of DNA synthesis, and its growth in amount produced and sizes/scales of production.

36	37-39	This language came directly from an SGI-DNA press release, quoted in Welch et al, 2017. We find it to be factually inaccurate. DNA synthesis machines capable of being used to produce whole genes have been available since the 1980s. It is not clear if they mean something different by a 'DNA printer'. Perhaps there is something significantly novel about the SGI-DNA machine, but it is not clear from this what that novelty is; on its own, it seems to be a highly inaccurate claim.
37	35	It is specifically "archived **biological** collections" that are being increasingly included (Kew holds paper archives, etc)
55	1-3	Burgess and Berry were reporting on this work. They did not complete it. If you wish to refer to the specific study at hand it can be found here. http://science.sciencemag.org/content/354/6314/830.full
59	21-23	We should suggest that the tone of language be slightly adjusted. Instead of databases being "not supportive", they might be described as "These databases are resistant to the idea of monitoring data usage, as it poses…"

Please submit your comments to secretariat@cbd.int or by fax at +1 514 288 6588.